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Partnerships

Special report of the Inter-Agency Meeting on Outer Space Activities on partnerships in the use and applications of space science and technology within the United Nations system

I. Introduction

1. The Inter-Agency Meeting on Outer Space Activities (UN-Space) has served as the focal point for inter-agency coordination and cooperation in space-related activities since the mid-1970s, with the aim of promoting synergies and collaboration related to the use of space technology and applications in the work of United Nations entities.
2. The General Assembly, in its resolution [73/91](#), on international cooperation in the peaceful uses of outer space, urged UN-Space, under the leadership of the Office for Outer Space Affairs of the Secretariat, to continue to examine how space science and technology and their applications could contribute to the 2030 Agenda for Sustainable Development and encouraged entities of the United Nations system to participate, as appropriate, in UN-Space coordination efforts.
3. At its thirty-seventh session, held at the headquarters of the World Health Organization (WHO), in Geneva, on 24 August 2017, UN-Space agreed to organize a workshop, to be held in New York in the second half of 2018, to consider public-private partnership models and cooperation with the private sector to increase the use of space science, technology and applications for economic growth and sustainable development, as well as the legal and ethical aspects of cooperation models involving non-State actors.
4. The thirty-eighth session of UN-Space was organized in the form of a workshop by the Office for Outer Space Affairs in its capacity as the secretariat of UN-Space and was co-hosted by the United Nations Office for Partnerships. It was held at United Nations Headquarters on 29 October 2018. The objectives of the session were, inter alia, to share experiences in forming partnerships to undertake space-related activities for the implementation of specific mandates of individual entities of the United Nations system, to identify challenges in building successful partnerships with partners outside the United Nations system in support of the 2030 Agenda for Sustainable Development and to share practices to overcome those challenges.



5. At the session, UN-Space noted the wealth of discussion and experiences of United Nations entities in cooperation with the private sector and agreed that its special report, to be presented to the Committee on the Peaceful Uses of Outer Space at its sixty-second session, in 2019, would focus on promoting partnerships in the use of space science, technology and applications for economic growth and the attainment of the Sustainable Development Goals.

6. In its special reports, issued since 2005, UN-Space has addressed the following themes: new and emerging technologies, applications and initiatives for space-related inter-agency cooperation ([A/AC.105/843](#)); contribution of the United Nations system to space benefits for Africa ([A/AC.105/941](#)); the use of space technology within the United Nations system to address climate change issues ([A/AC.105/991](#)); space for agriculture development and food security ([A/AC.105/1042](#)); space for global health ([A/AC.105/1091](#)); 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](#)); and space weather ([A/AC.105/1146](#)).

7. The present report was prepared by the Office for Outer Space Affairs on the basis of contributions received from the following United Nations entities: Executive Office of the Secretary-General; Department of Economic and Social Affairs of the Secretariat; Economic Commission for Africa (ECA); Economic and Social Commission for Asia and the Pacific (ESCAP); Economic and Social Commission for Western Asia (ESCWA); Office for Disarmament Affairs of the Secretariat; Office for Outer Space Affairs; Office of Information and Communications Technology of the Secretariat; Office of Legal Affairs of the Secretariat; United Nations Office on Drugs and Crime (UNODC); secretariat of the United Nations Framework Convention on Climate Change; United Nations Institute for Disarmament Research (UNIDIR); International Atomic Energy Agency (IAEA); International Telecommunication Union (ITU); and World Meteorological Organization (WMO).

II. The United Nations system and partnerships

8. The 2030 Agenda for Sustainable Development provides a global blueprint for dignity, peace and prosperity for people and the planet, now and in the future. Sustainable Development Goal 17 is on strengthening global partnerships to support and achieve the ambitious targets of the 2030 Agenda, bringing together national Governments, the international community, civil society, the private sector and other actors. When endorsing the Agenda, the States Members of the United Nations referred to the process of achieving the Sustainable Development Goals as a collective journey and expressed their determination to mobilize the means required to implement the Agenda through a revitalized Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focused, in particular, on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.

9. The *Sustainable Development Goals Report 2018* contains a review of progress in the third year of implementation of the 2030 Agenda. It is noted that, with regard to Goal 17, despite advances in certain areas, more needed to be done to accelerate progress and that all stakeholders would have to refocus and intensify their efforts on areas where progress had been slow. Given the importance of Goal 17 for the attainment of the Agenda and the interlinkages between and integrated nature of the Goals, the implementation of Goal 17 was comprehensively reviewed by the high-level political forum on sustainable development, which is the central United Nations platform for follow-up and review of the 2030 Agenda, at its sessions in 2017 and 2018. The forum will continue to review implementation of Goal 17 at its session in 2019.

10. In September 2018, the Secretary-General launched his strategy on new technologies in order to define how the United Nations system will support the use of new technologies to accelerate the achievement of the 2030 Agenda and to facilitate

the alignment of those technologies with the values enshrined in the Charter of the United Nations, the Universal Declaration of Human Rights and the norms and standards of international law. In the strategy, the Secretary-General recognized, inter alia, the need to work closely with new and current partners to overcome challenges and reconcile interests, especially in the areas of privacy and human rights, ethics, equality and equity, sovereignty and responsibility, and transparency and accountability.

