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Report of the Scientific and Technical Subcommittee on its fifty-fourth session, held in Vienna from 30 January to 10 February 2017

Contents

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I. Introduction

1. The Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space held its fifty-fourth session at the United Nations Office at Vienna from 30 January to 10 February 2017, under the chairmanship of Chiaki Mukai (Japan).

2. The Subcommittee held 20 meetings.

A. Attendance

3. Representatives of the following 72 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, Czechia, Ecuador, Egypt, El Salvador, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Lebanon, Luxembourg, Malaysia, Mexico, Mongolia, Morocco, Netherlands, New Zealand, Nigeria, Oman, Pakistan, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Saudi Arabia, 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, Venezuela (Bolivarian Republic of) and Viet Nam.

4. At its 855th and 860th meetings, on 30 January and 1 February, the Subcommittee decided to invite, at their request, observers for Cyprus, the Dominican Republic, Guatemala, Malta, Myanmar, Namibia, Norway and Paraguay to attend the session and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that doing so would not involve any decision of the Committee concerning status.

5. At its 855th meeting, the Subcommittee decided to invite, at its request, the observer for the European Union to attend the session, in accordance with General Assembly resolution 65/276, entitled “Participation of the European Union in the work of the United Nations”, and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that doing so would not involve any decision of the Committee concerning status.

6. At the same meeting, the Subcommittee decided to invite, at its request, the observer for the Sovereign Military Order of Malta to attend the session and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that doing so would not involve any decision of the Committee concerning status.

7. Observers for the Office for Disarmament Affairs of the Secretariat, the International Civil Aviation Organization (ICAO), the International Telecommunication Union (ITU), the World Health Organization (WHO) and the World Meteorological Organization (WMO) attended the session.

8. 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 (ESO), European Space Agency (ESA), European Telecommunications Satellite Organization, International Mobile Satellite Organization, Inter-Islamic Network on Space Sciences and Technology (ISNET) and International Telecommunications Satellite Organization.

9. The session was attended by observers for the Space Mission Planning Advisory Group (SMPAG) and the International Asteroid Warning Network (IAWN), in accordance with the agreement of the Subcommittee at its fifty-third session (A/AC.105/1109, para. 182).

10. Also at its 855th meeting, the Subcommittee decided to invite, at their request, the observers for the African Union Commission and the International Institute for the Unification of Private Law (Unidroit) to attend the session and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that doing so would not involve any decision of the Committee concerning status.

11. The session was attended by observers for the following non-governmental organizations having permanent observer status with the Committee: African Association of Remote Sensing of the Environment, Association of Space Explorers (ASE), Regional Centre for Remote Sensing of the North African States, Committee on Space Research (COSPAR), Eurisy, European Space Policy Institute (ESPI), International Academy of Astronautics (IAA), International Association for the Advancement of Space Safety (IAASS), International Society for Photogrammetry and Remote Sensing, International Astronautical Federation (IAF), International Astronomical Union (IAU), International Space University, National Space Society (NSS), Prince Sultan bin Abdulaziz International Prize for Water, Scientific Committee on Solar-Terrestrial Physics (SCOSTEP), Secure World Foundation, Space Generation Advisory Council (SGAC) and World Space Week Association.

12. At its 855th and 860th meetings, the Subcommittee decided to invite, at their request, the observers for Women in Aerospace Europe, the European Science Foundation and the Space Trust to attend the session and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that doing so would not involve any decision of the Committee concerning status.

13. The Subcommittee took note of the application by the European Science Foundation, represented by the European Space Sciences Committee, for permanent observer status with the Committee (A/AC.105/C.1/2017/CRP.3).

14. A list of the representatives of States, United Nations entities and other international organizations attending the session is contained in A/AC.105/C.1/2017/INF/46 and Corr.1.

B. Adoption of the agenda

15. At its 855th meeting, on 30 January, the Subcommittee adopted the following agenda:

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

13. Long-term sustainability of outer space activities.

14. 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.

15. Draft provisional agenda for the fifty-fifth session of the Scientific and Technical Subcommittee.

16. Report to the Committee on the Peaceful Uses of Outer Space.

C. General statements

16. Statements were made by representatives of the following member States during the general exchange of views: Algeria, Argentina, Austria, Brazil, Canada, Chile, China, Costa Rica, Cuba, Czechia, Ecuador, France, Germany, Hungary, India, Indonesia, Iran (Islamic Republic of), Israel, Italy, Japan, Jordan, New Zealand, Nigeria, Oman, Pakistan, Poland, Portugal, Republic of Korea, Romania, Russian Federation, South Africa, Sri Lanka, Switzerland, United Arab Emirates, United Kingdom, United States, Venezuela (Bolivarian Republic of) and Viet Nam. Statements were also made by the representative of Algeria on behalf of the Group of African States and by the representative of the Bolivarian Republic of Venezuela on behalf of the Group of Latin American and Caribbean States. The observer for the European Union also made a statement on behalf of the European Union and its member States. General statements were also made by the observers for the African Association of Remote Sensing of the Environment, APSCO, ESA, ESO, IAA, IAF, IAU, ISNET, ITU, SGAC and the Secure World Foundation. Statements were also made by the observers for Unidroit, the African Union Commission and the European Science Foundation, represented by the European Space Sciences Committee.

17. The Subcommittee heard the following scientific and technical presentations:

(a) “White paper on China space”, by the representative of China;

(b) “ICARUS: a new space system for global wildlife observation and protecting biodiversity”, by the representative of Germany;

(c) “The China Long March series launch vehicles”, by the representative of China;

(d) “Japan’s current and future programmes in space exploration”, by the representative of Japan;

(e) “Women in Aerospace Europe: the network”, by the observer for Women in Aerospace Europe;

(f) “Latest developments in the space science programmes of China”, by the representative of China;

(g) “Recent Indian space missions”, by the representative of India;

(h) “The James Webb space telescope mission”, by the representative of the United States;

(i) “United States Strategic Command: space situational awareness-sharing programme update”, by the representative of the United States;

(j) “Cassini mission: the grand finale”, by the representative of Italy;

(k) “Satellite industry interaction with Government to support the long-term sustainability of space”, by the representative of the United States;

(l) “Analogue research efforts of the Austrian Space Forum”, by the representatives of Austria;

(m) “Innovative research satellites in Sweden”, by the representative of Sweden;

(n) “Presentation on Netherlands space activities in 2016”, by the representative of the Netherlands;

(o) “BRITE nanosatellite constellation: four years of successful operations”, by the representative of Austria;

(p) “Using the framework of international organizations to develop an international lunar decade campaign”, by the observer for NSS;

(q) “Update on SCOSTEP activities”, by the observer for SCOSTEP;

(r) “Lunar Hathor: international deep drilling lunar mission study”, by the observer for the International Space University;

(s) “World Space Week”, by the observer for the World Space Week Association;

(t) “Space and climate change”, by the observer for ESA;

(u) “Space Generation Advisory Council: in support of the United Nations Programme on Space Applications”, by the observer for SGAC;

(v) “ESPI-Group of Latin American and Caribbean States: report on space activities in Latin American and Caribbean countries”, by the observer for ESPI;

(w) “Pseudo-satellites and their use in near space”, by the observer for IAASS;

(x) “Towards the establishment of an international registry of secured interests in space objects”, by the observer for Unidroit;

(y) “0G summit: shuttle diplomacy in a new space age”, by the observer for the Space Trust.

18. The Subcommittee welcomed New Zealand as the newest State member of the Committee on the Peaceful Uses of Outer Space. New Zealand brought the membership of the Committee to 84 States. The Subcommittee also welcomed the International Air Transport Association, a non-governmental organization, as the newest permanent observer of the Committee.

19. At the 855th meeting, on 30 January, the Chair of the Subcommittee made a statement outlining the work of the Subcommittee at its current session. She brought to the attention of the Subcommittee several provisions of General Assembly resolution 71/90 pertaining to the current work of the Subcommittee and drew particular attention to the fact that the General Assembly had emphasized the significant progress in the development of space science and technology and their applications that had enabled humans to explore the universe, and the extraordinary achievements made in space exploration efforts. She noted that the General Assembly had recognized the unique platform at the global level for international cooperation in space activities represented by the Committee and its Scientific and Technical Subcommittee and Legal Subcommittee and assisted by the Office for Outer Space Affairs of the Secretariat.

20. 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 previous year and presented a detailed description of activities planned for the coming year, including outreach activities and cooperation and coordination with United Nations entities and international intergovernmental and non-governmental organizations. She provided a comprehensive account of the work of the Office in support of the objectives of the plan of work for the thematic cycle dedicated to the fiftieth anniversary of the United Nations Conference on the Exploration and

Peaceful Uses of Outer Space, in 2018 (UNISPACE+50). She stressed the current unfavourable financial situation of the Office and highlighted the importance of having financial and other resources available for the successful implementation of the programme of work of the Office.

21. The Subcommittee welcomed with appreciation the designation of Scott Kelly, former astronaut of the National Aeronautics and Space Administration (NASA), as United Nations Champion for Space. His role would involve supporting the Office for Outer Space Affairs in promoting space as a tool for achieving the Sustainable Development Goals, and in raising awareness of the Office's activities, including activities related to UNISPACE+50.

22. The Subcommittee noted the remarkable convergence of anniversaries in 2017: the year marked the sixtieth anniversary of the advent of the space age with the launch into outer space of the first artificial Earth satellite, Sputnik I, on 4 October 1957; the fiftieth anniversary of the entry into force of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies; the fiftieth anniversary of the Landsat programme; the tenth anniversary of the International Heliophysical Year; and the tenth anniversary of the endorsement by the General Assembly of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space. In addition, the sixtieth session of the Committee on the Peaceful Uses of Outer Space would be held in 2017. The Subcommittee welcomed the opportunity presented by those anniversaries to increase awareness of the relevance to and importance of space applications for the betterment of the conditions of human life.

23. The Subcommittee agreed that, without space science and technology, and in particular without communication and navigation systems, it would be impossible to meet the current and future challenges of social and economic development and sustainability, such as natural disasters, food security, climate change and natural resource security. The Subcommittee emphasized that space activities were also crucial to supporting sustainable development, especially as part of efforts to support sustainable economic growth, improve quality of life and manage the global environment.

24. The Subcommittee noted the instrumental role it had played in the development of the legal regime governing the use of outer space activities for peaceful purposes and in efforts to provide a unique multilateral platform at the global level for enhancing international cooperation for the benefit of all countries, in particular in the area of using space applications for sustainable development, including within the context of the 2030 Agenda for Sustainable Development.

25. The Subcommittee welcomed the adoption of the African Space Policy and Strategy by the African Union Heads of State and Government during the twenty-sixth session of the African Union, held in Addis Ababa on 30 and 31 January 2016, a milestone achievement that marked the first concrete steps towards the realization of an African outer space programme within the framework of the African Union's Agenda 2063.

26. The Subcommittee noted that the Government of the Bolivarian Republic of Venezuela and the Bolivarian Agency for Space Activities would host the Eighth Space Conference of the Americas and the Second Venezuelan Conference on Space Technology, to be held in parallel in Caracas from 11 to 15 September 2017.

27. The Subcommittee also noted that the twenty-third session of the Asia-Pacific Regional Space Agency Forum, on the theme "Building a future through space science, technology and innovation", had been held in Manila from 15 to 18 November 2016. The twenty-fourth session would be held in Bangalore, India, in November 2017.

28. The Subcommittee further noted the activities that APSCO had been pursuing in 2016 to promote the socioeconomic development of the Asia-Pacific region. The Subcommittee noted that Egypt had become an associate member of APSCO.

29. The Subcommittee stressed the importance of the Outer Space Treaty for the orderly conduct of international cooperation in the peaceful exploration and use of outer space. The Subcommittee also stressed that the Treaty played an important role in the regulation of various aspects of international cooperative activities aimed at the development of, inter alia, space science and technology and their applications.

30. The view was expressed that it was important to ensure that the delicate formulations of the provisions of the Treaty were understood and followed in a uniform manner by States and other participants in space activities, as there were emerging instances of severe deviations from that important practice. The Treaty stipulated that there should be freedom of scientific investigation in outer space and that outer space should be free for exploration and use. Some politicians and experts, in their interpretations, appealed irresponsibly to a non-existing principle of "freedom of action in space".

31. Some delegations reaffirmed the commitment of their countries to the peaceful use and exploration of outer space and emphasized the following principles: universal access, on an equal and non-discriminatory basis, to outer space for all States, irrespective of their level of scientific, technical and economic development; non-appropriation of outer space, including the Moon and other celestial bodies, by claim of sovereignty, use, appropriation, occupation or any other means; the commitment by States to the use of outer space exclusively for peaceful purposes, as a common heritage of humankind; the non-militarization of outer space, the non-placement of weapons in outer space and the strict use of outer space for the improvement of living conditions and peace on the planet; and international and regional cooperation to promote the development of space activities.

32. Some delegations expressed the view that the Outer Space Treaty and other space treaties had been serving the international community well during the previous decades and that those instruments remained as relevant as before. That important point should be kept in mind as work continued on other areas of space governance, such as the long-term sustainability guidelines or transparency and confidence-building measures. The delegations expressing that view were also of the view that, as human space activity continued to multiply at an ever faster rate, it was important for the international community to ensure safety and security in outer space by complying with international space law as it existed at the current time.

33. The view was expressed that a thesis on global space governance or management did not have any substantive content or meaning, except for some States that tended to prioritize national regulations of space activities and were predisposed to taking egocentric approaches with regard to the exploration and use of outer space.

34. The view was expressed that there would be no prospect of arriving at what could be termed "space traffic management" without a preliminary consensus among States about an efficient and suitable international and multilateral system for regulating the safety of space operations. The delegation expressing that view was also of the view that a rapid introduction of space traffic rules, as some were advocating, would inevitably run into numerous complex issues that would be more suitably resolved as part of the development of the guidelines for the long-term sustainability for outer space activities.

35. Some delegations expressed the view that international and regional cooperation in the exploration and peaceful uses of outer space for the purpose of meeting global development goals was essential for States and should thus be continuously strengthened through the Committee and its Subcommittees. The Committee and its Subcommittees should remain a central international forum for those matters. In that regard it would be essential to explore various options for strengthening the capabilities of the Office for Outer Space Affairs so that it could actively contribute to the promotion of capacity-building and technical assistance in

space science and technology and their applications for the benefit of all States, in particular developing States.

36. The view was expressed that space technology was a driving force for socioeconomic development, and that that role was expanding at an extraordinary rate. The delegation expressing that view was also of the view that space technology should be made available to all countries in an unhindered and non-discriminatory manner, taking into particular account the needs of developing countries.

37. Some delegations expressed the view that, given the impact of space activities on human life and the environment and the current state of technological advances, coupled with the increasingly prominent role played by new private actors, the Scientific and Technical Subcommittee and the Legal Subcommittee should enhance their interaction and coordination in a way that promoted the progressive development of international law and its codification and furthered the establishment of binding international norms governing issues critical in the use and exploration of outer space.

