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Report of the Committee on the Peaceful Uses of Outer Space

Sixty-second session (12–21 June 2019)

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Note

Symbols of United Nations documents are composed of letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

[3 July 2019]

Contents

Chapter I

Introduction

1. The Committee on the Peaceful Uses of Outer Space held its sixty-second session in Vienna from 12 to 21 June 2019. The officers of the Committee were as follows:

Chair	André João Rypl (Brazil)
First Vice-Chair	Thomas Djamaluddin (Indonesia)
Second Vice-Chair/Rapporteur	Keren Shahar (Israel)

A. Meetings of subsidiary bodies

2. The Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space held its fifty-sixth session in Vienna from 11 to 22 February 2019, under the chairmanship of Pontsho Maruping (South Africa). The report of the Subcommittee was before the Committee (A/AC.105/1202).

3. The Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space held its fifty-eighth session in Vienna from 1 to 12 April 2019, under the chairmanship of Andrzej Misztal (Poland). The report of the Subcommittee was before the Committee (A/AC.105/1203).

B. Adoption of the agenda

4. At its opening meeting, the Committee adopted the following agenda:

1. Opening of the session.
2. Adoption of the agenda.
3. Statement by the Chair.
4. General exchange of views.
5. Ways and means of maintaining outer space for peaceful purposes.
6. Report of the Scientific and Technical Subcommittee on its fifty-sixth session.
7. Report of the Legal Subcommittee on its fifty-eighth session.
8. Space and sustainable development.
9. Spin-off benefits of space technology: review of current status.
10. Space and water.
11. Space and climate change.
12. Use of space technology in the United Nations system.
13. Future role of the Committee.
14. Space exploration and innovation.
15. “Space2030” agenda.
16. Other matters.
17. Report of the Committee to the General Assembly.

C. Membership

5. In accordance with General Assembly resolutions 1472 A (XIV), 1721 E (XVI), 3182 (XXVIII), 32/196 B, 35/16, 49/33, 56/51, 57/116, 59/116, 62/217, 65/97, 66/71, 68/75, 69/85, 71/90 and 72/77 and decisions 45/315, 67/412, 67/528, 70/518 and 73/517, the Committee on the Peaceful Uses of Outer Space was composed of the following 92 States: Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Belarus, Belgium, Benin, Bolivia (Plurinational State of), Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Chad, Chile, China, Colombia, Costa Rica, Cuba, Cyprus, Czechia, Denmark, Ecuador, Egypt, El Salvador, Ethiopia, Finland, France, Germany, Ghana, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Lebanon, Libya, Luxembourg, Malaysia, Mauritius, Mexico, Mongolia, Morocco, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Senegal, Sierra Leone, Slovakia, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Syrian Arab Republic, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Venezuela (Bolivarian Republic of) and Viet Nam.

D. Attendance

6. Representatives of the following 79 States members of the Committee attended the session: Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bolivia (Plurinational State of), Brazil, Bulgaria, Burkina Faso, Canada, Chile, China, Colombia, Costa Rica, Cuba, Cyprus, Czechia, Denmark, Ecuador, Egypt, El Salvador, Finland, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Lebanon, Libya, Luxembourg, Malaysia, Mexico, Mongolia, Morocco, Netherlands, New Zealand, Nigeria, Norway, Oman, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Slovakia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syrian Arab Republic, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela (Bolivarian Republic of) and Viet Nam.

7. The session was attended by the observer for the European Union as permanent observer of the Committee in accordance with General Assembly resolution 65/276.

8. Observers for the Office for Disarmament Affairs of the Secretariat, the United Nations Institute for Disarmament Research, the International Telecommunication Union, the World Meteorological Organization (WMO) and the International Atomic Energy Agency attended the session.

9. The session was attended by observers for the following intergovernmental organizations with permanent observer status with the Committee: Asia-Pacific Space Cooperation Organization (APSCO), European Southern Observatory, European Space Agency (ESA), European Telecommunications Satellite Organization (EUTELSAT-IGO), International Telecommunications Satellite Organization (ITSO) and Regional Centre for Remote Sensing of the North African States (CRTEAN).

10. The session was also attended by observers for the following non-governmental organizations with permanent observer status with the Committee: Eurisy, European Space Policy Institute, For All Moonkind, International Academy of Astronautics (IAA), International Association for the Advancement of Space Safety (IAASS), International Astronautical Federation, International Institute of Space Law, International Space University (ISU), Prince Sultan bin Abdulaziz International Prize for Water (PSIPW), Secure World Foundation (SWF), Space Generation Advisory Council (SGAC), University Space Engineering Consortium-Global (UNISEC-Global) and World Space Week Association.

11. A list of representatives of States members of the Committee, United Nations entities and other organizations attending the session is contained in A/AC.105/2019/INF/1 and A/AC.105/2019/INF/1/Corr.1.

E. General statements

12. Statements were made by representatives of the following States members of the Committee during the general exchange of views: Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Brazil, Canada, Chile, China, Colombia, Costa Rica, Cuba, Cyprus, Czechia, Ecuador, El Salvador, Egypt, Finland, France, Germany, Greece, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kazakhstan, Luxembourg, Malaysia, Mexico, New Zealand, Nigeria, Norway, Pakistan, Paraguay, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Saudi Arabia, South Africa, Spain, Switzerland, Sweden, Thailand, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela (Bolivarian Republic of) and Viet Nam. Statements were also made by the representative of Nigeria on behalf of the Group of African States and by the representative of Egypt on behalf of the Group of 77 and China. The representative of Chile made a statement on behalf of Argentina, Bolivia (Plurinational State of), Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Mexico, Uruguay and Venezuela (Bolivarian Republic of). The observer for the European Union made a statement. The observers for the Office for Disarmament Affairs of the Secretariat and WMO also made statements. Further statements were made by the observers for APSCO, CRTEAN, Eurisy, EUTELSAT-IGO, For All Moonkind, IAA, the International Astronautical Federation, the International Organization of Space Communications (Intersputnik), ISU, the National Space Society, SGAC, SWF, UNISEC-Global and the World Space Week Association.

13. At the opening of the session, the delegation of the United States held a commemorative event in the form of a panel discussion to mark the fiftieth anniversary of the Apollo 11 mission to the Moon, on the theme “The legacy of the Apollo 11 mission: the future of space exploration”. The panel discussion included Jackie Wolcott (Ambassador Extraordinary and Plenipotentiary and Permanent Representative of the United States to the United Nations (Vienna)), Scott Pace (Executive Secretary, National Space Council), Kenneth Bowersox (National Aeronautics and Space Administration (NASA) Deputy Associate Administrator for Human Exploration and Operations and former Space Shuttle commander), Jon Harrison (Senior Adviser, Bureau of Oceans and International Environmental and Scientific Affairs, United States Department of State), Daniel Dumbacher (Executive Director, American Institute of Aeronautics and Astronautics) and Simonetta Di Pippo (Director, Office for Outer Space Affairs). The questions and answers session was moderated by Kenneth Hodgkins (Director, Office of Space and Advanced Technology, United States Department of State).

14. The Committee expressed its appreciation to the delegation of the United States for organizing and holding the panel discussion for the benefit of member States and permanent observers of the Committee. Further, the Committee congratulated the United States on the fiftieth anniversary of the Apollo 11 mission, which had placed humans on the surface of the Moon for the first time, marked a new phase in space exploration and inspired humanity for new space endeavours.

15. At the 754th meeting, on 12 June, the Chair delivered a statement in which he stressed the importance of the promotion and further enhancement of the role of the Committee as a forum for fostering dialogue and cooperation among States members of the Committee and organizations with permanent observer status and for strengthening partnerships among States, intergovernmental and non-governmental organizations, industry and private sector entities. He further underlined that the Committee continued to be the intergovernmental body under the auspices of the United Nations uniquely positioned to deliver solutions for the emerging challenges in outer space activities and that it was important for the member States to join forces

with the aim of aligning the Committee's role with the evolving needs by advancing the development of a new "Space2030" agenda with the objective of maximizing the benefits of space activities for the implementation of the 2030 Agenda for Sustainable Development and the attainment of the Sustainable Development Goals, taking into account the particular needs of developing countries.

16. The Chair warmly welcomed Cyprus, Ethiopia, Finland, Mauritius and Paraguay as the newest members of the Committee, which brought the membership of the Committee to 92 member States. The Chair also welcomed the European Union on becoming a permanent observer of the Committee, as well as CANEUS-International, For All Moonkind and the International Organization for Standardization (ISO) as the newest international non-governmental organizations with observer status with the Committee.

17. At the same meeting, the Director of the Office for Outer Space Affairs made a statement in which she reviewed the work carried out by the Office during the past year, including outreach activities and cooperation and coordination with United Nations entities, international intergovernmental and non-governmental organizations, as well as representatives of the private sector. She also highlighted the current financial status of the Office and stressed the importance of availability of financial and other resources for the successful implementation of the programme of work of the Office. Further, the Director of the Office stressed the importance of innovation for expanding, through cooperation and partnerships, space exploration and the use of outer space for peaceful purposes. In that context, she provided a comprehensive account of the Office's approach to capacity-building, which was holistic, modern and strategic and was aimed at making space activities as inclusive as possible while ensuring that the benefits of space were made available to everyone and everywhere, such as through the Office's existing "Access to Space for All" initiative or the emerging programme entitled "Space law for new space actors: fostering responsible national space activities". The Director also outlined the substantial cooperative projects, programmes and partnerships of the Office that had been established since the last session of the Committee.

18. On behalf of the United Nations, the Director of the Office for Outer Space Affairs expressed gratitude to China, the International Astronomical Union (IAU) and MAXAR Technologies for their donations to the Office's permanent exhibition at the United Nations Office at Vienna.

19. The Committee welcomed the publication by the Office for Outer Space Affairs of the *Annual Report 2018*, which contained a comprehensive account of the Office's activities, cooperation and partnership programmes, achievements in 2018 and plans for the future.

20. At the 764th meeting, on 19 June, the Committee was addressed by Marcos Cesar Pontes, Minister of Science, Technology, Innovation and Communications of Brazil, who in 2006 had been the first astronaut from Brazil to go to outer space.

21. The Committee heard the following presentations:

(a) "Commercial space debris removal service for the long-term sustainability of space", by the representative of Japan;

(b) "Centre of Excellence in Research of Sustainable Space at the University of Helsinki", by the representative of Finland;

(c) "IAASS, 15 years of achievements", by the observer for IAASS;

(d) "Inspiring stars: astronomy for inclusion", by the observer for IAU;

(e) "Recent Indian space missions: update as of June 2019", by the representative of India;

(f) "UNNATI: first batch feedback and second batch announcement", by the representative of India;

(g) “United Nations Office for Outer Space Affairs *Annual Report 2018*”, by the representative of the Office for Outer Space Affairs;

(h) “The Copernicus Academy: space hub for knowledge exchange, innovation and outreach”, by the representative of Austria;

(i) “Open-design CubeSats for earthquake prediction and tsunami early-warning and their university-originated satellite construction observation”, by the observer for UNISEC-Global;

(j) “UNISEC-Global Challenge: for sustainable university space activities”, by the observer for UNISEC-Global;

(k) “A handbook for the post-mission disposal of satellites less than 100 kg”, by the observer for UNISEC-Global;

(l) “SEOSat/Ingenio: Spanish Earth Observation Satellite”, by the representative of Spain;

(m) “Recent satellite mission SAOCOM”, by the representative of Argentina;

(n) “Update on the Indian Space Research Organisation international cooperation: joint missions, payloads, data-sharing and partnerships with non-spacefaring nations”, by the representative of India.

22. The Committee agreed that it, together with its subcommittees and with the support of the Office for Outer Space Affairs, remained the unique international forum tasked with promoting international cooperation in the exploration and peaceful use of outer space and which offered an appropriate environment to discuss matters that had a great impact on the development of States for the betterment of humankind.

23. Some delegations expressed the view that it was important for member States to develop an agenda that could guide the work of the Committee and its subcommittees with a broad and long-term vision that had as its main axis the fulfilment of the Sustainable Development Goals, and that therefore the role and activities of the Committee and its subcommittees and the Office for Outer Space Affairs should be strengthened and their working methods should be optimized.

24. Some delegations expressed the view that the international community should make further efforts and explore all possible ways and means of taking advantage of the Committee and its subcommittees in order to deliver the common objectives of all nations on space-related issues.

25. The Committee recalled the success of the celebration of the fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE+50), which had served to stress the importance of strengthening international cooperation in the exploration and use of outer space for peaceful purposes. The Committee further recalled that UNISPACE+50 had been effective in raising awareness of the beneficial impact of space science and technology on sustainable development and reaffirmed that the quality of life on Earth was becoming increasingly dependent on activities carried out in outer space.

26. The Committee welcomed the adoption by the General Assembly of resolution 73/6, entitled “Fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space: space as a driver for sustainable development”.

27. The Committee agreed that the work relating to the “Space2030” agenda and its implementation plan would help in promoting the use of space activities for the implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals and the targets contained therein, as well as the Paris Agreement on climate change and the Sendai Framework for Disaster Risk Reduction 2015–2030.

28. Some delegations expressed the view that a continuous dialogue in a multilateral forum such as the Committee provided the best possibilities for fruitful and effective

international cooperation, coordination and information-sharing, which were necessary for ensuring the peaceful use and exploration of outer space.

29. Some delegations expressed the view that developing countries were increasingly engaged in space activities and actively participating in the discussions of the Committee, and while some countries had reached important milestones in space activities, other countries were only starting to develop their own space programmes and policies. That situation heightened recognition in developing countries of the potential, importance and impact of space activities, and in that connection, it was imperative to intensify the efforts to extend to all States the benefits derived from outer space activities, with a view to promoting the contribution of peaceful uses of outer space to socioeconomic development. Further, in line with the enhancement of international cooperation in outer space activities, it was vital to promote the broader participation of developing countries through active assistance from advanced spacefaring nations and the Office of Outer Space Affairs. Therefore, capacity-building and technical assistance were key factors for expanding the abilities of those working in the field, thereby enabling them to gain expertise and knowledge from more advanced spacefaring nations.

30. Some delegations reiterated their firm conviction that the use and exploration of outer space should be carried out exclusively for peaceful purposes, with a view to realizing a shared vision for the future, for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and in conformity with applicable international law.

31. Some delegations expressed the view that the most important principles that should govern the activities of States in outer space continued to be universal and equal access to outer space for all countries without discrimination, regardless of their level of scientific, technical and economic development, as well as the equitable and rational use of outer space for the benefit and in the interests of all humankind; the principle of non-appropriation of outer space, including the Moon and other celestial bodies, by any means; and international cooperation in the development of space activities, especially those referred to in the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries.

32. Some delegations expressed the view that international cooperation in the peaceful uses and exploration of outer space continued to be in the interest of all countries, irrespective of their degree of development, without discrimination of any kind and with due regard to the principle of equality.

33. The view was expressed that the attempt by some States to promote their national vision and norms as international standards was a matter of concern, as such action could lead to conflicts among participants of space activities and negatively affected the entire system of safety and security in outer space.

34. The view was expressed that the development of science and technology had brought humanity into the era of the commercial utilization of space resources, and that was linked to the risk of an intensification of the global competition for resources and could threaten international peace and security. In that connection, the Committee should engage in a concrete and objective discussion, to be based on the principles and norms of the Outer Space Treaty and aimed at the creation of an international mechanism for control over the utilization of space resources, which could take the form of a legally binding international agreement or a system of agreements. Such agreement would establish a reliable basis for national regulation and a conflict-free conduct of relevant activities. Further, strict compliance with the prohibition of national appropriation of outer space, including the Moon and other celestial bodies, as set out in the Outer Space Treaty, would guarantee that outer space would be free from conflicts related to territorial claims.

35. The view was expressed that the issue of exploitation of the natural resources of celestial bodies called for the establishment of an appropriate international framework

within which equitable, sustainable and rational solutions could be found in the future, and that, given not only the economic and political implications but also the impact that this issue could have on the implementation and interpretation of the treaties, consideration of the issue was solely the responsibility of States and therefore the Committee.

36. Some delegations expressed the view that the development of an international non-legally binding instrument covering the security, safety and sustainability of outer space activities would make it possible to set globally shared norms of responsible behaviour and related transparency and confidence-building measures, including a political commitment not to intentionally destroy space objects and to prevent any further generation of debris.

37. Some delegations expressed the view that the increasing amount of space debris posed a serious threat to the lives of people on Earth and encouraged the implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space and the Space Debris Mitigation Guidelines of the Committee. Information was also provided on the discussion in the World Economic Forum on establishing an international rating scheme for satellite sustainability, in order to encourage industry to voluntarily mitigate space debris.

38. The Committee expressed its appreciation for the organization of the following exhibitions during the session:

(a) “PlanetSound: an installation of planet models by artist Wolfgang Semmelrock”, organized with the support of the Permanent Mission of Austria to the United Nations (Vienna);

(b) “Ancient China navigation technology exhibition: the history of Chinese navigation technology during the last 5,000 years (time service, navigation, geodesy and exchange)”, organized by the China Satellite Navigation Office and the Permanent Mission of China to the United Nations (Vienna);

(c) “The legacy of the Apollo 11 mission: the future of space exploration”, organized by the Permanent Mission of the United States to the United Nations (Vienna) with the support of NASA;

(d) “Inspiring stars: a selection of objects that help people with disabilities engage with astronomy and space science”, organized by IAU.

39. The Committee expressed its appreciation to Switzerland for holding a meeting at the Vienna International Centre on 11 June 2019 on possible further work on the long-term sustainability of outer space activities.

40. The Committee also expressed its appreciation for the organization of the following events during the session:

(a) A side event entitled “Announcement of the selected experiment projects to be executed on board the China space station for the first cycle”, co-organized by the Office for Outer Space Affairs and the China Manned Space Agency;

(b) A lunchtime event entitled “Space solutions for the Pacific: assisting Pacific Island countries in developing capacity to access space-based solutions”, co-organized by New Zealand and the Office for Outer Space Affairs;

(c) A lunchtime event entitled “Achieving the impossible”, organized by the United Arab Emirates;

(d) A reception event entitled “IAASS anniversary and 15 years of advancement of space safety”, organized by IAASS;

(e) A side event entitled “Access to space for all: the Avio contribution to opening up space”, co-organized by Italy, the Office for Outer Space Affairs and Avio;

(f) A side event entitled “Inspiring stars: IAU inclusive world exhibition”, organized by IAU;

(g) A reception event entitled “Reception for an information exchange of ideas on space debris issues”, organized by Japan;

(h) A panel discussion entitled “Humans first”, organized by For All Moonkind;

(i) A panel discussion entitled “The interregional space policy dialogue between Asia-Pacific and Europe: innovation and partnerships for enhancing space capabilities”, co-organized by the Asia-Pacific Regional Space Agency Forum and the European Space Policy Institute, supported by Japan;

(j) A side event entitled “Space for youth”, organized by the Office for Outer Space Affairs in collaboration with SGAC;

(k) A special event entitled “Tackling space debris: European and international measures for a sustainable use of outer space”, co-organized by the Office for Outer Space Affairs and ESA;

(l) A side event entitled “Space for women/women in space”, co-organized by the United States and the Office for Outer Space Affairs.

F. Adoption of the report of the Committee

41. After considering the various items before it, the Committee, at its 769th meeting, on 21 June 2019, adopted its report to the General Assembly containing the recommendations and decisions set out below.

Chapter II

Recommendations and decisions

A. Ways and means of maintaining outer space for peaceful purposes

42. In accordance with paragraph 14 of General Assembly resolution 73/91, the Committee continued its consideration, as a matter of priority, of ways and means of maintaining outer space for peaceful purposes and its consideration of the broader perspective of space security and associated matters that would be instrumental in ensuring the safe and responsible conduct of space activities, including ways to promote international, regional and interregional cooperation to that end.

43. The representatives of Brazil, Canada, India, Indonesia, Japan, Pakistan, the Russian Federation and the United States made statements under the item. During the general exchange of views, statements relating to the item were also made by the representative of Egypt on behalf of the Group of 77 and China, as well as by representatives of other member States.

44. For its consideration of the item, the Committee had before it the following:

(a) A working paper submitted by the Russian Federation entitled “Survey of the problem of discretion exercised by States in interpreting basic legal principles and norms related to safety and security in outer space” (A/AC.105/L.319);

(b) A conference room paper entitled “Operating in space: towards developing protocols on the norms of behaviour” (A/AC.105/2019/CRP.12).

45. The Committee heard the following presentations:

(a) “Space Security Index”, by the representative of Canada;

(b) “Delimiting, dissuading and deflating conflicts: preserving outer space for peaceful purposes”, by the observer for IAASS.

46. The Committee agreed that through its work in the scientific, technical and legal fields, as well as through the promotion of international dialogue and the exchange of information on various topics relating to the exploration and use of outer space, it had a fundamental role to play in enhancing transparency and confidence-building among States, as well as in ensuring that outer space was maintained for peaceful purposes.

47. Some delegations expressed the view that it was the responsibility of all spacefaring nations to preserve and promote the benefits for all accruing from advances made in space technology and its applications.

48. Some delegations expressed the view that, in order to ensure that space was used in a sustainable manner and for peaceful purposes, it was important that space activities were carried out in accordance with international law, rules and regulations.

49. Some delegations expressed the view that meaningful international dialogue was essential to enhancing transparency, predictability and confidence among States, as it could prevent misperception, misinformation, misunderstanding and miscalculation arising from military activities in outer space.

