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Committee on the Peaceful Uses of Outer Space

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

Contents

	<i>Page</i>
I. UNISPACE+50 and global governance of outer space activities	2
II. UNISPACE conferences: review of 50 years of cooperation and development in space	4
III. Cross-cutting areas unique to the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs	13
IV. The way ahead to UNISPACE+50	23

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I. UNISPACE+50 and global governance of outer space activities

1. At present over 60 countries operate their own satellites, and our societies have become increasingly dependent on the more than 1,000 operational satellites that currently orbit the Earth. While annual space expenditure stood at about \$100 billion at the time of UNISPACE III, that number has grown steadily over the years. In 2015, the global space economy was worth \$323 billion, more than triple that amount, generated mostly by commercial and government entities operating at the national, regional and global levels. The increased strategic value of outer space has resulted in a growing focus on the governance of outer space activities, their safety and sustainability.
2. Addressing challenges to humanity and sustainable development, protecting the space environment and securing the long-term sustainability of outer space activities all require further attention. Stronger space governance and supporting structures at all levels, including improved space-based data and space infrastructure, are needed to implement the 2030 Agenda for Sustainable Development.
3. Building resilient societies through better coordination and the forging of global partnerships is one of the key challenges in the twenty-first century and an integral part of the efforts to meet the commitments undertaken in the three global development agendas adopted by the international community in 2015: the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change.
4. Since the beginning of the space age, international cooperation in the peaceful uses of outer space has evolved in such a way as to provide the impetus for a consideration of international mechanisms and infrastructures for space cooperation and coordination mechanisms at the national, international, regional and interregional levels.
5. The governance of space, which has been depicted as humanity's most expansive global commons, has become increasingly complex owing to the growing number of both governmental and non-governmental actors, and to the emergence of new technologies and approaches such as public-private partnerships and private funding initiatives.
6. Although not yet defined at the intergovernmental level, the concept of global space governance could be interpreted as referring to international action to, or the manner (process) of, governing and regulating space-related activities. As such, it encompasses a wide range of instruments, institutions and mechanisms including international and regional treaties, agreements and regulations, model national laws and regulations, as well as a wide range of international cooperative mechanisms utilized in space cooperation, guidelines and transparency and confidence-building measures, all of which are aimed at ensuring a certain level of predictability and orderly conduct of space activities.
7. For the purposes of the present document, the term "global space governance" refers primarily to the institutional framework for the governance of international cooperation in using outer space for peaceful purposes. That framework includes the

United Nations treaties and principles on outer space, the relevant guidelines adopted by the Committee and the resolutions on outer space adopted by the General Assembly, as well as supporting efforts undertaken at the national, regional and global levels, including by entities of the United Nations system and international space-related entities. To increase coherence and synergy in international cooperation in space activities at all levels, international initiatives exist for cooperation on specific aspects of the exploration and use of outer space, such as Earth observation and global navigation. Furthermore, multilateral coordination mechanisms are in place through which space-system operators coordinate the development of space-system applications for the benefit of the environment, human security and welfare. Those, too, form an integral part of global space governance. Further details on this topic can be found in paragraphs 55 to 71 of the present document and in chapter II of document A/AC.105/993.

8. The Committee is the primary United Nations body for coordinating and facilitating international cooperation in space activities. It has the overall mandate to strengthen the international legal regime governing outer space and work towards improved conditions for expanding international cooperation in using outer space for peaceful purposes. Through their agendas the Committee and its subsidiary bodies promote international cooperation among spacefaring and emerging space nations and serve as an important platform for strengthening space capabilities in developing countries for their economic, social and scientific advancement.

9. UNISPACE+50, an ambitious Committee undertaking, will consider the Committee's current status and define the future role of the Committee, its subsidiary bodies and the Office for Outer Space Affairs as important players in promoting international cooperation in the peaceful uses of outer space and in shaping global space governance. UNISPACE+50 will also consider ways and means for strengthening their role within the United Nations system and the global space community at a time when the space agenda is becoming increasingly complex and more actors, both governmental and non-governmental, are involved in ventures to explore space and carry out space activities.

10. The present document discusses the role in global space governance of the Committee, its subsidiary bodies and the Office. It includes, in chapter II, a historical overview of the three UNISPACE conferences held thus far and highlights their implementation processes and the lessons learned about envisioned outcomes and final results. In chapter III, the wide range of instruments, programmes and other cooperation and coordination mechanisms that have resulted from the UNISPACE conferences and the work of the Committee and the Office are highlighted. They are listed under the following cross-cutting areas: governance, capacity-building, resiliency, interoperability and space for sustainable development. Chapter IV connects the overview of the UNISPACE conferences with an assessment of the cross-cutting areas and outlines the way forward towards UNISPACE+50.

11. The present document has been prepared by the Secretariat in accordance with document A/AC.105/L.297, subparagraph 32 (d), and A/71/20, para. 304.

II. UNISPACE conferences: review of 50 years of cooperation and development in space

A. Historical overview of the three UNISPACE conferences held to date

1. Main focus

12. Table 1 shows the main focus of the three UNISPACE conferences held to date.

Table 1

Main focus of the UNISPACE conferences held to date

<i>Conference</i>	<i>Main focus</i>
UNISPACE I (1968)	Access to and the sharing of information, in particular examining opportunities and practical benefits of space science and technology applications for developing countries.
UNISPACE II (1982)	Building capacities in developing countries, in particular technical assistance and its financing, strengthening regional cooperation (regional centres), and dealing with the concern of preventing an arms race in outer space, in order to reap the benefits from the peaceful uses of outer space.
UNISPACE III (1999)	The use of space science and technology to meet global development challenges following the United Nations Conference on Environment and Development (Earth Summit) held in Rio de Janeiro, Brazil, in 1992, in particular the use of space technology, to assist in the solution of problems of regional and global significance, and the strengthening of the capabilities of Member States, in particular developing countries, in the use of the applications of space science and technology for their economic, social and cultural advancement.

13. The United Nations has been at the centre of international cooperation in space activities since the beginning of the space age, which was marked by the launch of the world's first artificial satellite, Sputnik I, in 1957. The Committee evolved as a result of the recognition by the General Assembly, in its resolution 1348 (XIII), of the importance of using outer space for peaceful purposes and of the need to promote international cooperation in the conduct of space activities and through the Assembly's establishment of the permanent Committee in Assembly resolution 1472 A (XIV).

14. Because of its unique mandate and positioning at the centre of global space governance, the Committee also played a key role in the organization of the three UNISPACE conferences held to date, at which the practical benefits of space science and technology and their applications were examined, with special emphasis on the needs of developing countries and the contributions of space science and technology and their applications in support of global and regional development agendas and in gaining benefits for society at large.

15. Each of the UNISPACE conferences was held in a different context owing to the continuous growth in space activities and their diversification, as well as the emergence of new actors. Nonetheless, the mandate of the Committee remained flexible enough to ensure progress in implementing the recommendations of the three UNISPACE conferences held to date while also gradually strengthening the mandates of the Committee and its subsidiary bodies, and the Office.