38. The view was expressed that the question regarding the permissibility of applying an exclusively technocratic approach to the matters of the exploration and use of resources of celestial bodies would require consideration within the context of UNISPACE+50. The delegation expressing that view was also of the view that it was a matter of the grave concern that there was a growing trend of dispersion of that important problem between various forums, including the Hague Space Resources Governance Working Group, when it should be considered only by the Committee and its Subcommittees. In that connection, it would be opportune to consider the advantages of the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, which had been commended by the General Assembly and constituted an important part of the body of international space law. The Agreement had a relatively small number of parties owing to the effect of "delayed decision", as many States had decided to take time for further consideration of the development of relevant technology and the perspectives for space resources exploration. Therefore, it would be possible to consider, within the framework of the Subcommittee, a simultaneous joint accession of the leading space-faring nations to the Agreement, to be followed by similar actions by other States.

39. The view was expressed that the series of ballistic missile launches in 2016 by the Democratic People's Republic of Korea should be condemned, as they were in violation of relevant Security Council resolutions, including resolution 2270 (2016) and resolution 2321 (2016), pursuant to which scientific and technical cooperation that could contribute to the development of nuclear weapon delivery systems by the Democratic People's Republic of Korea was prohibited. The delegation expressing that view was also of the view that Member States should faithfully implement those resolutions.

40. The Subcommittee expressed its gratitude to the organizers of the following events, held on the margins of the current session of the Subcommittee:

(a) Evening event on the theme "India in space: the forward look to international cooperation", organized by ESPI;

(b) Evening event on the theme "Planetary defence: technical, legal and economic aspects", organized by the national point of contact for space law for Austria of the European Centre for Space Law and the Museum of Natural History, Vienna;

(c) Tutorial and workshop sessions on the theme "Landsat past, present and future: accessing the United States Geological Survey land remote sensing archive", organized by the delegation of the United States;

(d) Special panel session and official book launch for *Fragility and Beauty: My Planet From Space*, organized jointly by the Office for Outer Space Affairs and ESA;

(e) Side event on the theme "Long-term sustainability guidelines implementation: an open dialogue", organized by the Permanent Mission of the United Kingdom;

(f) Special panel session on the theme "Space for women", held to mark the International Day of Women and Girls in Science, on 11 February, organized by the Office for Outer Space Affairs.

41. The Subcommittee noted with appreciation the voluntary cash contribution made by Switzerland in support of the project entitled "Inter-agency coordination and liaison office in Geneva for the promotion of space-based tools and technology for humanitarian affairs, the environment and security".

D. National reports

42. The Subcommittee took note with appreciation of the reports submitted by Member States (A/AC.105/1133 and Add.1 and 2 and conference room papers A/AC.105/C.1/2017/CRP.4, A/AC.105/C.1/2017/CRP.10, A/AC.105/C.1/2017/CRP.11 and A/AC.105/C.1/2017/CRP.12) for its consideration under agenda item 3, entitled "General exchange of views and introduction of reports submitted on national activities". The Subcommittee recommended that the Secretariat continue to invite Member States to submit annual reports on their space activities.

E. Symposium

43. In accordance with the agreement reached by the Subcommittee at its forty-fourth session, in 2007 (A/AC.105/890, annex I, para. 24), and at its fifty-third session, in 2016 (A/AC.105/1109, para. 263), as well as by the Committee at its fifty-ninth session, in 2016 (A/71/20, para. 300), a symposium organized by IAF on the topic "What is at stake in space in 2017 and 2018" was held on 8 February 2017.

44. The symposium, which was organized in the form of panel discussions, was opened with a welcome statement by Jean-Yves Le Gall, President, IAF. It was moderated by John Horack, Special Adviser to the IAF President. The first panel discussion, on the theme "Views on space: why we go", was opened with a keynote address by Sandy Magnus, Executive Director, American Institute of Aeronautics and Astronautics. The panellists were Sandy Magnus; Sergey Krikalev, Chief Director for Manned Spaceflight Programmes, State Space Corporation Roscosmos of the Russian Federation; Jan Woerner, Director General, ESA; Saku Tsuneta, Vice President, Japan Aerospace Exploration Agency (JAXA); Mylswamy Annadurai, Director, Indian Space Research Organisation Satellite Centre; Simonetta Di Pippo, Director, Office for Outer Space Affairs; and Yu Qi, Vice Director General of the Department of International Cooperation, China National Space Administration. The theme of the second panel discussion was "International benefits from space". It was opened with a keynote address by Jan Woerner and the panellists were Roberto Battiston, President, Italian Space Agency (ASI); Doan Ha Thang, Director, Viet Nam Space Committee Office; Francisco Javier Mendieta, Director General, Mexican Space Agency (AEM); Minoo Rathnasabapathy, Executive Director, SGAC; Khaled al Hashmi, Director of Space Missions, United Arab Emirates Space Agency; Itumeleng Makoloi, Director of Space Systems, Department of Science and Technology of South Africa; Avi Blasberger, Director General, Israel Space Agency; and Li Hongbo, Senior Expert, China Aerospace Science and Technology Corporation.

F. Adoption of the report of the Scientific and Technical Subcommittee

45. After considering the items before it, the Subcommittee, at its 874th meeting, on 10 February 2017, adopted its report to the Committee on the Peaceful Uses of Outer Space, containing its views and recommendations, as set out in the paragraphs below.

II. United Nations Programme on Space Applications

46. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 4, entitled "United Nations Programme on Space Applications".

47. The representatives of Chile, China, Costa Rica, Germany, Indonesia, Italy, Japan, Mexico, Nigeria, Pakistan, the Russian Federation and Venezuela (Bolivarian Republic of) made statements under agenda item 4. A statement was also made under the item by the representative of Argentina on behalf of the Group of Latin American and Caribbean States. During the general exchange of views, statements relating to the item were made by representatives of other member States.

48. The Subcommittee heard the following scientific and technical presentations:

(a) "Progress and plan of the United Nations regional centre in China (RCSSTEAP)", by the representative of China;

(b) "Brazilian Science Data Center", by the representative of Brazil;

(c) "International Space Forum 2016, held in Trento (Italy)", by the representative of Italy;

(d) "The space research projects of La Sapienza University of Rome, in the framework of the agreement with the Italian Space Agency", by the representative of Italy.

49. At the 855th meeting, on 30 January 2017, the Director of the Office for Outer Space Affairs, following the request made by the General Assembly in its resolution 71/90, apprised the Subcommittee of the status of the Office's capacity-building activities, including the status of implementation of the United Nations Programme on Space Applications. She also informed the Subcommittee that, as part of the Office's responsibilities to implement a number of important complex plans, activities and initiatives as part of UNISPACE+50, the Office had undertaken a number of important transitional measures, which included reassigning the function of the Expert on Space Applications to the post of the Director of the Office and conceptual reconsideration of planning and reporting on the activities conducted under the Programme on Space Applications and the United Nations Platform for Space-based Information for Disaster Management and Emergency response (UN-SPIDER), including overall capacity-building activities, in order to better accommodate the UNISPACE+50 themes and priorities within existing workshops, seminars, technical advisory missions and other relevant activities of the Office. She stressed that those transitional efficiency measures were aimed at strengthening existing collaboration and opening up new partnerships, with the goal of assuring a flawless process towards UNISPACE+50 and, at the same time, working towards a more resilient capacity-building programme for the Office.

50. The Subcommittee noted with appreciation that, since its previous session, in-cash and in-kind contributions had been offered for the activities of the Office, including the Programme on Space Applications, by APSCO; the Asian Disaster Preparedness Centre; the Agustin Codazzi Geographical Institute of Colombia (IGAC); the Austrian Research Promotion Agency (FFG); Beihang University, China; the Organization on Space Technologies for Societal Applications (Canada-Europe-United States-Asia) (CANEUS); the Centre for Remote Sensing of Land

Surfaces of the University of Bonn, Germany; the China Manned Space Agency; the China National Space Administration; the European Commission; ESA; the German Aerospace Centre (DLR) Galileo Control Centre; the Ministry for Transport, Innovation and Technology, Austria; the Government of China; the National Emergency Commission, Dominican Republic; the Federal Ministry for Economic Affairs and Energy, Germany; the Government of Japan; the Government of Kenya; the Survey Department, Ministry of Land Reform and Management, Nepal; IAF; the International Centre for Integrated Mountain Development; the International Water Management Institute; JAXA; AEM; the National Disaster Reduction Centre of China; the National Institute of Aeronautics and Space of Indonesia; the Pakistan Space and Upper Atmosphere Research Commission; the Secure World Foundation; the Sierra Nevada Corporation; the United Arab Emirates Space Agency and the Mohammed bin Rashid Space Centre; and the Department of Geoinformatics of the University of Salzburg, Austria.

51. The Subcommittee also noted with appreciation that Japan and JAXA had continued to provide staff on a non-reimbursable loan basis, in support of the Human Space Technology Initiative.

52. The Subcommittee expressed its appreciation to the Government of Italy for continuing the second-level specializing master's programme on navigation and related applications, a joint initiative between the Politecnico di Torino and the Istituto Superiore Mario Boella, in collaboration with the Istituto Nazionale di Ricerca Metrologica and the Office for Outer Space Affairs, and noted that the programme had begun in October 2016 and would last for 12 months, including three months for pilot projects.

53. The Subcommittee also expressed its appreciation to the Government of Japan for continuing the United Nations/Japan Long-Term Fellowship Programme on Nanosatellite Technologies, in cooperation with the Kyushu Institute of Technology, and noted that the six fellows selected in the 2016 round had begun their studies in October 2016.

54. The Subcommittee further expressed its appreciation to the Government of Germany, which, in collaboration with the Center of Applied Space Technology and Microgravity at Bremen University and DLR, had continued the Fellowship Programme for the Drop Tower Experiment Series and had successfully conducted the second cycle of the programme.

55. The Subcommittee continued to express its concern over the still-limited financial resources available for carrying out the capacity-building activities of the Office, including the United Nations Programme on Space Applications, and appealed to Member States to provide support through voluntary contributions.

56. The Subcommittee 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, the Basic Space Science Initiative, climate change, the Basic Space Technology Initiative and the Human Space Technology Initiative, and biodiversity and ecosystems.

57. The Subcommittee also noted the continued collaboration between the Office for Outer Space Affairs and the Government of Japan, in collaboration with 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 and was currently open for applicants under a second round for 2017 and 2018. The objective of the programme was to promote international cooperation and capacity-building in space technology and its applications under the Human Space Technology Initiative by providing opportunities to educational or research institutions in developing countries to deploy small satellites (CubeSats) from the Japanese Experiment Module (Kibo).

58. The Subcommittee further noted the following activities conducted by the Office in 2016:

(a) United Nations/Costa Rica Workshop on Human Space Technology, held in San José from 7 to 11 March 2016. The report was made available in document A/AC.105/1124;

(b) United Nations/India Workshop entitled "Use of Earth Observation Data in Disaster Management and Risk Reduction: Sharing the Asian Experience", held in Hyderabad, India, from 8 to 11 March 2016. The report was made available in document A/AC.105/1125;

(c) Discovery day on the benefits of very high-resolution imagery (in collaboration with DigitalGlobe), held in Geneva on 11 May 2016, with the financial support of the Government of Switzerland;

(d) Expert meeting on the benefits of space-based applications for environment and humanitarian affairs, held in Geneva on 12 and 13 May 2016, with the financial support of the Government of Switzerland;

(e) United Nations/Kenya Conference on Space Technology Applications for Wildlife Management and Protecting Biodiversity, held in Nairobi from 27 to 30 June 2016. The report was made available in document A/AC.105/1126;

(f) Central European University Workshop on Information and Communications Technologies for Sustainable Development Goal Indicator Monitoring, held in Budapest from 4 to 9 July 2016;

(g) United Nations/Austria Symposium on Integrated Space Technology Applications for Climate Change, held in Graz, Austria, from 12 to 14 September 2016. The report was made available in document A/AC.105/1127;

(h) United Nations/IAF Workshop entitled "Space Technology for Socioeconomic Benefits: Integrated Space Technologies and Applications for a Better Society", held in Guadalajara, Mexico, from 23 to 25 September 2016. The report was made available in document A/AC.105/1128;

(i) Discovery day on the benefits of very high-resolution imagery (in collaboration with DigitalGlobe), held in New York on 11 October 2016;

(j) United Nations/Islamic Republic of Iran Workshop on the Use of Space Technology for Dust Storm and Drought Monitoring in the Middle East Region, held in Tehran from 5 to 9 November 2016. The report was made available in conference room paper A/AC.105/C.1/2017/CRP.22;

(k) United Nations/United Arab Emirates high-level forum on space as a driver for socioeconomic sustainable development, held in Dubai, United Arab Emirates, from 20 to 24 November 2016;

(l) United Nations/Nepal Workshop on the Applications of Global Navigation Satellite Systems, held in Kathmandu from 12 to 16 December 2016. The report was made available in conference room paper A/AC.105/C.1/2017/CRP.19.

59. The Subcommittee noted the following activities planned by the Office for 2017:

(a) United Nations/Italy expert meeting on Open Universe, to be held in Rome on 11 and 12 April 2017;

(b) United Nations/Argentina Workshop on the Applications of Global Navigation Satellite Systems, to be held in Cordoba, Argentina, from 8 to 12 May 2017;

(c) United Nations Conference on Strengthened Space Cooperation for Global Health (dates and location to be decided);

(d) United Nations/United States Workshop entitled “Space Weather: the Decade after the International Heliophysical Year 2007”, to be held in Boston, United States, from 31 July to 4 August 2017;

(e) United Nations/Austria Symposium on Capacity-building for the Twenty-First Century, to be held in Graz, Austria, from 2 to 7 September 2017;

(f) United Nations/IAF Workshop on Space Technology for Socioeconomic Benefits, to be held in Adelaide, Australia, from 22 to 24 September 2017;

(g) Expert meeting on space for women, to be held in New York from 4 to 6 October 2017;

(h) United Nations/Russian Federation Workshop on Capacity-Building in Space Science and Technology for Sustainable Social and Economic Development, to be held in Samara, Russian Federation, from 30 October to 2 November 2017;

(i) United Nations/United Arab Emirates 2017 High-Level Forum on Space as a Driver for Socioeconomic Sustainable Development, to be held in Dubai, United Arab Emirates, from 6 to 9 November 2017;

(j) United Nations/South Africa Symposium on the Basic Space Technology Initiative entitled “Small Satellite Missions for Scientific and Technological Advancement”, to be held in Stellenbosch, South Africa, from 11 to 14 December 2017.

60. The Subcommittee also noted that, since the last session of the Committee, in 2016, in the framework of implementation of the Programme on Space Applications, the Office had concluded memorandums of understanding, funding agreements and framework agreements with the Prince Sultan bin Abdulaziz International Prize for Water, AEM, CANEUS and the Government of El Salvador.

61. The Subcommittee further noted that the Programme was aimed at promoting, through international cooperation, the use of space technologies and space-related data for sustainable economic and social development in developing countries by raising the awareness of decision makers of the cost-effectiveness and additional benefits to be obtained; establishing or strengthening capacity in developing countries to use space technology; and strengthening outreach activities to disseminate awareness of the benefits obtained.