11. The strategy builds on the efforts made over the past year by the United Nations system to address rapid technological advances and the multifaceted ways in which those advances affect its core work in the areas of peace and security, development, human rights and humanitarian action. In the strategy, the Secretary-General identified the following five principles to guide United Nations engagement with new technologies: (a) protect and promote global values; (b) foster inclusion and transparency; (c) work in partnership; (d) build on existing capabilities and mandates; and (e) be humble and continue to learn.

12. A wide range of United Nations offices and departments, such as the United Nations Office for Partnerships, the Global Compact Office, the Office of Legal Affairs, the Ethics Office, and the Department of Operational Support, are involved in various aspects of partnerships aimed at promoting or facilitating the more effective engagement of public and private sector stakeholders, including civil society organizations, with the United Nations development system. The roles of those entities are described below.

13. The United Nations Office for Partnerships advises, guides and facilitates partnership events and initiatives between the United Nations and non-State actors, such as the private sector, foundations and civil society. In addition to being a platform for the more effective engagement of public and private sector stakeholders, the Office also serves as a global gateway for public-private partnerships to advance the implementation of the 2030 Agenda. It oversees the United Nations Fund for International Partnerships, established in 1998 to serve as the interface between the United Nations Foundation Inc. and the United Nations system, and the United Nations Democracy Fund, established by the Secretary-General in July 2005 to support democratization around the world.

14. The United Nations Office for Partnerships also provides partnership advisory and outreach services in response to demand from the United Nations system, Governments and non-State actors, and engages with a wide range of partners to guide them and facilitate partnership events and initiatives in support of the Sustainable Development Goals. In his report on repositioning the United Nations development system to deliver on the 2030 Agenda (A/72/684-E/2018/7), the Secretary-General announced that the Office would be firmly established as the Organization's global gateway for partnerships.

15. The Office for Outer Space Affairs, as the United Nations hub for space affairs, leverages its position by helping countries, in particular, developing countries, to achieve the Sustainable Development Goals, including Goal 17, by forging partnerships with and among a wide range of space actors. For example, the Office jointly organized the UN-Space meeting on partnerships in space-related activities with the United Nations Office for Partnerships in October 2018. Moreover, it collaborated with other entities to organize events such as the United Nations/Austria Symposium on Space for Sustainable Development Goals, Stronger Partnerships and Strengthened Collaboration in September 2018 and the United Nations/China Forum on Space Solutions in April 2019.

16. The Global Compact Office promotes responsible business practices and United Nations values among the global business community and the United Nations system. In realizing its vision of mobilizing a global movement of companies and stakeholders committed to sustainable and responsible business practices, the United Nations Global Compact supports companies to do business responsibly by aligning their strategies and operations with its Ten Principles, which cover human rights, labour,

the environment and combating corruption, and to take strategic actions to advance the Sustainable Development Goals, with an emphasis on collaboration and innovation.

17. Under the Ten Principles of the United Nations Global Compact, businesses are called upon to support and respect the protection of internationally proclaimed human rights and make sure that they are not complicit in human rights abuses; to uphold freedom of association and the effective recognition of the right to collective bargaining and support the elimination of all forms of forced and compulsory labour, the effective abolition of child labour and the elimination of discrimination in respect of employment and occupation; to support a precautionary approach to environmental challenges, undertake initiatives to promote greater environmental responsibility and encourage the development and diffusion of environmentally friendly technologies; and to work against corruption in all its forms, including extortion and bribery.

18. The Office of Legal Affairs, through its General Legal Division, provides a wide range of advice, services and assistance on legal matters affecting the Organization's operation and activities. The Division's activities include the development and implementation of guidelines and modalities for expanding and developing partnerships and other forms of cooperation with the private sector, including with regard to the use of the name and emblem of the United Nations, and the provision of assistance to other offices and departments of the United Nations, including the Office for Outer Space Affairs, for the conclusion of appropriate legal instruments relating to such partnerships and other forms of cooperation and support to the peace operations of the Organization, including arrangements with commercial vendors for personnel, equipment and logistics support.

19. Upon request, the Ethics Office provides entities of the United Nations Secretariat with assistance in due diligence, which includes identification of risks and potential conflicts of interest, advice and recommendations, referrals to other offices and advice on risk management. The Office promotes adherence to policies and procedures related to ethical standards aimed at ensuring that all United Nations activities are consistent with the Organization's core values and adhere to the highest standards of ethical conduct; that there is no involvement in any form of corrupt or fraudulent practices; and that partnerships serve the best interests of the United Nations and do not negatively affect the Organization's reputation, integrity or credibility.