50. The view was expressed that the progress that had been achieved in the exploration and use of outer space was a result of cooperation among States that had been able to overcome their political differences with the view to joining forces to work for the benefit and interests of humanity, and that the fact that outer space had not yet become an arena for an arms race was a result of the good will of States and their understanding of all aspects of the danger and consequences of conflict in outer space. In that connection, the delegation expressing that view recalled that the entire international community shared the responsibility for implementing the important provision enshrined in the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (General Assembly resolution 1962 (XVIII) of 13 December 1963), namely, that the activities of States in the exploration and use of outer space should be carried out in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.

51. The view was expressed that the tasks of preventing conflicts in outer space and preserving outer space for peaceful purposes had become more relevant than ever and that there was a lack of measures undertaken by States in that regard. Therefore, in the view of the delegation expressing that view, there was a need for an international legally binding instrument that would establish reliable guarantees against an arms race in outer space, as such an arms race could lead to the placement of weapons, the use of force or the threat of the use of force in outer space.

52. The view was expressed that effective monitoring, verification and transparency and confidence-building measures must be continuously pursued, with a view to negotiating a legally binding instrument for multilateral verification. The delegation expressing that view was also of the view that voluntary transparency and confidence-building measures could not substitute for a legally binding instrument and that existing disarmament and arms control agreements might contain elements of such measures that could form the basis for transparency and confidence-building measures for outer space activities.

53. The view was expressed that more consideration should be given to the draft treaty on the prevention of the placement of weapons in outer space and of the threat or use of force against outer space objects, prepared by China and the Russian Federation, which had been under consideration at the Conference on Disarmament in recent years.

54. The view was expressed that the absence of conflicts in space in the past could not be regarded as a guarantee of peace, in particular in an era in which new actors were entering the space arena.

55. The view was expressed that, despite almost four decades of discussion and debate, no substantive outcome had emerged from the Conference on Disarmament, as testified by the ongoing arms build-up in the arena of outer space, which was prompting more and more countries to consider following suit. However, as there was no other platform for the discussion of space security issues, the Conference must continue its substantive consideration of the issue of the prevention of an arms race in outer space, leading to the initiation of negotiations on a legally binding treaty.

56. Some delegations expressed the view that it was disappointing that the Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space, established pursuant to General Assembly resolution 72/250, could not reach consensus, despite holding a rich and substantive debate on all aspects related to its mandate.

57. The view was expressed that, although the Committee was not a disarmament forum, with a view to avoiding conflict, it provided States the opportunity to share views, allay concerns, negotiate compromises and promote responsible behaviour in outer space.

58. Some delegations welcomed the organization of joint events by the First Committee and the Fourth Committee of the General Assembly and expressed the view that such events might help to increase awareness of the importance of preserving outer space for peaceful purposes.

59. The view was expressed that the Committee had the authority to promote international cooperation in space in relation to scientific, technical and legal aspects, as mandated by the General Assembly in its resolution 1472 (XIV) A of 12 December 1959. In the view of the delegation expressing that view, the Committee was a subsidiary organ of the General Assembly with a political character, and thus should address international space cooperation from more than a technical perspective and remain objective in keeping up with current issues. As part of the United Nations system, the Committee should engage with all entities of that system in order to achieve the Committee's fundamental objective of maintaining peace and security in outer space. The delegation expressing that view was also of the view that the issues of concern to the Committee were closely related to those of the First Committee and the Conference on Disarmament, and therefore issues relating to the prevention of an arms race in outer space should be considered by all three bodies in parallel. Those forums had the mandate and responsibility to strengthen the international basis for ensuring that outer space was used solely for peaceful purposes.

60. The view was expressed that States should be encouraged to continue to review and implement, to the greatest extent practicable, on a voluntary basis and in a manner consistent with their national interests, the report of the Group of Governmental Experts on Transparency and Confidence-building Measures in Outer Space Activities (A/68/189) of 2013 and the recommendations and transparency and confidence-building measures contained therein. The delegation expressing that view was also of the view that the Committee's continuing deliberations on that report, as well as specific inputs provided by Member States, could serve as important guidance for the Office for Outer Space Affairs and set out the direction for the evolution of the Committee's mandate to address emerging challenges to the peaceful uses of outer space.

61. The view was expressed that in the light of significant positive advancements in the work of the Committee on matters related to the long-term sustainability of outer space activities and transparency and confidence-building measures in outer space, there were no convincing arguments that would advocate for the need for action to be taken by the Committee relating to the so-called "weaponization" of outer space. Since the Committee began its work nearly six decades ago, it had been clear that there would be separately chartered efforts to deal specifically with space disarmament issues; those would include forums such as the First Committee of the General Assembly, the Conference on Disarmament and the Disarmament Commission.

62. The view was expressed that the threat of an arms race in outer space was emerging primarily as a result of the position of some States that contrived to dominate and attain complete freedom of action in outer space.

63. Some delegations reaffirmed the importance of preventing an arms race in outer space and the placement of weapons of any kind in outer space, and called upon all States, in particular those with major space capabilities, to contribute actively to the peaceful use of outer space to prevent an arms race there and to refrain from placing weapons of any kind in outer space or any other action contrary to that objective. The delegations expressing that view were also of the view that the preservation of the outer space environment in the long-term required a commitment of the international community to ensuring that no weapons would ever be placed there.

64. The view was expressed that voluntary measures for the provision of safety and security in outer space, such as the pledge to not be the first State to place weapons in outer space, which had already been made by more than 20 States, could also be supported.

65. The view was expressed that the current ways and means of ensuring the peaceful uses of outer space were focused on norms of responsible behaviour, which were pragmatic and voluntary measures that helped to enhance trust and confidence in the space activities and actions of States and all other space actors. In that regard, "rules of the road" were needed as a way to identify what constituted responsible behaviour in outer space, and such rules would go a long way towards improving trust and confidence, reducing tensions and avoiding misinterpretation of actions or activities. Thus, transparency and confidence-building measures would help to reduce the possibility of misinterpreting activities and actions, and deviations from the norms could help signal what would be regarded as irresponsible behaviour in space.

66. The view was expressed that with regard to space cooperation among States, non-legally binding, voluntary measures, such as "best practice" guidelines, transparency and confidence-building measures in outer space and norms of safe and responsible behaviour in outer space, offered the most practical and quickly implementable means of improving communication and providing early opportunities for operational risk reduction, thereby preserving the space environment and the ability to explore and use space for future generations.

67. Some delegations expressed the view that safety and security in outer space could be strengthened through the implementation by States of transparency and confidence-building measures, such as registering space objects, issuing pre-launch notifications, implementing the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space and participating in the activities of the Inter-Agency Space Debris Coordination Committee (IADC) relating to space debris mitigation, undertaking analysis of space object proximity awareness and collision avoidance, and participating in and contributing to international cooperation activities.

68. The view was expressed that, no matter how novel or innovative certain space activities might seem, the core United Nations treaties on outer space applied to such activities and could successfully guide participants towards peaceful and safe operations. In that connection, the national implementation of voluntary, agreed guidelines for the long-term sustainability of outer space activities would strengthen the foundation and pillars of the treaties and help to define responsible behaviour in the sustainable and peaceful uses of space.

69. The view was expressed that the agenda item under consideration was inextricably linked to the agenda item of the Scientific and Technical Subcommittee on long-term sustainability of outer space activities. Therefore, in the view of the delegation expressing that view, the discussions and deliberations under both items should not only continue to be carried out in concert, but should also be considered as integrally related, with the aim of facilitating agreement and consensus among

member States on an implementable set of transparency and confidence-building measures relating to the peaceful conduct of space activities.

70. The view was expressed that the international legal framework for outer space activities needed to be strengthened to enhance the safety and sustainability of space for all space users. In that regard, the ongoing initiatives of and deliberations by the Committee aimed at ensuring the long-term sustainability of outer space activities through the establishment of a set of guidelines could have a potentially significant impact on the future of outer space activities.

71. Some delegations expressed the view that safety and security in outer space could be affected by such factors as the growing number of spacefaring nations and the involvement of both governmental and non-governmental actors in space activities, the increasing accumulation of space debris, and technical malfunctions and accidents involving space objects, including accidental collisions and unforeseen harmful interference between them.

72. The view was expressed that Governments, while encouraging commercial space activities, should ensure that such activities continue to be for peaceful purposes and contribute to the long-term stability, safety and sustainability of outer space.

73. The view was expressed that international cooperation in the peaceful uses of outer space should be promoted by facilitating the transfer of technology, the sharing of information and the exchange of materials and equipment, taking into account in particular the needs of developing countries.

74. The Committee congratulated African States on the establishment, by a decision of the African Union, of the African Space Agency, to be hosted by Egypt. It noted that the Agency would serve as a platform for transcontinental cooperation and would create an opportunity for all African States to reap the common benefits gained from the space field.

75. The Committee noted that the Government of Nigeria had hosted the seventh African Leadership Conference on Space Science and Technology for Sustainable Development in Abuja from 5 to 9 November 2018 on the theme “Implementation of African space policy and strategy”.

76. The Committee also noted that the fourth Space Conference had been conducted on the margins of the International Air and Space Fair held in Santiago from 3 to 8 April 2018, as had the Latin American Week of Remote Sensing, a technical and scientific conference organized by the air force of Chile. The Week of Remote Sensing had been aimed at promoting the use of space information with respect to phenomena in the biosphere and had focused on the development of space applications for the civil and defence sectors.

77. The Committee further noted that the twenty-fifth session of the Asia-Pacific Regional Space Agency Forum, on the theme “Innovative space technology for evolving needs”, had been held in Singapore from 6 to 9 November 2018. The twenty-sixth session, on the theme “Advancing diverse links towards a new space era” would be held in Nagoya, Japan, from 26 to 29 November 2019.

78. The Committee noted that, on the occasion of its tenth anniversary, APSCO had held a high-level forum on the theme “Community of shared future through space cooperation” in Beijing on 14 November 2018.

79. The Committee recommended that, at its sixty-third session, in 2020, consideration of the item on ways and means of maintaining outer space for peaceful purposes should be continued, on a priority basis.

B. Report of the Scientific and Technical Subcommittee on its fifty-sixth session

80. The Committee took note with appreciation of the report of the Scientific and Technical Subcommittee on its fifty-sixth session (A/AC.105/1202), which contained the results of its deliberations on the items considered by the Subcommittee in accordance with General Assembly resolution 73/91.

81. The Committee expressed its appreciation to Pontsho Maruping (South Africa) for her able leadership as Chair during the fifty-sixth session of the Subcommittee.

82. The representatives of Argentina, Austria, Brazil, China, Colombia, Germany, Indonesia, Italy, Japan, the Russian Federation, Switzerland, the United Arab Emirates and the United States made statements under the item. The representative of Egypt made a statement on behalf of the Group of 77 and China. The representative of Costa Rica made a statement on behalf of Argentina, Bolivia (Plurinational State of), Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Mexico, Uruguay and Venezuela (Bolivarian Republic of). During the general exchange of views, statements relating to the item were also made by other member States.

83. The Committee heard the following presentations:

(a) "PRISMA, the Italian hyperspectral mission", by the representative of Italy;

(b) "Space science and technology initiatives of the Philippines", by the representative of the Philippines;

(c) "Tackling space debris: European and international measures for a sustainable use of outer space", by the observer for the European Space Agency.

1. United Nations Programme on Space Applications

(a) Activities of the United Nations Programme on Space Applications

84. The Committee took note of the discussion of the Subcommittee under the item on the activities of the United Nations Programme on Space Applications, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 51–71).

85. The Committee had before it and took note of the report on the United Nations/China Forum on Space Solutions on the theme "Realizing the sustainable development goals", held in Changsha, China, from 24 to 27 April 2019 (A/AC.105/1210).

86. The Committee noted that the priority areas of the Programme were environmental monitoring, natural resource management, satellite communications for tele-education and telemedicine applications, disaster risk reduction, the use of global navigation satellite systems (GNSS), the Basic Space Science Initiative, climate change, the Basic Space Technology Initiative, and the Human Space Technology Initiative, and biodiversity and ecosystems.

87. The Committee took note of the activities of the Programme carried out in 2018 and planned in 2019, as presented in the report of the Subcommittee (A/AC.105/1202, paras. 63–66).

88. The Committee noted that the Government of Japan, through the Kyushu Institute of Technology, and the Government of Italy, through the Politecnico di Torino and the Istituto Superiore Mario Boella, in collaboration with the Istituto Nazionale di Ricerca Metrologica, had continued to provide long-term fellowship programme opportunities for students from developing countries under the United Nations/Japan Long-term Fellowship Programme on Nanosatellite Technologies, and the United Nations/Italy Long-term Fellowship Programme on Global Navigation Satellite Systems and Related Applications, respectively.

89. The Committee noted the Drop Tower Experiment Series, which was a fellowship programme of the Office for Outer Space Affairs undertaken in collaboration with the Centre of Applied Space Technology and Microgravity and the German Aerospace Center (DLR), in which students could study microgravity by performing experiments in a drop tower. In the sixth cycle of the fellowship programme, a team from the Politecnico di Milano had been awarded the fellowship through competitive selection.

90. The Committee noted the continued collaboration between the Office for Outer Space Affairs and the Government of Japan, in collaboration with the Japan Aerospace Exploration Agency (JAXA), in implementing the United Nations/Japan Cooperation Programme on CubeSat Deployment from the International Space Station Japanese Experiment Module (Kibo), known as "KiboCUBE". The programme had been launched in September 2015. A team from the University of Nairobi had been selected to be the first to benefit from the programme. The team's CubeSat named 1KUNS-PF had been deployed from Kibo in May 2018 as the first satellite of Kenya. CubeSats developed by teams from Guatemala, Indonesia and Mauritius, which had been selected for the second and third rounds of KiboCube, would come after the mission of Kenya. The National Centre for Space Technologies of the Technical University of Moldova had been selected in June 2019. The objective of the cooperation programme was to promote international cooperation and capacity-building in space technology and its applications under the Human Space Technology Initiative by providing opportunities for educational and research institutions in developing countries to deploy CubeSats from Kibo.

91. The Committee noted the continued cooperation between the Office for Outer Space Affairs and the Government of China (through the China Manned Space Agency), in implementing the United Nations/China cooperation on the utilization of the China space station initiative under the United Nations Programme on Space Applications and the Human Space Technology Initiative. This innovative and forward-looking cooperation was aimed at providing scientists around the world with an opportunity to conduct their own experiments on board the China space station and thus to open space exploration activities to all countries and create a new paradigm for building capabilities in space science and technology. The first opportunity to conduct scientific experiments on board the China space station had been open to all Member States, in particular, developing countries. As an outcome of the application and selection process, nine projects were selected for implementation on board the China space station in the first cycle. The nine projects involved 23 institutions from 17 Member States in the Asia-Pacific region, Europe, Africa, North America and South America, reflecting the creativity and commitment of scientists from public and private entities in both developing and developed countries. The subjects of the research included space life science, biotechnology, microgravity fluid physics, microgravity combustion, astronomy, and space technologies. The selection results were announced jointly by the Office for Outer Space Affairs and the China Manned Space Agency on 12 June 2019 during a side event on the margins of the sixty-second session of the Committee.

92. The Committee expressed its appreciation to the Office for Outer Space Affairs for the manner in which the activities of the Programme had been implemented with the limited funds available. The Committee also expressed its appreciation to the Governments and intergovernmental and non-governmental organizations that had sponsored the activities. The Committee noted with satisfaction that further progress was being made in the implementation of the activities of the Programme for 2019.

93. The Committee noted with appreciation that since its sixty-first session, additional resources for 2018 and 2019 had been offered by various Member States and organizations.

94. The Committee once again expressed its concern that the financial resources available to the United Nations Programme on Space Applications remained

limited and appealed to the donor community to support the Programme through voluntary contributions.

95. The Committee requested the Office for Outer Space Affairs to continue to work with the Scientific and Technical Subcommittee on defining the priorities of the Programme.

96. The Committee noted with satisfaction that the United Nations Programme on Space Applications had continued to emphasize, promote and foster cooperation with Member States at the regional and global levels to support the regional centres for space science and technology education, affiliated to the United Nations.

97. The Committee noted that the Office for Outer Space Affairs continued to closely collaborate with the regional centres for space science and technology education, affiliated to the United Nations, namely the African Regional Centre for Space Science and Technology Education — in English Language, the African Regional Centre for Space Science and Technology — in French Language; the Centre for Space Science and Technology Education in Asia and the Pacific, the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean, the Regional Centre for Space Science and Technology Education for Western Asia and the Regional Centre for Space Science and Technology Education in Asia and the Pacific (China). In that connection, the Committee noted with appreciation that the host countries of the regional centres for space science and technology education, affiliated to the United Nations, were providing significant financial and in-kind support to the centres.

(b) International Satellite System for Search and Rescue

98. The Committee noted with satisfaction that the International Satellite System for Search and Rescue (COSPAR-SARSAT) currently had 42 member States and 2 participating organizations and that other entities were also interested in becoming associated with the programme in the future. The Committee noted with appreciation that the worldwide coverage of emergency beacons, carried on vessels and aircraft and by individual users around the world, had been made possible by the space segment, which consisted of transponders carried on 5 polar-orbiting satellites, 9 geostationary satellites and 43 newly added medium Earth orbit satellites provided by Canada, France, India, the Russian Federation and the United States, along with the European Organization for the Exploitation of Meteorological Satellites and the European Union, as well as by the ground-segment contributions of 29 additional countries. The Committee also noted that in 2018, alert data from the system had helped to save more than 2,100 lives in 904 search and rescue events worldwide.

2. Space technology for sustainable socioeconomic development

99. The Committee took note of the discussion of the Subcommittee under the item on space technology for sustainable socioeconomic development, as reflected in the report of the Scientific and Technical Subcommittee (A/AC.105/1202, paras. 77–93).

100. The Committee took note of the report of the Working Group of the Whole of the Scientific and Technical Subcommittee, reconvened under the chairmanship of P. Kunhikrishnan (India) (A/AC.105/1202, annex I).

101. The Committee recalled that the General Assembly, in its resolution 73/91, had reiterated the need to promote the benefits of space technology and its applications in the major United Nations conferences and summits for economic, social and cultural development and related fields, and had recognized that the fundamental significance of space science and technology and their applications for global, regional, national and local sustainable development processes should be promoted in the formulation of policies and programmes of action and their implementation, including through efforts towards achieving the objectives of those conferences and summits and in implementing the 2030 Agenda for Sustainable Development.

102. Some delegations reiterated the importance of international cooperation in the collection, processing and dissemination of data obtained by means of satellite technology, which strengthened the capacity of developing countries in decision-making and the application of appropriate policies to prevent natural disasters and epidemics, thereby contributing to the fulfilment of the objectives of the 2030 Agenda for Sustainable Development.

3. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment

103. The Committee took note of the discussion of the Subcommittee under the item on matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 94–107).

104. The Committee noted the international and regional initiatives undertaken to promote and use remote sensing data to support socioeconomic and sustainable development, in particular for the benefit of developing countries.

105. In the course of discussions, delegations reviewed national and international cooperation programmes in a number of key areas in which remote sensing data were crucial for well-informed decision-making. Examples included cartography, territorial planning, cadastral mapping which included real estate and property management tools, meteorology, tele-education and tele-health, disaster management, environmental protection, natural resource management, oceanographic monitoring, climate change, promoting sustainable development, air quality monitoring for aerosols and pollutants including monitoring of essential climate variables, disaster management and vulnerability assessments, ozone loss, ecosystems management, forestry, hydrology, meteorology and severe weather forecasting, sea surface temperature and wind monitoring, glacier mapping and studies, crop and soil monitoring, irrigation, precision agriculture, groundwater detection, space weather, security and law enforcement, and mineral mapping.

106. The view was expressed that access to spatial data, especially as a result of Earth observation, as well as space technology and its applications, had been a powerful factor in economic development and was essential for users in developing countries. The delegation expressing that view also expressed the view that the Office for Outer Space Affairs should work to facilitate access to space-derived data and relevant data processing applications in that regard and to promote open and free data policies to support such accessibility, in particular for developing countries.

107. Some delegations expressed the view that the development of applications based on remote sensing that could address the triple challenges of poverty, inequality and unemployment in Africa would have a significant impact with regard to achieving the Sustainable Development Goals of the 2030 Agenda for Sustainable Development. In particular, it was vitally important to implement and promote solutions in areas such as precision agriculture and water management.

108. The Committee noted the strong commitment of many Member States to supporting important initiatives such as the Group on Earth Observations and the Committee on Earth Observation Satellites, which played an important role in improving the sharing of remote sensing data and worldwide access to data.

4. Space debris

109. The Committee took note of the discussion of the Subcommittee under the item on space debris, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 108–143).

110. The Committee endorsed the decisions and recommendations of the Subcommittee on the item (A/AC.105/1202, paras. 142–143).

111. The Committee noted with satisfaction that the endorsement by the General Assembly, in its resolution 62/217, of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, was instrumental for the mitigation of space debris, and urged those countries that had not yet done so to consider implementing the Guidelines on a voluntary basis.

112. The Committee noted with appreciation that many States and international intergovernmental organizations were already implementing space debris mitigation measures consistent with the Space Debris Mitigation Guidelines of the Committee and/or the IADC Space Debris Mitigation Guidelines, and that other States had developed their own space debris mitigation standards based on those guidelines.

113. In addition, the Committee noted that some States were using the Space Debris Mitigation Guidelines of the Committee and/or the IADC Space Debris Mitigation Guidelines, the European Code of Conduct for Space Debris Mitigation, ISO standard 24113:2011 (Space systems: space debris mitigation requirements), and ITU recommendation ITU-R S.1003 (Environmental protection of the geostationary-satellite orbit) as reference points in their regulatory frameworks for national space activities. The Committee also noted that some States had cooperated in the space surveillance and tracking support framework funded by the European Union and in the ESA space situational awareness programme.