62. The Subcommittee noted that, in addition to the United Nations conferences, training courses, workshops, seminars and symposiums conducted in 2016 and planned for 2017, the Office for Outer Space Affairs had conducted, and planned to conduct, other activities under the Programme, placing emphasis on:

(a) Providing support for capacity-building in developing countries through the regional centres for space science and technology education, affiliated to the United Nations;

(b) Strengthening its long-term fellowship programme, to include support for the implementation of pilot projects;

(c) Ensuring the mainstreaming of the gender perspective into all of its activities;

(d) Promoting the participation of young people in space activities;

(e) Supporting or initiating pilot projects as a follow-up to activities of the Programme in areas of priority interest to member States;

(f) Providing technical advice, upon request, to Member States, bodies and specialized agencies of the United Nations system and relevant national and international organizations;

(g) Enhancing access to space-related data and other information.

63. The Subcommittee also noted the highlights of the activities of the regional centres for space science and technology education, affiliated to the United Nations, namely: Centre for Space Science and Technology Education in Asia and the Pacific; African Regional Centre for Space Science and Technology Education — in French Language; African Regional Centre for Space Science and Technology Education — in English Language; Regional Centre for Space Science and Technology Education for Latin America and the Caribbean; Regional Centre for Space Science and Technology Education for Western Asia; and Regional Centre for Space Science and Technology Education in Asia and the Pacific.

64. The Subcommittee further noted that a workshop on global navigation satellite systems, jointly hosted by the Regional Centre for Space Science and Technology Education for Asia and the Pacific, located in China, and the African Regional Centre for Space Science and Technology Education — in English Language, located in Nigeria, had been held in Ile-Ife, Nigeria, from 8 to 13 August 2016, and that a forum on space technology applications had been held in Beijing on 5 December 2016.

III. Space technology for sustainable socioeconomic development

65. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 5, “Space technology for sustainable socioeconomic development”.

66. The representatives of Egypt, France, Germany, Japan, Pakistan, South Africa and Venezuela (Bolivarian Republic of) made statements under agenda item 5. A statement was also made under the item by the representative of Argentina on behalf of the Group of Latin American and Caribbean States. The observer for Eurisy also made a statement. During the general exchange of views, statements relating to the item were made by representatives of other member States.

67. The Subcommittee heard the following scientific and technical presentations:

(a) “From COP 21 to COP 22, new challenges for space agencies on climate: greenhouse gas and water resource measurements from space”, by the representative of France;

(b) “Space to manage changes in wildlife pathways faced to environment and climate”, by the representative of France;

(c) “Overview of the Emirates Mars Mission”, by the representatives of the United Arab Emirates;

(d) “Engaging with stakeholders in preparation for UNISPACE+50”, by the observer for ESPI.

68. The Subcommittee had before it the following:

(a) Note by the Secretariat entitled “Fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space: the Committee on the Peaceful Uses of Outer Space and global governance of outer space activities” (A/AC.105/1137);

(b) Report on the United Nations/United Arab Emirates High-level Forum: Space as a Driver for Socioeconomic Sustainable Development (A/AC.105/1129);

(c) Report on the United Nations Workshop on Space Law on the theme “Contribution of space law and policy to space governance and space security in the twenty-first century” (A/AC.105/1131);

(d) Conference room paper entitled “UNISPACE+50: status of preparations” (A/AC.105/C.1/2017/CRP.5);

(e) Conference room paper containing a progress report by the Office for Outer Space Affairs on the UNISPACE+50 thematic priority entitled "International cooperation towards low-emission and resilient societies" (A/AC.105/C.1/2017/CRP.6);

(f) Conference room paper containing a progress report by the Office for Outer Space Affairs on the UNISPACE+50 thematic priority entitled "Capacity-building for the twenty-first century" (A/AC.105/C.1/2017/CRP.7);

(g) Conference room paper entitled "The 'Dark and quiet skies' proposal as an initiative under the auspices of the Committee on the Peaceful Uses of Outer Space for protecting the environmental observing conditions for large astronomical observatories and world citizens, submitted by the International Astronomical Union (IAU)" (A/AC.105/C.1/2017/CRP.17);

(h) Conference room paper entitled "Strengthening the means for the Office for Outer Space Affairs to cooperate with non-governmental entities in the space arena for the benefit of developing countries" (A/AC.105/C.1/2017/CRP.20);

(i) Working paper submitted by the Russian Federation entitled "Considerations aimed at facilitating a broader systemized understanding of the objective dimensions of issues and the functional dimensions of solutions related to sharing information on the situation in outer space in the context of deciding on the establishment of a working group on enhanced information exchange on space objects and events" (A/AC.105/C.1/2017/CRP.27);

(j) Conference room paper entitled "Third meeting of the Expert Group on Space and Global Health, held on 2 and 3 February 2017, and initial considerations in preparation towards UNISPACE+50" (A/AC.105/C.1/2017/CRP.28);

(k) Non-paper by the Secretariat containing a proposed workplan for UNISPACE+50 thematic priority 3, on enhanced information exchange on space objects and events.

69. The Subcommittee noted the ongoing efforts by the international community to implement the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction 2015-2030 and the Paris Agreement.

70. The Subcommittee recalled the preamble of General Assembly resolution 71/90 and noted in that context that space science and technology and their applications had immense potential to provide benefits to both developed and developing countries in areas such as agriculture and food security, climate change adaptation and mitigation, disaster management and emergency response, education, the environment and natural resources, navigation, the development of human settlements, humanitarian assistance, meteorology, global health, communications, water and transport, and that they served as important enablers of economic, social and cultural development and contributors to poverty eradication.

71. The Subcommittee welcomed with satisfaction the efforts that were being undertaken by some developing countries, such as Egypt, to improve the socioeconomic conditions of their people through addressing the problem of a substantial lack of food within the context of overpopulation.

72. The Subcommittee recalled the entry into force of the Paris Agreement on 4 November 2016 and noted that many essential climate variables used by the Intergovernmental Panel on Climate Change were observable only from space.

73. The Subcommittee also recalled the adoption of the African Space Policy and Strategy in January 2016 and noted that the African Union had extended the time frame for its Space Working Group, chaired by South Africa, to continue with the exercise of drafting governance and implementation frameworks.

74. The Subcommittee welcomed with satisfaction the efforts of the Office for Outer Space Affairs, the steering committee and member States with regard to the

preparations for the UNISPACE+50 process, carried out in accordance with document A/AC.105/L.297.

75. The Subcommittee took note with appreciation of the report of the tenth United Nations Workshop on Space Law, held in Vienna from 5 to 8 September 2016 on the theme "Contribution of space law and policy to space governance and space security in the twenty-first century" (A/AC.105/1131), and noted that the report contained a comprehensive set of observations, conclusions and recommendations pertaining to UNISPACE+50 and to the work of the Committee and its two Subcommittees, including in relation to the safety, security and sustainability of outer space activities.

76. Some delegations welcomed the organization of joint events by the First and Fourth Committees of the General Assembly and recommended that it would be appropriate for the Committee on the Peaceful Uses of Outer Space to suggest to the General Assembly the desirability of maintaining such meetings as an established practice for the future.

77. The view was expressed that strong and sustained knowledge-sharing was needed between developed and developing countries for the effective use of emerging space technologies in addition to traditional approaches to sustainable development.

78. The view was expressed that it was necessary to promote exchange and cooperation in scientific and technical research and capacity-building in space activities, with the involvement of the space sector, academia and industry, and to increase awareness of the potential of space technology for development.

79. The Subcommittee noted the crucial role of space data and technology in decision-making and early warning measures in the public health domain and reaffirmed the importance of the work of its Expert Group on Space and Global Health.

80. The Working Group of the Whole was reconvened under the chairmanship of Mylswamy Annadurai (India), in accordance with paragraph 8 of General Assembly resolution 71/90. At its 873rd meeting, on 10 February, the Subcommittee endorsed the report of the Working Group of the Whole, which is contained in annex I to the present report.

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

81. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 6, "Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment".

82. The representatives of Belarus, Canada, China, Egypt, Japan, Mexico, Oman, Sri Lanka, the Russian Federation and the United States made statements under agenda item 6. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

83. The Subcommittee heard the following scientific and technical presentations:

(a) "National Oceanic and Atmospheric Administration meteorological satellite update", by the representative of the United States;

(b) "Research and application of spatial information technology in the disease control and prevention field in China", by the representative of China;

(c) "GMES and Africa state of play", by the observer for the African Union Commission.

84. In the course of the discussions, delegations reviewed national, bilateral, regional and international programmes on remote sensing, in particular in the following areas: monitoring climate change; disaster management; monitoring oil spills; civil security; managing ecosystems and natural resources; air and water quality monitoring for aerosols and pollutants; meteorology and weather forecasting; archaeology, agriculture and forestry; ground water detection; irrigation, drought and wetland monitoring; coastal zone, reef and mangrove monitoring; watershed development and land use; land change detection; mineral exploration, ice-cover and glacial monitoring; oceanography, temperature and colour monitoring; rural development and urban planning; infrastructure development; medical science and epidemiology studies; and crop yield quantification.

85. The Subcommittee noted the efforts of developing countries to use Earth observation data to build national capacity to reduce poverty, advance socioeconomic development through the rational and sustainable use of resources and improve the quality of life of their populations.

86. The Subcommittee also noted that the expanding use of Earth observation data by decision makers at the national and local levels required greater availability of, and access to, Earth observation information from satellite operators.

87. The Subcommittee noted with appreciation the capacity-building initiatives, series of training workshops and other activities organized by space agencies of developed countries in cooperation with partners in developing countries, addressing satellite imagery processing and the use of Earth observation data in disaster management.

88. The Subcommittee noted the high interest of member States in cooperating internationally in the collection, processing and dissemination of Earth observation data and applications, in particular for the benefit of developing countries, to promote well-informed decisions. In that regard, the Subcommittee also noted that the availability of numerous Earth observation data and application service providers, such as the Regional Visualization and Monitoring System (SERVIR), offered opportunities for national and local decision makers to utilize satellite-derived information.

89. The Subcommittee also noted a number of planned next-generation Earth observation satellites that would provide greater resolution, accuracy and sustained observation of the Earth environment. The Subcommittee further noted plans of member States to coordinate and develop individual satellites and constellations to provide greater coverage and capability to meet increasing demands for more accurate Earth observation data and services.

90. The Subcommittee further noted the support provided by a number of member States through their respective space agencies to the United Nations Committee of Experts on Global Geospatial Information Management initiative to raise awareness of the possibilities offered by satellite-based remote sensing for improving baseline geospatial data and developing other required datasets globally.

91. Some delegations emphasized the importance of radar imagery and that of hyperspectral imaging in better managing and mapping mineral resources and geological features over large areas, while noting that more affordable access to high-resolution satellite imagery, both hyperspectral and optical, was still needed in that regard. The use of in-situ observations and data to improve information derived from satellite imagery and the development of new applications based on Earth observation data using machine learning and “deep learning” were also highlighted.

92. The view was expressed that, in order to increase the use of remote sensing data and associated technology tools, particularly in developing countries, partnerships with satellite operators should be encouraged in order to construct and operate ground station infrastructure at the local and national levels.

93. The view was expressed that all member States should be encouraged to put in place an appropriate legal framework to monitor and safeguard the collection and use of potentially sensitive Earth observation data.

94. The Subcommittee took note of the cooperation agreement between the Office for Outer Space Affairs and the Prince Sultan Bin Abdulaziz International Prize for Water related to the advancement of space science and technology to address the growing problem of water scarcity around the globe, and to the establishment of a space and water knowledge portal to highlight the benefits of remote sensing technology in water management.

95. The Subcommittee noted various water monitoring and water management efforts using remote sensing, emphasizing that water was essential to human activities in every aspect and that too many people around the world were suffering from water shortages or had no access to clean water. Water-related disasters such as typhoons, tsunamis, droughts and floods were a constant threat to populations globally; it was imperative to use remote sensing technology to resolve such water-related problems.

96. The Subcommittee also noted the continued support for the activities of the Committee on Earth Observation Satellites (CEOS) and that the United States Geological Survey had taken up the chairmanship of CEOS for 2017. The Subcommittee also noted that the thirty-first plenary session of CEOS would take place in Rapid City, South Dakota, United States, from 18 to 20 October 2017.

97. The Subcommittee further noted the continued support for the activities of the Group on Earth Observations (GEO) and that the new GEO Initiative 18 was aimed at supporting countries in integrating Earth observation data with global and national statistical systems to help them achieve the Sustainable Development Goals. The Subcommittee noted that the next GEO executive committee and plenary meetings would be held in Washington, D.C., in October 2017.

V. Space debris

98. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 7, “Space debris”.

99. The representatives of Canada, China, Egypt, Germany, India, Indonesia, Japan, Mexico, Pakistan, the Republic of Korea, the Russian Federation, the United States and Venezuela (Bolivarian Republic of) made statements under agenda item 7. A statement was made under the item by the representative of Argentina on behalf of the Group of Latin American and Caribbean States. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

100. The Subcommittee heard the following scientific and technical presentations:

(a) “Overview of the 2016 space debris mitigation activities in France”, by the representative of France;

(b) “Overview of JAXA’s research for comprehensive measures for space debris”, by the representative of Japan;

(c) “Activities of the Russian Federation on space debris research in 2016”, by the representative of the Russian Federation;

(d) “International Scientific Optical Network for near-Earth space monitoring: the latest achievements and perspectives”, by the representatives of the Russian Federation;

(e) “Space debris research in Switzerland”, by the representative of Switzerland;

(f) “United States space debris environment, operations and research updates”, by the representative of the United States;

(g) “Space debris mitigation activities at ESA in 2016”, by the observer for ESA;

(h) “Inter-Agency Space Debris Coordination Committee: annual activity overview”, by the observer for ESA;

(i) “Impact of newcomers on space debris risk”, by the observer for IAASS.

101. The Subcommittee had before it information on national research on space debris, the safety of space objects with nuclear power sources on board and problems relating to the collision of such objects with space debris, in replies received from Member States and international organizations (A/AC.105/C.1/111 and Add.1 and A/AC.105/C.1/2017/CRP.12).

102. The Subcommittee noted with satisfaction that 2017 marked the tenth anniversary of 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, and that those Guidelines had proved vital in controlling the space debris problem for the safety of future space missions.

103. The Subcommittee also noted with satisfaction that many States and international intergovernmental organizations were implementing space debris mitigation measures consistent with the Space Debris Mitigation Guidelines of the Committee and/or the Space Debris Mitigation Guidelines of the Inter-Agency Space Debris Coordination Committee and that a number of States had harmonized their national space debris mitigation standards with those guidelines.

104. The Subcommittee noted that some States were using the Space Debris Mitigation Guidelines of the Committee, the European Code of Conduct for Space Debris Mitigation, International Organization for Standardization 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.

105. The Subcommittee also noted that, in the area of space debris, 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.

106. Some delegations expressed the view that the first set of guidelines agreed to by the Working Group on the Long-term Sustainability of Outer Space Activities contained guidelines related to space debris that were an extension of the Space Debris Mitigation Guidelines of the Committee.

107. The view was expressed that the Space Debris Mitigation Guidelines of the Committee should incorporate those portions of the finalized guidelines for the long-term sustainability of outer space activities that related to space debris, with a view to developing a new set of United Nations principles on space debris mitigation.