20. The Department of Operational Support, through its Procurement Division, works to ensure fair and transparent commercial partnerships with vendors. The United Nations represents a global market of over \$17 billion annually for all types of products and services and the United Nations Global Marketplace is a platform that acts as a single window through which potential suppliers may register with United Nations entities that use the Marketplace as their vendor database. The Marketplace, which was initially developed in the 1990s, is mandated by the General Assembly to enhance the transparency and increase the harmonization of United Nations procurement practices; simplify and streamline the registration process for vendors; and increase procurement opportunities for vendors from developing countries.

21. Vendors doing business with the United Nations are required to accept and comply with the United Nations Supplier Code of Conduct. The sixth revision of the Code, which was approved on 9 April 2018 by the High-level Committee on Management, stipulates that: (a) vendors may not engage in corrupt practices; (b) vendors must disclose information on any situation that may appear to present a conflict of interest; (c) the United Nations has a zero-tolerance policy with regard to the acceptance of gifts or hospitality from vendors; and (d) there are restrictions on the employment by vendors of former United Nations staff members.

III. Partnerships in space-related activities

A. Developments in space policy

22. Partnerships are becoming an important modality for cooperation in outer space as an increasing number of private companies enter the traditionally Government-dominated space sector owing to rapid advances in technology and lower barriers to entry to the sector. Recognizing the emergence of new space actors, the General Assembly, in its resolution [72/77](#) of 7 December 2017, entitled “International cooperation in the peaceful uses of outer space”, agreed that the Office for Outer Space Affairs should pursue greater engagement with industry and private sector entities to further their support for and contributions to the overall work of the Office.

23. On 26 October 2018, the General Assembly adopted resolution [73/6](#), entitled “Fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space: space as a driver of sustainable development”. In the resolution, the General Assembly emphasized the need to build stronger partnerships and international cooperation and coordination in the exploration and peaceful uses of outer space at all levels and among the participants representing the space community, in order to enhance the contribution of space activities for the realization of the 2030 Agenda and the Sustainable Development Goals and targets contained therein.

24. Also in that resolution, the General Assembly invited the Committee on the Peaceful Uses of Outer Space to continue to develop, on the basis of the results of the UNISPACE+50 process, a “Space2030” agenda and implementation plan, and acknowledged the importance of global partnership and strengthened cooperation among Member States, intergovernmental and non-governmental organizations, industry and private sector entities in fulfilling the “Space2030” agenda and its implementation plan.

25. A series of high-level forums launched by the Office for Outer Space Affairs on the theme “Space as a driver for socioeconomic sustainable development” has given the space community an opportunity to address cross-sectoral matters by integrating the economic, environmental, social, policy and regulatory aspects of space activities into the pursuit of global sustainable development, as well as to forge new partnerships and strengthen unified efforts at all levels and among all relevant stakeholders in the space sector.

26. The Office for Outer Space Affairs continues to support the Committee on the Peaceful Uses of Outer Space and its subsidiary bodies in promoting international cooperation in space activities for peaceful purposes at a time when more actors, representing both government agencies and non-governmental entities, including industry and the private sector, are becoming increasingly involved in ventures to explore and use space and carry out space activities.

27. In accordance with General Assembly resolution [71/90](#), on 12 October 2017, the Disarmament and International Security Committee (First Committee) and the Special Political and Decolonization Committee (Fourth Committee) held the second joint ad hoc meeting on the topic of possible challenges to space security and sustainability. The programme for the half-day panel discussion was prepared by the Office for Outer Space Affairs and the Office for Disarmament Affairs and brought together panellists from the broader space community, including academia, civil society, industry and the private sector.

28. The panel discussion was opened by the Chairs of the First and Fourth Committees and featured presentations entitled “Satellite industry interaction with Governments to support the long-term sustainability of space”; “Outer space security: identifying challenges and solutions”; “Technological innovation of space activities and private actors’ cooperation in support to the broader outer space legal regime”; and “A fragmenting regime? Prospects for the future of outer space governance”. The

presentations were followed by an open discussion. A further joint half-day panel discussion will be convened in 2019 in accordance with General Assembly resolutions 73/72 and 73/91.

29. As reflected in the Agenda for Disarmament, launched by the Secretary-General on 24 May 2018, the Office for Disarmament Affairs, the Office for Outer Space Affairs and UNIDIR were tasked with deepening their engagement with States on the practical implementation of transparency and confidence-building measures in outer space activities and on the development of effective measures to prevent an arms race in outer space. On 1 February 2019, those three entities jointly organized a series of panels on further practical measures to prevent an arms race in outer space and to promote dialogue between States and the broader space community, including industry, the commercial sector and civil society.

30. UNIDIR continues to promote multilateral processes related to the strengthening of security in outer space and the development of norms for sustainable behaviour. Throughout 2018, UNIDIR provided technical expertise to the Conference on Disarmament and its subsidiary body on the prevention of an arms race in outer space and to the Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space. On 30 January 2019, UNIDIR held a space security workshop for Member States to set out the global implications of space security challenges and the legal framework for space activities. UNIDIR will continue to support processes in the framework of the Disarmament Commission relating to the practical implementation of transparency and confidence-building measures for space activities.