2. UNISPACE I

16. The rapid growth of space technology and its potential for applications, which had become evident by the 1960s, led to UNISPACE I, held in Vienna from 14 to 27 August 1968 (see document A/7285). UNISPACE I was convened with the prime objectives of reviewing progress in space science, technology and applications, examining their practical benefits and exploring the opportunities available to non-spacefaring nations for international cooperation in space activities.

17. The United Nations was perceived as an important facilitator in those processes. Open to all States Members of the United Nations, UNISPACE I also brought together entities of the United Nations system and heard reports from specialized agencies and programmes on trainings and projects aimed at facilitating the use by developing countries of space applications for their development needs. The United Nations entities involved were the Committee on Space Research, the Food and Agriculture Organization, the International Atomic Energy Agency (IAEA), the International Civil Aviation Organization, the International Labour Organization, the International Maritime Organization (named Inter-governmental Maritime Consultative Organization at the time), the International Telecommunication Union (ITU), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Health Organization and the World Meteorological Organization (WMO). In the recommendations and decisions adopted at UNISPACE I, the Committee recommended that the General Assembly request United Nations entities and specialized agencies to continue to submit to the Committee progress reports on their work in the field of the peaceful uses of outer space, including on any problems that had arisen or might arise from the use of outer space in the fields within their competencies.

18. UNISPACE I also clearly demonstrated that there was a growing demand for a wider dissemination of knowledge and the achievements of space science and technology, as well as for the promotion of its practical applications. As a result, the Office for Outer Space Affairs, which had initially been established as a small expert unit to service the Committee and its Subcommittees at the request of the General Assembly, was enlarged with a post for an expert on space application. Subsequently, the United Nations Programme on Space Applications of the Outer Space Affairs Division of the Secretariat, the forerunner of the Office, was established in 1971 with a mandate to promote practical applications of space

technology, create awareness of the benefits of space technology and assist people from developing countries in acquiring the knowledge, skills and practical experience necessary for their application.

19. The Office for Outer Space Affairs had initially been established as a small expert unit to render assistance to the Ad Hoc Committee on the Peaceful Uses of Outer Space in 1959. Following a request by the General Assembly, that expert unit became a unit within the Department of Political and Security Council Affairs in 1962. In 1968, the year UNISPACE I was held, the Office was transformed into the Outer Space Affairs Division within that Department and then into the Office for Outer Space Affairs within the Department of Political Affairs in 1992. Since 1993, when the Office was relocated from United Nations Headquarters in New York to the United Nations Office at Vienna, it has also been servicing the Legal Subcommittee, which had previously been serviced by the Office of Legal Affairs (See A/CONF.184/6, footnote 16).

20. UNISPACE I demonstrated that space research had already resulted in the development of important and practical applications that benefited humankind and that had proved their usefulness during the first decade of the space age. The conference served as an important platform for consultations and the exchange of information about the practical application of space technology. It gave impetus to the establishment of fellowships and technical assistance in support of national efforts to develop space activities.

3. UNISPACE II

21. By the time UNISPACE II was convened in Vienna from 9 to 21 August 1982, an estimated 120 satellites were being launched annually on average, over 100 countries were using remote sensing data, about 150 countries were using space communication and more than 220 direct reception stations were in operation for image data from meteorological satellites.

22. Three years prior, the United Nations Conference on Science and Technology for Development, held in Vienna in 1979, had concluded that about 95 per cent of all research and development was conducted by developed countries, while developing countries, which represented 70 per cent of the world's population at the time, had only 5 per cent of the world's research and development capacity, including in space science and technology.

23. Against this background, UNISPACE II focused on greater cooperation in space science and technology between developed and developing countries and among developing countries themselves. The conference also focused on intensifying efforts to promote a wider use of space technology and applications by developing countries as a powerful tool for accelerating national development. Several other important issues were discussed, among them, the allocation of the geostationary orbit, direct broadcasting by satellites and remote sensing. However, one of the primary concerns shared at UNISPACE II was the desire to maintain outer space for peaceful purposes and prevent an arms race in outer space.

24. UNISPACE II recommended giving appropriate assistance in support of the growth of indigenous nuclei and capacity-building in space technology in developing countries. Subsequently the General Assembly, in its resolution 37/90 of 10 December 1982, requested the Secretary-General to strengthen the Outer Space

Affairs Division, as it was then called, so that it could implement the recommendations of UNISPACE II to promote greater exchange of actual experiences with specific applications, to provide technical advisory services on space applications projects upon request by Member States or any specialized agencies and to develop a fellowship programme for in-depth training of space technologists and applications specialists, among other things (see General Assembly resolution 37/90, paras. 7-9).

25. UNISPACE II also called for strengthened regional cooperation, which, pursuant to General Assembly resolution 45/72 of 11 December 1990, led to the establishment of regional centres for space science and technology education in existing national and/or regional educational institutions in developing countries with the support of the United Nations (see also General Assembly resolution 37/90, para. 11).

26. The implementation of the recommendations of UNISPACE II nevertheless relied mainly on voluntary contributions by States, including for all new and expanded activities of the Office for Outer Space Affairs, as had been decided by the General Assembly in its resolution 37/90. This resulted in limited progress in the implementation.

27. In the years that followed UNISPACE II, space applications and the use of space technology forged rapidly ahead. The number of countries with space capabilities and countries using space technology and applications increased, as did the role of the commercial sector and the number of non-governmental actors in the space arena.

28. Major advances were also made in space-based observations of the Earth's atmosphere, oceans, surface and biosphere. Satellite communications resulted in greater global interdependence and brought distant parts of the world closer together. In addition to services in the field of transportation, new applications of global navigation satellite systems emerged in such areas as surveying and mapping, Earth sciences, agriculture, environmental monitoring, disaster management, telecommunications and precision timing.

29. At the same time, the Committee recognized the increasing challenges faced by humanity. Rapid population growth, resulting in the expansion of human activities, in particular industrial activities, and in increasing demand to meet the basic needs of people, continued to have an adverse impact on the condition of the planet, including in the form of land and coastal degradation, air and water pollution, loss of biodiversity, deforestation and degradation of living conditions. These challenges were addressed in the series of United Nations global conferences held in the 1990s, and in the early 2000s, including the Millennium Summit of the United Nations held in 2000, at which the importance of sustainable development for all humanity was stressed repeatedly.

4. UNISPACE III

30. The end of the cold war, the emergence of new issues regarding sustainable development, the advances made in space science and technology, and the increase in the number of emerging space nations led to a consensus to convene a third UNISPACE conference. UNISPACE III was held in Vienna from 19 to 30 July 1999. It was influenced by the Earth Summit, which had concluded with the adoption of

Agenda 21 as a non-binding, voluntarily implemented United Nations action plan for sustainable development. UNISPACE III expanded the notion of international cooperation in the peaceful uses in outer space by looking into how space could help humankind in tackling global problems, from protecting the Earth's environment and managing its resources to using space applications for human security, development and welfare.

31. UNISPACE III was unique in its organizational aspects (see A/C.4/54/9) and because it was the first United Nations conference on outer space issues at which industry and civil society participated in partnership with Governments. This innovative approach reflected the increasing use of outer space for economic purposes and the growing importance of the commercial sector in this endeavour (see A/CONF.184/6).