108. Some delegations expressed the view that outcome documents produced by the working groups of the Subcommittee, such as the Safety Framework for Nuclear Power Source Applications in Outer Space and the Space Debris Mitigation Guidelines of the Committee, should be officially presented to the Legal Subcommittee for examination.

109. The view was expressed that cooperation between the Scientific and Technical Subcommittee and the Legal Subcommittee would result in the development of legally binding rules for the handling of space debris, including of debris derived from space platforms with nuclear power sources (NPS) on board.

110. The view was expressed that the issue of space debris should remain on the agenda of the Scientific and Technical Subcommittee and that appropriate working groups and intergovernmental legal and technical panels should be created as necessary to explore the issue of space debris further.

111. The Subcommittee noted that the Inter-Agency Space Debris Coordination Committee, whose initial work had served as the basis for the Space Debris Mitigation Guidelines of the Committee, continued its work to characterize the space debris environment and evaluate improvements to its own Space Debris Mitigation Guidelines.

112. The Subcommittee expressed concern at the increasing amount of space debris and encouraged States as well as agencies, industries and academic institutions that had not yet done so to consider voluntarily implementing the Space Debris Mitigation Guidelines of the Committee.

113. The Subcommittee noted with appreciation that States had adopted a number of approaches and concrete actions to mitigate space debris, including the improvement of the design of launch vehicles and spacecraft, the development of specific software, the reorbiting of satellites, passivation, life extension, end-of-life operations and disposal.

114. The Subcommittee noted the development and application of new technologies and ongoing research related to space debris mitigation; collision avoidance; protecting space systems from space debris; limiting the creation of additional space debris; re-entry and collision avoidance techniques; measuring, characterizing, continuous monitoring and modelling of space debris; prediction, early warning and notification of space debris re-entry and collision; and space debris orbit evolution and fragmentation.

115. The Subcommittee also noted the evolving technologies related to the in-orbit robotic servicing of satellites, the extension of satellite lifespans and active space debris removal, which included the use of nets, harpoons, robotic arms, tentacles, slingshots, electrodynamic tethers and solar sails.

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

117. Some delegations expressed the view that countries with advanced space programmes should assume their responsibilities for space debris mitigation and removal to ensure that the mitigation and removal costs were not passed on to countries with emerging space capabilities.

118. The view was expressed that, in addressing space debris issues, States should act based on their common but differentiated responsibilities and their respective capabilities.

119. Some delegations expressed the view that information on action taken to reduce the creation of space debris should be made available to the Committee by, in particular, those States largely responsible for the current situation and those able to reduce space debris.

120. Some delegations expressed the view that efforts should be made to reuse launch vehicles and rockets in order to contain the amount of space debris at its current level.

121. The view was expressed that developed countries should perform detailed space debris analyses and include new technologies relating to orbit decay at the satellite mission design stage.

122. Some delegations expressed the view that States, in particular spacefaring nations, should pay greater attention to the problem of debris coming from platforms with NPS in outer space and to collisions of space objects with space

debris and its derivatives, as well as to ways of improving the technology for monitoring space debris.

123. Some delegations expressed the view that all relevant information about the re-entry of space debris into the Earth's atmosphere should be reported diligently and expeditiously to countries that might be affected.

124. Some delegations expressed the view that it was important to take appropriate measures to mitigate the possible re-entry of space debris over territories of other countries, especially in populated areas, and that national capacities to mitigate disasters resulting from space debris should be strengthened.

125. Some delegations expressed the view that it was necessary to strengthen international cooperation to promote research and build capacities in space debris mitigation measures, including in the areas of orbital determination and propagation, monitoring tools, operational protocols and satellite design.

126. Some delegations expressed the view that spacefaring nations should provide developing countries with technical assistance relating to the monitoring, mitigation and removal of space debris.

127. Some delegations expressed the view that the international community should further enhance cooperation to expand scientific knowledge and develop technology related to space debris, including, possibly, by conducting active debris removal missions in the future.

128. The view was expressed that developed countries should, under the auspices of the United Nations, take the lead in developing systems to remove the space debris already present in space with a view to stabilizing the space environment.

129. The view was expressed that active removal operations should be undertaken in such a way as to avoid any further multiplication of space debris.

130. Some delegations expressed the view that, to arrive at meaningful mitigation strategies and remediation measures, it was essential that States exchanged knowledge, skills, technical competency, data, information and analysis methods.

131. The view was expressed that all countries should have access to space debris data and data archives.

132. The Subcommittee noted with satisfaction that the compendium of standards adopted by States and international organizations to mitigate the creation of space debris, which had been initiated by Canada, Czechia and Germany, was being continuously updated and could be consulted on the website of the Office for Outer Space Affairs. The Subcommittee encouraged Member States to provide contributions and updates to the compendium.

133. The Subcommittee took note of paragraph 12 of General Assembly resolution 71/90 and agreed that Member States and international organizations having permanent observer status with the Committee should continue to be invited to provide reports on research on space debris, the safety of space objects with NPS on board, problems relating to the collision of such space objects with space debris and the ways in which debris mitigation guidelines were being implemented.

VI. Space-system-based disaster management support

134. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 8, "Space-system-based disaster management support".

135. The representatives of Canada, Chile, China, Costa Rica, France, Egypt, Germany, India, Indonesia, Italy, Japan, Mexico, Pakistan, the Russian Federation, the United States and Venezuela (Bolivarian Republic of) made statements under agenda item 8. A statement was also made under the item by the representative of Argentina on behalf of the Group of Latin American and Caribbean States. During

the general exchange of views, statements relating to the item were also made by representatives of other member States.

136. The Subcommittee had before it the following:

(a) Report on the United Nations/India Workshop on the Use of Earth Observation Data in Disaster Management and Risk Reduction: Sharing the Asian Experience, held in Hyderabad, India, from 8 to 10 March 2016 (A/AC.105/1125);

(b) Report on the United Nations International Conference on Space-based Technologies for Disaster Management: Understanding Disaster Risk, held in Beijing from 19 to 21 September 2016 (A/AC.105/1130);

(c) Conference room paper containing a report on activities carried out in 2016 in the framework of UN-SPIDER (A/AC.105/C.1/2017/CRP.16).

137. The Subcommittee noted with satisfaction the progress made with regard to activities held in 2016 and planned for 2017 in the framework of UN-SPIDER, including the continuing advisory support and other support provided through it for emergency response efforts.

138. Some delegations reiterated the importance of intensifying coordination and international cooperation as a way of carrying out training programmes in Latin America and the Caribbean.

139. The Subcommittee noted that, in 2016, UN-SPIDER had celebrated its tenth anniversary by holding the UN-SPIDER+10 Conference on the margins of the fifty-ninth session of the Committee on the Peaceful Uses of Outer Space.

140. The Subcommittee also noted that, with the continued support of its network of partners, UN-SPIDER had carried out missions for advisory support and assessment in Georgia, as well as follow-up activities in the Dominican Republic, El Salvador, Guatemala, the Lao People's Democratic Republic, Myanmar and Viet Nam. The Subcommittee noted with satisfaction the capacity-building efforts in the form of training sessions that had been held in China, the Dominican Republic, the Lao People's Democratic Republic and Myanmar, addressing specific requirements and providing follow-up to the UN-SPIDER technical advisory missions carried out in previous years.

141. The Subcommittee further noted the activities planned for 2017 and the synergies and cross-border actions facilitated by UN-SPIDER. It noted other capacity-building sessions that were planned and emphasized the need for increased capacity-building support in the various regions.

142. The Subcommittee welcomed the planned outreach activities of the Office for Outer Space Affairs, represented by UN-SPIDER, and its developing partnerships with United Nations entities, international organizations and Member States to continue promoting the use of space-based tools and information in global and regional initiatives, such as under the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Paris Agreement. It noted that more complementary relationships between UN-SPIDER and other initiatives should be established and existing relationships strengthened, including with Sentinel Asia.

143. The Subcommittee noted with satisfaction the ongoing activities of States members of the Committee to increase the availability and use of space-based solutions in support of disaster risk reduction, in particular in the context of the Sendai Framework for Disaster Risk Reduction 2015-2030, and also in support of UN-SPIDER. Those activities included promoting emergency observation in the event of natural or technological disasters under the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters, and under the Sentinel Asia programme and SERVIR, which covered Asia, Africa and the Himalayas and was funded by the United States.

144. The Subcommittee also noted with satisfaction the efforts conducted under the Charter to support disaster response efforts in countries in Asia, Europe, North, Central and South America and the Caribbean in 2016, as well as the contribution of satellite data by its members for use in several activations of the Charter.

145. The Subcommittee noted that the Charter had been activated 517 times since its creation, supporting 119 countries. Sentinel Asia had been activated 34 times in 2016.

146. The Subcommittee noted with satisfaction the activities conducted by several member States, directly or through the Charter, to facilitate access to satellite imagery and space-based information to support disaster response efforts following earthquakes in Ecuador and Italy, tropical storms in Costa Rica, the Dominican Republic and Haiti, forest fires in Canada, Chile and the Russian Federation and floods in China, Egypt and Venezuela (Bolivarian Republic of).

147. The Subcommittee also noted with satisfaction other activities of member States in the same area, such as the promotion, with the support of UN-SPIDER, of the universal access initiative of the Charter and the provision of national and regional data portals for the dissemination of information in near-real time.

148. The Subcommittee noted the efforts of several member States through CEOS, in particular in the context of its Working Group on Disasters. Among the activities conducted by the Working Group was the use of satellite data, including radar data generated using the German TerraSar-X satellite, to monitor volcanic activity in Latin America.

149. The Subcommittee also noted the recently launched Global Partnership using Space-based Technology Applications for Disaster Risk Reduction (GP-STAR), a voluntary effort among the Office for Outer Space Affairs, represented by UN-SPIDER, and Member States, entities of the United Nations system and international intergovernmental and other organizations to support the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030, to foster the use of space-based technologies and applications and Earth observation in disaster risk reduction efforts worldwide and to provide advice to Governments, organizations and projects on the use of space technologies and applications in disaster risk reduction efforts.

150. Some delegations highlighted the relevance of online platforms for sharing and disseminating space-based data and information to monitor the impacts and evolution of natural disasters. Examples given were flood monitoring (e.g. through DisasterWatch in Pakistan), mapping and assessing landslides in Pakistan and monitoring cyclone storms in India.

151. The Subcommittee noted the in-kind contributions made by States members of the Committee and regional support offices in 2016, including the provision of experts, to all technical advisory missions and related activities conducted by the Office for Outer Space Affairs through UN-SPIDER, and their efforts to share experiences with other interested countries.

152. The Subcommittee noted with appreciation the voluntary contributions made to the Office for Outer Space Affairs and its UN-SPIDER programme that were being made by member States, including the cash contributions from Austria, China and Germany, and again encouraged other member States to provide the Office activities and programmes, including UN-SPIDER, with all necessary support, including increased financial support, to enable it to better respond to Member States' requests for assistance and to fully carry out its workplan for the next biennium.

VII. Recent developments in global navigation satellite systems

153. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 9, "Recent developments in global navigation satellite

systems", and reviewed issues related to the International Committee on Global Navigation Satellite Systems (ICG), the latest developments in the field of global navigation satellite systems (GNSS) and new GNSS applications.

154. The representatives of China, India, Indonesia, Japan, Mexico, Pakistan, the Russian Federation and the United States made statements under agenda item 9. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

155. The Subcommittee heard the following scientific and technical presentations:

(a) "GNSS spectrum protection and interference detection and mitigation activities in China", by the representative of China;

(b) "Project overview of the Quasi-Zenith Satellite System", by the representative of Japan;

(c) "Joint Africa/Asia-Pacific regional centres collaborative training efforts on GNSS", by the representative of Nigeria;

(d) "GNSS interference detection and mitigation", by the representative of the United States.

156. The Subcommittee had before it the following documents:

(a) Note by the Secretariat on the eleventh meeting of the International Committee on Global Navigation Satellite Systems (A/AC.105/1134);

(b) Report of the Secretariat on activities carried out in 2016 in the framework of the workplan of the International Committee on Global Navigation Satellite Systems (A/AC.105/1136);

(c) A conference room paper containing a summary of the United Nations/Nepal Workshop on the Applications of Global Navigation Satellite Systems held in Kathmandu from 12 to 16 December 2016 (A/AC.105/C.1/2017/CRP.19);

(d) A conference room paper entitled "International Committee on Global Navigation Satellite Systems (ICG): call for participation in ICG spectrum protection and interference detection and mitigation activities — request for voluntary reporting on national radionavigation satellite service spectrum protection practices and global navigation satellite systems interference detection and mitigation capabilities" (A/AC.105/C.1/2017/CRP.18).

157. The Subcommittee was informed that the Office for Outer Space Affairs, as the executive secretariat of ICG, handled coordination for the planning of meetings of ICG and its Providers' Forum, in conjunction with sessions of the Committee and its subsidiary bodies. It was noted that the Office also maintained a comprehensive information portal for ICG and users of GNSS services.

158. The Subcommittee expressed its appreciation to the Office for Outer Space Affairs for its efforts in promoting the use of GNSS throughout its capacity-building initiatives and information dissemination, particularly in developing countries.

159. The Subcommittee noted that the ICG information centres, hosted by the regional centres for space science and technology education, affiliated to the United Nations, were working towards the establishment of a network of institutions involved or interested in GNSS. The main objective of the information centres was to enhance the capabilities of member States in using GNSS and related applications at the regional and international levels so as to advance their scientific, economic and social development. The centres coordinated their activities closely with ICG and its Providers' Forum through the Office for Outer Space Affairs.

160. The Subcommittee noted with appreciation the financial contributions made by the United States and the European Commission to the Office for Outer Space Affairs in support of GNSS-related activities, ICG, its Providers' Forum and its working groups.

161. The Subcommittee noted that a United Nations/Nepal workshop on the applications of GNSS had been held in Kathmandu from 12 to 16 December 2016. The focus of the workshop had been on the importance of and need for cooperation to apply GNSS solutions through the exchange of information and the scaling up of capacities among countries in the region. It also noted that a special seminar on GNSS spectrum protection and interference detection and mitigation had been organized during the workshop in order to highlight the importance of GNSS spectrum protection at the national level and explain how to reap the benefits of GNSS.

162. The Subcommittee noted with satisfaction that the eleventh meeting of ICG and the seventeenth meeting of the Providers' Forum, organized by Roscosmos on behalf of the Government of the Russian Federation, had been held in Sochi, Russian Federation, from 6 to 10 November 2016.

163. The Subcommittee noted that the items on the ICG meeting agenda covered compatibility and interoperability of satellite navigation systems; reference frames and timing; enhancement of GNSS performance; and development of new navigation services and capabilities. It also noted that ICG was progressing significantly in establishing an interoperable GNSS space service volume, and that exploiting the interoperability between all systems had allowed achievement of GNSS signal availability of very close to 100 per cent.

164. The Subcommittee welcomed the proposal by ICG for the Subcommittee to consider issues related to GNSS spectrum protection and interference detection and mitigation under its current agenda item on recent developments in GNSS. The Subcommittee noted that the intent behind the proposal was to raise awareness of the issue among States members of the Committee on the Peaceful Uses of Outer Space as part of efforts to promote the effective use of GNSS open services by the global community.