31. In May 2018, UNIDIR held its annual space security conference, providing an opportunity for States to engage with international experts on space security challenges and a forum for governmental, civil and commercial actors to discuss the development of norms on the sustainable use of space, including those relating to the testing of anti-satellite technologies in space. The conference was organized jointly with the Secure World Foundation and the Simons Foundation (Canada), and was supported by funding from China and the Russian Federation.

B. Developments in space activities

32. The achievement of the 2030 Agenda requires different actors to work together in an integrated manner. The United Nations has seen increased interest among States, in particular, developing countries, in applying space-based technologies in a way that promotes socioeconomic development and thereby increases the quality of life of their citizens. Emerging space actors, representing industry, the private sector, academia and civil society, could support States in their development efforts by engaging in public-private and civil society partnerships in order to mobilize and share knowledge, expertise, technologies and financial resources.

33. As part of its Access to Space for All initiative, the Office for Outer Space Affairs leverages triangular cooperation and provides developing countries with an opportunity for the orbital deployment of satellites. As a result, the first Kenyan satellite was successfully deployed on 11 May 2018 from the Japanese experiment module “Kibo” of the International Space Station, making history as the first satellite launched with the support of the United Nations. That milestone was made possible only through international collaboration between Governments, space agencies, academia and the Office, in its role as a capacity-builder and facilitator.

34. Building on that success, the Access to Space for All initiative also fosters the development of domestic capabilities through partnerships with space agencies and space entrepreneurs, including through the Bremen Drop Tower at the Center of Applied Space Technology and Microgravity in Germany and the Large Diameter Centrifuge of the European Space Research and Technology Centre of the European Space Agency. Through the announcement of other opportunities, the Office intends to facilitate access to experiments on the China Space Station and the Dream Chaser

of the Sierra Nevada Corporation and to the Bartolomeo facility of Airbus Defence and Space GmbH, located on board the International Space Station.

35. The Office works closely with national space agencies and private companies to leverage their combined expertise in the use of the Earth observation technologies for economic, social and scientific development and improved decision-making, particularly in developing countries, and promotes access to imagery catalogues, data and analytical services. On the basis of that scientific and technological expertise, a space solutions compendium is being developed that will provide targeted solutions to nations in planning and monitoring their efforts to achieve the Sustainable Development Goals. The Office is also working in partnership with the French Space Agency to advance the use of space for climate observation through the coordination of data acquisition and analysis from a multinational satellite constellation. In addition, the Office promotes space science research to better understand climate change in collaboration with the German Space Agency through its biennial conferences on space and climate change. The Office is also developing a modern collaborative online platform aimed at supporting specific goals through, for example, portals on space for women, space for water and space for sustainable development.

36. The Office continues to foster cooperation with the regional centres for space science and technology education, affiliated to the United Nations, and focuses on capacity-building in space science, technology, law and policy. The Office also promotes space science education through fellowships in small-satellite engineering, navigation and positioning systems, basic space science and applications with renowned academic institutions in Hungary, Italy, Japan and the Russian Federation.

37. Furthermore, the Office has established a growing network of, to date, 23 regional support offices that feature regional or national centres of expertise set up within an existing entity by a Member State or group of Member States. Those regional support offices are hosted by a space agency, research centre, university or disaster management institution and support the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), covering the areas of outreach and capacity-building, horizontal cooperation and technical advisory support.

38. The Geospatial Information Section continues to manage the system contracts related to the provision of geospatial information systems (software and hardware) and satellite imagery. Following the incorporation of the Section into the Office of Information and Communications Technology of the Secretariat, which provides overall information and communications technology to the Organization, the field of geospatial information management is increasingly being recognized as part of the information management ecosystem.

39. The use of satellite imagery by bodies such as the panels of experts of various sanctions committees of the Security Council continues to increase. Such bodies continue to receive satellite imagery analysis and interpretation services to identify or confirm events of interest to them. Additionally, the Section has provided imagery interpretation services for the planning, monitoring and execution of the newly established United Nations Mission to support the Hudaydah Agreement, aimed at coordinating United Nations efforts to assist parties in implementing the ceasefire agreement in Yemen.

40. Recent advancements in miniaturized satellites and cost model changes open up a new frontier in the area of remote sensing. Specialized small sensors such as synthetic aperture radars will provide very high temporal resolution images with a revisit period of as little as four hours anywhere on Earth from a relatively low Earth orbit. The United Nations is aware of the benefits and potential offered by synthetic aperture radar technology in peace operations. The Geospatial Information Section is currently conducting a pilot project involving the application of synthetic aperture radar with the Government of Finland. The main goal of that project is to provide additional geospatial information (e.g., the detection of surface and near-surface

changes, the monitoring of large areas containing multiple border crossings and the verification of disruptive activities in near real-time).