32. Furthermore, as part of UNISPACE III, a technical forum was held that included 40 events comprising workshops, seminars, round-table meetings and discussion panels. An important role was also played by the regional preparatory conferences, which served to consolidate regional inputs for UNISPACE III.

33. The most important result of UNISPACE III was the adoption of the Vienna Declaration on Space and Human Development, which provided the nucleus of a strategy to address global challenges at the brink of the twenty-first century. The Vienna Declaration comprised 33 specific recommendations that addressed global challenges and were subsequently endorsed by the General Assembly in its resolution 54/68 of 6 December 1999. In the Vienna Declaration, the States participating in UNISPACE III also decided to invite the General Assembly to declare World Space Week between 4 and 10 October for the yearly celebration at the international level of the contribution that space science and technology could make to the betterment of the human condition. World Space Week marks two milestone historical events: the launch of the first satellite, Sputnik I, on 4 October 1957, and the entry into force of the Outer Space Treaty on 10 October 1967.

34. UNISPACE III strengthened the role of the Office for Outer Space Affairs in supporting Member States in building their national space infrastructures and in supporting the intergovernmental processes in the area of space activities that take place within the United Nations framework. The Office was vested with a mandate to conduct capacity-building activities in space law and policy. In addition, the implementation of various recommendations of UNISPACE III led to the establishment of the International Committee on Global Navigation Satellite Systems (ICG), to which the Office serves as executive secretariat, and of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) as a programme of the Office, in 2005 and 2006 respectively.

35. The emphasis was placed on the primary responsibility of Member States for the implementation of various recommendations of UNISPACE III through national programmes and through bilateral and multilateral cooperation, in particular through action teams under the voluntary leadership of Member States. This permitted progress to be made throughout the year and helped to avoid sole reliance on the resources available to the Secretariat, while ensuring that primary responsibility for providing policy guidance on and coordinating implementation at the global level

remained with the Committee and its subsidiary bodies through their consideration of agenda items.

36. Through the implementation of the recommendations of UNISPACE III, the focus on the dual-use character of space applications shifted to civil and industrial uses for the promotion of sustainable development, including protecting the Earth's environment and managing its resources; using space applications for human security, development and welfare; advancing scientific knowledge of space and protecting the space environment; enhancing education and training opportunities; strengthening space activities in the United Nations system; and promoting international cooperation.

5. Review of the implementation of the recommendations of UNISPACE III

37. At the international level, the Committee has coordinated efforts to implement the recommendations of UNISPACE III. More than 50 Member States and some 40 intergovernmental and non-governmental organizations, including 15 entities of the United Nations system, participated in the work of 12 action teams under the voluntary leadership of Member States. Those action teams had been established by the Committee in 2001 and 2003 to translate priority recommendations into specific actions. The Office for Outer Space Affairs also prepared a plan of action consisting of measures to implement specific recommendations.

38. The recommendations of the action teams on the way forward were based on a comprehensive, global review of the current status of the activities that relate to the recommendations of UNISPACE III under their responsibility. The assessments by the action teams, unprecedented in both scope and depth, were conducted without an increase in the regular budget of the programme on the peaceful uses of outer space. Their analysis of the current situation, their findings on the impediments to making space technology work effectively to solve the most acute problems faced by humanity and their recommendations on how to do so constituted a solid foundation for the implementation phase. The implementation of the priority recommendations through the action teams also led to the development of international action-oriented networks to address the use of space applications as a tool to solve global problems. To date, however, several coordination mechanisms and platforms established as a result of the recommendations of UNISPACE III, continue to rely mainly on voluntary contributions. Those include UN-SPIDER and ICG, which have become even more vital for supporting the implementation of the global development agendas.

39. Following UNISPACE III, the Committee and its subsidiary bodies established several new mechanisms for facilitating the implementation of the Conference's recommendations. The structure of the agendas of the Scientific and Technical Subcommittee and the Legal Subcommittee was revised to enable the introduction of new agenda items under multi-year workplans or single items for discussion. The revised structure of the agendas enabled those bodies to provide policy guidelines to the action teams to implement the recommendations of UNISPACE III.

40. In 2004 the Committee conducted a five-year review of the mechanisms for and progress made in implementing the recommendations of UNISPACE III, known as the UNISPACE III+5 review. In the report of the review, the Committee identified synergies between the implementation of those recommendations and the

results of global conferences held within the United Nations system and other global initiatives (see A/59/174). The Committee proposed a plan of action for further implementing the recommendations of UNISPACE III, and stressed that any progress achieved in implementing those recommendations was also progress towards achieving internationally agreed development goals.

41. The report of the UNISPACE III+5 review of the UNISPACE III conference, as contained in the report of the Committee, provided a road map for the further development of space capabilities to advance human development through making space tools more widely available by moving from the demonstration of the usefulness of space technology to a more broadly based operational use of space-based services. The plan of action contained proposals for further specific actions in four areas (see A/59/174, paras. 228-316): use of space to support overarching global agendas for sustainable development; developing coordinated, global space capabilities; use of space to support specific agendas to meet human development needs at the global level; and overarching capacity development. The plan of action also identified entities willing to undertake some of those actions.

42. In implementing the plan of action in those four areas, the Committee was to provide a bridge between users and potential providers of space-based development and services by identifying needs of Member States and coordinating international cooperation to facilitate access to the scientific and technical systems that might meet them, while observing the interaction between different stakeholders in the future implementation of the strategy and building upon the respective roles and needs of actors involved in the wider space community.

43. Other important achievements were made. The Working Group on Space Debris of the Scientific and Technical Subcommittee successfully concluded its work, which led to the endorsement by the General Assembly of the Space Debris Mitigation Guidelines of the Committee in its resolution 62/217 of 22 December 2007. In 2009, the Working Group on the Use of Nuclear Power Sources in Outer Space of the Scientific and Technical Subcommittee published jointly with IAEA the Safety Framework for Nuclear Power Source Applications in Outer Space. In addition, the Working Group on Near-Earth Objects of the Scientific and Technical Subcommittee and the Action Team on Near-Earth Objects finalized recommendations for an international response to a threat posed by a near-Earth object, resulting in the establishment in 2013 of the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG). Finally, the Action Team on Public Health eventually led to the establishment, in 2015, of the Expert Group on Space and Global Health under the Scientific and Technical Subcommittee.

44. In implementing the recommendations of UNISPACE III, the Committee established closer links with the work of the Commission on Sustainable Development by contributing to the multi-year thematic clusters of that Commission. This paved the way for further recognition of space tools as drivers for socioeconomic sustainable development and the contribution those tools can make to reaching the objectives of the United Nations Conference on Sustainable Development, held in Rio de Janeiro, Brazil, from 20 to 22 June 2012.