165. The Subcommittee noted that the twelfth meeting of ICG would be hosted by Japan, in Kyoto, from 2 to 7 December 2017. The Subcommittee also noted the expression of interest by China in hosting the thirteenth meeting of ICG, in 2018, by India to host the fourteenth meeting, in 2019, and by the Office for Outer Space Affairs to host the fifteenth meeting, in 2020.

166. The Subcommittee also noted that the Global Positioning System (GPS) of the United States continued to be a central pillar in the expansion of GNSS coverage and use, and that GPS accuracy currently averaged a user range error of 70 centimetres. It was noted that the United States continued to broadcast GPS signals free of direct user charges and continued to strongly support international cooperation for peaceful civil, commercial and scientific purposes among current and future GNSS providers.

167. The Subcommittee further noted that the United States had completed its implementation of the 12 GPS Block IIF satellites, which had led to incremental increases in overall system performance and more satellites transmitting the new civilian GPS signals known as "L2C" and "L5". The Subcommittee noted that the United States continued to work toward the launch of the next generation of satellites, GPS Block III, which would provide improved service with the broadcast of the third civilian signal, "L1C". Work on an upgraded ground control system, called "OCX", in support of the new GPS Block III satellites, would also continue.

168. The Subcommittee noted that the satellite-aided search and rescue programme known as Cospas-Sarsat, for which the Medium-altitude Earth Orbit Search and Rescue (MEOSAR) distress signals relayed by GPS and Galileo of the European Union were in early operational capability, had been used in search and rescue efforts. It also noted that the MEOSAR system had been using upgraded GPS satellites, GLONASS of the Russian Federation and Galileo of the European Union, orbiting in space at an altitude of between 19,000 and 24,000 km. It further noted that the MEOSAR system provided near-instantaneous distress alerts and locations

as well as significantly more satellites compared with the current constellations used in search and rescue.

169. The Subcommittee also noted that the civilian services of GLONASS were provided free of direct user charges, were accessible, effective and fully responsive to the needs of different users and that the launch of the latest GLONASS-M navigation satellite into orbit supported the space segment of the system.

170. The Subcommittee further noted that the System of Differential Correction and Monitoring, an augmentation of GLONASS, continued to be updated and was to be used in civil aviation for enhancing navigation precision. The provision of GLONASS-based precise point positioning to support applications requiring real-time access was being organized.

171. The Subcommittee noted that the interface control document for GLONASS Code Division Multiple Access signals in bands L1, L2 and L3 had been published. An open service performance standard was currently being developed, which demonstrated commitment to providing a basic performance standard for the system's users. The Subcommittee also noted that international cooperation existed that was aimed at making GLONASS an essential element of the international GNSS infrastructure, with benefits for users worldwide.

172. The Subcommittee also noted that the initial services of the European GNSS Galileo had been declared operational in December 2016. Galileo provided a range of state-of-the-art positioning, navigation and timing services to users worldwide. The Galileo constellation consisted of 18 satellites; however, the full constellation would consist of a total of 30 satellites and was expected to be completed by 2020.

173. The Subcommittee further noted that the BeiDou Navigation Satellite System, a global navigation satellite system compatible with other GNSS, had been established by China. The System was in full service and had provided positioning, navigation, timing and short-message communication services to the Asia-Pacific region since 2012. A new generation of satellites had been tested and verified in 2016, and between six and eight satellites were scheduled to be launched in 2017. The System would constitute a complete space constellation and would provide global coverage by 2020.

174. The Subcommittee noted that India was currently implementing its satellite navigation programme, which consisted of two systems: the GPS-aided Geostationary-augmented Navigation System (GAGAN), which was a satellite-based augmentation system, and the Indian Regional Navigation Satellite System (IRNSS), which was an independent regional system. GAGAN had been certified for Navigation Performance, 0.1 Nautical Mile service level and for Approach with Vertical Precision certification by the Directorate General of Civil Aviation of India, thus enabling en route navigation and precision approach services using GAGAN. The Subcommittee also noted that, in addition to using GAGAN in the aviation sector, India was taking initiatives to use it in non-aviation sectors.

175. The Subcommittee also noted that the IRNSS constellation, also known as NavIC, provided satellite-based navigation services. It consisted of seven satellites: three in geostationary orbits and four in geosynchronous orbits. All the seven IRNSS satellites, including IRNSS 1A and IRNSS 1G, had been put into orbit using the Polar Satellite Launch Vehicle of India. The IRNSS signal in space was being broadcast by IRNSS satellites and was being received successfully.

176. The Subcommittee further noted that the Quasi-Zenith Satellite System (QZSS), a Japanese satellite positioning system composed mainly of satellites in quasi-zenith orbits, was being developed, and that Michibiki, the first QZSS satellite, was currently performing all its functions. The QZSS satellite positioning function, which was compatible and interoperable with GPS, had been enabled to extend availability time by sharing the same positioning signals. In addition to positioning and GPS augmentation, QZSS could provide a messaging service that would contribute to disaster management.

177. The Subcommittee noted that QZSS would be expanded and upgraded to become an operational regional satellite-based navigation system to improve positioning in the Asia-Pacific region. A constellation of four satellites would be established and the formal operation would begin during the 2018 Japanese fiscal year. A constellation of seven satellites would enable sustainable positioning to be completed by around the 2023 Japanese fiscal year.

178. The Subcommittee noted with appreciation that Indonesia, Mexico and Pakistan had reported on their projects and activities in the use of GNSS technology for environmental management and protection, disaster risk reduction, agriculture and food security, emergency response, more efficient surveying and mapping and safer and more effective transportation by land, sea and air, as well as ionospheric and tropospheric scientific research. They had also reported on their efforts to ensure the participation of international partners in those projects and activities.

VIII. Space weather

179. In accordance with General Assembly resolution 71/90, the Scientific and Technical Subcommittee considered agenda item 10, “Space weather”.

180. The representatives of Canada, China, Egypt, Germany, Indonesia, Italy, Japan, Mexico, Pakistan, the Russian Federation and the United States made statements under agenda item 10. During the general exchange of views, statements relating to the item were made by representatives of other member States.

181. The Subcommittee heard the following scientific and technical presentations:

(a) “Opportunities in science and engineering with space applications at the National Institute for Space Research”, by the representative of Brazil;

(b) “Terrestrial *gamma*-ray flashes and lightning discharges”, by the observer for SCOSTEP;

(c) “Space weather: portfolio samples”, by the representative of Brazil.

182. The Subcommittee had before it the following:

(a) Conference room paper entitled “Steering committee meeting of the International Space Weather Initiative (ISWI), 19 February 2016: report on the adoption of an open data policy for the ISWI instrument network”, submitted by the rapporteur of the Expert Group on Space Weather (A/AC.105/C.1/2017/CRP.8);

(b) Conference room paper entitled “Space weather: views of France”, submitted by France (A/AC.105/C.1/2017/CRP.24);

(c) Conference room paper entitled “Progress report on the work of the Expert Group on Space Weather under UNISPACE+50 thematic priority 4, ‘International framework for space weather services’, at the fifty-fourth session of the Subcommittee”, submitted by the Rapporteur of the Expert Group on Space Weather (A/AC.105/C.1/2017/CRP.30).

183. The Subcommittee noted that space weather was an international concern because it had the potential to threaten the ground- and space-based infrastructure upon which society increasingly relied. As such, it needed to be addressed from a global perspective through international cooperation and coordination aimed at predicting potentially severe space weather events and mitigating their impacts. In that regard, the Subcommittee noted the importance of the continuous participation of countries worldwide in space-based and ground-based measurements and forecast services.

184. The Subcommittee also noted the importance of focused research that would lead to improvements in modelling and forecasting capabilities over time so as to understand both the drivers of space weather and the impact of space weather events on Earth and in space, with a view to ensuring appropriate planning and coordinated

responses from Member States and their national and international agencies in predicting and mitigating severe space weather events.

185. The Subcommittee welcomed with appreciation UNISPACE+50 thematic priority 4, “International framework for space weather services”, one of the seven UNISPACE+50 thematic priories endorsed by the Committee on the Peaceful Uses of Outer Space at its fifty-ninth session in 2016 (A/71/20, para. 296).

186. The Subcommittee welcomed the fact that the Expert Group on Space Weather, as the mechanism designated to pursue the objective of UNISPACE+50 thematic priority 4, with the substantive support of the Office for Outer Space Affairs, had undertaken steps to align its workplan with the objective of the thematic priority and had started to develop a strategy, taking into account its intersessional work and in coordination with the Office. The report was to be presented to the Subcommittee at its fifty-fifth session, in 2018.

187. The Subcommittee noted that a number of international and regional initiatives and programmes were aimed at addressing the potentially severe effects of space weather, such as “Understanding space weather to shield society: a global road map for 2015-2025” of COSPAR; International Living with a Star; the 2016-2019 four-year plan for activities related to space weather of WMO; the establishment of 18 regional warning centres under the International Space Environment Service, the Asia-Oceania Space Weather Alliance; and the scientific studies being undertaken at the regional forum of APSCO.

188. The Subcommittee also noted that, in order to foster international cooperation in the interests of maintaining continuous space weather monitoring in the future, including by filling gaps, as appropriate, it was critical to have open access to interoperable data. In that regard, the Subcommittee welcomed the progress made by the International Space Weather Initiative (ISWI) and noted with satisfaction the adoption by the ISWI steering committee of an open data policy, as presented to the Subcommittee (see A/AC.105/C.1/2017/CRP.8).

189. The Subcommittee further noted a number of national activities undertaken in space weather research, training and education to improve scientific and technical understanding of adverse space weather effects, with the aim of strengthening space weather resilience.

190. The Subcommittee noted with appreciation a number of global conferences and workshops held and planned on space weather, including the United Nations/United States workshop entitled “International Space Weather Initiative: the decade after the International Heliophysical Year 2007”, to be held in Boston, United States, from 31 July to 4 August 2017, which would be directly relevant to UNISPACE+50 thematic priority 4.

191. The Subcommittee noted that that workshop would mark the tenth anniversary of the International Heliophysical Year 2007, which had led to the creation of ISWI. The Subcommittee also noted that the workshop would focus on recent advances made in scientific research by utilizing ISWI instrument data in conjunction with space mission data to acquire significant new knowledge about space weather phenomena near Earth and in interplanetary space, and that the inputs received from the workshop would be used to further advance the work undertaken under UNISPACE+50 thematic priority 4.

192. The Subcommittee also noted that the Expert Group on Space Weather would be invited to contribute to the United Nations/United States workshop, in particular to the high-level international forum on the economic and societal effects of extreme space weather, which would be held on the first two days of the workshop.

193. The Subcommittee further noted that the Expert Group would engage in a number of other space weather workshops around the world and that it was planning to hold a meeting and workshop dedicated to UNISPACE+50 thematic priority 4 on

27 and 28 April 2017, on the margins of the congress of the European Geosciences Union to be held in Vienna, with the support of the Office for Outer Space Affairs.

194. The Subcommittee noted that the Office for Outer Space Affairs, as the body leading the Inter-Agency Meeting on Outer Space Activities (UN-Space), was preparing a special report on space weather, to be issued for consideration by the Committee at its sixtieth session, in June 2017, in the context of the preparations for UNISPACE+50.

195. The view was expressed that space weather was an important element in the effort to ensure the long-term sustainability of outer space activities and that it was important to work collaboratively towards an international framework of space weather services as part of UNISPACE+50.

196. At the 864th meeting of the Subcommittee, on 3 February, the rapporteur of the Expert Group on Space Weather presented the progress that the Expert Group had made on the margins of the current session of the Subcommittee, stressing the importance of working towards achieving the objectives of UNISPACE+50 thematic priority 4.

197. At its meetings held on the margins of the fifty-fourth session of the Subcommittee, which had been attended by more than 27 experts from 20 countries, the Expert Group had welcomed the mandate given to it by the Committee to work as the mechanism under UNISPACE+50 thematic priority 4, with the substantive support of the Office for Outer Space Affairs. The Expert Group had also welcomed the fact that, under the mechanism, space weather-related activities were also to be implemented through the capacity-building activities of the Office and through the role of the Office as the executive secretariat of ICG. The Expert Group had underlined that important synergies existed between the tasks set out in its existing workplan as endorsed by the Subcommittee in 2015 (A/AC.105/1088, para. 169) and the objectives of thematic priority 4. In that regard, the Expert Group had agreed to focus, during the coming year, on the preparation of a report for the mitigation of space weather effects, to be considered by the Subcommittee and the Committee as part of UNISPACE+50 in 2018.

198. The Expert Group had agreed to build on the successful outcomes of a space weather workshop entitled “From scientific discovery to applications, services and infrastructure protection” that it hosted on the margins of the fifty-third session of the Subcommittee, in February 2016. In that regard, the Expert Group had begun to develop a road map for international coordination and information exchange regarding space weather events and the mitigation of its adverse impacts through risk analysis and assessment of user needs, as required under the objectives of thematic priority 4.

199. The Expert Group had highlighted two main goals through which the Committee could make significant and actionable future contributions to the mitigation of the adverse impacts of space weather:

(a) Developing an improved basis for international monitoring, forecasting and warning procedures, especially in the form of more coordinated international communication and coordination of warnings of extreme space weather events. The Expert Group had noted that individual Member States had some existing capabilities in that regard upon which to build;

(b) Defining a set of best practices, operating procedures and actions to mitigate the adverse impacts of extreme space weather, which required a prior assessment in each Member State of its exposure to risks from space weather and related socioeconomic impacts, as well as defined operating procedures, developed in partnership with administrations responsible for critical infrastructure and civil protection.

200. The Expert Group had also continued to examine the potential future governance and cooperation mechanisms needed for the implementation of a

comprehensive space weather mechanism. In that regard, the Expert Group had underlined that it was important that the Committee, through the Office for Outer Space Affairs, established a clear relationship between its role and that of other United Nations entities and other space weather stakeholders, including WMO, ICAO, the International Space Environment Service, the Coordination Group for Meteorological Satellites, COSPAR, ISWI and SCOSTEP.

201. The Expert Group had expressed appreciation to the Office for Outer Space Affairs for its support and for its presentations on the governance structures in place in the areas of global navigation satellite systems and the associated mechanism of ICG, and on planetary defence and the associated mechanisms of IAWN and SMPAG.

IX. Near-Earth objects

202. In accordance with General Assembly resolution 71/90, the Scientific and Technical Subcommittee considered agenda item 11, “Near-Earth objects”.

203. The representatives of China, Germany, Indonesia, Japan, Mexico, Pakistan, the Republic of Korea, the Russian Federation and the United States, as well as the representative of Argentina, on behalf of the Group of Latin American and Caribbean States, made statements under agenda item 11. Statements were also made by the observers for ASE, IAU, IAWN and SMPAG. During the general exchange of views, statements relating to the item were made by representatives of other member States.

204. The Subcommittee heard the following scientific and technical presentations:

(a) “Evolution of a (fictional) asteroid threat: preparing for planetary defence”, by the observer for IAA;

(b) “Status report on the work of IAWN and SMPAG”, by the observers for IAWN and SMPAG;

(c) “NEO-related activity in Indonesia: assessment of present and future projections”, by the representative of Indonesia;

(d) “ESO’s role in ground-based observations of NEOs”, by the observer for ESO.