114. The Committee noted that an increasing number of States were adopting concrete measures to mitigate space debris, including the improvement of the design of launch vehicles and spacecraft, the de-orbiting of satellites, passivation, life extension, end-of-life operations and the development of specific software and models for space debris mitigation.

115. The Committee noted that IADC, whose initial work had served as the basis for the Space Debris Mitigation Guidelines of the Committee, had updated its own Space Debris Mitigation Guidelines, which now stated that the post-mission lifetime of a satellite in orbit should not exceed 25 years, included the requirement of achieving a 90 per cent probability of the successful post-mission disposal of satellites, and addressed the topic of large constellations.

116. The Committee noted that the issue of space debris and their proliferation continued to be a cause for concern because space debris hindered the future exploration and use of outer space.

117. The view was expressed that the commercial development of technology to enable on-orbit servicing and orbital debris removal should be encouraged.

118. Some delegations expressed concern at the lack of international regulation of active debris removal activities.

119. The view was expressed that access to space debris mitigation and removal technologies should be facilitated because a cleaner space environment would be beneficial to all.

120. Some delegations expressed the view that the issue of space debris required the implementation of measures including the adequate monitoring, detection and mitigation of space debris, in order to protect property and people on Earth and ensure the normal provision of data from operational missions.

121. Some delegations expressed the view that the issue of space debris should be addressed in a manner that would not jeopardize the development of the space capabilities of developing countries.

122. Some delegations expressed the view that it was important that new space actors were not burdened as a result of the historical activities of established space actors and that addressing the challenges posed by the placement in space of large constellations and megaconstellations should be made a priority in the work of the Committee.

123. Some delegations expressed the view that there was a need for differentiated degrees of responsibility in the clearing of space debris, in line with the space activities of each Member State.

124. Some delegations expressed the view that proposed approaches for space debris mitigation should not create undue barriers for new space actors.

125. Some delegations expressed the view that new technologies for space surveillance and tracking could play an important role in ensuring the sustainable use of space.

126. The view was expressed that it was important to raise awareness and build political support to discourage activities that resulted in the uncontrolled generation of space debris.

127. The view was expressed that it was of utmost importance to have legally binding instruments that provided clarity on the responsibility of countries in terms of collisions of spacecraft, explosions, implosions, accidents with space debris with nuclear power sources on board, and the re-entry into the atmosphere of spacecraft with nuclear power sources.

128. The view was expressed that the registration of space objects and their parts, including those that were no longer functional, was particularly important to ensure the safety of missions in orbit, access to basic services and the long-term sustainability of outer space activities.

5. Space-system-based disaster management support

129. The Committee took note of the discussion of the Subcommittee under the item on space-system-based disaster management support, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 144–168).

130. The Committee welcomed the activities organized by the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), which supported the development of capacity to use all types of space-based information in support of the full disaster management cycle. These activities were aimed at promoting greater understanding, acceptance and commitment by countries in the implementation of national disaster management strategies tailored for their specific needs and environmental conditions. In that regard, the Committee took note of the UN-SPIDER technical advisory services and the UN-SPIDER knowledge portal (www.un-spider.org), a web-based platform for information, communication and process support that fostered the exchange of information, the sharing of experiences, capacity-building and technical advisory support.

131. Some delegations expressed the view that in order to strengthen disaster risk preparedness and emergency response at the national level, the Office for Outer Space Affairs should increase the capacity-building activities of UN-SPIDER by offering more technical advisory missions and training programmes, in particular to developing countries.

132. In her statement, the Director of the Office for Outer Space Affairs thanked the Governments of Austria, China and Germany for their commitment to and support of UN-SPIDER since its inception, including through the implementation of UN-SPIDER activities coordinated by the UN-SPIDER offices in Beijing, Vienna and Bonn, Germany.

133. The Committee noted with appreciation that the UN-SPIDER regional support offices greatly contributed to the programme's activities in the areas of capacity-building, institutional strengthening and knowledge management.

134. The Committee noted that UN-SPIDER would hold its ninth annual conference in Beijing in September 2019 as one of the commitments of the Office for Outer Space

Affairs to supporting the implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030.

135. The view was expressed that satellite technology for supporting disaster management had significantly advanced. The delegation expressing that view noted that high-resolution optical images were used to analyse the propagation of fine dust, yellow dust, smog and smoke from forest fires, that improvements to infrared imaging capabilities allowed greater cloud-to-surface analysis thereby enabling quick predictions of localized heavy rains, and that in making use of such detailed data collection, the modelling of three-dimensional wind fields could be used to support the detection and monitoring of typhoons. The Committee also noted the ongoing activities of Member States, including the emergency mapping service of the European Earth Observation Programme (Copernicus), the Sentinel Asia project and its coordination of emergency observation requests through the Asian Disaster Reduction Centre, and the International Charter on Space and Major Disasters, all of which were valuable contributions that promoted the use of space-based solutions in support of disaster management.

6. Recent developments in global navigation satellite systems

136. The Committee took note of the discussion of the Subcommittee under the item on recent developments in GNSS, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 169–190).

137. The Committee noted with appreciation the work of the International Committee on Global Navigation Satellite Systems (ICG), the latest developments in the field of GNSS technologies and new GNSS applications.

138. The Committee noted the efforts by the Office for Outer Space Affairs in promoting the use of GNSS through its capacity-building and information dissemination initiatives, in particular in developing countries, as well as the role of the Office as the executive secretariat of ICG in coordinating the planning of meetings of ICG and its Providers' Forum, in conjunction with sessions of the Committee and its subsidiary bodies.

139. The Committee noted the comprehensive information portal for ICG and users of GNSS services, maintained by the Office, which continued to play an active role in facilitating cooperation and communication among the providers and users of GNSS.

140. The Committee noted that through ICG all providers had agreed on the information presented in the publication entitled *The Interoperable Global Navigation Satellite Systems Space Service Volume* (ST/SPACE/75) and on a number of recommendations on continuing the development, support and expansion of the multi-GNSS space service volume concept.

141. The Committee noted that the thirteenth meeting of ICG and the twenty-first meeting of the Providers' Forum, organized by the China Satellite Navigation Office on behalf of the Government of China, had been held in Xi'an, China, from 4 to 9 November 2018 and that the fourteenth meeting of ICG would be hosted by India and would be held in Bengaluru, India, from 8 to 13 December 2019.

142. The Committee also noted the expression of interest by the Office for Outer Space Affairs to host the fifteenth meeting of ICG, to be held in 2020, and the interest expressed by the United Arab Emirates to host the sixteenth meeting, in 2021.

143. The Committee noted the progress by the European GNSS Galileo and the regional space-based augmentation system European Geostationary Navigation Overlay Service (EGNOS), with four new Galileo satellites launched into orbit by Arianespace in 2018, which brought the number of satellites in orbit as part of the constellation to 26. The full Galileo constellation would consist of 30 satellites and was expected to be completed by 2020; it would provide improved services and new

business opportunities in a wide variety of applications in many sectors of the economy, worldwide.

7. Space weather

144. The Committee took note of the discussion of the Subcommittee under the item on space weather, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 191–209).

145. The Committee noted that space weather, which was caused by solar variability, was an international concern owing to the potential threat it posed to space systems, human space flight and ground- and space-based infrastructures upon which society increasingly relied. As such, it needed to be addressed in a global manner, through international cooperation and coordination, in order to be able to predict potentially severe space weather events and mitigate their impact to guarantee the long-term sustainability of outer space activities.

146. The Committee noted a number of national and international activities undertaken in the fields of research, training and education to improve the scientific and technical understanding of the adverse effects of space weather and thus strengthen global resilience to it.

147. The Committee noted with appreciation that the Expert Group on Space Weather of the Scientific and Technical Subcommittee had held meetings on the margins of the fifty-sixth session of the Scientific and Technical Subcommittee, in 2019, as well as during the intersessional period.

148. Some delegations expressed the view that they supported the establishment of a dedicated international coordination group for space weather which could improve international collaboration and coordination and contribute to enhance global resiliency against adverse effects of space weather.

149. The view was expressed that in relation to a priority activity of the Expert Group on Space Weather on the establishment of an international coordination group for space weather, in close collaboration with COSPAR, the International Civil Aviation Organization, WMO and the International Space Environment Service, the structure and the working mechanism of such a coordination group could be elaborated only in the course of implementing specific joint projects by the participating entities.

8. Near-Earth objects

150. The Committee took note of the discussion of the Subcommittee under the item on near-Earth objects, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 210–228).

151. The Committee noted with appreciation the efforts being made by the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG), which had been established in 2014 pursuant to recommendations on an international response to the near-Earth object impact threat, to share information with regard to discovering, monitoring and physically characterizing potentially hazardous near-Earth objects, as well as the efforts vested in planning to mitigate a potential impact of a near-Earth object, with a view to ensuring that all nations, in particular developing countries with limited capacity to predict and mitigate an impact of a near-Earth object, were aware of potential threats.

152. The Committee noted the work carried out by the SMPAG Ad Hoc Working Group on Legal Issues, which had been established by SMPAG in 2016 to consider legal issues relevant to the work of SMPAG in the context of existing international treaties governing activities in outer space, and that the Ad Hoc Working Group had presented to SMPAG at its twelfth meeting in February 2019 a report containing an initial assessment of the current legal context and of relevant legal questions and issues regarding planetary defence.

153. The Committee noted that there were currently 15 signatories to the Statement of Intent for Participation in IAWN, representing observatories and space institutions in China, Colombia, Croatia, Mexico, the Republic of Korea, the Russian Federation and the United States, as well as an amateur observer in the United Kingdom. The Committee also noted that Czechia had become the nineteenth member of SMPAG and that COSPAR had become its sixth permanent observer.

154. The Committee noted that further information on the meetings of IAWN and SMPAG, to which the Office for Outer Space Affairs served as the permanent secretariat, had been made available on their web pages, at http://iawn.net and http://smpag.net, respectively.

155. The Committee noted progress and milestones in asteroid observation missions: the JAXA sample return mission Hayabusa-2 had arrived at the target asteroid, Ryugu, in June 2018, carrying the rover MINERVA-II, which carried out the world's first successful exploration of the surface of an asteroid by a rover, in September 2018, and the NASA sample return mission OSIRIS-REx, an international mission involving Canada, France and Japan, which had arrived at the target asteroid, Bennu, in October 2018.

156. The Committee noted that IAWN, SMPAG and the Office for Outer Space Affairs were planning to collaborate in the organization of an international seminar on the topic of near-Earth objects, to be held in Erice, Italy, from 20 to 24 April 2020.

157. The Committee noted that the sixth IAA International Planetary Defense Conference had been held from 29 April to 3 May 2019 in the Washington, D.C., area and that the seventh IAA International Planetary Defense Conference would be held at the Vienna International Centre in Vienna from 26 to 30 April 2021.

158. The Committee noted that the ninth meeting of the IAWN steering committee would be held on 12 September 2019, followed by the 13th meeting of SMPAG on 13 September 2019, at the European Southern Observatory, in Garching, Germany.

9. Long-term sustainability of outer space activities

159. The Committee took note of the discussion by the Subcommittee under the item on the long-term sustainability of outer space activities, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 229–263).

160. The Committee had before it the following:

(a) Conference room paper by Canada, France, Japan, the United Kingdom, and the United States entitled "Proposal by Canada, France, Japan, the United Kingdom and the United States for the establishment of a working group on implementation of agreed guidelines and related aspects of the long-term sustainability of outer space activities" (A/AC.105/2019/CRP.7 and A/AC.105/2019/CRP.7/Rev.1);

(b) Conference room paper by Belarus, China, Nicaragua, Pakistan, and the Russian Federation entitled "Proposal on the modalities of the Working Group on the Long-Term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space" (A/AC.105/2019/CRP.10, A/AC.105/2019/CRP.10/Rev.1 and A/AC.105/2019/CRP.10/Rev.2);

(c) Conference room paper by the United Kingdom entitled "Operating in space: towards developing protocols on the norms of behaviour" (A/AC.105/2019/CRP.12);

(d) Conference room paper by the United Arab Emirates entitled "Proposal on the work related to the long-term sustainability of outer space activities of the Committee on the Peaceful Uses of Outer Space" (A/AC.105/2019/CRP.13);

(e) Conference room paper by Switzerland entitled "Meeting hosted by Switzerland on possible further work on the long-term sustainability of outer space activities: background and Chair's summary" (A/AC.105/2019/CRP.16);

(f) Non-paper by the Chair of the Committee entitled “The way forward for long-term sustainability: sustainability as enabler”;

(g) Non-paper by the Chair of the informal consultations, South Africa, entitled “Long-term sustainability informal discussions”;

(h) Non-paper by the Chair of the informal consultations, South Africa, entitled “Draft report language for consideration by delegations”;

(i) Non-paper by the Chair of the informal consultations, South Africa, entitled “Draft report language for consideration by delegations (as at 5 p.m. on 19 June 2019)”.

161. The Committee noted with appreciation that the delegation of Switzerland had held a meeting on 11 June 2019 at the Vienna International Centre, just prior to the sixty-second session of the Committee, with the objective of sharing views, advancing mutual understanding and making progress towards reaching consensus on topics of possible further work on the long-term sustainability of outer space activities. Topics discussed at the meeting included: (a) options for collaborative information-sharing and exchange with the aim of ensuring the safety and sustainability of space operations; (b) challenges posed by large constellations; (c) issues associated with rendezvous and proximity operations, including active debris removal and on-orbit servicing activities; and (d) concepts on international coordination of space traffic.

162. The Committee noted with appreciation that the Chair of the Committee and interested delegations had held extensive informal consultations prior to and on the margins of the present session to discuss possible ways forward on the topic of the long-term sustainability of outer space activities. In particular, the Committee expressed its appreciation to the delegation of South Africa for chairing informal consultations on the margins of the present session.

163. The Committee adopted the preamble and 21 guidelines for the long-term sustainability of outer space activities, as contained in A/AC.105/C.1/L.366, and requested the Secretariat to reissue that document as an annex to the report of the Committee on the present session. The Committee encouraged States and international intergovernmental organizations to voluntarily take measures to ensure that the guidelines were implemented to the greatest extent feasible and practicable.

164. The Committee noted that it should serve as the principal forum for continued institutionalized dialogue on issues related to the implementation and review of the guidelines.

165. The Committee decided to establish, under a five-year workplan, a working group under the agenda item on the long-term sustainability of outer space activities of the Scientific and Technical Subcommittee.

166. The Committee agreed that the bureau of the working group would be elected at the beginning of the fifty-seventh session of the Subcommittee on the basis of nominations to be submitted to and circulated by the Secretariat during the intersessional period.

167. The Committee decided that the working group would agree on its own terms of reference, methods of work and dedicated workplan at the fifty-seventh session of the Subcommittee, in 2020, and that the working group would be guided by the following framework:

(a) Identifying and studying challenges and considering possible new guidelines for the long-term sustainability of outer space activities. This could be done by taking into consideration existing documents including, inter alia, documents A/AC.105/C.1/L.367 and A/AC.105/2019/CRP.16;

(b) Sharing experiences, practices and lessons learned from voluntary national implementation of the adopted guidelines;

(c) Raising awareness and building capacity, in particular among emerging space nations and developing countries.

168. The Committee agreed the bureau of the working group would lead the work of the working group at the fifty-seventh session of the Scientific and Technical Subcommittee with a view towards the development at that session of the working group's: (a) terms of reference; (b) methods of work, including ways of incorporating input from non-governmental organizations, industry and the private sector through States members of the Committee; and (c) workplan. The Committee noted that, in carrying out its work, the working group could take into consideration, inter alia, conference room papers A/AC.105/2019/CRP.7/Rev.1, A/AC.105/2019/CRP.10/Rev.2, A/AC.105/2019/CRP.13 and A/AC.105/2019/CRP.16. The Committee noted that the meetings of the working group would be supported by interpretation services in all six official languages of the United Nations.

10. Use of nuclear power sources in outer space

169. The Committee took note of the discussion of the Subcommittee under the item on the use of nuclear power sources in outer space, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 264–273).

170. The Committee endorsed the report and recommendations of the Subcommittee and the Working Group on the Use of Nuclear Power Sources in Outer Space, reconvened under the chairmanship of Sam A. Harbison (United Kingdom) (A/AC.105/1202, para. 273, and annex II).

171. The Committee acknowledged that some States and an international intergovernmental organization were developing, or considering developing, legal and regulatory instruments on the safety of the use of nuclear power sources in outer space, taking into account the contents and requirements of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space and of the Safety Framework for Nuclear Power Source Applications in Outer Space.

172. The Committee stressed the value and importance of implementing the voluntary Safety Framework for Nuclear Power Source Applications in Outer Space, which had been developed by the Subcommittee together with the International Atomic Energy Agency.

173. Some delegations expressed the view that it was important to continue to study, analyse and evaluate various aspects, practices and regulations pertinent to the use of NPS in space, and that such activities must be beneficial, not detrimental, to humanity. The delegations expressing that view were also of the view that States were responsible for regulating the use of nuclear energy in space and that it was their duty to observe the relevant international legal regime. In that connection, and taking into account the Safety Framework, it was important for the Subcommittee to continue to address the issue through the application of appropriate strategies, long-term planning and the establishment of adequate and updated regulatory frameworks.

174. Some delegations expressed the view that more consideration should be given to the use of NPS in terrestrial orbits, specifically in the geostationary orbit and low-Earth orbit, in order to address the problem of potential collisions of nuclear-powered space objects in orbit and the incidents or emergencies that could be created by the accidental re-entry of such objects into the Earth's atmosphere, as well as the impact of such a re-entry on the Earth's surface, human life and health and the ecosystem.

11. Space and global health

175. The Committee took note of the discussion of the Subcommittee under the item on space and global health, as reflected in the report of the Scientific and Technical Subcommittee (A/AC.105/1202, paras. 274–284).

176. The Committee endorsed the recommendations and decisions on the item made by the Subcommittee and its Working Group on Space and Global Health, convened under the chairmanship of Antoine Geissbühler (Switzerland), including the Working Group's multi-year workplan (A/AC.105/1202, para. 284. and annex III).

177. The Committee noted the broad array of activities relevant to space and global health and stressed the value and importance of space-based research, data and information for supporting decision-making and improved early warning measures in the public and global health domains.

178. The view was expressed that satellite observations could improve understanding of the emissions of atmospheric particles (including desert dust and fine particulate matter (PM2.5)), the related trends, and their impact on global health and could thus contribute to the air quality monitoring on a global scale, and that the utilization of space technology for global health needed to be further pursued.

12. Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of the International Telecommunication Union

179. The Committee took note of the discussion of the Subcommittee under the item on the examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of ITU, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 285–294).

180. Some delegations expressed the view that the geostationary orbit was a limited natural resource that was at risk of becoming saturated, thereby threatening the sustainability of space activities in that environment; that its use should be rationalized; and that it should be made available to all States, under equitable conditions, irrespective of their current technical capabilities, taking into particular account the needs of developing countries and the geographical position of certain countries. Those delegations were also of the view that it was important to use the geostationary orbit in compliance with international law and with the legal framework established by the United Nations and ITU.

181. Some delegations expressed the view that the geostationary orbit, as a limited natural resource clearly in danger of saturation, must be used rationally, efficiently, economically and equitably. That principle was deemed fundamental to safeguarding the interests of developing countries and countries with a certain geographical position, as set out in article 44, paragraph 196.2, of the Constitution of ITU, as amended by the Plenipotentiary Conference held in Minneapolis, United States, in 1998.

13. Draft provisional agenda for the fifty-seventh session of the Scientific and Technical Subcommittee

182. The Committee took note of the discussion of the Subcommittee under the item on the draft provisional agenda for its fifty-seventh session, as reflected in the report of the Subcommittee (A/AC.105/1202, paras. 295–298).

183. The Committee endorsed the recommendations and decisions on the item made by the Subcommittee (A/AC.105/1202, paras. 296–298).

184. On the basis of the deliberations of the Subcommittee at its fifty-sixth session, the Committee agreed that the following items should be considered by the Subcommittee at its fifty-seventh session:

1. Adoption of the agenda.
2. Election of the Chair.
3. Statement by the Chair.
4. General exchange of views and introduction of reports submitted on national activities.
5. United Nations Programme on Space Applications.
6. Space technology for sustainable socioeconomic development.
7. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment.
8. Space debris.
9. Space-system-based disaster management support.
10. Recent developments in global navigation satellite systems.
11. Space weather.
12. Near-Earth objects.
13. Long-term sustainability of outer space activities.

    (Work in accordance with the modalities outlined in paras. 165–168 of the present report)
14. Future role and method of work of the Committee.
15. Use of nuclear power sources in outer space.

    (Work for 2020 as reflected in the multi-year workplan of the Working Group (A/AC.105/1138, annex II, para. 9))
16. Space and global health.

    (Work for 2020 as reflected in the multi-year workplan of the Working Group (see annex III, para. 5, and appendix I of the present report))
17. Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of the International Telecommunication Union.

    (Single issue/item for discussion)
18. Draft provisional agenda for the fifty-eighth session of the Scientific and Technical Subcommittee.
19. Report to the Committee on the Peaceful Uses of Outer Space.