41. The Geospatial Information Section, in cooperation with the European Union Satellite Centre under the Copernicus Programme, is studying the possibility of enhancing the situational awareness capacities of United Nations field missions for detecting activities through multi-temporal coherence imagery analysis using Sentinel imagery. That methodology will allow United Nations field missions to monitor large areas of interest and, if necessary, conduct further investigations using high-resolution imagery.

42. The Government of the United States of America has provided the United Nations peace operations community with the opportunity to access existing satellite image archives through a commercial satellite imagery platform, the Enhanced Viewer-Web Hosting Service. That platform is used for image analysis of the areas where peacekeeping operations operate.

43. The OneMap Initiative has been established to produce and share geospatial information (derived from satellite imagery and validated field surveys) in countries where accurate and up-to-date geospatial information is unavailable or insufficient and to develop a common operational framework among participating organizations. The aim of the OneMap Initiative is to create and maintain a suitable and sustainable mechanism for various stakeholders to work closely together as one team to avoid duplication of and synchronize, integrate and streamline efforts and resources to provide the maximum benefit to all. The OneMap pilot project is being implemented in South Sudan, together with the Geo-referenced Infrastructure and Demographic Data for Development initiative.

44. Through the use of geographical information systems and satellite imagery, the Operational Satellite Applications Programme of the United Nations Institute for Training and Research provides geospatial information to United Nations decision makers, Member States, international organizations and non-governmental organizations. The Programme develops solutions for integrating data collected in the field with remote sensing imagery and data collected through geographical information systems. That integration takes place through web-mapping and information-sharing mechanisms, including the remote monitoring of development projects and the sharing of geographical data using web services, in line with the Programme's mission to deliver integrated satellite-based solutions for human security, peace and socioeconomic development.

45. The Programme has created an extended network of public and private partners and collaborates with the majority of United Nations agencies, space agencies and several international initiatives that are active in the area of satellite technology geospatial information. Its strategic partnership with the European Organization for Nuclear Research, where the Programme's production centre is located, gives the Programme edge computing capability and virtually unlimited storage capacity. The Programme is designed to produce output for identified users and beneficiaries by harnessing technology to provide specific and usable applications in three main areas: humanitarian relief and coordination; human security and humanitarian law; and territorial planning and monitoring.

46. UNODC uses satellite imagery and navigation satellite data for monitoring the illicit cultivation of crops, in particular, coca, opium poppy and cannabis, and to map other crops in order, for example, to assess the impact of alternative development projects. UNODC is currently working in partnership with the United Nations Development Programme (UNDP) to conduct an impact assessment in Afghanistan, combining satellite imagery with socioeconomic data on farmers. All the satellite imagery for crop monitoring is acquired from commercial companies such as Airbus, DigitalGlobe and Effgis, using United Nations systems contracts.

47. UNODC is also using satellite synthetic aperture radar and optical images provided by the European Maritime Safety Agency of the European Union in its work

to support maritime law enforcement responses aimed at identifying vessels that could be involved in illicit activities, often related to illegal fishing or smuggling activities. UNODC is partnering with Vulcan Inc. in the Seychelles to enhance maritime domain awareness capability in order to counter illicit activity at sea, such as illegal trans-shipments.

C. Sectoral cooperation

48. The work of WMO, a specialized agency of the United Nations and the United Nations system's authoritative voice on weather, climate, water and related environmental services, is carried out in close partnership with the national meteorological and hydrological services of its 186 member States and 6 member territories. WMO has established the goal of expanding cooperation between the various stakeholders participating in the global weather enterprise. That goal is in line with the 2030 Agenda, in which the need for more partnerships between the public and private sectors in order to achieve the Sustainable Development Goals is emphasized. In line with WMO resolution 33 (EC-70), cooperation takes place within the WMO Policy Framework for Public-Private Engagement. Working arrangements are in place with the Association of Hydro-Meteorological Equipment Industry, which represents and promotes the views of private sector companies whose work relates to the activities of WMO.

49. There is growing interest among non-governmental space actors in contributing to the space-based observation system component of the WMO Integrated Global Observing System, to the related ground segment and to a wide range of downstream services. That interest is driven by the increasing capacity of the private sector for developing, launching and operating space-based observation system components. In its engagement with the private sector, the priority of WMO is to maintain open access to and share data from observations, as mandated by WMO resolutions 25 (Cg-XIII), 40 (Cg-XII) and 60 (Cg-XVII).

50. The legal instruments of ITU regulate the use of radio frequencies in space. The ITU legal framework has treaty status and is binding on ITU member States; the Constitution and Convention of ITU are complemented by the Radio Regulations, which are part of the Administrative Regulations and govern the use of frequency bands for radio services and any associated orbits, including the geostationary satellite orbit, which are limited natural resources. ITU is composed of member States and of other entities and organizations that belong to one of three membership categories: sector member, associate or academia. While private sector entities have different rights than member States, they can become members by joining ITU directly.