205. The Subcommittee had before it a status report by IAWN and SMPAG, submitted by the Chairs of IAWN and SMPAG (A/AC.105/C.1/2017/CRP.25).

206. The Subcommittee heard status reports by IAWN and SMPAG and noted with appreciation the efforts being made by IAWN and SMPAG to share information with regard to discovering, monitoring and physically characterizing potentially hazardous near-Earth objects in order to ensure 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. The Subcommittee also noted with appreciation their efforts to develop activities and build consensus on mitigating a potential near-Earth object threat, which, in the interest of public safety, required cooperative action by the global community.

207. The Subcommittee noted that, pursuant to General Assembly resolution 71/90, the Office for Outer Space Affairs was to serve as the permanent secretariat of SMPAG. It was informed by SMPAG about the finalization of funding arrangements with the Office in that regard.

208. The Subcommittee was informed about initial agreements by IAWN and SMPAG on the criteria and thresholds for impact response actions, which were contained in conference room paper A/AC.105/C.1/2017/CRP.25.

209. The Subcommittee noted that SMPAG had held its eighth meeting on 1 February, on the margins of the current session of the Subcommittee, supported by

the Office for Outer Space Affairs, and was informed of the progress made in work under the SMPAG workplan, as contained in the report on that meeting, available at http://smpag.net. The Subcommittee was informed that the SMPAG Ad Hoc Working Group on Legal Issues, established by SMPAG in 2016, had held its first meeting on 2 February, on the margins of the current session of the Subcommittee, to discuss its terms of reference and to identify and agree on the scope of questions and plan of work, in particular with regard to addressing possible legal questions related to SMPAG workplan items.

210. The Subcommittee noted that IAWN and the Office for Outer Space Affairs had initiated the establishment of an interface to facilitate general communication on near-Earth objects by the public, as well as for communication with Member States in the event of an impact warning. That was also linked to the UNISPACE+50 process, which was aimed at reinforcing some of the existing global coordination mechanisms in order to work towards strengthening the resiliency of societies and ensuring the long-term sustainability of outer space activities.

211. The Subcommittee welcomed with appreciation the proclamation by the General Assembly in its resolution 71/90 of International Asteroid Day, which would be observed annually on 30 June, the anniversary of the 1908 Tunguska impact over Siberia, Russian Federation. International Asteroid Day was intended as a global awareness-raising campaign to provide the public with information about the possible asteroid impact hazard and about the crisis communication efforts at the global level in case of a credible near-Earth object threat; the work undertaken by SMPAG and IAWN, facilitated by the Office for Outer Space Affairs; and the work undertaken in that area by the Committee on the Peaceful Uses of Outer Space and its member States.

212. The Subcommittee noted that nearly 19 million observations of asteroids had been collected in 2016 by the worldwide network of astronomical observatories in 76 countries. It also noted that the number of known near-Earth objects had exceeded 15,000 in October 2016 and currently totalled 15,688, of which 1,894 had been discovered in 2016, with 1,781 asteroids catalogued whose orbits took them within 8 million kilometres of Earth’s orbit.

213. The Subcommittee also noted a number of national and regional networks and projects whose work contributed to IAWN efforts to enhance capabilities to observe near-Earth objects. They included the Asia-Pacific Asteroid Observation Network and the Deep Ecliptic Patrol of the Southern Sky (DEEP-South) project by the Korea Astronomy and Space Science Institute.

214. The Subcommittee further noted a number of cooperative projects and asteroid observation missions, such as the JAXA sample return mission Hayabusa-2, scheduled to arrive at the target asteroid “Ryugu” in 2018, and the NASA sample return mission OSIRIS-Rex, launched in 2016 as an international mission with Canada, France and Japan and scheduled to arrive at the target asteroid “Bennu” in 2018.

215. The Subcommittee was informed of the progress of a number of international cooperative endeavours to pursue asteroid impact mitigation technology options, such as the European Union-funded NEOShield-2 project, coordinated by Airbus Defence and Space, Germany, with 11 partner organizations, the aim of which was to develop the demonstration mission concept to test the potential efficacy of the kinetic-impactor deflection method; and the double asteroid redirection test, which was part of the Asteroid Impact and Deflection Assessment mission jointly undertaken by ESA and NASA.

216. The Subcommittee noted a number of national activities and preparedness plans relating to near-Earth objects, including the National Near-Earth Objects Preparedness Strategy of the United States, issued on 30 December 2016 and prepared by the Interagency Working Group for Detecting and Mitigating the Impact

of Earth-Bound Near-Earth Objects, which was co-chaired by NASA and the White House Office of Science and Technology Policy.

217. The Subcommittee also noted that IAA would hold its fifth International Planetary Defence Conference in Tokyo from 15 to 19 May 2017. The conference would bring together international experts from across a variety of relevant disciplines to discuss the detection and characterization of the potential hazard to the Earth posed by asteroids and comets, and actions that could be taken to prevent or minimize the devastating effects of an asteroid impact.

218. The Subcommittee further noted that the next meetings of the IAWN steering committee and SMPAG would take place during the week beginning 9 October 2017, either in Europe or the United States, to review progress, current issues and future milestones.

X. Use of nuclear power sources in outer space

219. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 12, “Use of nuclear power sources in outer space”.

220. The representatives of China, Indonesia, Mexico, Oman, Pakistan, the Russian Federation, the United States and Venezuela (Bolivarian Republic of), as well as the representative of Argentina, on behalf of the Group of Latin American and Caribbean States, made statements under agenda item 12. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

221. The Subcommittee heard a scientific and technical presentation entitled “Safety recommendations for nuclear power source applications in outer space”, by the representative of the United Kingdom.

222. The Subcommittee had before it the following:

(a) Draft report on the implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space and general recommendations for potential future work, prepared by the Working Group on the Use of Nuclear Power Sources in Outer Space (A/AC.105/C.1/L.359);

(b) Working paper submitted by the United Kingdom on safety recommendations for nuclear power source applications in outer space (A/AC.105/C.1/L.360);

(c) A conference room paper submitted by France entitled “Proposal to revise the Principles Relevant to the Use of Nuclear Power Sources in Outer Space adopted by the General Assembly in its resolution 47/68 of 14 December 1992” (A/AC.105/C.1/2016/CRP.7).

223. The Subcommittee 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 jointly with the International Atomic Energy Agency.

224. Some delegations expressed the view that NPS should be used on board spacecraft only for deep space missions, or when their use was unavoidable.

225. The Subcommittee noted that some States were developing, or considering developing, national legal and regulatory instruments on the safety of the use of NPS 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.

226. Some delegations expressed the view that the Safety Framework represented a significant advance in the development of safe NPS applications and that the implementation of the Safety Framework by Member States and international

intergovernmental organizations would provide assurance to the global public that NPS applications for use in outer space were being developed, launched and used in a safe manner.

227. The Subcommittee agreed that, in order to encourage the sharing of best practices and substantiate national commitments to safety, it was important to continue to share, within the framework of the Working Group on the Use of Nuclear Power Sources in Outer Space and under the present agenda item, experiences in implementing the guidance contained in the Safety Framework and in satisfying the intent of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space, and for Member States and intergovernmental organizations with experience with NPS missions to engage in discussions about advances in knowledge and practices and their potential for enhancing the technical content and scope of the Principles.

228. Some delegations expressed the view that more consideration should be given to the use of NPS in terrestrial orbits in order to address the problem of potential collisions of objects with NPS on board and to the accidental re-entry of NPS into the Earth's atmosphere. Those delegations were also of the view that more attention should be given to that matter through the formulation of adequate strategies, long-term planning, the issuance of regulations and the promotion of binding standards, as well as observance of the Safety Framework.

229. Some delegations expressed the view that serious consideration should be given to the protection of the Earth's biosphere from potential risks associated with the launch, operation and decommissioning of NPS applications.

230. Some delegations expressed the view that, for more than five and a half decades, NPS applications had played a critical role in the exploration of space, enabling missions of scientific discovery to destinations across the solar system.

231. The view was expressed that the use of NPS applications should be in conformity with international law, the Charter of the United Nations and United Nations treaties and principles on outer space, in particular the Outer Space Treaty.

232. Some delegations expressed the view that, in order to ensure the safe use of NPS, it would be important for space actors with proven capabilities in that field to make available to other States their know-how and information on measures taken to ensure the safety of objects using NPS.

233. Some delegations expressed the view that the regulatory process associated with the use of NPS in outer space was the exclusive responsibility of States, irrespective of their level of social, economic, scientific or technical development, and that the matter concerned all humanity. Those delegations were also of the view that Governments bore international responsibility for national activities involving the use of NPS in outer space conducted by governmental and non-governmental organizations alike, and that such activities must be beneficial, not detrimental, to humanity.

234. The view was expressed that the effects of the use of NPS in outer space on humans and the environment had not been identified, that there still was no clearly defined regulatory framework for establishing the responsibilities of States with regard to the use of NPS and that potentially critical situations arising from irresponsible practices in that area had not been addressed. The delegation expressing that view was also of the view that, in that connection, the Safety Framework in its current form was still insufficient.

235. The view was expressed that, to date, the Working Group on the Use of Nuclear Power Sources in Outer Space had not identified any challenges to implementing the Safety Framework that would require any modifications or additions to it. The delegation expressing that view was also of the view that, based on a practical assessment of and experience with the Safety Framework, the Framework provided a comprehensive and sufficient foundation for guidance for

Member States and international intergovernmental space organizations to develop and operate their own NPS applications for use in outer space in a safe manner.

236. Pursuant to General Assembly resolution 71/90, the Subcommittee, at its 855th meeting, on 30 January, reconvened its Working Group on the Use of Nuclear Power Sources in Outer Space under the chairmanship of Sam A. Harbison (United Kingdom).

237. The Working Group on the Use of Nuclear Power Sources in Outer Space held four meetings. At its 871st meeting, on 9 February, the Subcommittee endorsed the report and recommendations of the Working Group, including its new multi-year workplan (contained in annex II, paragraph 9, to the present report).

XI. Long-term sustainability of outer space activities

238. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 13, "Long-term sustainability of outer space activities", under the workplan contained in the report of the Committee on the Peaceful Uses of Outer Space on its fifty-fourth session (A/66/20, annex II) and as extended by the Committee at its fifty-seventh and fifty-ninth sessions (A/69/20, para. 199 and A/71/20, para. 137).

239. The representatives of Australia, Austria, Canada, China, France, Germany, India, Indonesia, Iran (Islamic Republic of), Italy, Japan, Pakistan, the Russian Federation, South Africa, Switzerland, the United Kingdom, the United States and Venezuela (Bolivarian Republic of) made statements under agenda item 13. A statement was made under the item by the representative of Argentina on behalf of the Group of Latin American and Caribbean States. The observer for the Secure World Foundation also made a statement. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

240. The Subcommittee had before it the following:

(a) Note by the Secretariat entitled "Guidelines for the long-term sustainability of outer space activities" (A/AC.105/C.1/L.354/Rev.1);

(b) Working paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities entitled "Outline for the report of the Working Group on the Long-term Sustainability of Outer Space Activities" (A/AC.105/C.1/L.357);

(c) Working paper submitted by the Russian Federation entitled "Further ideas on a set of goals for achieving the Vienna consensus on space security and the need for thorough reflection on the modalities of addressing the complex issues associated with space traffic management and the justifiability of the high expectations of early decisions in the area" (A/AC.105/C.1/L.361);

(d) Working paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities entitled "Proposals for the guidelines for the long-term sustainability of outer space activities" (A/AC.105/C.1/2017/CRP.13);

(e) Conference room paper submitted by the United Kingdom on the country's implementation of the first set of guidelines for the long-term sustainability of outer space activities (A/AC.105/C.1/2017/CRP.21);

(f) Conference room paper submitted by France on French activities relating to and views on the long-term sustainability of outer space activities in relation to the implementation of the first set of guidelines (A/AC.105/C.1/2017/CRP.26);

(g) Working paper submitted by the Russian Federation entitled "Considerations aimed at facilitating a broader systemized understanding of the objective dimensions of issues and the functional dimensions of solutions related to

sharing information on the situation in outer space in the context of deciding on the establishment of a working group on enhanced information exchange on space objects and events" (A/AC.105/C.1/2017/CRP.27);

(h) Working paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities entitled "Guidelines for the long-term sustainability of outer space activities" (A/AC.105/C.1/2017/CRP.29);

(i) Working paper submitted by Canada, France, Germany, Italy, Japan, Romania, Sweden, the United Kingdom and the United States containing a proposal for an expert group on space objects and events (A/AC.105/L.302).

241. In accordance with General Assembly resolution 71/90, the Working Group on the Long-term Sustainability of Outer Space Activities was reconvened under the chairmanship of Peter Martinez (South Africa).

242. The Subcommittee welcomed the agreement reached at the fifty-ninth session of the Committee on a first set of guidelines on which negotiations had been carried out and concluded (A/71/20, para. 133) and recalled that the mandate of the Working Group had been extended for a further two years by the Committee (A/71/20, para. 137), with a view to developing a second set of guidelines that would be brought together with the preambular text and the first set of guidelines to form a full compendium of guidelines to be adopted by the Committee and referred to the General Assembly in 2018, to coincide with UNISPACE+50 (A/71/20, para. 133).

243. The Subcommittee also welcomed the progress made by the Working Group on the Long-term Sustainability of Outer Space Activities since its most recent meeting, including the work undertaken during the fifty-ninth session of the Committee and during the third intersessional meeting of the Working Group, held in Vienna from 19 to 23 September 2016.

244. Some delegations expressed the view that the first set of guidelines for the long-term sustainability of outer space activities (A/71/20, annex), agreed to by the Committee at its fifty-ninth session, in June 2016, represented a milestone in international cooperation in the peaceful uses of outer space.

245. The view was expressed that the successful completion of a full compendium of guidelines would strengthen the role of the Committee as the anchor institution of the United Nations for space governance.

246. The view was expressed that the Committee and its Subcommittees had a fundamental role in addressing the long-term sustainability of outer space activities, as that was a topic that demanded a multilateral approach and needed to be addressed at the international level.

247. The view was expressed that it was imperative that the process to ensure the long-term sustainability of outer space activities within the Subcommittee succeeded in order to underscore and strengthen the role of the Committee as the leading multilateral forum for the progressive development and codification of space law and norms guiding the actions of States in outer space.

248. The view was expressed that the Working Group should not lose sight of the international community's common goal to develop a best practice compendium of broadly agreeable, non-binding guidelines to contribute to ensuring the sustainability of outer space activities for generations to come.

249. Some delegations expressed the view that the completion of a final compendium of guidelines for the long-term sustainability of outer space activities would represent an important contribution to the UNISPACE+50 process.

250. The view was expressed that those topics for which it might not be possible to complete specific guidelines by the fifty-fifth session of the Subcommittee could be considered further using the mechanisms specified under the relevant thematic priorities of UNISPACE+50. In that context, the thematic priorities on the legal

regime of outer space global space governance and on enhanced information exchange on space objects and events, the mechanisms of which included coordination with the Working Group, were specifically underscored.