185. The Committee agreed that, in accordance with the agreement reached at the forty-fourth session of the Scientific and Technical Subcommittee, in 2007 (A/AC.105/890, annex I, para. 24), the symposium to be held at the fifty-seventh session of the Subcommittee, in 2020, was to be organized by the Office for Outer Space Affairs on the topic "Access to space for all".

C. Report of the Legal Subcommittee on its fifty-eighth session

186. The Committee took note with appreciation of the report of the Legal Subcommittee on its fifty-eighth session (A/AC.105/1203), which contained the results of its deliberations on the items considered by the Subcommittee, in accordance with General Assembly resolution 73/91.

187. The representatives of Austria, Belgium, Brazil, China, Germany, Greece, Indonesia, Japan and the Russian Federation made statements under the item. Statements were also made by the representative of Egypt on behalf of the Group of 77 and China, and by the representative of Costa Rica on behalf of Argentina, Bolivia (Plurinational State of), Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Mexico, Uruguay and Venezuela (Bolivarian Republic of). During the general exchange of views, statements relating to the agenda item were also made by other member States.

188. The Committee expressed its appreciation to Andrzej Misztal (Poland) for his able leadership as Chair during the fifty-eighth session of the Subcommittee.

1. Information on the activities of international intergovernmental and non-governmental organizations relating to space law

189. The Committee took note of the discussion of the Subcommittee under the item entitled “Information on the activities of international intergovernmental and non-governmental organizations relating to space law”, as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 47–64).

190. The Committee noted the important role of intergovernmental and international non-governmental organizations and their contribution to its endeavours to promote the development, strengthening and furtherance of understanding of international space law.

191. The Committee also noted that it was important to continue to exchange information among the Subcommittee and intergovernmental and international non-governmental organizations on recent developments in the area of space law. It endorsed the recommendation of the Subcommittee that such organizations should again be invited to report on their activities relating to space law to the Subcommittee at its fifty-ninth session.

2. Status and application of the five United Nations treaties on outer space

192. The Committee took note of the discussion of the Subcommittee under the item on the status and application of the five United Nations treaties on outer space, as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 65–82).

193. The Committee endorsed the decisions and recommendations of the Subcommittee and its Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, which had been reconvened under the chairmanship of Bernhard Schmidt-Tedd (Germany) (A/AC.105/1203, para. 68, and annex I, paras. 9–13).

194. Some delegations expressed the view that new legal challenges arising from the continuous development of space science and technology, such as those relating to space resources exploitation, large constellations and space debris remediation, as well as the emergence of new space actors, had to be addressed on a multilateral basis.

195. Some delegations expressed the view that, although non-legally binding instruments had been a success in that they had guided States in conducting their activities in outer space in a safe and secure manner, they should not replace treaties and custom as the valuable sources of international law that they are. The delegations expressing this view also expressed the view that the gradual development of international space law through binding treaties should be carried out within the Legal Subcommittee.

196. Some delegations expressed the view that the five United Nations treaties on outer space, together with the relevant principles enshrined therein, endorsed by the General Assembly, were to be considered the multilateral foundation of international space law.

197. The view was expressed that the universality of the five United Nations treaties on outer space should be strongly supported and promoted, and that the treaties provided a sound and basic framework for outer space activities. The delegation expressing this view also expressed the view that new legally binding instruments developed by the Committee should not impose an undue burden on States in the conduct of their space activities.

198. Some delegations expressed the view that the guidance document envisioned under thematic priority 2 of UNISPACE+50 (Legal regime of outer space and global governance: current and future perspectives), to be finalized in 2020, would offer valuable guidance to States wishing to become a party to the five United Nations treaties on outer space and could thus help to promote the universality of those treaties, greater adherence to them and the progressive development of international space law.

199. The view was expressed that the Committee and its Legal Subcommittee were the exclusive and unique forums for addressing potential gaps in the binding legal framework on outer space brought about as a result of the continuous evolution of space technology.

200. The view was expressed that, although the international guidelines and standards on space debris mitigation were not legally binding, they could nevertheless facilitate the practical application of the fault-based liability regime set out in the five United Nations treaties on outer space.

3. Matters relating to the definition and delimitation of outer space and the character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of the International Telecommunication Union

201. The Committee took note of the discussion of the Subcommittee under the agenda item on matters relating to the definition and delimitation of outer space and the character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of ITU, as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 83–111).

202. The Committee endorsed the recommendations of the Subcommittee and its Working Group on the Definition and Delimitation of Outer Space, reconvened under the chairmanship of André Rypl (Brazil) as Acting Chair in the absence of the Chair, José Monserrat Filho (Brazil) (A/AC.105/1203, paras. 85–86, and annex II, para. 9).

203. Some delegations expressed the view that the lack of a definition or delimitation of outer space brought about legal uncertainty concerning the applicability of space law and air law and that matters concerning State sovereignty and the boundary between airspace and outer space needed to be clarified in order to reduce the possibility of disputes among States.

204. Some delegations expressed the view that the geostationary orbit, as a limited natural resource clearly in danger of saturation, needed to be used rationally and should be made available to all States, irrespective of their current technical capacities. That would give States access to the geostationary orbit under equitable conditions, bearing in mind, in particular, the needs and interests of developing countries and the geographical position of certain countries and taking into account the processes of ITU and relevant norms and decisions of the United Nations.

205. Some delegations expressed the view that the exploitation of the geostationary orbit, a limited natural resource with sui generis characteristics that was at risk of

saturation and that was of strategic and economic value for the States that used it, should be conducted in a rational, balanced, efficient, economical and equitable manner.

206. The view was expressed that the geostationary orbit should be viewed as a specific area and special part of outer space that needed specific technical and legal governance and thus should be regulated by a sui generis regime.

207. Some delegations expressed the view that the utilization by States of the geostationary orbit on a "first come, first served" basis was unacceptable and that the Subcommittee should therefore develop a legal regime guaranteeing equitable access to orbital positions for States in accordance with the principles of the peaceful use and non-appropriation of outer space.

4. National legislation relevant to the peaceful exploration and use of outer space

208. The Committee took note of the discussion of the Legal Subcommittee under the item on national legislation relevant to the peaceful exploration and use of outer space, as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 112–122).

209. The Committee noted with satisfaction that some States members of the Committee continued to implement, or were considering initiating the implementation of, the recommendations on national legislation relevant to the peaceful exploration and use of outer space contained in General Assembly resolution 68/74, entitled "Recommendations on national legislation relevant to the peaceful exploration and use of outer space".

210. The Committee noted various activities of member States to review, strengthen, develop or draft national space laws and policies, as well as establish or reform their governance of national space activities.

211. The Committee agreed that the general exchange of information on national legislation relevant to the peaceful exploration and use of outer space enabled States to gain an understanding of existing national regulatory frameworks and to share experiences on national practices, and that the results achieved under the agenda item were highly useful for both developing and developed States when establishing or improving their national regulatory frameworks.

212. Some delegations expressed the view that, in its provision of technical and capacity-building assistance, the Committee should focus on member States that have identified a need for supplementary regulation through the exchange of information on best practices to improve their domestic laws.

5. Capacity-building in space law

213. The Committee took note of the discussion of the Subcommittee under the item on capacity-building in space law, as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 123–140).

214. The Committee endorsed the recommendation of the Subcommittee on this agenda item (A/AC.105/1203, para. 140).

215. The Committee agreed that, to build the national capacity necessary to ensure that the increasing number of participants in space activities complied with international space law, international cooperation in research, training and education in space law was essential.

216. The Committee noted with appreciation that a number of national, regional and international efforts to build capacity in space law were being undertaken by governmental and non-governmental entities.

217. The Committee noted that capacity-building in space law was a fundamental tool that should be enhanced through international cooperation.

218. The view was expressed that greater support was needed from the Office and member States to foster both North-South and South-South cooperation to facilitate the sharing of knowledge and expertise in the field of space law.

219. The Committee welcomed the new project on legal advisory services, entitled "Space law for new space actors", launched by the Office for Outer Space Affairs. Some delegations expressed interest in supporting the new project.

220. The Committee noted with appreciation that the United Nations/Russian Federation Conference on Space Law and Policy had been held in Moscow from 11 to 13 September 2018 and that the United Nations/Germany High-level Forum: The way forward after UNISPACE+50 and on "Space2030" had been held in Bonn, Germany, from 13 to 16 November 2018. The Committee noted that those events had contributed to capacity-building in space law by connecting space law experts, practitioners and representatives of government, industry and civil society.

221. The Committee noted with appreciation the forthcoming United Nations/Turkey/APSCO Conference on Space Law and Policy, which was being organized in collaboration with Turkey and was to be hosted by the Turkish Space Agency and the Space Technologies Research Institute (TÜBİTAK UZAY) in Istanbul, Turkey, from 23 to 26 September 2019.

222. The Committee noted the value of the Office for Outer Space Affairs organizing a basic space law and policy seminar specifically targeting officials of Vienna-based permanent missions and requested the Office to explore the feasibility of holding such an event.

6. Review and possible revision of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space

223. The Committee took note of the discussion of the Subcommittee under the item on the review and possible revision of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space, as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 141–150).

224. The Committee endorsed the agreement of the Subcommittee at its fifty-eighth session, in 2019 (A/AC.105/1203, para. 150), to provisionally suspend the consideration by the Legal Subcommittee of the item entitled "Review and possible revision of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space", pending the outcome of the work of the Working Group on the Use of Nuclear Power Sources in Outer Space of the Scientific and Technical Subcommittee.

7. General exchange of information and views on legal mechanisms relating to space debris mitigation and remediation measures, taking into account the work of the Scientific and Technical Subcommittee

225. The Committee took note of the discussion of the Legal Subcommittee under the item on the general exchange of information and views on legal mechanisms relating to space debris mitigation and remediation measures, taking into account the work of the Scientific and Technical Subcommittee, as reflected in the report of the Legal Subcommittee (A/AC.105/1203, paras. 151–185).

226. The Committee endorsed the decisions of the Subcommittee as reflected in its report (A/AC.105/1203, para. 185).

227. The Committee noted with satisfaction that the endorsement by the General Assembly, in its resolution 62/217, of the Space Debris Mitigation Guidelines of the Committee was a crucial step in providing all spacefaring nations with guidance on ways to mitigate the problem of space debris, and urged all Member States of the United Nations to consider voluntary implementation of the Guidelines.

228. The Committee noted with satisfaction that some States had taken measures to enforce the implementation of internationally recognized guidelines and standards relating to space debris through relevant provisions in their national legislation.

229. The view was expressed that the furtherance of a comprehensive, rule-based binding guidance document on space debris at the international level would bring predictability and create the conditions necessary for overcoming uncertainty and fragmentation in the regulation of international space activities.

230. The view was expressed that criteria and procedures for active removal or intentional destruction of space objects, either functioning or non-functioning, needed to be thoroughly deliberated under the auspices of the United Nations to guarantee the effectiveness of the measures and ensure that they were accepted by stakeholders.

231. The view was expressed that the space debris issue should be addressed in a manner that would neither impose undue burden on the space programmes of developing nations nor jeopardize the development of the space capabilities of those nations, and that would ensure that the cost of the debris removal process was not passed on to the countries with emerging space capabilities.

232. The view was expressed that the use of space debris remediation technologies raised several legal questions that should be addressed by the Legal Subcommittee, including questions regarding States' jurisdiction and control over registered space objects, as well as liability for damage resulting from debris remediation operations.

233. The view was expressed that, as the notion of "fault" was not defined in the United Nations treaties on outer space, space debris mitigation guidelines could play an important role in evaluating whether the conduct of a launching State constituted fault for the purposes of determining the State's liability for damage, which could encompass either physical damage to spacecraft in orbit or any loss incurred as the result of performing a collision avoidance manoeuvre.

8. General exchange of information on non-legally binding United Nations instruments on outer space

234. The Committee took note of the discussion within the Subcommittee under the item on the general exchange of information on non-legally binding United Nations instruments on outer space, as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 186–198).

235. The Committee took note of the compendium on mechanisms adopted by States and international organizations in relation to non-legally binding United Nations instruments on outer space, which the Office had made available on a dedicated web page, and invited States members of the Committee and international intergovernmental organizations having permanent observer status with the Committee to continue to submit responses to the Secretariat for inclusion in the compendium.

236. Some delegations recalled the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, and expressed the view that the Declaration was an important instrument for the promotion of international cooperation with a view to maximizing the benefits of space applications for all States.

237. The view was expressed that space governance by means of non-legally binding instruments and the increasing number of national space laws constituted a trend in the development of space law. The delegation expressing this view also stressed the importance for countries to effectively implement relevant non-legally binding instruments in parallel with international processes.

238. The view was expressed that non-legally binding instruments, such as the guidelines for the long-term sustainability of outer space activities, could play an important and normative role in ensuring safety and security in outer space.

9. General exchange of views on the legal aspects of space traffic management

239. The Committee took note of the discussion of the Subcommittee under the item entitled "General exchange of views on the legal aspects of space traffic management", as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 199–221).

240. The Committee endorsed the recommendation by the Legal Subcommittee to continue to consider the item, in particular in view of the increasingly complex and congested space environment resulting from the growing number of objects in outer space, the diversification of actors in outer space and the increase in space activities, which were phenomena that posed a challenge to the safety and sustainability of space activities.

241. The view was expressed that a comprehensive international space traffic management system could enhance the safe and sustainable conduct of space activities and could include the following: improved multilateral sharing of information on space situational awareness; enhanced international registration procedures; international mechanisms for the notification and coordination of launches, in-orbit manoeuvres and re-entry of space objects; and safety and environmental provisions. The delegation expressing this view was also of the view that such a system was all the more relevant in the context of very large satellite constellations, which could pose a heightened risk for the safety and sustainability of space activities, in particular with regard to the mitigation of space debris, and could present challenges for astronomical observation.

242. The view was expressed that a lack of clear understanding of the concept of space traffic management had hampered debates under this agenda item and that consideration should be given to a number of measures and practices that were being undertaken by States with regard to space traffic management, in order to identify matters for discussion and advance the debate under this agenda item.

10. General exchange of views on the application of international law to small-satellite activities

243. The Committee took note of the discussion of the Legal Subcommittee under the item entitled "General exchange of views on the application of international law to small-satellite activities", as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 222–238).

244. The Committee noted with satisfaction that the item continued to be on the agenda of the Subcommittee and agreed that its inclusion helped to address and raise awareness of issues relating to the use of small satellites by various actors.

245. The Committee noted that activities involving small satellites, regardless of the size of those satellites, should be carried out in compliance with the existing international regulatory framework.

246. Some delegations expressed the view that the existing legal regime on outer space ensured the safety, transparency and sustainability of operations involving small-satellite activities and that no ad hoc legal regime, nor any other mechanisms that could impose limitations on the design, building, launch or use of space objects, should be created.

247. Some delegations expressed the view that international cooperation, coordination and information-sharing with regard to all aspects of small-satellite activities and related services were important for ensuring the sustainable and safe use of outer space.

248. Some delegations expressed the view that the Committee should continue to conduct in-depth studies with a view to enabling countries and institutions in need to carry out relevant activities in outer space in an economical and safe manner.

249. The Committee noted that the questionnaire on the application of international law to small-satellite activities (A/AC.105/1203, annex I, para. 12 and appendix II) had been useful in guiding discussions and deliberations under the agenda item.

11. General exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources

250. The Committee took note of the discussion of the Subcommittee under the item entitled "General exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources", as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 239–267).

251. The Committee had before it a conference room paper entitled "Proposal by the United Arab Emirates on the work related to space resources utilization of the Committee on the Peaceful Uses of Outer Space" (A/AC.105/2019/CRP.17).

252. Some delegations expressed that they favoured establishing a working group as had been originally proposed by Greece and Belgium at the fifty-eighth session of the Legal Subcommittee, in 2019, and that any assertion that doing so would be premature should be rejected. The delegations expressing this view also expressed the view that the Legal Subcommittee should seize the opportunity to foster a structured discussion on space resources that took into account the needs and rights of all countries, irrespective of their level of development.

253. The view was expressed that, while it might not be technically feasible at present to engage in space resources activities, the enactment of national legislation on the subject required the issue to be addressed multilaterally with a view to developing an international legal framework within which such activities could be undertaken. The delegation expressing this view also expressed the view that space resource-related activities should be based on the principles of sustainable use of natural resources, avoidance of harmful contamination, and efficiency, that appropriate international safety standards should be established and adhered to, and that such activities should be coordinated at the international level in order to avoid competing interests and minimize conflicts.

254. The view was expressed that, with respect to space resources, all stakeholders should collaborate so that future activities could develop in a proper and pragmatic manner and in accordance with international law. The delegation expressing this view also expressed the view that discussions should evolve in a way that reflected current technology, economic realities and the needs of industry.

255. The view was expressed that the interest in and demand for the development of space resources was growing, therefore, there should be no gaps in the legal system and regulations governing emerging development activities. The delegation expressing this view also expressed its support for the establishment of a working group within the Legal Subcommittee that would gradually develop international rules governing all space resource activities in line with the legal framework and principles established under the existing treaties on outer space.

256. The view was expressed that a working group on space resources should be established and that the time frame of that working group's mandate should be open-ended and its scope should be comprehensive in terms of substance, and also that the working group should begin by carrying out a thorough assessment of the scientific, technological, economic and financial capacities of the international community in the field of research, development and use of space resources, prior to developing any legal framework. The delegation expressing this view also expressed the view that, owing to the interdisciplinary nature of issues related to space resources, the work of the Scientific and Technical Subcommittee and the Legal Subcommittee in that regard should be closely coordinated.

257. The view was expressed that the purpose of holding consultations and negotiations in the format of a working group should be to develop draft articles of an international treaty that would establish a legally binding, comprehensive

international legal framework for the exploration, development and use of space resources.

258. The Committee endorsed the nomination by Belgium and Greece of Andrzej Misztal (Poland) as Moderator and Steven Freeland (Australia) as Vice-Moderator to lead the scheduled informal consultations during the fifty-ninth session of the Legal Subcommittee (A/AC.105/1203, para. 278).

259. The Committee noted that the Moderator and Vice-Moderator would present to States members of the Committee, in the intersessional period, a draft plan for the scheduled informal consultations containing proposed substantive topics for discussion and their rationale. States members of the Committee would be invited to provide comments accordingly. The Secretariat would send out the note by the Moderator and Vice-Moderator containing the draft plan, and any responses from States members should be sent directly by electronic means to the Moderator and Vice-Moderator for their consideration.

12. Proposals to the Committee on the Peaceful Uses of Outer Space for new items to be considered by the Legal Subcommittee at its fifty-ninth session

260. The Committee took note of the discussion of the Subcommittee under the item on proposals to the Committee for new items to be considered by the Legal Subcommittee at its fifty-ninth session, as reflected in the report of the Subcommittee (A/AC.105/1203, paras. 268–283).

261. On the basis of the deliberations of the Legal Subcommittee at its fifty-eighth session, the Committee agreed that the following substantive items should be considered by the Subcommittee at its fifty-ninth session:

Regular items

1. Adoption of the agenda.
2. Election of the Chair.
3. Statement by the Chair.
4. General exchange of views.
5. Information on the activities of international intergovernmental and non-governmental organizations relating to space law.
6. Status and application of the five United Nations treaties on outer space.
7. Matters relating to:
   (a) The definition and delimitation of outer space;
   (b) The character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of the International Telecommunication Union.
8. National legislation relevant to the peaceful exploration and use of outer space.
9. Capacity-building in space law.
10. Future role and method of work of the Committee.

Single issues/items for discussion

11. General exchange of information and views on legal mechanisms relating to space debris mitigation and remediation measures, taking into account the work of the Scientific and Technical Subcommittee.
12. General exchange of information on non-legally binding United Nations instruments on outer space.

13. General exchange of views on the legal aspects of space traffic management.

14. General exchange of views on the application of international law to small-satellite activities.

15. General exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources.

New items

16. Proposals to the Committee on the Peaceful Uses of Outer Space for new items to be considered by the Legal Subcommittee at its sixtieth session.

262. The Committee agreed that the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space and the Working Group on the Definition and Delimitation of Outer Space should be reconvened at the fifty-ninth session of the Legal Subcommittee.

263. The Committee endorsed the agreement reached by the Subcommittee that the International Institute of Space Law and the European Centre for Space Law should again be invited to organize a symposium, to be held during the fifty-ninth session of the Subcommittee (A/AC.105/1203, para. 282).

D. Space and sustainable development

264. The Committee considered the agenda item entitled “Space and sustainable development”, in accordance with General Assembly resolution 73/91.

265. The representatives of Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Nigeria, Pakistan, the Russian Federation, South Africa and the United States made statements under the item. During the general exchange of views, representatives of other member States also made statements relating to the item.

266. The Committee heard the following presentations under the item:

(a) “First Space Summit 2020: building space development from the South”, by the representative of Chile;

(b) “China space: realizing the Sustainable Development Goals”, by the representative of China;

(c) “United Nations/Germany High-level Forum: The way forward after UNISPACE+50 and on ‘Space2030’”, by the representative of Germany;

(d) “Earth observations for disaster and risk management: the Space-based Earth Observation Applications for Emergency Response and Disaster Risk Reduction (SPEAR) project and how it supports the UN-SPIDER programme”, by the representative of Germany;

(e) “Swedish Space Corporation exploiting innovative opportunities helping Earth benefit from space”, by the representative of Sweden;

(f) “Convergence of space-derived data and information with neural network-based artificial intelligence and blockchain for sustainable development”, by the observer for CANEUS International.

267. The Committee reiterated its acknowledgement of the significant role of space science and technology and their applications in the implementation of the 2030 Agenda for Sustainable Development, in particular for the Sustainable Development Goals; in the realization of the Sendai Framework for Disaster Risk Reduction 2015–2030; and in the fulfilment by States parties of their commitments to the Paris Agreement on climate change.