51. With regard to space activities, ITU member States ensure legal certainty when using radio frequencies and orbits by regularly revising and updating the Radio Regulations. In carrying out such updates, satellite operators provide technical expertise and insight into future trends in the space sector. Member States and satellite operators have been working in synergy since the implementation of the Radio Regulations, with active participation in the world radiocommunication conferences and the submission of satellite networks filings. That collaboration has ensured the constant evolution of the Radio Regulations to fit the needs of and anticipate space technologies. The same synergy also plays a crucial role in the radio standardization process and the dissemination of best practices related to space activities. The involvement of all public and private space actors fosters the ITU mission to ensure the rational, efficient and economic use of orbits and radio frequencies while guaranteeing equitable access to those scarce resources.

52. The current challenge facing ITU in respect of space activities is ensuring that the process of cooperation between member States and the private sector to adapt the ITU framework also includes new space actors, whether they are new spacefaring nations or new companies that are often smaller than traditional satellite operators

and manufacturers. In order to ensure the involvement of those actors, ITU is considering various actions such as specific provisions in the Radio Regulations to cover satellites with a shorter mission duration, improved online tools for submitting frequency requests, smarter access to ITU data and new categories of ITU membership.

53. In 2009, IAEA and the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space jointly published the Safety Framework for Nuclear Power Source Applications in Outer Space (A/AC.105/934). IAEA continues to maintain close working relations with the Subcommittee and its Working Group on the Use of Nuclear Power Sources in Outer Space with a view to promoting and facilitating the implementation of the Safety Framework.

54. The meetings of the Working Group on the Use of Nuclear Power Sources in Outer Space are convened in Vienna in line with the Group's multi-year workplan for the period 2017–2021, the objectives of which are: (a) promoting and facilitating the implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space; and (b) discussing 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.

55. WHO cooperates closely with the Office for Outer Space Affairs within the framework of the Working Group on Space and Global Health of the Scientific and Technical Subcommittee, established in 2018. At its first meetings in 2019, the Working Group agreed on its workplan and on the questionnaire on experiences and practices in the use of space science and technology for global health. That questionnaire is to be circulated to States members of the Committee and international intergovernmental and non-governmental organizations with permanent observer status with the Committee, United Nations entities, the Group on Earth Observations, the World Organization for Animal Health, the International Federation of Red Cross and Red Crescent Societies and Doctors Without Borders.

56. Subject to the availability of resources, the Office for Outer Space Affairs is planning to hold two workshops on space and global health, in 2020 and 2021, in collaboration with WHO and the World Organization for Animal Health and in consultation with States members of the Committee, regional commissions and other international intergovernmental and non-governmental organizations, as appropriate. The workshops would be aimed at raising awareness and sharing national, regional and interregional experiences and practices in increasing the use of space science and technology for global health and attaining the health-related Sustainable Development Goals, including through partnerships.

57. The Department of Economic and Social Affairs and the Office for Outer Space Affairs have engaged in areas of mutual interest relating to sustainable development and the 2030 Agenda. That engagement is centred around both Earth- and space-related themes, such as recognition of the extraordinary potential of rapid technological change as well as the potential risks of people and communities being left behind or excluded from such changes. In order to ensure that all people and countries are supported in accessing the benefits of space-based and other technologies that facilitate sustainable development, good governance and strong institutions are required at all levels to ensure positive development outcomes. The Office for Outer Space Affairs and the Department of Economic and Social Affairs have collaborated on key publications, including the Department's flagship publication, the *United Nations E-Government Survey*, and have shared expertise through expert group meetings, inter-agency working groups and other relevant meetings that have primarily focused on strengthening collaboration for development and the implementation of the Sustainable Development Goals.

58. Moreover, the Office for Outer Space Affairs plans to collaborate with United Nations entities, including the United Nations Children's Fund (UNICEF), to finance the development of small satellites, and the United Nations Humanitarian Response

Depot, a global network of hubs managed by the World Food Programme that procures, stores and rapidly transports emergency supplies for the humanitarian community, to facilitate access to space-based solutions to humanitarian crises.

D. Regional cooperation

59. In its resolution [73/91](#), the General Assembly noted with satisfaction the adoption of the African Space Policy and Strategy by the Assembly of the African Union at its twenty-sixth ordinary session, held in Addis Ababa on 30 and 31 January 2016, and noted that that achievement marked the first step towards the realization of an African outer space programme within the framework of the African Union Agenda 2063.

60. Building on the Africa Regional Data Cube and the Digital Earth Australia programme, ECA is putting in place a collaborative partnership that includes Geoscience Australia, the Group on Earth Observations, AfriGEOSS, the Committee on Earth Observation Satellites and the World Economic Forum, in order to develop the Digital Earth Africa programme. That initiative is intended to deliver an exceptional fit-for-purpose platform that will translate over 50 years of Earth observation satellite imagery into information on and insights into the changing African landscape and coastline. Digital Earth Africa will be a unique continental-scale platform that will democratize the ability to process and analyse satellite data. It will track changes across Africa in unprecedented detail and provide spatially enabled data on a vast number of issues, including soil and coastal erosion, agriculture, forest and desert development, water quality and changes to human settlements.