6. Follow-up to the UNISPACE conferences and review of their implementation: progress and challenges

45. Table 2 shows the main accomplishments of the UNISPACE conferences held to date.

Table 2

Main accomplishments of the UNISPACE conferences held to date

<i>Conference</i>	<i>Main accomplishments</i>
UNISPACE I (1968)	<p>Outcomes: UNISPACE I institutionalized the support, such as in the form of trainings and fellowships, aimed at giving developing countries access to information on the practical benefits of space science and technology applications and at promoting the sharing of such information. This was achieved in part by strengthening and expanding the mandate of the Office for Outer Space Affairs to assist developing countries.</p> <p>New mechanisms: UNISPACE I established the United Nations Programme on Space Applications.</p> <p>Funding and implementation: Funding was obtained through the regular budget. The recommendations of UNISPACE I were implemented through international cooperation among Member States and through the United Nations Outer Space Affairs Division, as well as through United Nations inter-agency cooperation.</p>
UNISPACE II (1982)	<p>Outcomes: UNISPACE II strengthened the indigenous capacities of developing countries for using space science and technology for development. This was successful to a limited extent due to a lack of financing. UNISPACE II also strengthened regional cooperation and put new emphasis on preventing an arms race in outer space.</p> <p>New mechanisms: UNISPACE II resulted in the establishment of regional centres for space science and technology education, affiliated to the United Nations.</p> <p>Funding and implementation: Funding came from voluntary contributions and reallocations from the regular budget. The recommendations were implemented thanks to national and regional efforts and international cooperation among Member States; through the Office, its Programme on Space Applications and regional centres for space science and technology education, affiliated to the United Nations; and through the United Nations inter-agency cooperation mechanism.</p>
UNISPACE III (1999)	<p>Outcomes: UNISPACE III adopted 33 recommendations, comprised in the Vienna Declaration. These were grouped into six categories:</p> <ul style="list-style-type: none"> (a) Protecting the Earth's environment and managing its resources (5 recommendations); (b) Using space applications for human security, development and welfare (6 recommendations); (c) Advancing scientific knowledge of space and protecting the space environment (5 recommendations); (d) Enhancing education and training opportunities, and ensuring public awareness of the importance of space activities (7 recommendations); (e) Strengthening and repositioning of space activities in the United Nations system (6 recommendations); (f) Promoting international cooperation (4 recommendations). <p>New mechanisms: UNISPACE III led to the establishment of ICG and UN-SPIDER. It also led to the establishment of two mechanisms for the coordination of activities related to near-Earth objects, IAWN and SMPAG, and of the Expert Group on Global Health and the Expert Group on Space Weather of the Scientific and Technical Subcommittee.</p>

<i>Conference</i>	<i>Main accomplishments</i>
	<p>Funding and implementation: Funding was provided through commitments by Member States. The recommendations of UNISPACE III were implemented thanks to national and regional efforts and international cooperation among Member States; the Office, its Programme on Space Applications and regional centres for space science and technology education, affiliated to the United Nations; and the United Nations inter-agency cooperation mechanism.</p>

46. Although its recommendations were not officially reviewed, UNISPACE I, the first global conference on the exploration and peaceful uses of outer space, was important in raising awareness of the benefits that could be derived from the application of space technologies. UNISPACE I also encouraged the creation of training and education programmes that were to enable officials from developing countries to gain practical experience with space technology applications. Over the course of the 1970s, space applications programmes were also developed by the United Nations and the specialized agencies concerned with telecommunications, meteorology, disaster risk reduction, environment monitoring and remote sensing for agriculture, forestry, geology, cartography and other resource development applications.

47. The review of recommendations of UNISPACE II was conducted by the Working Group of the Whole of the Scientific and Technical Subcommittee. In its review the Working Group identified several follow-up actions that needed attention if the UNISPACE II recommendations were to be met. Those included the need for greater international understanding to overcome the difficulties faced by developing countries in relation to the free exchange of scientific and technological information, the transfer of technologies, and the lifting of undue restrictions on the sale of components, subsystems or systems required for peaceful space applications.

48. Moreover, to allow for the implementation of the recommendations of UNISPACE II, Member States and international organizations were urged to provide cash and in-kind contributions for activities of the Programme on Space Applications of the Office, in particular for those activities not implemented for lack of financing. In fact, the General Assembly, which had endorsed the recommendations of UNISPACE II in its resolution 37/89, decided, in its resolution 37/90, that all new and expanded activities contained in that resolution were to be funded mainly through voluntary contributions as well as through the rearrangement of priorities within the following regular budget of the United Nations (see annex II of A/AC.105.672).

49. UNISPACE III concluded with 33 recommendations, a substantial number. The recommendations included a provision that their implementation was to be reviewed five years later. Of all three UNISPACE conferences held to date, UNISPACE III has undergone the most comprehensive review, as reflected in paragraphs 37-44 of the present document.

50. The role of the Governments of Member States has been critical in making progress in the implementation of the recommendations of UNISPACE III. The General Assembly, in its resolution 59/2, recognized that the responsibility for implementing the recommendations rested with Member States, the Office, under the guidance of the Committee and its subsidiary bodies, intergovernmental

organizations for multilateral cooperation and other entities with space-related activities, including non-governmental entities, and the younger generation.

51. Although awareness of the benefits of outer space for society at large is still limited and space activities have been assigned limited priority and resources in many States for that reason, much has been accomplished in the implementation of UNISPACE III. This can be attributed in particular to having well-defined responsibilities and commitments for implementation, and as well as to the work done by the Committee. To date, however, several coordination mechanisms and platforms established as a result of UNISPACE III, such as UN-SPIDER and ICG, continue to rely mainly on voluntary contributions, even though they have become vital for the implementation of the current global development agendas.

52. In order for government agencies, research institutions and non-governmental entities to receive broad support from policymakers and the general public for their activities, objectives have to be clearly defined, realistic and linked to the priorities of society at large. The benefits to be derived, including short-term benefits, must be well articulated.

53. The UNISPACE conferences and their implementation processes have underscored the fact that successful implementation of any recommendation that involves Governments requires a commitment by policymakers in terms of the level of priority assigned to the space-related activity and the allocation of financial and human resources.

III. Cross-cutting areas unique to the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs

54. In 2016, the Committee and its Subcommittees defined seven thematic priorities for UNISPACE+50 (see A/71/20, para. 296). In doing so, they considered the cross-cutting areas of governance, capacity-building, resiliency, interoperability, and space for sustainable development identified in document A/AC.105/L.297 and endorsed by the Committee in 2015 (see A/70/20, para. 351). These cross-cutting areas are unique to the work of the Committee, its subsidiary bodies and the Office for Outer Space Affairs and are closely related to the goals of the three global development agendas adopted by the international community in 2015: the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change. The cross-cutting areas most adequately reflect the current activities of the Office, as mandated by the Committee and by the General Assembly.