268. The Committee noted with appreciation that the United Nations/China Forum on Space Solutions on the theme “Realizing the Sustainable Development Goals”,

held in Changsha, China, from 24 to 27 April 2019, brought together space solution providers and users to forge new partnerships, enhance international space cooperation and thus contribute to the attainment of the Sustainable Development Goals.

269. The Committee noted the value of space technology and applications, as well as of space-derived data and information, to sustainable development, including by improving the formulation and subsequent implementation of policies and programmes of action relating to environmental protection, land and water management, urban and rural development, marine and coastal ecosystems, health care, climate change, disaster risk reduction and emergency response, energy, infrastructure, navigation, seismic monitoring, natural resources management, snow and glaciers, biodiversity, agriculture and food security.

270. The Committee took note of the information provided by States on their efforts to integrate cross-sectoral activities at the national, regional and international levels and to incorporate space-derived geospatial data and information into all sustainable development processes and mechanisms.

271. The Committee took note of the information provided by States on their actions and programmes aimed at increasing awareness and understanding in society of the applications of space science and technology for meeting development needs.

272. The Committee noted with satisfaction the large number of outreach activities carried out by States at the regional level to build capacity through education and training in using space science and technology applications for sustainable development. The Committee noted with appreciation the role played in space-related education by the regional centres for space science and technology education, affiliated to the United Nations.

273. The view was expressed that the Committee should continue to create opportunities to assist Member States in enhancing their capacities and institutional cooperation relating to the use of space technology for sustainable development at various levels of cooperation, and that the support of the international community was needed in providing technical support to developing countries, adequate resources for the transfer of knowledge and capacity-building relating to space technology.

274. The view was expressed that the adoption of open data policies was beneficial for promoting the use of space-based data and applications for socioeconomic development objectives.

E. Spin-off benefits of space technology: review of current status

275. The Committee considered the agenda item entitled “Spin-off benefits of space technology: review of current status”, in accordance with General Assembly resolution 73/91.

276. The representatives of Colombia, India, Italy and the United States made statements under the item.

277. The publication *Spinoff 2019*, issued by NASA, was available on the NASA website. The Committee expressed its gratitude to NASA for its *Spinoff* publication series, which had been made available to delegations every year since the forty-third session of the Committee, in 2000.

278. The Committee agreed that spin-offs from space technology presented great potential for continuous development in the industrial sector, as well as the provision of services. It also agreed that spin-offs could be applied to achieve social and economic objectives, including the Sustainable Development Goals.

279. The Committee took note of the information provided by States on their national practices regarding spin-offs from space technology involving various actors, including the private sector and academia, that had resulted in the emergence of

fruitful partnerships and shared learning opportunities among the private sector, international intergovernmental organizations and public research and education institutions.

280. The Committee took note of innovations in numerous scientific areas, including those relating to health, medicine, the environment, education, communication, transport, dentistry, safety, biology, chemistry and materials science. It also took note of practical applications of spin-offs from space technology of benefit to society, such as the use of enhanced software engineering tools and theories to improve instant online marketing processes, as well as the use of compact recreational facilities originally developed for the International Space Station, which had a beneficial impact on public health.

281. The Committee agreed that the use of spin-offs from space technology should be further promoted because they advanced economies by stimulating the development of innovative products, thereby improving the quality of life.

F. Space and water

282. The Committee considered the agenda item entitled “Space and water”, in accordance with General Assembly resolution 73/91.

283. The representatives of Canada, France, India, Indonesia, Israel, Japan, the Russian Federation, South Africa and the United States made statements under the item. During the general exchange of views, other member States also made statements relating to the item.

284. The Committee heard a presentation entitled “PSIPW eighth award ceremony”, by the observer for PSIPW.

285. In the course of the discussion, delegations reviewed water-related cooperation activities, giving examples of national programmes and bilateral, regional and international cooperation that demonstrated the beneficial effect of international cooperation and policies on the sharing of remote sensing data.

286. The Committee noted that water-related issues were becoming one of the major challenges for humankind in the twenty-first century. The Committee also noted that to attain the Sustainable Development Goals, it was important to make use of space technologies and applications, as well as the practices and initiatives made possible through space-borne observations of water.

287. The Committee noted that a large number of space-borne platforms addressed water-related issues and that space-derived data were used extensively in water management. The Committee also noted that space technology and applications, combined with non-space technologies, played an important role in addressing many water-related issues, including the observation and study of oceans and changing coastal features; global water cycles and unusual climate patterns; the mapping of watercourses and transboundary basins; the planning and management of reservoirs and irrigation projects; the monitoring and mitigation of the effects of floods, droughts, cyclones and lake outbursts; the management of conventional and non-conventional water resources; the reuse of agricultural drainage water; the desalination of sea and brackish water; the reuse of municipal wastewater; the harvesting of rain; and the improvement of the timeliness and accuracy of forecasts.

288. Some delegations expressed the view that climate change was linked to the issue of stable water management, because climate change had contributed to the deterioration of the global supply of potable water.

G. Space and climate change

289. The Committee considered the agenda item entitled “Space and climate change”, in accordance with General Assembly resolution 73/91.

290. The representatives of Brazil, Canada, China, Colombia, France, India, Indonesia, Israel, Japan, Pakistan, the Republic of Korea, the Russian Federation, South Africa, Switzerland and the United States made statements under the item. The observers for CRTEAN and WMO also made statements. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

291. The Committee heard the following presentations:

(a) "Republic of Korea remote sensing activities on the Arctic: collaboration between KOPRI and KARI", by the representative of the Republic of Korea;

(b) "CANEUS contribution to the United Nations Framework Convention on Climate Change 2030 vision and the proposed role of space technology for a regenerative climate-resilient future", by the observer for CANEUS International.

292. The Committee underscored the importance of continued commitment by the global community to tackling climate change as that was one of the most pressing issues for humankind and the Earth, and it adversely affected large segments of the world population and required coordination between policymakers at the international level to take leadership on that matter. In that regard, the Committee emphasized the growing value of space-based technology in providing critical climate data in order to better understand and mitigate climate change and monitor implementation of the Paris Agreement.

293. The Committee noted that space-based observations could contribute to the understanding of climate change and could contribute to the achievement of Sustainable Development Goal 13, on climate action, by monitoring essential climate variables, and noted the benefits of using Earth observations to track changes in sea level, carbon dioxide concentrations, sea ice depletion and terrestrial snow mass and to gather data on remote areas such as deserts, oceans, the polar caps and glaciers.

294. The Committee noted the usefulness of satellite observations and Earth observation applications and noted that an integrated perspective on the changing environment of the Earth required combining and complementing space-derived data with ground-based in situ observations (ground-based and sea-based observations).

295. The Committee also noted that global efforts to monitor climate change would benefit from the incorporation of open data policies, Earth observation applications that transformed raw data into information of critical importance for people and societies, and the sharing of data and information with the most vulnerable regions of the world.

296. The Committee noted the importance of bilateral partnerships in climate change-related activities in the area of Earth observation, such as the efforts undertaken by DLR and the Centre national d'études spatiales (CNES) in the MERLIN mission to track methane emissions; the CNES/UK Space Agency MicroCarb mission to map carbon dioxide sources; the CNES/Indian Space Research Organisation SARAL mission to study ocean circulation and sea surface evaluation; the National Institute for Space Research (INPE) of Brazil/Chinese Academy of Space Technology China–Brazil Earth Resources Satellite (CBERS) mission to collect images for various environmental applications; the NASA/DLR/ESA collaboration to track the Earth's water movement and to extend the data series related to the Gravity Recovery and Climate Experiment mission (GRACE); and the China National Space Administration/CNES Chinese-French Oceanography Satellite (CFOSAT) mission to study ocean surface winds and waves to enable more reliable sea-state forecasts and yield new insights into ocean-atmosphere interactions.

297. The Committee further noted a number of space programmes at the national level that made it a high priority to build, launch and operate Earth-observation satellite systems to track the manifestations and effects of climate change.

298. The Committee noted that it was important to support international cooperation in the use of Earth observation, including long-established organizations such as

WMO, the Committee on Earth Observation Satellites, the Coordination Group for Meteorological Satellites, the Global Climate Observing System, the Group on Earth Observations and APSCO.

299. The Committee noted that the Space Climate Observatory – whose creation had been proposed by CNES and approved by many space agencies in the Paris Declaration adopted at the One Planet Summit on 11 December 2017, and for which a joint declaration of interest was signed at Le Bourget, France, on 17 June 2019 – had the main objective of producing and distributing adequate, timely and reliable data as well as information on the impacts of climate change at the national and regional levels through the use of space technologies, targeted measures and relevant models cross-referenced with socioeconomic indicators, in order to define and implement climate change mitigation and adaption.

300. The Committee noted that at the Climate Action Summit to be held on 23 September 2019, hosted by the Secretary-General of the United Nations, Member States were expected to present concrete and realistic plans to reduce greenhouse gas emissions over the next decade with the goal of reaching zero emissions by 2050.

301. The view was expressed that the combination of space and terrestrial factors, in particular the impact of galactic cosmic rays and a shift of the Earth's magnetic pole, could cause climate change in polar regions and hence result in global climate change.

H. Use of space technology in the United Nations system

302. The Committee considered the agenda item entitled "Use of space technology in the United Nations system", in accordance with General Assembly resolution 73/91.

303. The representatives of India and Indonesia made statements under the item. The observer for ITU also made a statement. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

304. The Committee had before it the following:

(a) Special report of the Inter-Agency Meeting on Outer Space Activities (UN-Space) on partnerships in the use and applications of space science and technology within the United Nations system (A/AC.105/1200);

(b) Report of UN-Space on its thirty-eighth session and fourteenth open session (A/AC.105/1209);

(c) Conference room paper entitled "Marine environmental effects of jettisoned waste from commercial spaceflight activities" (A/AC.105/2019/CRP.11);

(d) Conference room paper entitled "Cooperation between the United Nations Office for Outer Space Affairs and the International Civil Aviation Organization" (A/AC.105/2019/CRP.14).

305. The Committee welcomed with appreciation the special report of UN-Space on partnerships and noted that there was a wide range of United Nations offices, departments and other entities involved in various aspects of partnerships aimed at promoting or facilitating the more effective engagement of public and private sector stakeholders with the United Nations development system.

306. The Director of the Office for Outer Space Affairs, in her capacity as the Chair of UN-Space, made a statement informing the Committee about the thirty-eighth session of UN-Space, held in New York in October 2018. The Committee noted that the session had been organized in the form of a workshop and had considered the issue of cooperation with the private sector in the use of space science, technology and applications for economic growth and sustainable development.

307. The Committee took note of the plan of UN-Space to hold its thirty-ninth session in New York in October 2019, in cooperation with the Department of Economic and Social Affairs of the Secretariat, and to hold its fortieth session in Bangkok in 2020, in cooperation with the Economic and Social Commission for Asia and the Pacific. The Committee noted that the next UN-Space open session would constitute an integral part of the World Space Forum to be held in Vienna in November 2019.

308. The Committee noted with appreciation the increasing bilateral cooperation of the Office for Outer Space Affairs with other entities of the United Nations system, including with the International Civil Aviation Organization on matters relating to commercial space transportation, with the Department of Economic and Social Affairs on increasing the use of space technology for sustainable development; and with the Office for Disarmament Affairs on a joint panel discussion by the Disarmament and International Security Committee (First Committee) and the Special Political and Decolonization Committee (Fourth Committee) of the General Assembly.

309. The Committee agreed that the Office for Outer Space Affairs should liaise with the secretariat of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and its 1996 Protocol, at the International Maritime Organization, on matters relating to the effects on the marine environment of waste jettisoned from commercial spaceflight activities and report on the status of those matters to the Committee at its sixty-third session, in June 2020. In that regard, the Committee noted that it was the responsibility of member States to liaise and coordinate nationally with their respective authorities and departments responsible for the processes under those intergovernmental bodies.

310. The Committee noted that the third Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific, held in Bangkok in October 2018, had adopted the Ministerial Declaration on Space Applications for Sustainable Development in Asia and the Pacific, and the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018–2030).

311. The Committee noted that ITU would hold the World Radiocommunication Conference 2019 (WRC-19) in Sharm el-Sheikh, Egypt, from 28 October to 22 November 2019.

I. Future role of the Committee

312. The Committee considered the agenda item entitled “Future role of the Committee”, in accordance with General Assembly resolution 73/91.

313. The representatives of Brazil, China, Colombia, Costa Rica, France, India, Indonesia, Pakistan, the Russian Federation, Switzerland and the United States made statements under the item. The representative of Egypt made a statement on behalf of the Group of 77 and China, and the representative of Costa Rica made a statement on behalf of Argentina, Bolivia (Plurinational State of), Chile, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Mexico, Uruguay and Venezuela (Bolivarian Republic of). During the general exchange of views, statements relating to the item were also made by representatives of other member States.

314. The Committee agreed that it served, together with its two subcommittees, and supported by the Office for Outer Space Affairs, as a unique common platform for promoting international cooperation in the exploration and peaceful uses of outer space on a global scale.

315. The view was expressed that it was the duty of the States members of the Committee to effectively enhance the role and importance of the Committee in addressing all issues relating to the peaceful uses of outer space. The delegation expressing that view was also of the view that all rules governing space activities should be adopted within the framework of the Committee in full observance of the established rules of procedure, and not within the framework of other informal platforms or alternative mechanisms.

316. The view was expressed that it was important for the Committee and its subsidiary bodies to firmly maintain their core role in the formulation, interpretation and application of rules and regulations pertaining to activities in outer space in order to avoid fragmentation of the legal framework governing activities in outer space, and to strengthen their role by adapting to changing realities and needs, such as the emergence of new non-State actors and new activities such as space resource development and space debris removal.

317. The view was expressed that it was necessary to support the work of the regional centres for space science and technology education, affiliated to the United Nations, and to strengthen exchanges and collaboration between different regional centres to build the capacity of developing countries.

318. In accordance with the agreement reached at its sixty-first session, in 2018 (A/73/20, para. 382), the Committee considered the governance and method of work of the Committee and its subsidiary bodies under the present item.

319. The Committee had before it the note by the Secretariat on the governance and method of work of the Committee and its subsidiary bodies (A/AC.105/C.1/L.377), which had been made available to the Scientific and Technical Subcommittee and the Legal Subcommittee at their respective sessions in 2019.

320. The Committee took note of the work for 2019 under the multi-year workplan, as reflected in the reports of the Scientific and Technical Subcommittee and the Legal Subcommittee on their respective sessions in 2019 (A/AC.105/1202, annex I and appendix; and A/AC.105/1203, paras. 272–277).

321. The Committee agreed to the following administrative measures relating to the governance and method of work to be applicable to the Committee and its subcommittees starting in 2020:

(a) The Secretariat is requested to upload statements that have been voluntarily submitted by States for uploading to the website of the Office for Outer Space Affairs in a timely manner during all sessions. Upon submitting statements for interpretation purposes, delegations are to inform the Secretariat as to whether the statement may be uploaded;

(b) Statements by delegations should continue to be limited to 10 minutes. The time-keeping device should be used in all sessions. The Chair of each respective session should remind delegations when 1 minute remains. The Chair should interrupt the delivery of the statement when 10 minutes have elapsed;

(c) The time-keeping device should be used for the delivery of presentations. The Chair of each respective session should remind delegations when 1 minute remains. The Chair should interrupt the delivery of the presentation when 15 minutes have elapsed;

(d) The Secretariat is requested to inform States members of the Committee of the procedure for voluntary opting out of receiving paper copies of pre-session documents;

(e) The Secretariat is requested to publish the schedule of working group meetings, technical presentations and side events in advance of the respective sessions on the pages of the Office website dedicated to the sessions of the Committee and its subcommittees;

(f) The Secretariat is requested to prepare guidance to be made available on the website of the Office for Outer Space Affairs containing practical information on how to follow the work of the Committee and its subsidiary bodies, as well as information on procedures on applications for membership and observer status with the Committee;

(g) The Secretariat is requested to provide invitation letters, together with the indicative schedule of work, well in advance of the sessions in order to allow sufficient time for the processing of government authorizations for delegations;

(h) A regular agenda item entitled “Future role and methods of work of the Committee” is to be introduced on the agendas of both subcommittees to allow for discussion of cross-cutting issues. The wording of the current agenda item of the Committee (“Future role of the Committee”) is to be amended accordingly to read as “Future role and method of work of the Committee”.

322. The Committee was informed that some delegations would establish an informal consultative group in which representatives of all interested States members of the Committee would be invited to informally discuss administrative measures relating to the governance and method of work of the Committee and its subsidiary bodies.

323. The Committee noted the constructive discussion on the governance and method of work held at the present session and agreed that several issues had been raised that would be further considered under the current workplan.

J. Space exploration and innovation

324. The Committee considered the agenda item entitled “Space exploration and innovation”, in accordance with General Assembly resolution 73/91.

325. The representatives of China, Colombia, India, Japan and the United States made statements under the item. During the general exchange of views, other statements relating to the agenda item were also made by other member States.

326. The Committee heard the following presentations under the item:

(a) “Extending human presence into the solar system”, by the representative of the United States;

(b) “ISAS/JAXA deep space fleet cut into the solar system”, by the representative of Japan;

(c) “ActInSpace 2020”, by the representative of France;

(d) “Harnessing human history in space to sustain future exploration”, by an observer for For All Moonkind;

(e) “RadarSat Constellation Mission”, by the representative of Canada;

(f) “United Nations/Jordan Workshop on Global Partnership in Space Exploration and Innovation”, by the representative of Jordan;

(g) “JAXA’s lunar exploration activities”, by the representative of Japan;

(h) “ArgoMoon and LICIACube: Italian CubeSats for international cooperation”, by the representative of Italy;

(i) “United Arab Emirates National Space Programme”, by the representative of the United Arab Emirates;

(j) “Indian space science missions: serving global scientific community (including the Mars Orbiter Mission (MOM), Astrosat and the Venus announcement of opportunity)”, by the representative of India;

(k) “Institutional Internationalization Project at INPE: novel opportunities for academic and research cooperation”, by the representative of Brazil;

(l) “Chandrayaan-2: India plans to land on the Moon”, by the representative of India;

(m) “China deep space telemetry, tracking and command (‘TT and C’) and international cooperation”, by the representative of China;

(n) “Private sector partnerships powering the future” by the representative of the United States;

(o) “Realizing the Moon village: participation of emerging space countries” by an observer for the Space Generation Advisory Council.

327. The Committee noted that the current session was the first time it had considered the topic of space exploration and innovation as an item on its agenda, and recalled that the topic had been added as an item pursuant to the recommendations made by the Action Team on Exploration and Innovation and had been presented in the note by the Secretariat entitled "Thematic priority 1. Global partnership in space exploration and innovation" (A/AC.105/1168), and that the note was the first-ever United Nations document to emphasize the importance of human space exploration beyond low Earth orbit.

328. The Committee noted that, at the present session, delegations had shared information on developments in space exploration and innovation, providing details on national activities and programmes, as well as examples of bilateral, regional and international cooperation that furthered space exploration and innovation aims. In the course of the discussions, information had been provided on, inter alia, research and development activities; astronaut programmes; a space exploration innovation hub centre; the planned establishment of the Mars Scientific City; activities in connection with the International Space Station and the China space station; the use of a satellite as a multi-wavelength observatory; various missions to the Moon, Mars, Venus, Jupiter and asteroids, and relevant cooperation opportunities therefor; the planned Lunar Orbital Platform-Gateway, which would function as a reusable way station from which robotic and human expeditions could be mounted; a new spacecraft that had the potential to be utilized as a deep-space logistics carrier to the cis-lunar region; a second touchdown operation on an asteroid; a dedicated solar mission with a focus on studying the inner solar corona; a tracker of electromagnetic counterparts of binary neutron star merger events; a mission to examine the atmospheric composition of exoplanets; and satellites launched for the purpose of deep space exploration.

329. The Committee noted the increasing role that industry and the private sector, including start-up companies, were playing in space exploration and innovation activities, including through public-private partnerships.

330. The Committee noted how space exploration inspired and engaged the general public, and youth in particular, thereby contributing to increased participation in science, technology, engineering and mathematics.

331. The Committee noted the desirability of integrating developing countries into space exploration efforts to ensure that space exploration activities would become open and inclusive on a global scale.

332. The Committee noted with appreciation the second International Space Exploration Forum, hosted by Japan in March 2018, at which ministers and heads of space agencies from more than 40 States and international intergovernmental organizations had discussed the future of international space exploration and had agreed on three outcome documents, including the Tokyo Principles for International Space Exploration, that highlighted the importance of space exploration and the significance of international cooperation.

333. The Committee also noted with appreciation the United Nations/Jordan Workshop on Global Partnership in Space Exploration and Innovation, held in Amman in March 2019 (see A/AC.105/1208), which had been the first workshop co-organized by the Office for Outer Space Affairs to be devoted to the topic and had included cross-sectoral, capacity-building and strategic components.

334. In the context of this agenda item, the Committee noted the event that had been held on the first day of the present session, which had commemorated the Apollo 11 mission, a major milestone in the history of space exploration, and had included discussions on the future of space exploration.

335. The Committee also noted the exhibitions that had taken place in the rotunda of the Vienna International Centre during the present session of the Committee, which had included both historical and forward-looking displays on space exploration and innovation.