61. Furthermore, ECA has initiated a dialogue with corporate providers (such as Airbus One Atlas for Africa, DigitalGlobe and EarthWatch) to make available very high-resolution satellite imagery across Africa. When completed, that innovative model of partnership will offer on-demand access to up-to-date satellite imagery, enabling users to get the best value by allowing them to purchase only what they need.

62. In the Arab region, ESCWA, through the Information and Communication Technology Policies Section of its Technology for Development Division, is engaging various sectors of the region in harnessing the power of information and communications technologies and digital and space technologies to implement the 2030 Agenda and leave no one behind. The 2019 report entitled the *Arab Digital Development Report* is focused on empowerment and inclusiveness. The report is produced with input from ITU, the Department of Economic and Social Affairs and other United Nations entities in the region.

63. Additionally, and through its Sustainable Development Policies Division and its Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socioeconomic Vulnerability in the Arab Region, ESCWA is developing layers of spatial information using remote sensing satellite imagery on geographical information systems for climate vulnerability assessment and climate modelling, with applications in areas related to vegetation indices, land use and soil parameters. Furthermore, the ESCWA Statistics Division is working on geospatial data for statistical purposes in the Arab region.

64. Asia and the Pacific is home to some of the leading actors in the space community, along with many developing countries that urgently need or regularly utilize space information for a variety of purposes in the sustainable development process. On 10 October 2018, ministers and heads of the space community from over 30 countries in Asia and the Pacific met in Bangkok for the Third Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific. The Conference adopted two documents that will guide work in Asia and the Pacific for the next decade: (a) the Ministerial Declaration on Space Applications for Sustainable Development in Asia and the Pacific; and (b) the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018–2030).

65. The Plan of Action is a regionally coordinated, inclusive and detailed blueprint that is driven by countries' needs and that harnesses space and geospatial applications and digital innovations to support countries, particularly those with specific needs, to achieve the 2030 Agenda. The following entities have contributed to the development and negotiation process and pledged to collaborate closely and work collectively towards the implementation of the Plan of Action: the Office for Outer Space Affairs; the United Nations Institute for Training and Research and its Operational Satellite Applications Programme; UN-SPIDER; the European Space Agency; the Group on Earth Observations; the Asia-Pacific Regional Space Agency Forum; the Asia-Pacific Space Cooperation Organization; the Asian Disaster Reduction Center and its Research and Training Center for Space Technology and Applications; and the World Geospatial Industry Council.

66. The Plan of Action maps sectoral needs and resources at the national and regional levels and promotes multisectoral coordination. It is fully aligned with the ESCAP Regional Road Map for Implementing the 2030 Agenda for Sustainable Development in Asia and the Pacific and will contribute to the UNISPACE+50 process and the "Space2030" agenda. It details 188 actions in the following thematic areas: (a) disaster risk management; (b) natural resource management; (c) connectivity; (d) social development; (e) energy; and (f) climate change. All actions will significantly contribute to achieving 37 targets of 14 of the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction 2015–2030.

67. ESCAP will continue to implement activities in support of the Plan of Action through the long-standing Regional Space Applications Programme for Sustainable Development (RESAP). Notably, through its operational arm, the Regional Cooperative Mechanism for Drought Monitoring and Early Warning, RESAP is contributing to disaster risk reduction, early warning systems and emergency response in Asia and the Pacific. Various service nodes in Australia, China, India and Thailand support drought-prone developing countries by building capacities for monitoring and mitigating drought through a range of geospatial data and tools.

68. In September 2018, a drought-monitoring system known as Mongolia DroughtWatch, which had been adapted to suit conditions in Mongolia, became operational in the country. The system was developed by the Institute of Remote Sensing and Digital Earth of China in collaboration with the National Remote Sensing Centre of Mongolia. In addition, the drought-monitoring tool developed and tailored for Myanmar by the National Remote Sensing Centre of India is regularly being used in the dry zone of the country to produce 5- to 15-day outlook reports on drought conditions. For Cambodia, eWater, Geoscience Australia and the Bureau of Meteorology of Australia have also developed a comprehensive pilot water accounting system, along with a data cube, which enables space- and ground-derived information to be better stored, combined and examined.

69. In addition, work to strengthen multi-hazard early warning systems in Pacific island countries, supported by the Government of Japan and other key partners such as the Indonesian Agency for Meteorology, Climatology and Geophysics, assisted those countries in the use of statistical and geospatial data as a key component of early warning systems through technical training, regional workshops and pilot projects.

70. ESCAP supports capacity-building for member States in space applications through partnerships with various training institutions in Asia and the Pacific. In 2018, the secretariat sponsored five young technicians from Bangladesh, Mongolia, Myanmar, Papua New Guinea and Tajikistan to undertake a master's degree course on remote sensing and geographical information systems at the Centre for Space Science and Technology Education in Asia and the Pacific and the Chinese University of Hong Kong, China, with full scholarships provided by the Government of India and the South-South Education Foundation.