A. Governance

55. The Committee has been instrumental in the development of the legal regime governing activities in outer space for peaceful purposes established through the five space law treaties and the five sets of principles and declarations on outer space. The fundamental principles laid down in the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the

Moon and Other Celestial Bodies (Outer Space Treaty) have been further elaborated in the subsequent treaties and sets of principles and declarations adopted by the General Assembly.¹

56. The outer space treaties include a number of confidence-building measures that States have asked the United Nations to act upon. The United Nations Register of Objects Launched into Outer Space, entrusted to the Office, is the central repository of official information provided by States on space objects in accordance with the Convention on Registration of Objects Launched into Outer Space or, on a voluntary basis, in accordance with General Assembly resolution 1721 (XVI) B. The Register has been maintained by the Office since 1962. To date, over 92 per cent of the 7,200 satellites, probes, landers, manned spacecraft and space station flight elements launched into Earth orbit or beyond have thus been registered with the Secretary-General.

57. The Vienna Declaration adopted at the UNISPACE III conference, in 1999, called for action to promote the efforts of the Committee in the development of space law by inviting States to ratify or accede to, and inviting intergovernmental organizations to declare acceptance of, the outer space treaties developed by the Committee. Following UNISPACE III, the number of ratifications of all five treaties on outer space increased. Between 1999 and January 2016 (the treaty status below is reported as at 1 January 2016), the number of States that had ratified the Outer Space Treaty had increased from 95 to 104. Over the same period, similar rises occurred for the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (from 85 to 94), the Convention on International Liability for Damage Caused by Space Objects (from 80 to 92), the Registration Convention (from 40 to 62) and the Agreement Governing the Activities of States on the Moon and other Celestial Bodies (from 9 to 16). The Legal Subcommittee, in particular, is continuing its efforts to increase the number of States that ratify or accede to the outer space treaties and the number of intergovernmental organizations that declare acceptance of them and is considering further measures in that vein.

¹ The five outer space treaties are the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (General Assembly resolution 2222 (XXI), annex); the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Assembly resolution 2345 (XXII), annex); the Convention on International Liability for Damage Caused by Space Objects (Assembly resolution 2777 (XXVI), annex); the Convention on Registration of Objects Launched into Outer Space (Assembly resolution 3235 (XXIX), annex); and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Assembly resolution 34/68, annex); the five declarations and sets of legal principles are the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (Assembly resolution 1962 (XVIII)); the Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (Assembly resolution 37/92, annex); the Principles Relating to Remote Sensing of the Earth from Outer Space (Assembly resolution 41/65, annex); the Principles Relevant to the Use of Nuclear Power Sources in Outer Space (Assembly resolution 47/68) and the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (Assembly resolution 51/122, annex).

58. The Committee and its Subcommittees are uniquely positioned as a global platform for international cooperation in the peaceful uses of outer space and dialogue among major spacefaring nations and emerging space nations. This has been reaffirmed by the fact that the number of States that have become members of the Committee has increased from the initial 24 States at the establishment of the Committee as a permanent body in 1959 to the current 83 States members of the Committee, with one further State becoming the eighty-fourth member of the Committee by December 2016.

59. In 1962, the Committee began to invite to its meetings international organizations that promoted the peaceful uses of outer space. At its second meeting, the Committee invited the Committee on Space Research along with the United Nations entities UNESCO, ITU and WMO to become permanent observers. Organizations having permanent observer status with the Committee received a standing invitation to its annual sessions and those of its subsidiary bodies and have been given opportunities to address the Committee and its subsidiary bodies at their open meetings. At the time of UNISPACE III, 13 organizations had permanent observer status with the Committee. Since UNISPACE III, there has been an increase in the number of international intergovernmental and non-governmental entities granted permanent observer status with the Committee. Their number currently amounts to 34.

60. The Committee and its Subcommittees, through their agendas and the work of the working groups and expert groups, constantly monitor the advances in space technology and the rapidly evolving space agenda with a view to developing new mechanisms reflective of the new complexities of space activities. Their efforts include addressing the broader concept of space security, transparency and confidence-building measures in outer space and working towards securing the long-term sustainability of outer space activities.

61. In their contribution to strengthening overall space governance, the Committee, and in particular its Legal Subcommittee, have not only worked on preparing treaties and principles on outer space but are also looking at States' practices in implementing the existing regulations in their national legislation. That work has led to the creation of valuable databases on national legislation relevant to the peaceful exploration and uses of outer space.

62. The ongoing work carried out by the Legal Subcommittee and its Working Group on the Review of International Mechanisms for Cooperation in the Peaceful Exploration and Use of Outer Space has revealed the breadth and diversity of the mechanisms utilized: legally binding multilateral and bilateral agreements; memorandums of understanding; non-legally binding arrangements, principles and technical guidelines; and multilateral coordination mechanisms through which space-system operators coordinate the development of applications of space systems for the benefit of the environment, human security and welfare, and development. Each constitutes an important element of space governance overall.

63. Since the early 2000s, the work of the Legal Subcommittee and three of its working groups resulted in the adoption by the General Assembly of resolution 59/115 of 10 December 2004 on the application of the concept of the "launching State", resolution 62/101 of 17 December 2007 on recommendations on enhancing the practice of States and international intergovernmental organizations

in registering space objects, and resolution 68/74 of 11 December 2013 on recommendations on national legislation relevant to the peaceful exploration and use of outer space.

64. Another milestone reached by the Legal Subcommittee in the 2000s was the agreement on certain aspects of the use of the geostationary orbit, which included the recommendation that where coordination is required between countries with a view to the utilization of satellite orbits, including the geostationary satellite orbit, the countries concerned should take into account the fact that access to that orbit has to take place, *inter alia*, in an equitable manner and according to the ITU Radio Regulations.

65. Moreover, the work carried out by the Working Group on Space Debris of the Scientific and Technical Subcommittee resulted in the adoption by the Committee of its Space Debris Mitigation Guidelines and their subsequent endorsement by the General Assembly in its resolution 62/217 of 21 December 2007. The Committee also endorsed, in 2009, the Safety Framework for Nuclear Power Source Applications in Outer Space, which is an important result of the work done jointly by the Committee and IAEA.

66. In 2013, the Scientific and Technical Subcommittee endorsed the recommendations of the Action Team on Near-Earth Objects for an international response to a near-Earth object impact threat (A/AC.105/C.1/L.329), which were subsequently endorsed by the Committee and welcomed by the General Assembly in its resolution 68/75 and led to the establishment of IAWN and SMPAG, the work of which is facilitated by the United Nations.

67. The Scientific and Technical Subcommittee established, in 2010, the Working Group of the Long-term Sustainability of Outer Space Activities. The Working Group was tasked with recommending a set of guidelines containing voluntary best practices for all space actors to help ensure the long-term sustainable use of outer space. In 2016 the Committee agreed on the first set of guidelines for the long-term sustainability of outer space activities (see A/71/20, annex). The Working Group continues its work on a preamble and a second set of guidelines, which will be brought together with the first set to form a full compendium of guidelines, to be referred to the General Assembly in 2018.

68. Since 2014 the Committee has also considered the broader perspective of space security and associated matters that are instrumental in ensuring the safe and responsible conduct of space activities. It has done so in line with the report of the Group of Governmental Experts on Transparency and Confidence-building Measures in Outer Space Activities (A/68/189), which contains several concrete measures aimed at ensuring the safety, security and sustainability of outer space activities in the long term, and in accordance with General Assembly resolutions 68/50, 69/38 and 70/53.