251. Some delegations expressed the view that it should be possible for the Working Group to reach a consensus on an additional number of guidelines during the current session of the Subcommittee.

252. Some delegations expressed the view that the limited amount of time left to discuss the remaining draft guidelines was of concern, and that it was essential for the Working Group to adopt an efficient method of work whereby provisionally agreed draft guidelines would be set aside as they reached maturity and would not be re-examined until the adoption of the second set of guidelines.

253. The view was expressed that work on the second set of guidelines should be conducted in a spirit of equality and in an open and tolerant manner, with all comments welcomed and all parties listened to.

254. The view was expressed that the Working Group should encourage more countries, especially developing countries, to actively participate in its consultations and negotiations.

255. Some delegations expressed the view that all delegations should embrace the "Vienna spirit" of negotiations and should contribute constructively to the ongoing efforts of the Working Group.

256. Some delegations expressed the view that the decision by the Working Group to hold a fourth intersessional meeting in Vienna, just prior to the sixtieth session of the Committee, was a welcome one, and that they hoped that the same "Vienna spirit" of flexibility and cooperation that had characterized the third intersessional meeting of the Working Group, in 2016, would lead to substantial and demonstrable progress being made on the remaining draft guidelines.

257. The view was expressed that the work on the guidelines for the long-term sustainability of outer space activities would only be completed once a complete version of all guidelines was available that took into account the interests of all States. The delegation expressing that view also stated that it reserved the right to comment on any guideline at any time.

258. The view was expressed that the Working Group should formulate a detailed workplan to clarify the order in which the guidelines would be discussed at subsequent intersessional meetings and at the sixtieth session of the Committee, in June 2017. The delegation expressing that view also stated that, once a decision was taken on the order in which the guidelines would be considered, the Working Group should strictly follow that order during consultations, so that all member States, especially those who were not native English speakers, could be better prepared for the discussions.

259. The view was expressed that all guidelines for the long-term sustainability of outer space activities must align with current international law on outer space activities.

260. The view was expressed that the guidelines were intended to compensate for the deficiencies of existing legal regulation through the voluntary, dedicated development of good and responsible practices that would include practices pertaining to registration, and that space safety and security trends were such that strengthening the legal regime and normative regulations for outer space activities was of paramount importance. The delegation expressing that view was also of the view that the guidelines should be standardized, bearing in mind existing space law and not the practice of non-participation in major multilateral space treaties.

261. Some delegations expressed the view that the legal aspects of some of the topics under consideration by the Working Group should be discussed in the Legal Subcommittee.

262. Some delegations expressed the view that outer space should be used exclusively for peaceful purposes and that all legal means should be sought to preserve outer space for such purposes. Delegations expressing that view also stated that the lack of agreed definitions for the terms “arms” or “weapons” or the lack of progress in other specialized forums on non-militarization should not prevent the Committee from taking decisions reaffirming the use of outer space for exclusively peaceful purposes.

263. The view was expressed that two new sections were needed in the guidelines document: one focusing on definitions and another focusing on principles.

264. Some delegations expressed the view that the guidelines for the long-term sustainability of outer space activities should protect the interests of developing countries and emerging space nations and not limit their access to outer space.

265. Some delegations expressed the view that the guidelines for the long-term sustainability of outer space activities should not become an instrument for countries that had traditionally managed space technology to impose restrictions on other countries. The delegations expressing that view also stated that it was the right of each State to develop and use space technology as a fundamental tool to improve the living conditions of its inhabitants.

266. The view was expressed that special importance should be given to the technical aspects of ensuring the long-term sustainability of space activities, and that emphasis should be placed on international cooperation and the transfer of technology as effective means to promote research programmes and build capacity in countries with emerging space capabilities.

267. Some delegations expressed the view that States should begin to focus their attention on implementing the guidelines.

268. The view was expressed that it might be useful to agree that each member State would submit a report on the status of its implementation of the guidelines, taking into consideration that the guidelines were not legally binding and that their implementation was voluntary. The delegation expressing that view also stressed the importance of gathering and sharing information, insights and experiences, ensuring transparency and building mutual confidence in a constructive atmosphere.

269. The view was expressed that the guidelines should be effective, practicable, concise and based on evidence and best practice.

270. Some delegations expressed the view that issues related to the long-term sustainability of outer space activities should be considered in the light of the conclusions set out in the report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities (contained in A/68/189).

271. The view was expressed that some of the proposed guidelines could be considered as potential measures to build transparency and confidence, whereas others could provide the technical basis for the implementation of other measures to strengthen stability in outer space.

272. The Subcommittee welcomed the side event on the theme “Long-term sustainability guidelines implementation: an open dialogue”, organized by the Permanent Mission of the United Kingdom, which had provided a valuable opportunity for member States to exchange views on their experiences and expectations on implementation of the guidelines, and noted the related conference room papers submitted by the United Kingdom and France on their experiences implementing the first set of guidelines (A/AC.105/C.1/2017/CRP.21 and A/AC.105/C.1/2017/CRP.26).

273. At its 872nd meeting, on 9 February, the Subcommittee endorsed the report of the Working Group on the Long-term Sustainability of Outer Space Activities, which is contained in annex III to the present report.

XII. 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

274. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 14, "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", as a single issue/item for discussion.

275. The representatives of Indonesia, Oman, Pakistan, the Russian Federation, South Africa and Venezuela (Bolivarian Republic of), as well as the representative of Argentina, on behalf of the Group of Latin American and Caribbean States, made statements under agenda item 14. During the general exchange of views, statements relating to the item were made by representatives of member States and by the observer for ITU.

276. The Subcommittee heard the following scientific and technical presentations:

(a) "Pioneering last-mile logistics in space", by the representative of Israel;

(b) "Report of the International Telecommunication Union on the use of the geostationary satellite orbit and other orbits", by the observer for ITU.

277. The Subcommittee noted with appreciation the information provided in the annual report for 2016 of the Radiocommunication Bureau of ITU on the use of the geostationary satellite orbit and other orbits (see www.itu.int/ITU-R/space/snl/report/), as well as other documents referred to in conference room paper A/AC.105/C.1/2017/CRP.14. The Subcommittee invited ITU to continue to submit reports to it.

278. 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 exploitation 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, in accordance with the decisions of ITU and within the legal framework established in the relevant United Nations treaties.

279. 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.

280. Some delegations expressed the view that the geostationary orbit provided unique potential for access to communications and information, in particular for assisting developing countries in implementing social programmes and educational projects, disseminating knowledge and providing medical assistance.

281. Some delegations expressed the view that the utilization by States of the geostationary orbit on the basis of “first come, first served” was unacceptable and that the Subcommittee, with the involvement of ITU, should therefore develop a regime guaranteeing equitable access to orbital positions for States.

282. The view was expressed that the current regime for the exploitation and utilization of the geostationary orbit provided opportunities mostly to the countries with greater financial and technical capabilities and, in that connection, there was a need to take anticipatory measures to address the potential dominance of such countries in the utilization of space in order to address the needs of developing countries and of countries in particular geographical areas, such as those in equatorial regions.

283. Some delegations expressed the view that the current system of reserving slots in the geostationary orbit was abused by a number of satellite operators, which obtained dozens or even hundreds of orbital positions for the purpose of reselling them at more expensive prices, thereby hindering the development of the space programmes of those willing to utilize that unique orbit diligently. The delegations expressing that view were also of the view that the distribution of those critical locations should be made fairly, in accordance with the principle of equality and taking into account the limited character of the orbit, and that each State should have at least two orbital slots reserved in the location near its national territory.

284. The view was expressed that the exchange of information on the use of the geostationary orbit could be an effective measure serving the needs of States with regard to its efficient use. The delegation expressing that view was also of the view that the first steps towards such information exchange could be the establishment of communication between the Subcommittee and ITU-R study group 4, and the inclusion of an item on increasing the efficiency and exchange of information regarding the use of orbital and frequency resources of the geostationary orbit in the agenda of the World Radiocommunication Conference 2019.

285. Some delegations expressed the view that, in order to ensure the sustainability of the geostationary orbit, as well as to assure guaranteed and equitable access to the geostationary orbit based on the needs of all nations, taking into particular account the needs and interests of developing countries, it was necessary to keep that issue on the agenda of the Subcommittee and to explore it further, through the creation of appropriate working groups and legal and technical intergovernmental panels, as necessary.

XIII. Draft provisional agenda for the fifty-fifth session of the Scientific and Technical Subcommittee

286. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 15, “Draft provisional agenda for the fifty-fifth session of the Scientific and Technical Subcommittee”.

287. The Subcommittee noted that the Secretariat had scheduled the fifty-fifth session of the Subcommittee to be held from 29 January to 9 February 2018.

288. The Subcommittee also noted that, in accordance with General Assembly resolution 71/90, it would submit to the Committee its proposal on the draft provisional agenda for the fifty-fifth session of the Subcommittee and recommended that the following items be included in the draft provisional agenda:

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. Use of nuclear power sources in outer space.

(Work for 2018 as reflected in the multi-year workplan of the Working Group (see para. 237 and annex II, para. 9, to the present report))

14. Long-term sustainability of outer space activities.

(Work for 2018 as reflected in the extended multi-year workplan of the Working Group (A/71/20, para. 137))

15. 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)

16. Draft provisional agenda for the fifty-sixth session of the Scientific and Technical Subcommittee.

17. Report to the Committee on the Peaceful Uses of Outer Space.

289. The Subcommittee agreed that the topic for the symposium to be organized in 2018 by the Office for Outer Space Affairs should be "Expanding horizons: the case for industry engagement in UNISPACE+50 and beyond".

290. The Subcommittee took note of the proposal made by ICG (A/AC.105/C.1/2017/CRP.18) and agreed that, under the agenda item on recent developments in global navigation satellite systems, a general exchange of information should be included on issues related to GNSS spectrum protection and interference detection and mitigation, with a view to raising awareness of efforts to achieve the overall goal of promoting effective use of GNSS open services by the global community. In that context, the Subcommittee encouraged States members and permanent observers of the Committee to participate in the focused exchange of information under the item.

291. The Subcommittee noted that the Action Team on Space Exploration and Innovation had held two meetings on the margins of the present session of the Subcommittee under the co-chairmanship of China, Jordan and the United States, with a view to preparing its terms of reference and finalizing its report for UNISPACE+50, in 2018. The Subcommittee encouraged States members and permanent observers of the Committee to nominate focal points for the Action Team.

292. The Subcommittee recalled the agreement reached at its fifty-second session, in 2015 (A/AC.105/1088, para. 275), and considered that it was necessary to add

further measures related to the management of scientific and technical presentations. The Subcommittee therefore decided that: (a) States members and observers of the Committee should communicate to the Secretariat no later than one week before each session of the Subcommittee their wish to make scientific and technical presentations; and (b) the Secretariat would take the necessary decisions in the scheduling of presentations in the interest of the smooth running of the sessions.

Annex I

Report of the Working Group of the Whole

1. In accordance with paragraph 8 of General Assembly resolution 71/90, the Scientific and Technical Subcommittee, at its fifty-fourth session, reconvened its Working Group of the Whole.

2. From 2 to 10 February 2017, the Working Group held five meetings, under the chairmanship of Mylswami Annadurai (India). The Working Group considered the following items:

(a) Preparations for UNISPACE+50;

(b) Space technology for sustainable socioeconomic development;

(c) Draft provisional agenda for the fifty-fifth session of the Scientific and Technical Subcommittee.

3. The Working Group had before it the documents listed in paragraph 68 of the report of the Subcommittee on its fifty-fourth session.

4. At its 5th meeting, on 10 February, the Working Group adopted the present report.

I. Preparations for UNISPACE+50

5. At the 1st meeting of the Working Group, the Director of the Office for Outer Space Affairs of the Secretariat informed the Working Group of the status of preparations for UNISPACE+50, in 2018. With reference to a number of documents submitted to the Subcommittee at its fifty-fourth session, she gave a strategic overview of the preparations for UNISPACE+50, including actions taken and activities being prepared under the UNISPACE+50 thematic priorities, as defined by the Committee on the Peaceful Uses of Outer Space at its fifty-ninth session (A/71/20, para. 296).

6. The Director, in her statement, underlined the importance of adhering to organizational, administrative and reporting timelines for substantive activities that generated recommendations for UNISPACE+50. She said that the Office was dedicated to working with member States and all relevant stakeholders towards UNISPACE+50 and beyond in order to build a foundation for a comprehensive “Space2030” agenda that would help define the role of space activities in both addressing overarching long-term development concerns and contributing to global efforts towards achieving the goals and targets of the 2030 Agenda for Sustainable Development. For that reason, the Office required support, both financial and in kind, from member States and organizations.

7. The Working Group welcomed the progress made in the overall preparations under the UNISPACE+50 thematic priorities. The Working Group commended the Office for the achievements made to date in the preparations for UNISPACE+50 and for the activities planned.

8. The Working Group reiterated that UNISPACE+50 presented a unique opportunity to position space as a driver for socioeconomic sustainable development and to strengthen the role of the Committee, its subsidiary bodies and the Office for Outer Space Affairs as the centre of international cooperation in the peaceful uses of outer space and the governance of outer space activities.

9. The Working Group noted with satisfaction that the newly established Action Team on Space Exploration and Innovation, under the thematic priority on global partnership in space exploration and innovation, had held meetings on the margins of the current session of the Subcommittee, under the co-chairmanship of China,

Jordan and the United States of America, and that it had advanced its work by developing its terms of reference.

10. The Working Group also noted with satisfaction the progress made under other thematic priorities during the current session of the Subcommittee, as reported in the report of the Subcommittee on its fifty-fourth session, in particular on the thematic priorities entitled “International framework for space weather services” and “Strengthened space cooperation for global health”. The work on those thematic priorities had been undertaken by the Expert Group on Space Weather, chaired by Canada, and the Expert Group on Space and Global Health, co-chaired by Canada and Switzerland. The work of the expert groups was substantively supported by the Office for Outer Space Affairs.

11. The Working Group noted with appreciation that, as part of the preparations for UNISPACE+50 and with the aim of advancing the debate on the role of space science and technology in fostering global development, a high-level forum on space as a driver for socioeconomic sustainable development had been held in Dubai, United Arab Emirates, from 20 to 24 November 2016, organized by the Office for Outer Space Affairs in collaboration with the Government of the United Arab Emirates.

12. The Working Group also noted with appreciation that the 2017 high-level forum, under the leadership of the Office for Outer Space Affairs, would also be held in Dubai, United Arab Emirates, from 6 to 9 November 2017. That forum would focus on building stronger partnerships among space actors. It was noted that Germany had offered to host and co-organize the 2018 forum, to be held in the second half of that year in Bonn. That forum would focus on the implementation of UNISPACE+50 deliverables and outcomes towards a Space2030 agenda and would be co-sponsored by the European Space Agency.

13. The Working Group acknowledged the need for the Office to be able to build stronger partnerships with Governments, international intergovernmental and non-governmental organizations and non-governmental entities, in order to provide enhanced support to developing countries and to further the objectives of the UNISPACE+50 process. It requested the Office to apprise the Committee at its sixtieth session, in 2017, on developments in that regard, including by submitting a revised version of A/AC.105/C.1/2017/CRP.20.