K. “Space2030” agenda

336. The Committee considered the agenda item entitled “‘Space2030’ agenda”, in accordance with General Assembly resolution 73/91, as a new agenda item under a multi-year workplan, which is to remain on the agenda of the Committee until its sixty-third session, in 2020.

337. In accordance with the decision of the Committee, the Working Group on the “Space2030” Agenda was established under this agenda item to continue to develop a “Space2030” agenda and its implementation plan, based on the mandates derived from General Assembly resolution 73/6.

338. The representatives of Austria, Brazil, China, Colombia, Germany, France, Indonesia, Japan, the Russian Federation, and the United Kingdom made statements under the item. During the general exchange of views, statements relating to the item were also made by representatives of other member States. Statements were also made by the representative of Egypt on behalf of the Group of 77 and China, and by the representative of Costa Rica on behalf of Argentina, Bolivia (Plurinational State of), Chile, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Mexico, Uruguay and Venezuela (Bolivarian Republic of).

339. The Committee had before it a working paper submitted by the Bureau of the Working Group on the “Space2030” Agenda (A/AC.105/L.317) containing a consolidated zero draft of the “Space2030” agenda and implementation plan, for further negotiations during the meetings of the Working Group at the sixty-second session of the Committee. The Committee also had before it a conference room paper containing a revised zero draft of the “Space2030” agenda and implementation plan (A/AC.105/2019/CRP.15).

340. The Committee heard a presentation entitled “Space Generation Fusion Forum 2019 outcomes”, by the observer for SGAC.

341. The Committee noted with appreciation the work by the Bureau of the Working Group, assisted by the Secretariat, in preparing the above-mentioned zero draft of a “Space2030” agenda and implementation plan, which provided a good basis for further negotiations and was based on the deliberations in the meetings of the Working Group held thus far as well as on written contributions by several States members of the Committee.

342. The Committee noted that a “Space2030” agenda and implementation plan was a collective effort by States members of the Committee to develop a high-level, forward-looking and comprehensive document that highlighted the role of space and the broad societal benefits that it brought. Such an agenda and implementation plan should serve as an inspirational tool for a broader international community by promoting the use of space technologies and applications and space-derived data to further economic growth, sustainable development and prosperity.

343. The Committee further noted that a “Space2030” agenda and implementation plan were intended to raise awareness of, promote and strengthen the use of space tools for the attainment of the global development agendas, in particular the 2030 Agenda for Sustainable Development and its goals and targets, as well as the Sendai Framework for Disaster Risk Reduction 2015–2030 and the commitments by States parties to the Paris Agreement on climate change.

344. The Committee further noted that the “Space2030” agenda and implementation plan represented a unique opportunity to demonstrate the continuous relevance and the strengthening of the Committee on the Peaceful Uses of Outer Space and its subcommittees and the Office for Outer Space Affairs as unique platforms for international cooperation in the exploration and use of outer space for peaceful purposes and the global governance of outer space activities for the benefit of and in the interest of all humankind.

345. The Committee noted that the “Space2030” agenda should contain concise, future-oriented, overarching objectives, complemented by an implementation plan containing practical measures and concrete deliverables, building upon the seven thematic priorities developed by the Committee in the context of UNISPACE+50, which constituted a comprehensive approach to addressing key areas and served as a good basis to determine the core objectives of the future work of the Committee and its subcommittees and the Office for Outer Space Affairs.

346. The Committee further noted that by developing and carrying out the “Space2030” agenda and implementation plan, States members of the Committee gave expression to the importance they attached to global partnerships and strengthened cooperation among Member States, United Nations entities, intergovernmental and non-governmental organizations, industry and private sector entities, as appropriate.

347. The Committee noted that a “Space2030” agenda and implementation plan provided an important opportunity to demonstrate the commitment of the Committee and its subcommittees, supported by the Office for Outer Space Affairs, to address changes in the undertaking of outer space activities that had come about as a result of the diversification of such activities and the increasing number of participants, both governmental agencies and non-governmental entities, including industry and the private sector, as well as to continue to respond, as appropriate, to such changes and address new and emerging issues.

348. The Committee noted that a “Space2030” agenda and implementation plan should underscore the need to preserve outer space as an operationally stable and safe environment suitable for use by current and future generations and to enable space activities, consistent with international law, by promoting a governance framework that encouraged safety, participation and innovation, and ensuring the long-term sustainability of outer space activities.

349. Some delegations expressed the view that a “Space2030” agenda and implementation plan should ensure clarity on concepts in the absence of a generally accepted definition, for example, that “global governance of outer space activities” was understood as rules and regulations stemming from multilateral processes conducted under the auspices of the United Nations and not the result of any unilateral action by a State, and that it was based on international law, including the United Nations treaties on outer space, as well as the United Nations principles on outer space and related General Assembly resolutions, and the contributions of the Committee to that end.

350. Some delegations expressed the view that a “Space2030” agenda and implementation plan should reflect the determination to address inequalities among countries and to create conditions for the sustainable and inclusive development of space activities in support of sustainable development goals. In doing so, a “Space2030” agenda and implementation plan should also identify concrete steps and measures aimed at addressing the gap between those States that had developed space-related capabilities and technologies and those States that had limited or no access to such capabilities.

351. Some delegations expressed the view that a “Space2030” agenda and implementations plan should be implemented in consistency with the rights and obligations of States under applicable international law and that at the same time such an agenda should strongly urge States to refrain from promulgating, adopting and applying any unilateral economic, financial or trade measures that could impede space activities and the full implementation of a “Space2030” agenda, particularly in developing countries. Those delegations expressed the view that a revitalized global partnership was required to ensure that a “Space2030” agenda and implementation plan could be carried out, and that a “Space2030” agenda should recognize the need for the mobilization of financial resources, capacity-building and the transfer of technologies to developing countries on favourable terms and on a non-discriminatory basis.

352. The view was expressed that the utilization of the geostationary orbit was also crucial in the efforts to advance the contribution of space for sustainable development. That delegation was of the view that a "Space2030" agenda and implementation plan should identify ways to ensure equitable access to the geostationary orbit for all States, including by revitalizing partnerships with other international organizations, taking into account the needs and interests of developing countries as well as the geographical position of certain countries.

353. The view was expressed that in developing a "Space2030" agenda and implementation plan, the main focus should remain on how activities in space can support the attainment of the Sustainable Development Goals. That delegation was of the view that a "Space2030" agenda and implementation plan should not be used to define terms or consider items that were also being discussed in relation to the guidelines on the long-term sustainability of outer space activities.

354. The Committee noted that, in contribution to the discussions on a "Space2030" agenda, at the United Nations/Austria Symposium entitled "Space: a tool for accessibility, diplomacy and cooperation", to take place in Graz, Austria, from 2 to 4 September 2019, the main focus would be space science and technology as well as space law and policy.

355. The Committee also noted that at the United Nations/Austria World Space Forum, to take place in Vienna from 18 to 22 November 2019, the focus would be on the topic "Access to space for all" and that the Forum would seek to ensure continuous dialogue among the global community on that matter and contribute to discussions on a "Space2030" agenda, and raise awareness of that agenda.

356. Pursuant to General Assembly resolution 73/91, the Committee, at its 755th meeting, on 12 June 2019, convened its Working Group on the "Space2030" Agenda, which was chaired by members of the Bureau, comprising the Chair, Awni Mohammad Khasawneh (Jordan), and the two Vice-Chairs, Maria Assunta Accili Sabbatini (Italy) and Dumitru Dorin Prunariu (Romania), and was assisted by the Secretariat.

357. The Working Group on the "Space2030" Agenda held four meetings, as well as informal consultations, to advance its work on a "Space2030" agenda and implementation plan. At its 768th meeting, on 21 June 2019, the Committee endorsed the report of the Working Group, as contained in annex I to the present report.

L. Other matters

358. The Committee considered the agenda item entitled "Other matters", in accordance with General Assembly resolution 73/91.

359. The representatives of China, Costa Rica, Indonesia, Iran (Islamic Republic of), the Russian Federation, Switzerland and the United States made statements under the item. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

1. Programme 5, "Peaceful uses of outer space": proposed programme plan for the period 2020 and programme performance for 2018

360. At the 758th meeting, on 14 June 2019, the Director of the Office for Outer Space Affairs presented to the Committee the following:

(a) A conference room paper entitled "Programme 5, 'Peaceful uses of outer space': proposed programme plan for the period 2020 and programme performance for 2018" (A/AC.105/2019/CRP.8);

(b) Proposed programme budget for 2020 (A/74/6 (sect. 6)).

361. The Committee was invited to provide inputs for the plan of the programme on the peaceful uses of outer space prior to the conclusion of the formal review of the programme

by the General Assembly's subsidiary organ for planning, programming and coordination, the Committee for Programme and Coordination, at its fifty-ninth session.

362. The Committee noted that the new form and presentation of the programme plan was clear and concise. The Committee further noted that the highlighted result in 2018 and the highlighted planned result for 2020 better illustrated and facilitated understanding of the work that the Office for Outer Space Affairs undertook. The Committee agreed on the proposed programme plan for the period 2020.

363. Some delegations welcomed the opportunity to provide inputs to the proposed programme plan and noted the breadth and relevance of the work of the Office. Information was requested on the collaborations and partnerships established by the Office in the delivery of activities for disaster risk reduction.

364. The view was expressed that there was a need to make adequate resources available for the Office to continue implementing its work.

2. Membership of the Committee

365. The Committee welcomed the application of Singapore for membership in the Committee (A/AC.105/2019/CRP.3) and decided to recommend to the General Assembly at its seventy-fourth session, in 2019, that Singapore should become a member of the Committee.

366. The Committee welcomed the application of Rwanda for membership in the Committee (A/AC.105/2019/CRP.4) and decided to recommend to the General Assembly at its seventy-fourth session, in 2019, that Rwanda should become a member of the Committee.

367. The Committee welcomed the application of the Dominican Republic for membership in the Committee (A/AC.105/2019/CRP.18) and decided to recommend to the General Assembly at its seventy-fourth session, in 2019, that the Dominican Republic should become a member of the Committee.

3. Observer status

368. With regard to the applications of non-governmental organizations for the status of permanent observer with the Committee, the Committee recalled its agreement at its fifty-third session, in 2010 (A/65/20, para. 311), that observer status would be granted to non-governmental organizations on a provisional basis, for a period of three years, pending information on the status of their application for consultative status with the Economic and Social Council; that the provisional observer status could be extended for an additional year, if necessary; and that it would grant permanent observer status to such non-governmental organizations upon confirmation of their consultative status with the Council.

369. The Committee took note of the application of the Moon Village Association for permanent observer status with the Committee. The application and the relevant correspondence were before the Committee in conference room paper A/AC.105/2019/CRP.5.

370. The Committee decided to recommend that the General Assembly, at its seventy-fourth session, in 2019, grant to the Moon Village Association the status of observer, on a provisional basis, for a period of three years, pending information on the status of their application for consultative status with the Economic and Social Council.

371. In accordance with the request of the Committee at its fifty-sixth session, in 2013, the Secretariat had compiled information on the consultative status with the Economic and Social Council of non-governmental organizations having permanent observer status with the Committee (A/AC.105/2019/CRP.6). The Committee urged non-governmental organizations having permanent observer status with it that had not yet initiated the application process for consultative status with the Council to do so in the near future.

4. Joint panel discussion of the First and Fourth Committees on possible challenges to space security and sustainability

372. The Committee noted that in accordance with the recommendation of the Committee (see A/73/20, para. 385) and General Assembly resolutions 73/72 and 73/91, a joint panel discussion of the First and Fourth Committees of the General Assembly on possible challenges to space security and sustainability, with the joint support of the Office for Outer Space Affairs and the Office for Disarmament Affairs, would be held in New York in October 2019.

373. The Committee considered a proposed draft concept note on the joint panel discussion prepared by the two Offices and recommended that the text of the draft concept note as contained in A/AC.105/2019/CRP.19 should form the basis of the upcoming preparations of the joint panel discussion.

5. Draft provisional agenda for the sixty-third session of the Committee

374. The Committee recommended that the following items should be considered at its sixty-third session, in 2020:

1. Opening of the session.
2. Adoption of the agenda.
3. Election of officers.
4. Statement by the Chair.
5. General exchange of views.
6. Ways and means of maintaining outer space for peaceful purposes.
7. Report of the Scientific and Technical Subcommittee on its fifty-seventh session.
8. Report of the Legal Subcommittee on its fifty-ninth session.
9. Space and sustainable development.
10. Spin-off benefits of space technology: review of current status.
11. Space and water.
12. Space and climate change.
13. Use of space technology in the United Nations system.
14. Future role and method of work of the Committee.
15. Space exploration and innovation.
16. “Space2030” agenda.

    (Work under a multi-year workplan of the working group (see A/AC.105/1202, annex IV))
17. Other matters.

M. Schedule of work of the Committee and its subsidiary bodies

375. The Committee agreed on the following tentative timetable for its session and those of its subcommittees in 2020:

	Date	*Location*
Scientific and Technical Subcommittee	3–14 February 2020	Vienna
Legal Subcommittee	23 March–3 April 2020	Vienna
Committee on the Peaceful Uses of Outer Space	17–26 June 2020	Vienna

Annex I

Report of the Working Group on the "Space2030" Agenda of the Committee on the Peaceful Uses of Outer Space

1. In accordance with the decision of the Committee on the Peaceful Uses of Outer Space at its sixty-first session, held from 20 to 29 June 2018, the Working Group on the "Space2030" Agenda was established under a new agenda item of the Committee, entitled "'Space2030' agenda", which will remain on the Committee's agenda until its sixty-third session, in 2020 (A/73/20, paras. 358–363).

2. The Working Group has been tasked with developing a "Space2030" agenda and its implementation plan, based on the mandate derived from General Assembly resolution 73/6, entitled "Fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space: space as a driver of sustainable development".

3. In accordance with the decision of the Committee at its sixty-first session, the Working Group on the "Space2030" Agenda held an intersessional meeting from 7 to 11 October 2018 to establish its workplan and method of work, as contained in the appendix to the summary report of the Working Group, contained in the report of the Scientific and Technical Subcommittee at its fifty-sixth session (A/AC.105/1202, annex IV).

4. The Working Group held four meetings, as well as informal consultations, during the sixty-second session of the Committee in order to advance its work.

5. The Working Group recalled its workplan for 2019, as follows:

(a) Consider the draft structure of a "Space2030" agenda and implementation plan with a view to finalizing it by the end of the fifty-sixth session of the Scientific and Technical Subcommittee;

(b) Start developing a draft "Space2030" agenda and implementation plan and submit a consolidated draft "Space2030" agenda and implementation plan to the Committee on the Peaceful Uses of Outer Space at its sixty-second session. The Working Group may hold intersessional meetings, as necessary, to advance its work.

6. The Working Group also recalled that, as per its method of work, a list of focal points had been established to disseminate relevant information, which had also been made available through a dedicated web page of the Working Group on the website of the Office for Outer Space Affairs.

7. The Working Group recalled that meetings had been held during the respective sessions of the Scientific and Technical Subcommittee and the Legal Subcommittee in 2019. Summary reports of the Working Group on the "Space2030" Agenda of the Committee on the Peaceful Uses of Outer Space are contained in the respective reports of the subcommittees (A/AC.105/1202, annex IV; and A/AC.105/1203, annex III).

8. The Working Group had before it a working paper submitted by the Bureau of the Working Group on the "Space2030" Agenda (A/AC.105/L.317) containing a consolidated zero draft of the "Space2030" agenda and implementation plan, for further negotiations during the meetings of the Working Group during the sixty-second session of the Committee.

9. The Working Group also had before it a conference room paper containing a revised text of the zero draft of the "Space2030" agenda and implementation plan, prepared by the Bureau of the Working Group, with the assistance of the Secretariat, on the basis of discussions at the meetings and informal consultations of the Working Group during the sixty-second session of the Committee (A/AC.105/2019/CRP.15).

10. The Working Group noted with appreciation the work by the Bureau of the Working Group, assisted by the Secretariat, to advance the work on a "Space2030"

agenda and its implementation plan, and commended the Bureau for its efficient leadership in conducting the meetings of the Working Group to advance its work.

11. The Working Group discussed a “Space2030” agenda and implementation plan (A/AC.105/L.317 and A./AC.105/2019/CRP.15) and reiterated that a “Space2030” agenda should be developed as a high-level, forward-looking document, intended to highlight the role of space and the broad societal benefits it brought, serving as a source of inspiration and significantly contributing to the betterment of the everyday lives of people on Earth.

12. The Working Group also discussed the issue that the “Space2030” agenda and implementation plan should highlight the unique role of the Committee and its subcommittees, supported by the Office for Outer Space Affairs, as unique platforms for international cooperation in the exploration and use of outer space for peaceful purposes; for the global governance of outer space activities, based on applicable international law; for developing international space law; for fostering dialogue among spacefaring and emerging spacefaring nations; and for promoting the increased involvement of all countries in space activities, including through capacity-building initiatives. The “Space2030” agenda would also demonstrate the important role of space in supporting global development agendas.

13. The Working Group acknowledged the importance of global partnership and strengthened cooperation among Member States, intergovernmental and non-governmental organizations, industry and private sector entities, as appropriate, in fulfilling the “Space2030” agenda and its implementation plan, once agreed. As such, the document should be written in clear, concise and understandable language, for use by the broader international community and actors from the space and non-space sectors alike.

14. The Working Group recalled that, as per its workplan for 2020, it would:

(a) Continue to consider and consolidate the draft “Space2030” agenda and implementation plan during the sessions of the Scientific and Technical Subcommittee and the Legal Subcommittee to be held in 2020. The Working Group may hold intersessional meetings, as necessary, to advance its work;

(b) Submit a final, consolidated draft of the “Space2030” agenda and implementation plan to the Committee at its sixty-third session, in 2020, for its consideration and submission to the General Assembly at its seventy-fifth session, in 2020.

15. The Working Group agreed that, on the basis of the guidance received during this session, as well as any further contributions by States members of the Committee, the Bureau, assisted by the Secretariat, would prepare a draft “Space2030” agenda and implementation plan, to be submitted to the Working Group for further consideration during its meetings at the fifty-seventh session of the Scientific and Technical Subcommittee, in 2020. The States members of the Committee are invited to provide further comments on the revised zero draft of the “Space2030” agenda and implementation plan to the Bureau of the Working Group by 30 September 2019.

16. The Working Group noted that the Bureau may decide to circulate a draft text of the “Space2030” agenda and implementation plan through the list of focal points in order to receive further concrete proposals by States members of the Committee, before submitting the text for processing, to be made available in the six official languages of the United Nations prior to the fifty-seventh session of the Scientific and Technical Subcommittee, in 2020.

17. At its 4th meeting, on 21 June 2019, the Working Group adopted the present report.

Annex II

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

I. Context of the guidelines for the long-term sustainability of outer space activities

Background

1. The Earth's orbital space environment constitutes a finite resource that is being used by an increasing number of States, international intergovernmental organizations and non-governmental entities. The proliferation of space debris, the increasing complexity of space operations, the emergence of large constellations and the increased risks of collision and interference with the operation of space objects may affect the long-term sustainability of space activities. Addressing these developments and risks requires international cooperation by States and international intergovernmental organizations to avoid harm to the space environment and the safety of space operations.

2. Space activities are essential tools for realizing the achievement of the Sustainable Development Goals. Hence, the long-term sustainability of outer space activities is of interest and importance for current and emerging participants in space activities, in particular for developing countries.

3. Over the years, the Committee on the Peaceful Uses of Outer Space 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, the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee has developed a set of voluntary guidelines with a view to setting out a holistic approach to promoting the long-term sustainability of outer space activities. The guidelines comprise a compendium of internationally recognized measures for, and commitments to, ensuring the long-term sustainability of outer space activities and, in particular, enhancing the safety of space operations.

4. The development of voluntary guidelines is premised on the understanding that outer space should remain an operationally stable and safe environment that is maintained for peaceful purposes and open for exploration, use and international cooperation by current and future generations, in the interest of all countries, irrespective of their degree of economic or scientific development, without discrimination of any kind and with due regard for the principle of equity. 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 for the long-term sustainability for outer space activities should promote international cooperation in the peaceful use and exploration of outer space.

Definition, objectives and scope of the guidelines

5. 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. This is consistent with, and supports, the objectives of the Declaration of Legal Principles

Governing the Activities of States in the Exploration and Use of Outer Space and the 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), as such objectives are integrally associated with a commitment to conducting space activities in a manner that addresses the basic need to ensure that the environment in outer space remains suitable for exploration and use by current and future generations. States understand that maintaining exploration and use of outer space for peaceful purposes is a goal to be pursued in the interest of all humankind.

6. The objective of ensuring and enhancing the long-term sustainability of outer space activities, as understood at the international level and as set out in the guidelines, entails the need to identify the general context of, and modalities for, continuous improvements in the way that States and international intergovernmental organizations, while developing, planning and executing their space activities, remain committed to the use of outer space for peaceful purposes, so as to ensure that the outer space environment is preserved for current and future generations.

7. These guidelines are grounded in the understanding that the exploration and use of outer space should be conducted in a way so as to ensure the long-term sustainability of outer space activities. Accordingly, they are intended to support States in engaging in activities aimed at preserving the space environment for the exploration and use of outer space for peaceful purposes by all States and international intergovernmental organizations. In this regard, the guidelines also reiterate the principles contained in article III of the Outer Space Treaty that the activities of States in the exploration and use of outer space shall be carried out in accordance with international law, including the Charter of the United Nations. Accordingly, States should build on these principles when developing and conducting their national activities in outer space.