69. In line with the report of the Group of Governmental Experts and the growing recognition of the need to comprehensively address the cross-cutting aspects of safety and security under the broader concept of space security, the Office established closer links with other United Nations entities, including the Office for Disarmament Affairs, to enhance cooperation and coordination aimed at strengthening the overall governance of outer space. The aim was to strengthen the coordination of transparency and confidence-building measures in outer space

activities in the United Nations system as mandated by General Assembly resolution 70/53.

70. Another important segment of global space governance is the Inter-Agency Meeting on Outer Space Activities (UN-Space), which was established in 1974, shortly after UNISPACE I. Since 2014 this unique United Nations coordination mechanism for space-related activities has been serving as a focal point for inter-agency coordination and cooperation among the United Nations entities that routinely make use of space technologies and their applications in a wide range of activities under their respective mandates. UN-Space is led by the Office.

71. The substantive issues on the agenda of UN-Space have been primarily related to the organization of major conferences, events and initiatives. They have also included the recommendations of the three UNISPACE conferences, the Millennium Development Goals, Agenda 21, the World Summit on Information and the 2030 Agenda for Sustainable Development.

72. To make use of UN-Space as a unique United Nations coordination mechanism for space-related activities, and in view of the recommendations of the report of the Group of Governmental Experts, the Office prepared, in 2016, a special report on the role of United Nations entities in supporting Member States in the implementation of transparency and confidence-building measures in outer space activities (A/AC.105/1116). The report had been prepared in close coordination with the Office for Disarmament Affairs and contained contributions from other relevant United Nations entities.

B. Capacity-building

73. Capacity-building, as a mechanism for building and strengthening national space infrastructures and for increasing awareness among decision makers of the benefits of space science and technology and their applications in addressing societal needs for sustainable development, is another central element in the work of the Committee. It includes activities of States members of the Committee and permanent observers to the Committee, as well as work undertaken by the Office for Outer Space Affairs as part of its central role of fostering capacity-building in the use of space science and technology and their applications for the benefit of all countries, in particular developing countries, and work done through the regional centres for space science and technology education, affiliated to the United Nations.

74. The Office has placed capacity-building among its core activities in line with the recommendations of the three UNISPACE conferences held to date and as mandated by the Committee. This applies in particular to building capacity in the use of space science and technology in developing countries, raising awareness of socioeconomic benefits of space technology applications at the national, regional, and international levels, fostering institutional capacities in managing disaster risk reduction, and promoting capacity-building in space law and policy to meet the need for strengthened capacities of all countries in developing their national space activities. Furthermore, capacity-building has recently become more targeted based on needs assessments and on the need to promote efforts to encourage science, technology, engineering and mathematics education, especially for women in developing countries.

75. Following recommendations of UNISPACE III, which resulted in the establishment of an action team dedicated to capacity-building, the Office expanded its capacity-building activities to the area of space law and policy. Capacity-building in disaster risk reduction is an essential pillar of the UN-SPIDER, a programme of the Office. Furthermore, the General Assembly, in its resolution 70/82 of 9 December 2015, encouraged the Office to conduct capacity-building and outreach activities associated with transparency and confidence-building measures within the context of the long-term sustainability of outer space activities.

76. An important dimension of capacity-building in the field of space activities is regional and interregional cooperation. To help States to develop their space capacities, the close ties the Committee has with regional and interregional intergovernmental entities and mechanisms for coordination and cooperation, such as the European Space Agency, the Asia-Pacific Space Cooperation Organization, the Asia-Pacific Regional Space Agency Forum, the African Leadership Conference on Space Science and Technology for Sustainable Development and the Space Conference of the Americas have been essential.

77. The regional component of capacity-building in space science and technology applications is further strengthened by the regional centres for space science and technology education, affiliated to the United Nations, the establishment of which was one of the important outcomes of UNISPACE II. Currently there are six such regional centres, namely the African Regional Centre for Space Science and Technology Education — in French Language, located in Morocco, the African Regional Centre for Space Science and Technology Education — in English Language, located in Nigeria, the Regional Centre for Space Science and Technology Education for Asia and the Pacific, located in China, the Centre for Space Science and Technology Education in Asia and the Pacific, located in India, the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean, with campuses located in Brazil and Mexico, and the Centre for Space Science and Technology Education for Western Asia, located in Jordan.

78. A number of entities of the United Nations system carry out capacity-building activities in space applications for the benefit of developing countries, as reflected in the UN-Space reports. Inter-Agency coordination bodies that had direct or indirect relevance to space-related activities emerged following UNISPACE III. One example is the United Nations Geographic Information Working Group, which coordinates United Nations activities related to geospatial information management. It comprises 35 United Nations entities, departments, offices, programmes and specialized agencies and seeks to develop and maintain a common geographic database as a crucial capacity-building effort to enhance normative, programme and operational capabilities and efficiencies within the United Nations system. It was co-chaired by the Office for Outer Space Affairs and the Department of Safety and Security from 2013 to 2015.

79. Capacity-building in the use of space science and technology and their applications is also vital to ensure that space activities support development agendas. Strengthening the capabilities of Member States, especially developing countries, to use the results of space research for economic and cultural development has become a more prominent aspect of the work of the Committee. It involves promoting the exchange of experiences and information, as well as

coordination of capacity-building efforts in a systematic manner, at the global and regional levels, among Member States and national and international space-related entities, including the private sector. These efforts have been further reinforced by the interlinkages between certain items on the agendas of the Committee and its Subcommittees, such as those on the agenda of the Legal Subcommittee on national space legislation and capacity-building in space law. Capacity-building efforts are essential for promoting an understanding of national requirements of space activities, in particular in view of the differences between constitutional and legal systems worldwide.

C. Resiliency

80. Building resilient societies through better coordination and forging of global partnerships is one of the key challenges in the twenty-first century and an integral part of the efforts to meet the commitments undertaken in the three global development agendas adopted by the international community in 2015: the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change. Strengthening the use of outer space for resiliency means being able to depend on space systems and to respond to the impact of events such as adverse space weather, natural disasters and near-Earth object impact threats.

81. Since the 1990s the United Nations has made sustained efforts in the area of disaster risk reduction and the use of space-based technologies for disaster prevention and mitigation, with an important role being played by the coordinated application of space technology such as Earth observation and meteorological satellites, communications satellites and satellite navigation and positioning systems within the Hyogo Framework for Action 2005-2015, adopted at the World Conference on Disaster Risk Reduction held in Kobe, Hyogo, Japan, in 2005.

82. As a result of UNISPACE III and further consideration by the Committee of ways to meet the needs for enhanced global coordination in disaster management and emergency response, UN-SPIDER was established in 2006 as a programme of the Office for Outer Space Affairs. UN-SPIDER was mandated to ensure greater access to and use of space-based services for all countries and facilitate capacity-building and institutional strengthening for disaster management, in particular in developing countries.