14. The Working Group considered the preparations under thematic priority 3, on enhanced information exchange on space objects and events, taking into account the work of the Working Group on the Long-term Sustainability of Outer Space Activities.

15. The Working Group noted several issues to be taken into account in order to decide upon an adequate way forward under that thematic priority. Those issues included: (a) the need to further assess the most appropriate mechanism, such as a possible new working group or expert group under the current agenda item of the Subcommittee on the long-term sustainability of outer space activities, or a new agenda item; (b) the composition of the dedicated chairmanship of such a mechanism; and (c) the period of a corresponding multi-year workplan, possibly starting from 2019, pending further consideration of the relationship between the objective and the planned outcome of the thematic priority and the current work of the Working Group on the Long-term Sustainability of Outer Space Activities. Related proposals submitted or to be submitted by States members of the Committee would form the basis for further work.

16. The Working Group recommended that the Committee on the Peaceful Uses of Outer Space further consider those issues referred to in paragraph 15 above, and others that might arise, during its sixtieth session, in June 2017, with a view to making progress towards establishing a dedicated mechanism under that thematic priority.

17. The Working Group noted that, in order to achieve timely progress under all thematic priorities, the Committee, at its sixtieth session, should consider the overall status of preparations and evaluate the need for further measures and actions to successfully meet the objectives of the UNISPACE+50 process.

18. The Working Group exchanged views relating to the "Dark and quiet skies" proposal for protecting the environmental observing conditions for large astronomical observatories and world citizens, submitted by the International Astronomical Union (IAU) (A/AC.105/C.1/2017/CRP.17).

19. Some delegations underlined the importance of the matter and called for the minimizing of light pollution.

20. The Working Group agreed that the Office for Outer Space Affairs should submit the proposal to the United Nations Educational, Scientific and Cultural Organization (UNESCO), with a view to obtaining an official reply from UNESCO on the matter.

21. The Working Group encouraged IAU to attend the sixtieth session of the Committee, in June 2017, at which further consideration should be given to the proposal.

II. Space technology for sustainable socioeconomic development

22. The Working Group noted that the Expert Group on Space and Global Health had held its third meeting on 2 and 3 February 2017, on the margins of the current session of the Subcommittee. The meeting had been held under the co-chairmanship of Canada and Switzerland and the aim of the meeting had been to advance the Expert Group's work under items 2 and 3 of the workplan presented at the fifty-second session of the Subcommittee (A/AC.105/1088, annex I, para. 7 (b)) and to discuss the involvement of the Expert Group in preparations for UNISPACE+50 thematic priority 5, on strengthened space cooperation for global health.

23. The Working Group also noted that the Expert Group had reviewed and discussed various key activities held during the previous year that were relevant to the application of space science and technology to global health. The Expert Group had also discussed ways to further strengthen interagency cooperation, both domestically and internationally, between space and health organizations and ways to increase awareness of the benefits that space technologies could offer the global health community.

24. The Working Group took note of the roadmap developed by the Expert Group (see A/AC.105/C.1/2017/CRP.28) in order to set out the next steps in developing the appropriate components underpinning the thematic priority on strengthened space cooperation for global health. It noted that, as part of that roadmap, the Expert Group had agreed to support the preparations for a conference on space and global health to be organized jointly by the Office for Outer Space Affairs and the World Health Organization. The conference would be sponsored by the Government of Switzerland, and possibly co-sponsored by other relevant organizations and stakeholders. The conference would be held in Geneva in 2017.

III. Draft provisional agenda for the fifty-fifth session of the Scientific and Technical Subcommittee

25. The Working Group noted that, in accordance with General Assembly resolution 71/90, the Scientific and Technical Subcommittee would submit to the Committee its proposal for the draft provisional agenda for the fifty-fifth session of the Subcommittee, to be held in 2018.

26. The Working Group agreed that the topic for the 2018 symposium to be organized by the Office for Outer Space Affairs, in accordance with the agreement reached by the Subcommittee at its forty-fourth session, in 2007 (A/AC.105/890, annex I, para. 24), should be “Expanding horizons: the case for industry engagement in UNISPACE+50 and beyond”.

27. The Working Group exchanged views on the logistical challenges posed by a high number of technical presentations being given, keeping in mind that it demonstrated a high level of interest among experts, and recommended that the issue of scheduling technical presentations and any other organizational matters, as well as the draft provisional agenda of the Subcommittee, be considered by the Subcommittee, under its agenda item 15.

Annex II

Report of the Working Group on the Use of Nuclear Power Sources in Outer Space

1. Pursuant to General Assembly resolution 71/90, the Subcommittee, at its 855th meeting, on 30 January, reconvened its Working Group on the Use of Nuclear Power Sources in Outer Space under the chairmanship of Sam A. Harbison (United Kingdom of Great Britain and Northern Ireland).

2. The Working Group recalled the objectives of its multi-year workplan for the period 2010-2015, adopted by the Subcommittee at its forty-seventh session, in 2010 (A/AC.105/958, annex II, para. 8) and extended to 2017 by the Subcommittee at its fifty-first session, in 2014 (A/AC.105/1065, annex II, para. 9):

(a) To promote and facilitate the implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space by providing information pertinent to challenges faced by member States and international intergovernmental organizations, in particular those considering or initiating involvement in applications of nuclear power sources (NPS) in outer space;

(b) To identify any technical topics for, and establish the objectives, scope and attributes of, any potential additional work by the Working Group to further enhance safety in the development and use of space NPS applications. Any such additional work would require the approval of the Subcommittee and would be developed with due consideration for relevant principles and treaties.

3. The Working Group had before it the following:

(a) Draft report on the implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space and general recommendations for potential future work (A/AC.105/C.1/L.359);

(b) Working paper submitted by the United Kingdom on safety recommendations for nuclear power source applications in outer space (A/AC.105/C.1/L.360).

4. The Working Group took note of the presentation entitled “Safety recommendations for nuclear power source applications in outer space”, which had been made to the Subcommittee by the representative of the United Kingdom.

5. In accordance with its multi-year workplan, the Working Group continued its consideration of document A/AC.105/C.1/L.359 and prepared its report on the status of implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space and its recommendations for future work.

6. The amended and finalized report and recommendations were before the Subcommittee in a conference room paper (A/AC.105/C.1/2017/CRP.23). The Working Group requested the Secretariat to make that conference room paper available as a revision to document A/AC.105/C.1/L.359 immediately after the current session of the Subcommittee and in all official languages of the United Nations.

7. Based on the results of the current multi-year workplan, and taking note of potential opportunities for further enhancing safety in the use of space NPS, the Working Group reached consensus on the following recommendations:

(a) The Subcommittee should continue to encourage and provide opportunities for:

(i) States members of the Committee and intergovernmental organizations involved in space NPS mission applications, or planning or considering such involvement, to report on their progress in implementing the Safety

Framework and to identify challenges and experiences relevant to implementing the Safety Framework;

(ii) States members of the Committee and intergovernmental organizations with experience in space NPS to share information relevant to addressing those challenges;

(iii) Presentations by States members of the Committee with experience in space NPS applications on their mission-specific experiences in implementing the guidance contained in the Safety Framework and in satisfying the intent of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space;

(b) The Subcommittee should provide the opportunity for States members of the Committee and intergovernmental organizations to engage in discussions within the Working Group about advances in knowledge and practices and their potential for enhancing the technical content and scope of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space.

8. The Working Group prepared a new multi-year workplan encompassing the recommendations, and with the following objectives:

Objective 1. Promote and facilitate the implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space by:

(a) Providing an opportunity for member States and international intergovernmental organizations considering or initiating involvement in space NPS applications to summarize and discuss their plans, progress to date and any challenges faced or foreseen in implementing the Safety Framework;

(b) Providing an opportunity for member States and international intergovernmental organizations with experience in space NPS applications to make presentations on challenges identified under subparagraph (a) above, and on their mission-specific experiences in implementing the guidance contained in the Safety Framework.

Objective 2. Discuss within the Working Group advances in knowledge and practices and their potential for enhancing the technical content and scope of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space through presentations from member States and international intergovernmental organizations based on one or more of the following:

(a) Their practical experience in implementing the Principles;

(b) Their knowledge of advances in science and technology relating to space NPS;

(c) Their knowledge of internationally accepted norms, standards and practices regarding radiation protection and nuclear safety.

9. The Working Group agreed that it would advance those objectives by conducting the following workplan for the period 2017-2021:

2017 Conduct intersessional work by holding teleconferences and meetings, as necessary, in order to prepare for activities to be implemented under the workplan. Request the Secretariat to invite, by no later than April 2017, States members of the Committee and international intergovernmental organizations to make technical presentations pursuant to the first and/or second objectives of the workplan.

2018 Receive technical presentations pursuant to the invitation extended in 2017. In its report to the Subcommittee, the Working Group will: (a) summarize the technical presentations; (b) identify any significant challenges that should be addressed in the presentations planned for 2019 by member States and international intergovernmental organizations with experience in space NPS applications; and (c) summarize the discussions about potential enhancement of the

technical content and scope of the Principles. Request the Secretariat to invite, by no later than April 2018, States members of the Committee and international intergovernmental organizations to make technical presentations pursuant to the first and/or second objectives of the workplan.

2019 Receive technical presentations under the same arrangements as in 2018. In its report to the Subcommittee, the Working Group will: (a) summarize the technical presentations; (b) identify any significant challenges that should be addressed in the presentations planned for 2020 by member States and international intergovernmental organizations with experience in space NPS applications; and (c) summarize the discussions about potential enhancements of the technical content and scope of the Principles. Request the Secretariat to invite, by no later than April 2019, States members of the Committee and international intergovernmental organizations to make technical presentations pursuant to the first and/or second objectives of the workplan.

2020 Receive technical presentations under the same arrangements as in 2019. Determine whether the current workplan should be extended and, if it is not to be extended, prepare a draft report summarizing the technical presentations received and the challenges identified during the course of the workplan and identifying potential enhancements to the technical content and scope of the Principles.

2021 If the workplan has not been extended, finalize the report.

10. In accordance with the new multi-year workplan, the Working Group requested the Secretariat to invite, by no later than April 2017, States members of the Committee and international intergovernmental organizations to make technical presentations pursuant to the first and/or second objectives of the workplan.

11. The Working Group noted with sorrow the passing of Jan P. Fladeboe of the United States of America, who had been a long-standing contributor to the work of the Working Group.

Annex III

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

1. In accordance with paragraph 8 of General Assembly resolution 71/90, the Scientific and Technical Subcommittee, at its fifty-fourth session, reconvened its Working Group on the Long-term Sustainability of Outer Space Activities.

2. The Working Group on the Long-term Sustainability of Outer Space Activities held meetings from 30 January to 9 February 2017 under the chairmanship of Peter Martinez (South Africa).

3. In accordance with the workplan extended by the Committee on the Peaceful Uses of Outer Space at its fifty-ninth session (A/71/20, para. 137), the Working Group had before it the following:

(a) Note by the Secretariat entitled "Guidelines for the long-term sustainability of outer space activities" (A/AC.105/C.1/L.354/Rev.1);

(b) Working paper by the Chair of the Working Group entitled "Outline for the report of the Working Group on the Long-term Sustainability of Outer Space Activities" (A/AC.105/C.1/L.357);

(c) Working paper submitted by the Russian Federation entitled "Further ideas on a set of goals for achieving the Vienna consensus on space security and the need for thorough reflection on the modalities of addressing the complex issues associated with space traffic management and the justifiability of the high expectations of early decisions in this area" (A/AC.105/C.1/L.361);

(d) Working paper by the Chair of the Working Group entitled "Proposals for the guidelines for the long-term sustainability of outer space activities" (A/AC.105/C.1/2017/CRP.13);

(e) Conference room paper submitted by the United Kingdom of Great Britain and Northern Ireland on the country's implementation of the first set of guidelines for the long-term sustainability of outer space activities (A/AC.105/C.1/2017/CRP.21);

(f) Conference room paper submitted by France on French activities relating to and views on the long-term sustainability of outer space activities, in relation to the implementation of the first set of guidelines (A/AC.105/C.1/2017/CRP.26);

(g) Working paper submitted by the Russian Federation entitled "Considerations aimed at facilitating a broader systemized understanding of the objective dimensions of issues and the functional dimensions of solutions related to sharing information on the situation in outer space in the context of deciding on the establishment of a working group on enhanced information exchange on space objects and events" (A/AC.105/C.1/2017/CRP.27);

(h) Working paper by the Chair of the Working Group entitled "Guidelines for the long-term sustainability of outer space activities" (A/AC.105/C.1/2017/CRP.29).

4. The Working Group recalled that its third intersessional meeting had been held in Vienna from 19 to 23 September 2016 and noted that it had been a constructive meeting.

5. The Working Group thanked the Chair for his efforts to propose streamlined texts, as requested by delegations at the third intersessional meeting of the Working Group, and as contained in A/AC.105/C.1/2017/CRP.13. The Working Group agreed that some of the texts he had proposed could form the basis for future discussions.

6. The Working Group noted that, in addition to the meetings that the Working Group had held during the present session of the Subcommittee, during which it had

had the benefit of interpretation services, the Chair and interested delegations had also held extensive informal consultations on the margins of the session to advance work on some of the draft guidelines, on the preambular text, on a section on implementation, updating and reviewing the guidelines and on the report of the Working Group.

7. The Working Group also noted that it had not had sufficient time at the present session to discuss the preambular text in detail. The Working Group further noted, however, that cross-cutting issues pertaining to all guidelines could be addressed in the preambular text.

8. The Working Group further noted that the text of the following draft guidelines had been discussed during the present session and that proposed edits to those draft guidelines were reflected in A/AC.105/C.1/2017/CRP.29:

(a) Guideline 6. Enhance the practice of registering space objects;

(b) Guideline 11. Provide updated contact information and share information on space objects and orbital events;

(c) Guideline 14. Perform conjunction assessment during all orbital phases of controlled flight;

(d) Guideline 15. Develop practical approaches for pre-launch assessment of possible conjunctions of newly launched space objects with space objects already present in near-Earth space;

(e) Guideline 21. Establish procedures and requirements for the safe conduct of operations resulting in the destruction of in-orbit space objects;

(f) Guideline 24. Share experience related to the long-term sustainability of outer space activities and develop new procedures, as appropriate, for information exchange;

(g) Guideline 30. Address approaches to the design and operation of small-size space objects;

(h) Guideline 32. Observe measures of precaution when using sources of laser beams passing through outer space.

9. The Working Group agreed that A/AC.105/C.1/2017/CRP.29 would be used as the basis for producing the next official version of the guidelines, to be translated into all official languages of the United Nations.

10. The Working Group agreed that it would continue to work intersessionally, using electronic and other means as appropriate. In that connection, the Working Group agreed to hold two intersessional meetings in Vienna in 2017: the first directly preceding the sixtieth session of the Committee, in June 2017, and the second in either September or October 2017.

11. The Working Group agreed that the Chair of the Working Group would consult with the Chair of the Committee and with the Secretariat regarding the scheduling of the sixtieth session of the Committee so as to give the Working Group the opportunity to meet during that session and benefit from interpretation services.

12. On 9 February 2017, the Working Group considered and adopted the present report.