8. The guidelines also promote international cooperation and understanding to address natural and man-made hazards that could compromise the operations of States and international intergovernmental organizations in outer space and the long-term sustainability of outer space activities. Preserving the use of outer space for current and future generations is consistent with upholding the long-standing principle contained in article I of the Outer Space Treaty 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, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

9. 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.

10. The guidelines are also intended to support States and international intergovernmental organizations in developing their space capabilities through cooperative endeavours, as appropriate, in a manner that reduces to a minimum or, as feasible, avoids causing harm to the outer space environment and the safety of space operations, for the benefit of current and future generations.

11. The guidelines 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.

12. The guidelines are premised on the idea that the interests and activities of States and international intergovernmental organizations in outer space, as they have or may have defence or national security implications, should be compatible with preserving

outer space for peaceful exploration and use, and safeguarding its status pursuant to the Outer Space Treaty and the relevant principles and norms of international law.

13. The guidelines duly take into account the relevant recommendations contained in the report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities (A/68/189) and could be considered as potential transparency and confidence-building measures.

Status of the guidelines

14. The existing United Nations treaties and principles on outer space provide the fundamental legal framework for the guidelines.

15. The guidelines are voluntary and not legally binding under international law, but any action taken towards their implementation should be consistent with the applicable principles and norms of international law. The guidelines are formulated in the spirit of enhancing the practice of States and international organizations in applying the relevant principles and norms of international law. Nothing in the guidelines should constitute a revision, qualification or reinterpretation of those principles and norms. Nothing in the guidelines should be interpreted as giving rise to any new legal obligation for States. Any international treaties referred to in the guidelines apply only to the States parties to those treaties.

Voluntary implementation of the guidelines

16. States and international intergovernmental organizations should voluntarily take measures, through their own national or other applicable mechanisms, to ensure that the guidelines are implemented 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, including the provisions of applicable United Nations treaties and principles on outer space. States and international intergovernmental organizations are encouraged to administer existing and, if necessary, establish new procedures to meet requirements associated with the guidelines. In implementing these guidelines, States should be guided by the principle of cooperation and mutual assistance and should conduct all their activities in outer space with due regard for the corresponding interests of all other States.

17. The greater the technical and other relevant capabilities at the disposal of a particular State, the greater the emphasis that State should place on implementing the guidelines to the extent feasible and practicable. States without such capabilities are encouraged to take steps to develop their own capacity to implement the guidelines. In cases where the development and enactment of regulations, standards and procedures required for the implementation of the guidelines may prove to be a difficult task, the States concerned are encouraged to seek the support of other States or international intergovernmental organizations to develop their own capacity to implement the guidelines and to enhance, by appropriate means, their level of engagement in following space operations safety requirements and in monitoring safety trends.

18. States and relevant international intergovernmental organizations in a position to support developing countries in developing their national capacities for the implementation of these guidelines, through appropriate and mutually agreed capacity-building mechanisms, are encouraged to do so as one of the means of ensuring and enhancing the long-term sustainability of outer space activities.

19. The widest implementation of these guidelines by States (at the level of both governmental agencies and non-governmental entities) and international intergovernmental organizations requires certain capacities and capabilities, which could be built and enhanced, inter alia, through international cooperation. As reflected in the 1996 Declaration on International Cooperation in the Exploration and Use of

Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, States and international intergovernmental organizations are free to determine all aspects of their cooperation on an equitable and mutually acceptable basis, and those aspects should be in full compliance with the legitimate rights and interests of the parties concerned as, for example, with intellectual property rights. Other relevant aspects also include addressing the issues of technology safeguard arrangements, multilateral commitments and relevant standards and practices, as applicable.

20. International cooperation is required to implement the guidelines effectively, to monitor their impact and effectiveness and to ensure that, as space activities evolve, they continue to reflect the most current state of knowledge of pertinent factors influencing the long-term sustainability of outer space activities, particularly with regard to the identification of factors that influence the nature and magnitude of risks associated with various aspects of space activities or that may give rise to potentially hazardous situations and developments in the space environment.

Review of implementation and updating of the guidelines

21. The relevant United Nations body serving as the principal forum for continued institutionalized dialogue on issues related to the implementation and review of the guidelines is the Committee on the Peaceful Uses of Outer Space. States and international intergovernmental organizations are encouraged to share their practices and experiences in the Committee regarding the implementation of the present guidelines.

22. States and international intergovernmental organizations should also work within the Committee and the Office for Outer Space Affairs of the United Nations Secretariat, as appropriate, to address concerns raised with respect to the implementation of the guidelines. When issues arise regarding the practical implementation of the guidelines, States and international intergovernmental organizations are encouraged to raise the issues with other directly involved States and international intergovernmental organizations through appropriate channels. Without prejudice to the mechanism foreseen in article IX of the Outer Space Treaty, these exchanges on practical implementation may seek to achieve a mutual understanding of the situation and options for mutual resolution. The outcome of those exchanges and resulting solutions could be presented to the Committee, on the basis of the consent of the States involved, with a view to sharing relevant knowledge and experience with other States and international intergovernmental organizations.

23. The guidelines reflect a common understanding on existing and possible challenges to the long-term sustainability of outer space activities, the nature of those challenges, and the measures that could prevent or reduce their harmful impact, based on current knowledge and established practices. States and international intergovernmental organizations are encouraged to promote and/or conduct research on topics relevant to these guidelines and their implementation.

24. The Committee may periodically review and revise 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 may be submitted by a member State of the Committee, for consideration by the Committee.

II. Guidelines for the 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

1. States should adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities, taking into account their obligations under the United Nations treaties on outer space as States responsible for national activities in outer space and as launching States. When adopting, revising, amending or implementing national regulatory frameworks, States should consider the need to ensure and enhance the long-term sustainability of outer space activities.

2. With the increase in outer space activities by governmental and non-governmental actors from around the world, and considering that States bear international responsibility for the space activities of non-governmental entities, States should adopt, revise or amend regulatory frameworks to ensure the effective application of relevant, generally accepted international norms, standards and practices for the safe conduct of outer space activities.

3. When developing, revising, amending or adopting national regulatory frameworks, States should consider the provisions of General Assembly resolution 68/74, on recommendations on national legislation relevant to the peaceful exploration and use of outer space. In particular, States should consider not only existing space projects and activities but also, to the extent practicable, the potential development of their national space sector, and envisage appropriate, timely regulation in order to avoid legal lacunae.

4. States, in enacting new regulations, or in revising or amending existing legislation, should bear in mind their obligations under article VI of the Outer Space Treaty. Traditionally, national regulations have been concerned with issues such as safety, liability, reliability and cost. As new regulations are developed, States should consider regulations that enhance the long-term sustainability of outer space activities. At the same time, regulations should not be so prescriptive as to prevent initiatives addressing the long-term sustainability of 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

1. When developing, revising or amending, as necessary, regulatory measures applicable to the long-term sustainability of outer space activities, States and international intergovernmental organizations should implement international obligations, including those arising under the United Nations space treaties to which they are party.

2. In developing, revising or amending, as necessary, national regulatory frameworks, States and international intergovernmental organizations should:

(a) Consider the provisions of General Assembly resolution 68/74, on recommendations on national legislation relevant to the peaceful exploration and use of outer space;

(b) Implement space debris mitigation measures, such as the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, through applicable mechanisms;

(c) Address, to the extent practicable, risks to people, property, public health and the environment associated with the launch, in-orbit operation and re-entry of space objects;

(d) Promote regulations and policies that support the idea of minimizing the impacts of human activities on Earth as well as on the outer space environment. They are encouraged to plan their activities based on the Sustainable Development Goals, their main national requirements and international considerations for the sustainability of space and the Earth;

(e) Implement the guidance contained in the Safety Framework for Nuclear Power Source Applications in Outer Space and satisfy the intent of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space through applicable mechanisms that provide a regulatory, legal and technical framework that sets out responsibilities and assistance mechanisms, prior to using nuclear power sources in outer space;

(f) Consider the potential benefits of using existing international technical standards, including those published by the International Organization for Standardization (ISO), the Consultative Committee for Space Data Systems and national standardization bodies. In addition, States should consider the utilization of recommended practices and voluntary guidelines proposed by the Inter-Agency Space Debris Coordination Committee and the Committee on Space Research;

(g) Weigh the costs, benefits, disadvantages and risks of a range of alternatives and ensure that such measures have a clear purpose and are implementable and practicable in terms of the technical, legal and management capacities of the State imposing the regulation. Regulations should also be efficient in terms of limiting the cost for compliance (e.g., in terms of money, time or risk) compared with feasible alternatives;

(h) Encourage advisory input from affected national entities during the process of developing regulatory frameworks governing space activities to avoid unintended consequences of regulation that might be more restrictive than necessary or that conflicts with other legal obligations;

(i) Examine and adapt existing relevant legislation to ensure its compliance with these guidelines, considering the need for transition periods appropriate to their level of technical development.

Guideline A.3

Supervise national space activities

1. In supervising space activities of non-governmental entities, States should ensure that entities under their jurisdiction and/or control that conduct outer space activities have the appropriate structures and procedures for planning and conducting space activities in a manner that supports the objective of enhancing the long-term sustainability of outer space activities, and that they have the means to comply with relevant national and international regulatory frameworks, requirements, policies and processes in this regard.

2. States bear international responsibility for national activities in outer space and for the authorization and continuing supervision of such activities, which are to be carried out in conformity with applicable international law. In fulfilling this responsibility, States should encourage each entity conducting space activities to:

(a) Establish and maintain all the necessary technical competencies required to conduct the outer space activities in a safe and responsible manner and to enable the entity to comply with the relevant governmental and intergovernmental regulatory frameworks, requirements, policies and processes;

(b) Develop specific requirements and procedures to address the safety and reliability of outer space activities under the entity's control, during all phases of a mission life cycle;

(c) Assess all risks to the long-term sustainability of outer space activities associated with the space activities conducted by the entity, in all phases of the mission life cycle, and take steps to mitigate such risks to the extent feasible.

3. In addition, States are encouraged to designate a responsible entity or entities to plan, coordinate and assess space activities with the aim of promoting their effectiveness in supporting the Sustainable Development Goals and in supporting the objectives of the guidelines for the long-term sustainability of outer space activities in a broader perspective and vision.

4. States should ensure that the management of an entity that conducts outer space activities establishes structures and procedures for planning and conducting space activities in a manner that supports the objective of promoting the long-term sustainability of outer space activities. Appropriate measures to be taken by management in this regard should include:

(a) A commitment at the highest levels of the entity to promoting the long-term sustainability of outer space activities;

(b) Establishing and fostering an organizational commitment to promoting the long-term sustainability of outer space activities within the entity, as well as in relevant interactions with other entities;

(c) Urging, to the extent practicable, that the entity's commitment to the long-term sustainability of outer space activities is reflected in its management structure and procedures for planning, developing and conducting outer space activities;

(d) Encouraging, as appropriate, the sharing of the experiences of the entity in the conduct of safe and sustainable outer space activities as a contribution by the entity to enhancing the long-term sustainability of outer space activities;

(e) Designating a contact point within the entity responsible for communication with relevant authorities to facilitate efficient and timely sharing of information and coordination of potentially urgent measures to promote the safety and sustainability of outer space activities.

5. States should ensure that appropriate communication and consultation mechanisms are in place within and among the competent bodies that oversee or conduct space activities. Communication within and among relevant regulatory bodies can promote regulations that are consistent, predictable and transparent so as to ensure that regulatory outcomes are as intended.

Guideline A.4

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

1. In fulfilling their obligations under the Constitution and the Radio Regulations of the International Telecommunication Union (ITU), States should pay particular attention to the long-term sustainability of space activities and sustainable development on Earth and to facilitating the prompt resolution of identified harmful radio frequency interference.

2. As provided for in article 44 of the ITU Constitution, radio frequencies and any associated orbits, including the geostationary-satellite orbit, are limited natural resources that must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to those orbits and frequencies, taking into account the special needs of developing countries and the geographical situation of particular countries.

3. Consistent with the purpose of article 45 of the ITU Constitution, States and international intergovernmental organizations should ensure that their space activities are conducted in such a manner as not to cause harmful interference with the reception and transmission of radio signals related to the space activities of other States and international intergovernmental organizations, as one of the means of promoting the long-term sustainability of outer space activities.

4. In their use of the electromagnetic spectrum, States and international intergovernmental organizations should consider the requirements for space-based Earth observation systems and other space-based systems and services in support of sustainable development on Earth, in accordance with the ITU Radio Regulations and the ITU Radiocommunication Sector (ITU-R) Recommendations.

5. States and international intergovernmental organizations should ensure the implementation of the radio regulation procedures established by ITU for space radio links. Moreover, States and international intergovernmental organizations should encourage and support regional and international cooperation aimed at improving efficiency in decision-making and implementation of practical measures to eliminate identified harmful radio frequency interference in space radio links.

6. Spacecraft and launch vehicle orbital stages that have terminated their operational phases in orbits that pass through the low-Earth orbit (LEO) region should be removed from orbit in a controlled fashion. If this is not possible, they should be disposed of in orbits that avoid their long-term presence in the LEO region. Spacecraft and launch vehicle orbital stages that have terminated their operational phases in orbits that pass through the geosynchronous Earth orbit (GEO) region should be left in orbits that avoid their long-term interference with the GEO region. For space objects in or near the GEO region, the potential for future collisions can be reduced by leaving objects at the end of their mission in an orbit above the GEO region such that they will not interfere with, or return to, the GEO region.

Guideline A.5

Enhance the practice of registering space objects

1. States and international intergovernmental organizations, acting in accordance with their obligations under article VIII of the Outer Space Treaty and the Convention on Registration of Objects Launched into Outer Space and taking into consideration the recommendations contained in General Assembly resolutions 1721 B (XVI) and 62/101, should ensure the development and/or implementation of effective and comprehensive registration practices, as proper registration of space objects is a key factor in the safety and the long-term sustainability of space activities. Inadequate registration practices may have negative implications for ensuring the safety of space operations.

2. To that end, States and international intergovernmental organizations should adopt appropriate national or other relevant policies and regulations to harmonize and sustain over the long term such registration practices on the widest possible international basis. When registering space objects, States and international intergovernmental organizations should bear in mind the need to provide timely information that contributes to the long-term sustainability of outer space activities and should consider also providing information on space objects, their operation and their status, as set out in General Assembly resolution 62/101.

3. Prior to the launch of a space object, the State from whose territory or facility a space object will be launched should, in the absence of prior agreement, contact States or international intergovernmental organizations that could qualify as the launching States of that space object to jointly determine how to proceed with the registration of that particular space object. Following the launch of a space object, and considering relevant criteria in the Convention on Registration of Objects Launched into Outer Space (Registration Convention), States and/or international intergovernmental organizations that were involved in the launch should coordinate among themselves,

to include those States and international intergovernmental organizations that may exercise jurisdiction and control over the non-registered space object, to register the space object.

4. In the event that a State or international intergovernmental organization receives, from another State or international intergovernmental organization, an enquiry seeking clarification about the registration/non-registration of a space object that could presumably be under its jurisdiction and/or control, that State or international intergovernmental organization should respond, as soon as practicable, in order to facilitate the clarification and/or resolution of a particular registration issue. In certain circumstances, a State may choose to communicate an enquiry through or copy an enquiry to the Office for Outer Space Affairs. In such cases, the requested State is encouraged to reply likewise.

5. The Office should be effectively engaged, within its standing responsibilities and existing resources, in executing integrated functions pertaining to: (a) the accumulation of information on orbital launches performed (i.e., completed launches resulting in the placement of objects into Earth orbit or beyond) and on orbital objects (i.e., space objects that have been launched into Earth orbit or beyond); and (b) the assignment of international designations to orbital launches and orbital objects in accordance with Committee on Space Research notation, as well as the provision of such designations to the States of registry. States and international intergovernmental organizations should support efforts by the Office to promote initiatives that would enable States to adhere to registration practices and consider implementing and sustaining the provision of registration information in furtherance of General Assembly resolution 62/101.

6. The launching States and, where appropriate, international intergovernmental organizations should request all necessary information from space launch service providers and users under their jurisdiction and/or control to meet all registration requirements under the Registration Convention and encourage their receptiveness to and consideration of the provision of expanded registration information. States and international intergovernmental organizations, having institutionalized the practice of providing expanded registration information, should strive to sustain such practice and identify circumstances complicating the achievement of that task.

7. States and international intergovernmental organizations should take into account General Assembly resolution 62/101 and consider providing information on any change of status in operations (inter alia, when a space object is no longer functional) and, following the change in supervision of a space object in orbit, information about changes in the orbital position. States and international intergovernmental organizations should be aware of the importance of achieving and sustaining a practicable degree of coherence and uniformity in applying the provisions of this paragraph. Varying implementation practices, inasmuch as such may relate to the contents and attributes of information furnished, may necessitate addressing appropriate interpretative aspects. In such cases, States and international intergovernmental organizations should, through dedicated consultative process within the Committee on the Peaceful Uses of Outer Space, consider, acquire and develop shared positions with respect to providing information on any changes in space objects' status of operations and in the orbital positions of space objects.

8. In cases where a launched space object contains other space objects planned for future separation and independent orbital flight, States and international intergovernmental organizations should, when entering these objects in their registry and when furnishing registration information to the Secretary-General of the United Nations, indicate (for example, in the form of side notes) the number and names of space objects that may, in the future, separate from the main space object, on the understanding that those space objects should not be given different or modified names when they are subsequently registered.

9. In accordance with article IV, paragraph 2, of the Registration Convention, and considering General Assembly resolution 62/101, on registration practices, as well as

principle 4.3 of General Assembly resolution 47/68, States and international intergovernmental organizations should provide information to the Office through internationally accepted mechanisms on all space activities or objects that involve the use of nuclear power sources in outer space.

B. Safety of space operations

Guideline B.1

Provide updated contact information and share information on space objects and orbital events

1. States and international intergovernmental organizations should exchange, on a voluntary basis, and/or make readily available regularly updated contact information on their designated entities authorized to engage in exchanges of appropriate information on on-orbit spacecraft operations, conjunction assessments and the monitoring of objects and events in outer space, in particular those entities that are responsible for processing incoming incident reports and forecasts and adopting precautionary and response measures. This may be achieved either by providing such information to the Office for Outer Space Affairs so that the Office can make it available, within its standing mandate and existing resources, to other States and international intergovernmental organizations and/or by providing it directly to other States and international intergovernmental organizations, with the understanding that contact information for national focal points, at a minimum, will likewise be communicated to the Office.

2. States and international intergovernmental organizations should establish appropriate means to enable timely coordination to reduce the probability of and/or to facilitate effective responses to orbital collisions, orbital break-ups and other events that might increase the probability of accidental collisions or may pose a risk to human lives, property and/or the environment, in the case of uncontrolled re-entries of space objects.

3. States and international intergovernmental organizations should exchange, on a voluntary basis and as mutually agreed, relevant information on space objects and information related to actual or potential situations in near-Earth space that may affect the safety of outer space operations. The information exchanged should, to the extent practicable, be reliable, accurate and complete, and be concluded to be so by the providing entity. The information to be exchanged, including time reference and period of applicability and other relevant information, should be provided in a timely manner and on a mutually agreed basis.

4. States and international intergovernmental organizations should, through a dedicated consultative process, preferably under the auspices of the Committee on the Peaceful Uses of Outer Space, taking into account the work of relevant technical bodies, consider, acquire specific understanding of, and develop shared positions on the practical issues and modalities, as appropriate, relating to the exchange of relevant information on space objects and events in near-Earth space obtained from different authorized sources, in order to achieve harmonized and standardized record-keeping on space objects and events in outer space.

5. States and international intergovernmental organizations should consider the options for effectively accumulating and providing access to information on objects and events in outer space on a timely basis and for achieving consistency in the understanding and use of such information as one of the means to support their activities aimed at maintaining the safety of space operations. The options for consideration could include: standards and formats for representing information to enable the interoperability of information shared on a voluntary basis; bilateral, regional or multilateral arrangements to exchange information; bilateral, regional or multilateral coordination among providers of information to enable cooperation and interoperability; and the establishment of a United Nations information platform.

Those options could serve as a basis for a distributed international information system for multilateral cooperation in sharing and disseminating multi-source information on objects and events in near-Earth space.

Guideline B.2

Improve accuracy of orbital data on space objects and enhance the practice and utility of sharing orbital information on space objects

1. States and international intergovernmental organizations should promote the development and use of techniques and methods to improve the accuracy of orbital data for spaceflight safety and the use of common, internationally recognized standards when sharing orbital information on space objects.

2. Recognizing that spaceflight safety strongly depends upon the accuracy of orbital and other relevant data, States and international intergovernmental organizations should promote techniques and the investigation of new methods to improve such accuracy. Those methods could include national and international activities to improve the capabilities and geographical distribution of existing and new sensors, use of passive and active on-orbit tracking aids, and combining and validating data from different sources. Special attention should be paid to encouraging the participation and capacity-building of developing countries with emerging space capabilities in this domain.

3. When sharing orbital information on space objects, operators and other appropriate entities should be encouraged to use common, internationally recognized standards to enable collaboration and information exchange. Facilitating greater shared awareness of the current and predicted location of space objects would enable timely prediction and prevention of potential collisions.

Guideline B.3

Promote the collection, sharing and dissemination of space debris monitoring information

States and international intergovernmental organizations should encourage the development and use of relevant technologies for the measurement, monitoring and characterization of the orbital and physical properties of space debris. States and international intergovernmental organizations should also promote the sharing and dissemination of derived data products and methodologies in support of research and international scientific cooperation on the evolution of the orbital debris population.