83. A number of other initiatives have been launched at the regional and global levels to integrate the use of satellite data into various phases of disaster management, in particular during the crisis phase. One of those initiatives is the International Charter on Space and Major Disasters, established following the UNISPACE III conference in November 2000. The International Charter provides, through authorized users, a unified system of space data acquisition and delivery to those affected by disasters. Furthermore, since 2005, the Group on Earth Observations has been leading a worldwide effort to build the Global Earth Observation System of Systems, which has significantly strengthened international collaboration and policy decisions on Earth observation by coordinating strategies in this area. The Office has acted as a cooperating body of the International Charter and has a memorandum of understanding with the secretariat of the Group on Earth

Observations to strengthen the collaboration, which is particularly relevant for the implementation of the Office's UN-SPIDER mandates.

84. UN-SPIDER is an important programme of the Office because of its direct relevance to the Sendai Framework for Disaster Risk Reduction 2015-2030 and its contribution to the Sendai Framework's implementation in the form of advisory missions, capacity-building and the dissemination of information on its knowledge portal. The Sendai Framework 2015-2030 was a reaffirmation of the commitment of the United Nations and the world community to advancing disaster risk reduction in the global development agenda, to integrate, as appropriate, both disaster risk reduction and the building of resilience into policies, plans, programmes and budgets at all levels and to consider both within relevant frameworks.

85. In the Sendai Framework space-based technology and Earth observation are recognized as valuable for disaster management and emergency response because they pave the way for more resilient societies. The Framework includes specific references to the importance of using information gathered by space-based platforms and in situ for pre-disaster risk assessment, for prevention and mitigation and for the development and implementation of appropriate preparedness and effective responses to disasters.

86. Apart from natural disasters there are other areas where space systems are increasingly relied on to respond to the impact of events, such as adverse space weather and near-Earth object impact threats. Enhanced coordination efforts at the global level to reduce the impact of such events are essential.

87. As a result of the recommendations of UNISPACE III, several mechanisms in the areas of near-Earth object impact threat and space weather closely related to building resiliency and human security issues have also been developed under the auspices of the Committee.

88. In its recommendations for an international response to the near-Earth object impact threat, the Action Team on Near-Earth Objects (Action Team 14) called for a coordinated international response (see A/AC.105/1038, annex III, paras. 11-14). The recommendations led to the establishment, in 2014, of IAWN and SMPAG. Their work is facilitated by the United Nations, and the Office serves as the permanent secretariat of SMPAG.

89. Similarly, potentially hazardous impacts of space weather require the development of a global capability to monitor space weather events both from space and from Earth. Relevant data need to be shared to better forecast and mitigate the impacts of space weather on Earth and the space environment. In that regard, the Expert Group on Space Weather of the Scientific and Technical Subcommittee, established in 2014, plays an important role in fostering more synergy and in promoting the convergence of common interest among States members of the Committee and related national and international organizations in space weather efforts.

D. Interoperability

90. Interoperability refers to the possibility of spatial data to be combined, and for services to interact, without repetitive manual intervention, in such a way that the

result is coherent and that the added value of the data sets and services is enhanced.² Several platforms established as a result of UNISPACE III are aimed at achieving interoperability in areas such as global and regional space-based positioning, navigation and timing systems, as well as in the coordination of efforts relating to the near-Earth object impact threat.

91. In view of the growing importance of the positioning and timing of navigation satellites in a variety of areas, such as surveying and mapping, transportation, precision agriculture, monitoring of the environment and disaster risk reduction, an ICG was created in 2005 as an important coordination mechanism. The Office serves as executive secretariat to ICG.

92. The establishment of ICG was a follow-up to the recommendations adopted at UNISPACE III and the work of the Action Team on Global Navigation Satellite Systems (Action Team 10). The Action Team recognized that, although system providers were working to increase awareness among policy makers of the benefits of Global Navigation Satellite Systems (GNSS) and their augmentations for a wide range of societal, civil and commercial applications, that task was beyond the resources of any individual operator and called for the establishment of a coordination mechanism involving operators of GNSS and their augmentations, as well as appropriate international organizations.

93. ICG, which in 2015 celebrated its tenth anniversary, has been working to achieve compatibility and interoperability among global and regional space-based positioning, navigation and timing systems and promote the use of global navigation satellite systems and their integration into national infrastructure, particularly in developing countries. In view of the growing dynamism of GNSS infrastructures and the projection that the installed base of GNSS devices will reach 6 billion in 2020, two-thirds of which will be outside Europe and North America, the ICG continues to add value as a platform for exchanging views on signal availability, integrity and interference issues, which is crucial for the quality of the resource.³

94. In the area of near-Earth objects, IAWN and SMPAG work to ensure that information is shared in discovering, monitoring and physically characterizing potentially hazardous near-Earth objects so that all countries, in particular developing countries with limited capacity in predicting and mitigating a near-Earth object impact, are aware of potential threats, and that capacity is built for developing effective emergency response and disaster management in the face of a near-Earth object impact threat.

95. IAWN is an interface linking together institutions performing functions such as discovering, monitoring and physically characterizing the potentially hazardous near-Earth object population and maintaining an internationally recognized clearing house for the receipt, acknowledgment and processing of all near-Earth object observations.

96. SMPAG comprises representatives of spacefaring nations and other relevant entities. Its responsibilities include laying out the framework, timeline and options

² As defined in directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an infrastructure for spatial information in the European Community.

³ European Global Navigation Satellite Systems Agency, GNSS Market Report: Issue No. 4 (Luxembourg, 2015) (available at <http://www.gsa.europa.eu/2015-gnss-market-report>).

for initiating and executing space mission response activities as well as promoting opportunities for international collaboration on research and techniques for near-Earth object deflection.

E. Space for sustainable development

97. Following UNISPACE III, the Committee strengthened its unique position to promote the wider application of space science and technology for sustainable development by creating closer links with the Commission on Sustainable Development, and working to raise awareness of the contributions space science and technology and their applications are making to the efforts of humankind to promote sustainable development in all countries and regions of the world.

98. The value of space technology and applications and space-derived data and information in contributing to sustainable development has been demonstrated by the fact that they improve the formulation and subsequent implementation of policies and programmes of action in connection with land and water management, marine and coastal ecosystems, health care, climate change, disaster risk reduction and emergency response, energy, navigation, seismic monitoring, natural resources management, biodiversity, agriculture and food security. The capacity of space science and technology in meeting development goals was recognized at the United Nations Conference on Sustainable Development, held in 2012 in Rio de Janeiro, Brazil.

99. In its report on the UNISPACE III+5 review (see A/59/174), in 2004, the Committee provided a road map for the further development of space capabilities to advance human development through making space tools more widely available by moving from the demonstration of the usefulness of space technology to a more broadly based operational use of space-based services. The plan of action contained in that report (see sect. VI.B) and endorsed by the General Assembly in its resolution 59/2 constituted a long-term strategy for enhancing mechanisms at the national, regional and global levels for developing and strengthening the use of space science and technology and their applications to support overarching global agendas for sustainable development; developing coordinated, global space capabilities; supporting specific agendas to meet human development needs at the global level; and supporting overarching capacity development.

100. In that regard, the Committee also provided substantive input for consideration by the Commission on Sustainable Development under its thematic clusters in the period 2006-2011 on the contributions space science and technology and their applications have made to a wide range of thematic areas, such as improving energy-efficiency; promoting industrial development; addressing climate change; and the role of space applications in agriculture, for sustainable resource management, consumption and production. Cross-cutting areas identified by the Commission on Sustainable Development, such as sustainable development in Africa and capacity-building and training opportunities for developing countries were also addressed (see A/AC.105/872, A/AC.105/892 and A/AC.105/944).

101. Paramount to the strategy for implementing the recommendations of UNISPACE III and contributing to the work of the Commission on Sustainable Development was the need to take into account the benefits of space-based data and

space infrastructure as essential inputs for decision-making in multiple areas. One such area is disaster management and emergency response (see A/AC.105/993).

102. With the adoption of the 2030 Agenda for Sustainable Development came a growing recognition that its goals and major targets required stronger space governance and supporting structures at all levels, including improved space-based data and space infrastructure.

103. The 17 Sustainable Development Goals and 169 targets demonstrate the scale and ambition of this new universal Agenda. It constitutes a plan of action for people, planet and prosperity. All countries and all stakeholders, acting in collaborative partnership, have committed to its implementation by taking the bold and transformative steps urgently needed to shift the world on to a sustainable and resilient path.

104. Space tools are highly relevant for the attainment of all 17 Sustainable Development Goals and their respective targets, either directly, as enablers and drivers for sustainable development, or indirectly, as an integral part of the indicators for monitoring the progress towards the implementation of the 2030 Agenda for Sustainable Development. This applies, for example, to Goal 3 on ensuring healthy lives and promoting well-being for all at all ages (space for global health); Goal 9 on building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation, and Goal 11 on making cities and human settlements inclusive, safe, resilient and sustainable (space for resilient societies and infrastructures); Goal 13 on urgent action to combat climate change and its impacts (space for monitoring and mitigating climate change); and Goal 14 on conserving and sustainably using the oceans, seas and marine resources for sustainable development (space for ocean monitoring). Space-based technologies are also vital for Goal 15 on protecting, restoring and promoting sustainable use of terrestrial ecosystems, sustainably managing forests, combating desertification and halting and reversing land degradation and halting biodiversity loss (space and biodiversity).

105. The effective use of space tools for implementing the 2030 Agenda for Sustainable Development will depend on having strong partnerships and cooperation with all relevant stakeholders to support Member States in fulfilling the Sustainable Development Goals at the national level.

106. UNISPACE+50 is therefore a very timely opportunity for the Committee, its subsidiary bodies and the Office to further align their work with the 2030 Agenda for Sustainable Development, its goals and targets, which will stimulate action over the next years in an integrated way, balancing the three dimensions of sustainable development: economic, social and environmental.

IV. The way ahead to UNISPACE+50

107. The space achievements to date did not come about spontaneously but are the result of the combined efforts undertaken at the national, regional, and global levels to foster international cooperation in the peaceful uses of outer space. The fact that the range of space activities has become so impressive can be attributed to the global UNISPACE conferences and the work of the Committee as the main

international platform for facilitating that cooperation, supported by the Office for Outer Space Affairs. Further testimony to this is that at the beginning of the space age, in the late 1950s, there were two space powers, and two satellites had been launched into outer space, whereas today more than 1,000 operational satellites orbit the Earth with over 60 countries operating their own satellites.

108. The Committee and its Subcommittees have provided critical institutional leadership to the development of the main legal and cooperation processes in space activities. The interaction among the Committee's broad-based membership, which includes space powers, emerging space nations, countries that are still in the early stages of building their space infrastructures, and an impressive number of space-related intergovernmental and non-governmental organizations, continues to position the Committee at the centre of global space governance.

109. UNISPACE+50, which will be held in 2018, 50 years after the first global United Nations Conference on the Exploration and Peaceful Uses of Outer Space, is therefore a timely opportunity to steer the course towards strengthening the Committee's mandates to address the current challenges and opportunities, in particular in the areas of the seven UNISPACE+50 thematic priorities endorsed by the Committee in 2016 (see A/71/20, para. 296):

- (a) Global partnership in space exploration and innovation;
- (b) Legal regime of outer space and global space governance: current and future perspectives;
- (c) Enhanced information exchange on space objects and events;
- (d) International framework for space weather services;
- (e) Strengthened space cooperation for global health;
- (f) International cooperation towards low-emission and resilient societies;
- (g) Capacity-building for the twenty-first century.

110. Another element central to the work of the Committee and the Office for Outer Space Affairs are the efforts to further increase coherence and synergy by building partnerships in the space-related work of entities of the United Nations system and international space-related entities. This is achieved, in part, through increased coordination within UN-Space and by implementing the recommendations of the Group of Governmental Experts on Transparency and Confidence-building Measures in Outer Space Activities, so as to address holistically the challenges to the safety, security and sustainability of outer space activities.

111. In the lead-up to UNISPACE+50, from 2016 to 2018, a three-year series of high-level forums will be held on the theme "Space as a driver for socioeconomic sustainable development". The forums will be an opportunity for the collective space community to offer guidance and recommendations for the UNISPACE+50 road map in the areas of: (a) space economy — the development of space-derived economic benefits; (b) space society — the evolution of society and societal benefits stemming from space-related activities; (c) space accessibility — all communities using and benefiting from space technology; and (d) space diplomacy — building partnerships and strengthening international cooperation in space activities.

112. The series of high-level forums is intended to drive the debate on the role of space science and technology in fostering global development, while at the same time providing a framework for development cooperation. The high-level forums will also be an opportunity to get into contact with officials of governmental, non-governmental and intergovernmental organizations responsible for space technology development and applications around the world, and to build a community working to implement projects and initiatives that help the economies, societies and diplomatic efforts of nations with a particular focus on the space sector. In this regard, the high-level forums represent a platform for this dialogue and a vital milestone towards UNISPACE+50, since they will address how best to integrate the economic, environmental, social, policy and regulatory aspects of space to help achieve global sustainable development.

113. This is particularly important in view of the fact that the world's population is projected to reach 8.5 billion by 2030 and 9.7 billion by 2050, and is projected to exceed 11 billion in 2100, with almost all the population growth from the current 7 billion taking place in less-developed countries.⁴ This trend places growing pressure on our planet and its population. Space applications have the global reach to address that challenge, since they support environmental security, food security, disaster preparedness and overall human security, as well as forming one of the cornerstones of the information society.

114. In fostering global partnerships and engaging the space community at large, the Office has launched the Multi-Donor Strategic Support to UNISPACE+50 initiative, which seeks to provide support to the UNISPACE+50 process in order to prepare, structure, and implement activities to promote space-based applications and technologies for innovative and timely actions to support Member States in meeting objectives of the three global development agendas, namely the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change.

115. Working with all relevant stakeholders in addressing overarching, long-term development concerns, UNISPACE+50, will define concrete deliverables pertaining to space for development, based on the four pillars of space economy, space society, space accessibility and space diplomacy, thus shaping a road map towards "Space 2030".

⁴ See Department of Economic and Social Affairs, *World Population Prospects: The 2015 Revision* (ESA/P/WP.2014).