Guideline B.4

Perform conjunction assessment during all orbital phases of controlled flight

1. Conjunction assessment should be performed for all spacecraft capable of adjusting trajectories during orbital phases of controlled flight for current and planned spacecraft trajectories. States and international intergovernmental organizations should, through national mechanisms and/or international cooperation, perform conjunction assessments during all orbital phases of controlled flight for their current and planned spacecraft trajectories. With due consideration to article VI of the 1967 Outer Space Treaty, States should encourage entities, including spacecraft operators and conjunction assessment service providers under their jurisdiction and/or control to perform conjunction assessments through national mechanisms, when applicable. International intergovernmental organizations should perform such assessments through their respective mechanisms.

2. States and international intergovernmental organizations should develop and implement in an appropriate manner approaches to and methods for conjunction assessment that may include: (a) improving the orbit determination of relevant space objects; (b) screening current and planned trajectories of relevant space objects for potential collisions; (c) determining the risk of collision and whether an adjustment

of trajectory is required to reduce the risk of collision; and (d) sharing information on the proper interpretation and usage of the conjunction assessment results, as appropriate. States and international intergovernmental organizations should, where applicable, encourage entities under their respective jurisdiction and/or control, including spacecraft operators and conjunction assessment service providers, to develop or help develop such approaches and methods to conjunction assessment.

3. Spacecraft operators, including those of non-governmental entities, that are unable to perform conjunction assessments should seek support, via State authorities, as necessary and in accordance with relevant applicable regulations, from appropriate around-the-clock conjunction assessment entities. International intergovernmental organizations that are unable to perform conjunction assessments should seek support through their respective mechanisms.

4. States and international intergovernmental organizations should, in a dedicated international consultative process, acting through their designated entities, as appropriate, share knowledge and experience related to the interpretation of conjunction assessment information with the objective of developing methods and consistent criteria for assessing probability of collisions and making avoidance manoeuvre decisions and agreeing on classes of methods applicable to different types of conjunctions. States and international intergovernmental organizations that have developed practical methods and approaches for conjunction assessments and collision avoidance manoeuvre decision-making processes should also share their expertise by, inter alia, providing training opportunities for emerging spacecraft operators and disseminating best practices, knowledge and experience.

5. States and international intergovernmental organizations should encourage conjunction assessment service providers under their jurisdiction and control to consult on screening criteria and notification thresholds with spacecraft operators and pertinent parties before providing conjunction assessment services, as practicable.

Guideline B.5

Develop practical approaches for pre-launch conjunction assessment

1. States and international intergovernmental organizations are encouraged to advise launch service providers under their jurisdiction and control to consider conducting pre-launch conjunction assessment for space objects to be launched. To facilitate and promote such pre-launch conjunction assessment practices, States and international intergovernmental organizations are encouraged, with the involvement of launch service providers and, as necessary, other relevant entities under their jurisdiction and control, to develop, implement and improve the corresponding methods and procedures.

2. States and international intergovernmental organizations are encouraged to advise launch service providers under their jurisdiction and control to seek support, as necessary, via designated entities authorized to engage in exchanges of information on pre-launch conjunction assessment, as appropriate and in accordance with relevant applicable regulations, for pre-launch conjunction assessment from appropriate conjunction assessment entities.

3. When performing a specific pre-launch conjunction assessment, launch service providers are encouraged to coordinate, via designated entities authorized to engage in exchanges of information on pre-launch conjunction assessment, with pertinent States and international intergovernmental organizations concerning the given assessment, if necessary.

4. States and international intergovernmental organizations should, with the involvement of launch service providers and other relevant entities under their jurisdiction and control as necessary, develop common international standards for describing relevant information required for pre-launch conjunction assessment in order to facilitate the provision, as mutually agreed, of pre-launch conjunction assessment support.

5. States and international intergovernmental organizations are encouraged to exchange their analytical assessment of the trends in the change of the risk of collision of space objects to be launched with other space objects operating near the planned insertion orbit.

6. States and international intergovernmental organizations are encouraged to consider providing, using, as appropriate, applicable existing and/or new dedicated mechanisms, information on launch schedules useful for assessing changes in the future population of space objects, pre-launch notifications containing information on the launch plan that would be useful for assisting in the identification of newly launched space objects, and notices for mariners and pilots on restricted zones at sea and in airspace. The contents and attributes of such information should be appropriate for its intended use.

7. States and international intergovernmental organizations should, through a dedicated consultative process within the Committee on the Peaceful Uses of Outer Space, consider, acquire and develop shared positions on information to be provided for pre-launch conjunction assessment.

Guideline B.6

Share operational space weather data and forecasts

1. States and international intergovernmental organizations should support and promote the collection, archiving, sharing, intercalibration, long-term continuity and dissemination of critical space weather data and space weather model outputs and forecasts, where appropriate in real time, as a means of enhancing the long-term sustainability of outer space activities.

2. States should be encouraged to monitor, to the extent feasible, space weather continuously and to share data and information with the aim of establishing an international space weather database network.

3. States and international intergovernmental organizations should support the identification of data sets critical for space weather services and research and should consider adopting policies for the free and unrestricted sharing of critical space weather data from their space- and ground-based assets. All governmental, civilian and commercial space weather data owners are urged to allow free and unrestricted access to and archiving of such data for mutual benefit.

4. States and international intergovernmental organizations should also consider sharing real-time and near-real-time critical space weather data and data products in a common format, promote and adopt common access protocols for their critical space weather data and data products, and promote the interoperability of space weather data portals, thus promoting ease of data access for users and researchers. The real-time sharing of these data could provide a valuable experience for sharing in real time other kinds of data relevant to the long-term sustainability of outer space activities.

5. States and international intergovernmental organizations should further undertake a coordinated approach to maintaining the long-term continuity of space weather observations and identifying and filling key measurement gaps, so as to meet critical needs for space weather information and/or data.

6. States and international intergovernmental organizations should identify high-priority needs for space weather models, space weather model outputs and space weather forecasts and adopt policies for free and unrestricted sharing of space weather model outputs and forecasts. All governmental, civilian and commercial space weather model developers and forecast providers are urged to allow free and unrestricted access to and archival of space weather model outputs and forecasts for mutual benefit, which will promote research and development in this domain.

7. States and international intergovernmental organizations should also encourage their space weather service providers to:

(a) Undertake comparisons of space weather model and forecast outputs with the goal of improved model performance and forecast accuracy;

(b) Openly share and disseminate historical and future critical space weather model outputs and forecast products in a common format;

(c) Adopt common access protocols for their space weather model outputs and forecast products to the extent possible, to promote their ease of use by users and researchers, including through interoperability of space weather portals;

(d) Undertake coordinated dissemination of space weather forecasts among space weather service providers and to operational end users.

Guideline B.7

Develop space weather models and tools and collect established practices on the mitigation of space weather effects

1. States and international intergovernmental organizations should undertake a coordinated approach to identifying and filling gaps in research and operational models and forecasting tools required to meet the needs of the scientific community and of the providers and users of space weather information services. Where possible, this should include coordinated efforts to support and promote research and development to further advance space weather models and forecasting tools, incorporating the effects of the changing solar environment and the evolving terrestrial magnetic field as appropriate, including within the context of the Committee on the Peaceful Uses of Outer Space and its Subcommittees, as well as in collaboration with other entities such as the World Meteorological Organization and the International Space Environment Service.

2. States and international intergovernmental organizations should support and promote cooperation and coordination on ground- and space-based space weather observations, forecast modelling, satellite anomalies and reporting of space weather effects in order to safeguard space activities. Practical measures in this regard could include:

(a) Incorporating current and forecast space weather thresholds into space launch criteria;

(b) Encouraging satellite operators to cooperate with space weather service providers to identify the information that would be most useful to mitigate anomalies and to derive recommended specific guidelines for on-orbit operations. For example, if the radiation environment is hazardous, this might include actions to delay the uploading of software, implementation of manoeuvres, etc.;

(c) Encouraging the collection, collation and sharing of information relating to ground- and space-based space weather-related impacts and system anomalies, including spacecraft anomalies;

(d) Encouraging the use of a common format for reporting space weather information. In relation to the reporting of spacecraft anomalies, satellite operators are encouraged to take note of the template proposed by the Coordination Group for Meteorological Satellites;

(e) Encouraging policies promoting the sharing of satellite anomaly data related to space weather-induced effects;

(f) Encouraging training on and knowledge transfer relating to the use of space weather data, taking into account the participation of countries with emerging space capabilities.

3. It is acknowledged that some data may be subject to legal restrictions and/or measures for the protection of proprietary or confidential information, in accordance

with national legislation, multilateral commitments, non-proliferation norms and international law.

4. States and international intergovernmental organizations should work towards the development of international standards and the collection of established practices applicable for the mitigation of space weather effects in satellite design. This could include the sharing of information on design practices, guidelines and lessons learned relating to mitigation of the effects of space weather on operational space systems, as well as documentation and reports relating to space weather user needs, measurement requirements, gap analyses, cost-benefit analyses and related space weather assessments.

5. States should encourage entities under their jurisdiction and/or control to:

(a) Incorporate in satellite designs the capability to recover from a debilitating space weather effect, such as by including a safe mode;

(b) Incorporate space weather effects into satellite designs and mission planning for end-of-life disposal in order to ensure that the spacecraft either reach their intended graveyard orbit or de-orbit appropriately, in accordance with the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space. This should include appropriate margin analysis.

6. International intergovernmental organizations should also promote such measures among their member States.

7. States should undertake an assessment of the risk and socioeconomic impacts of adverse space weather effects on the technological systems in their respective countries. The results from such studies should be published and made available to all States and used to inform decision-making relating to the long-term sustainability of outer space activities, particularly with regard to mitigating the adverse impacts of space weather on operational space systems.

Guideline B.8

Design and operation of space objects regardless of their physical and operational characteristics

1. States and international intergovernmental organizations are encouraged to promote design approaches that increase the trackability of space objects, regardless of their physical and operational characteristics, including small-size space objects, and those that are difficult to track throughout their orbital lifetime, as well as facilitate the accurate and precise determination of their position in orbit. Such design solutions could include the use of appropriate on-board technology.

2. States and international intergovernmental organizations should encourage manufacturers and operators of space objects, regardless of their physical and operational characteristics, to design such objects to implement applicable international and national space debris mitigation standards and/or guidelines in order to limit the long-term presence of space objects in protected regions of outer space after the end of their mission. States and international intergovernmental organizations are encouraged to share their experiences and information on the operation and end-of-life disposal of space objects, in furtherance of the long-term sustainability of space activities.

3. Due to the importance of small-size space objects to all space programmes, in particular, for developing countries and emerging spacefaring countries, the implementation of the present guideline supports the development of space programmes, including the launching and operation of small-size space objects or any other space objects that are difficult to track, in a way that promotes the long-term sustainability of outer space activities.

Guideline B.9

Take measures to address risks associated with the uncontrolled re-entry of space objects

1. States and international intergovernmental organizations should have in place procedures for furnishing to other States and/or the Secretary-General of the United Nations, via designated entities, as soon as practicable and with updates if necessary, information on the forecasted uncontrolled re-entry of potentially hazardous space objects that are under their jurisdiction and control, and communicating and coordinating the mitigation of risks associated with such events. States and international intergovernmental organizations without space object tracking capabilities should seek support from other States and international intergovernmental organizations with such capabilities. If a State or international intergovernmental organization has early information on forecasted uncontrolled re-entry of potentially hazardous space objects that are under the jurisdiction and control of another State or international intergovernmental organization, it should share such information with that State or international intergovernmental organization via their designated entities. If a State or international intergovernmental organization has early information on the forecasted uncontrolled re-entry of potentially hazardous space objects whose jurisdiction and control is not identified, it should share such information with other States and/or the United Nations via designated entities.

2. States and international intergovernmental organizations with relevant technical capabilities and resources and/or States and international intergovernmental organizations which exercise jurisdiction over the objects forecast to re-enter the atmosphere should assist each other (in a proactive manner and/or in responding to a request) to improve the reliability of results when predicting the uncontrolled re-entry of potentially hazardous space objects, such as by tracking the objects and generating information on their trajectory. States and international intergovernmental organizations should cooperate to build capacity in the area of monitoring uncontrolled space object re-entries.

3. When feasible and without prejudice to furnishing preliminary information on possible hazardous events associated with the uncontrolled re-entry of space objects, the procedures referred to above should be employed during the final phase of the orbital flight of a space object. The procedures should be used until the termination of the ballistic flight of the space object has been confirmed, as well as in the event of the identification of the space object or its fragments that reach the surface of the Earth.

4. States and international intergovernmental organizations should furnish in a timely fashion relevant information they may have at their disposal, as practicable, to support addressing risks from uncontrolled re-entries. The contents and attributes of such information should, to the extent practicable, be relevant to raising awareness, where appropriate, of possible contingencies associated with high-risk uncontrolled re-entries. States and international intergovernmental organizations should designate appropriate entities that are authorized to provide, request and receive such information.

5. States and international intergovernmental organizations should consider applying design techniques to minimize the risk associated with fragments of space objects surviving uncontrolled re-entry.

6. Without prejudice to article 5 of the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, the State(s) having jurisdiction over the territory on which a space object or its component parts have been discovered or are presumed to have reached the surface of the Earth, should respond to any request for timely consultations by the State or international intergovernmental organization with jurisdiction and control over the object. In such consultations, the State or international intergovernmental organization exercising jurisdiction and control over the object should advise and, if mutually agreed, assist

the potentially affected State(s) in the search for and identification, assessment, analysis, evacuation and return of the object or its fragments. State(s) on whose territory a space object or its component parts have been discovered or are presumed to have reached the surface of the Earth should respond to requests from the State or international intergovernmental organization with jurisdiction and control over the object to follow appropriate procedures for, inter alia, identification, assessment, and analysis of the space object or its component parts, to avoid the harmful effects of any hazardous materials which could have survived the uncontrolled re-entry.

Guideline B.10

Observe measures of precaution when using sources of laser beams passing through outer space

When governmental and/or non-governmental entities under the jurisdiction and control of States and international intergovernmental organizations use lasers that generate beams passing through near-Earth outer space, States and international intergovernmental organizations should analyse the probability of accidental illumination of passing space objects by laser beams; conduct a quantitative evaluation of the laser radiation power at the distance of crossing space objects; if possible, perform an assessment of the risk of malfunctioning of, damage to, and/or break-up of space objects due to such illumination; and, as necessary, observe appropriate measures of precaution.

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

States and international intergovernmental organizations should promote and facilitate international cooperation to enable all countries, in particular developing and emerging spacefaring countries, to implement these guidelines. International cooperation should, where appropriate, involve the public, private and academic sectors, and may include, inter alia, the exchange of experience, scientific knowledge, technology and equipment for space activities on an equitable and mutually acceptable basis.

Guideline C.2

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

1. States and international intergovernmental organizations should share, as mutually agreed, experiences, expertise and information relating to the long-term sustainability of outer space activities, including with non-governmental entities, and develop and adopt procedures to facilitate the compilation and effective dissemination of information on the ways and means of enhancing the long-term sustainability of space activities. When further developing their information-sharing procedures, States and international intergovernmental organizations could take note of existing data-sharing practices used by non-governmental entities.

2. The experiences and expertise acquired by those engaged in space activities should be regarded as instrumental in the development of effective measures to enhance the long-term sustainability of outer space activities. States and international intergovernmental organizations should therefore share relevant experiences and expertise to enhance the long-term sustainability of space activities.

Guideline C.3

Promote and support capacity-building

1. States and international intergovernmental organizations with experience in space activities should encourage and support capacity-building in developing countries with emerging space programmes, on a mutually acceptable basis, through measures such as improving their expertise and knowledge on spacecraft design, flight dynamics and orbits, performing joint orbital calculations and conjunction assessments, and providing access to appropriate precise orbital data and appropriate tools for the monitoring of space objects through relevant arrangements as appropriate.

2. States and international intergovernmental organizations should support current capacity-building initiatives and promote new forms of regional and international cooperation and capacity-building that are in accordance with national and international law to assist countries in gathering human and financial resources and achieving efficient technical capabilities, standards, regulatory frameworks and governance methods that support the long-term sustainability of outer space activities and sustainable development on Earth.

3. States and international intergovernmental organizations should coordinate their efforts in space-related capacity-building and data accessibility in order to ensure efficiency in the use of available resources and, to the extent that it is reasonable and relevant, avoid unnecessary duplication of functions and efforts, taking into account the needs and interests of developing countries. Capacity-building activities include education, training and sharing of appropriate experience, information, data, tools and management methodologies and techniques, as well as the transfer of technology.

4. States and international intergovernmental organizations should also undertake efforts to make relevant space-based information and data accessible to countries affected by natural disasters or other catastrophes, guided by considerations of humanity, neutrality and impartiality, and to support capacity-building activities aimed at enabling the receiving countries to make optimal use of such data and information. These space-based data and information with appropriate spatial and temporal resolution should be freely, quickly and easily available for countries in crisis.

Guideline C.4

Raise awareness of space activities

1. States and international intergovernmental organizations should raise general public awareness of the important societal benefits of space activities and of the consequent importance of enhancing the long-term sustainability of outer space activities. To this end, States and international intergovernmental organizations should:

(a) Promote institutional and public awareness of space activities and their applications for sustainable development, environmental monitoring and assessment, disaster management and emergency response;

(b) Conduct outreach, capacity-building and education on regulations and established practices relevant to the long-term sustainability of space activities;

(c) Promote activities of non-governmental entities that will enhance the long-term sustainability of outer space activities;

(d) Raise awareness among relevant public institutions and non-governmental entities about national and international policies, legislation, regulations and best practices that are applicable to space activities.

2. States and international intergovernmental organizations should promote public awareness of space applications for sustainable development, environmental monitoring and assessment, disaster management and emergency response through

information-sharing and joint efforts with public institutions and non-governmental entities, taking into account the needs of current and future generations. In designing space education programmes, States, international intergovernmental organizations and non-governmental entities should pay special attention to courses on enhancing knowledge and practice of the utilization of space applications to support sustainable development. States and international intergovernmental organizations should initiate the voluntary collection of information on public awareness and education tools and programmes with a view to facilitating the development and implementation of other initiatives with similar objectives.

3. States and international intergovernmental organizations should foster outreach activities by or with industry, academia and other relevant non-governmental entities. Outreach, capacity-building and educational initiatives could take the form of seminars (in person or broadcast over the Internet), published guidelines to complement national and international regulations or a website with basic information on a regulatory framework and/or a contact point within the Government for regulatory information. Appropriately targeted outreach and education can assist all entities engaged in space activities in gaining a better appreciation and understanding of the nature of their obligations, in particular relating to implementation, which can lead to improved compliance with the existing regulatory framework and the practices currently being employed to enhance the long-term sustainability of outer space activities. This is particularly valuable where the regulatory framework has been changed or updated, resulting in new obligations for participants in space activities.

4. Cooperation between Governments and non-governmental entities should be encouraged and fostered. Non-governmental entities, including professional and industry associations and academic institutions, can play important roles in increasing international awareness of issues associated with space sustainability, as well as promoting practical measures to enhance space sustainability. Such measures could include adoption of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space; compliance with the ITU Radio Regulations related to space services; and the development of open, transparent standards for the exchange of data necessary to avoid collisions, harmful radio frequency interference or other harmful events in outer space. Non-governmental entities can also play important roles in bringing stakeholders together to develop common approaches to certain aspects of space activities that can collectively enhance the long-term sustainability 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

1. States and international intergovernmental organizations should promote and support research into and the development of sustainable space technologies, processes and services and other initiatives for the sustainable exploration and use of outer space, including celestial bodies.

2. In their conduct of space activities for the peaceful exploration and use of outer space, including celestial bodies, States and international intergovernmental organizations should take into account, with reference to the outcome document of the United Nations Conference on Sustainable Development (General Assembly resolution 66/288, annex), the social, economic and environmental dimensions of sustainable development on Earth.

3. States and international intergovernmental organizations should promote the development of technologies that minimize the environmental impact of manufacturing and launching space assets and that maximize the use of renewable

resources and the reusability or repurposing of space assets to enhance the long-term sustainability of those activities.

4. States and international intergovernmental organizations should consider appropriate safety measures to protect the Earth and the space environment from harmful contamination, taking advantage of existing measures, practices and guidelines that may apply to those activities, and developing new measures as appropriate.

5. States and international intergovernmental organizations conducting research and development activities to support the sustainable exploration and use of outer space should also encourage the participation of developing countries in such activities.

Guideline D.2

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

1. States and international intergovernmental organizations should investigate the necessity and feasibility of possible new measures, including technological solutions, and consider implementation thereof, in order to address the evolution of and manage the space debris population in the long term. These new measures, together with existing ones, should be envisaged so as not to impose undue costs on the space programmes of emerging spacefaring nations.

2. States and international intergovernmental organizations should take measures at the national and international levels, including international cooperation and capacity-building, to increase compliance with the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space.

3. Investigation of new measures could include, inter alia, methods for the extension of operational lifetime, novel techniques to prevent collision with and among debris and objects with no means of changing their trajectory, advanced measures for spacecraft passivation and post-mission disposal and designs to enhance the disintegration of space systems during uncontrolled atmospheric re-entry.

4. Such new measures aimed at ensuring the sustainability of space activities and involving either controlled or uncontrolled re-entries should not pose an undue risk to people or property, including through environmental pollution caused by hazardous substances.

5. Policy and legal issues, such as ensuring that these new measures are compliant with the provisions of the Charter of the United Nations and applicable international law, may also need to be addressed.