IV. Leveraging partnerships through stronger cooperation mechanisms

71. Achieving the objectives of the 2030 Agenda requires cooperation and coordination with a wide range of other stakeholders, institutions and processes. A number of mechanisms, networks, systems and panels are in place to promote interaction and partnerships with a view to identifying and examining technological needs and gaps, including with regard to scientific cooperation, innovation and capacity-building, and to help facilitate the development and dissemination of technologies relevant to the Sustainable Development Goals. Such mechanisms include a technology facilitation mechanism established to support the 2030 Agenda; UN-Space, the inter-agency mechanism for coordination and collaboration in space-related activities; the United Nations system network to coordinate geospatial information management; and global observation systems and panels that harness space-derived data.

72. By means of paragraph 70 of the 2030 Agenda, Member States launched a technology facilitation mechanism in order to support the implementation of the Sustainable Development Goals. The mechanism is aimed at facilitating multi-stakeholder collaboration and partnerships through the sharing of information, experiences, best practices and policy advice among Member States, civil society, the private sector, the scientific community, United Nations entities and other stakeholders.

73. The mechanism comprises the following: the United Nations inter-agency task team on science, technology and innovation for the Sustainable Development Goals, which include a group of 10 representatives from civil society, the private sector and the scientific community; a collaborative multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals; and an online platform that acts as a gateway for information on existing initiatives, mechanisms and programmes related to science, technology and innovation. The fourth annual multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals will take place on 14 and 15 May 2019 at United Nations Headquarters and the theme will be “Science, technology and innovation for ensuring inclusiveness and equality, with a special focus on Sustainable Development Goals 4, 8, 10, 13, and 16”.

74. UN-Space was established as a focal point for coordination and cooperation and is aimed at promoting synergies and collaboration related to the use of space technology and applications in the work of United Nations entities. UN-Space convenes its annual sessions and issues a report on its deliberations for the consideration of the Committee on the Peaceful Uses of Outer Space, the primary intergovernmental body that deals with the peaceful uses of space and international cooperation in outer space. UN-Space prepares biennial reports of the Secretary-General on the coordination of space-related activities within the United Nations system and produces special reports on selected topics.

75. UN-Space organizes open sessions to promote dialogue among Member States and other stakeholders and demonstrate examples of how the United Nations system responds to selected themes. The themes of previous sessions have been the following: Education and training in space-related areas: challenges and opportunities in the United Nations system (2004); Space technology for disaster management: opportunities within the United Nations system (2005); Space technology for sustainable development and disaster management: opportunities within the United Nations system (2006); The use of space-derived geospatial data for sustainable development in the United Nations system (2007); Public-private partnerships and innovative funding approaches in the United Nations system to promote the use of space technology and its applications (2008); Space benefits for Africa: contribution of the United Nations (2009); Space technology for emergency communications (2010); Space and climate change (2011); Space for agriculture and food security

(2012); Space and disaster risk reduction: planning for resilient human settlements (2013); Engaging space tools for development on Earth: contribution of space technology and applications to the post-2015 development agenda (2014); Space-based information for development (2015); The transformative potential of space technology for development: approaches and opportunities in the United Nations system (2017); and United Nations: reinforcing synergies for UNISPACE+50 and beyond (2018).

76. The United Nations system network of the United Nations Committee of Experts on Global Geospatial Information Management aims to strengthen collaboration on and the coordination and sharing of geospatial information within the United Nations system through the development of relevant policies, capacity-building, delivery infrastructure and systems and geospatial information management, and to increase communication on and awareness among senior management of the relevance of geospatial information and the management thereof. The growing network, established in 2017, includes United Nations system organizations, such as the Food and Agriculture Organization of the United Nations, ITU and the International Organization for Migration, and United Nations offices, funds, programmes and other subsidiary organs, such as UNDP, the United Nations Population Fund, UNICEF, the United Nations Institute for Training and Research, UNODC, the United Nations Environment Programme, the United Nations Office for Disaster Risk Reduction, the World Food Programme, the Office for the Coordination of Humanitarian Affairs, the Department of Operational Support, the Office of Legal Affairs, the Office for Outer Space Affairs, the secretariats of the regional economic commissions and the secretariat of the United Nations Committee of Experts on Global Geospatial Information Management.

77. The United Nations system network of the United Nations Committee of Experts on Global Geospatial Information Management has discussed the increasing use of satellite imagery and remote sensing in the United Nations for a wide range of applications in fields including census-taking, health, education, drugs and crime, humanitarian assistance, disaster reduction, sustainable development, refugees, environmental monitoring and peace and security. It identified five main means of increasing collaboration in relation to the use of remote sensing: (a) the leverage of existing system contracts for the joint procurement of imagery; (b) inter-agency technical cooperation and capacity transfers (e.g., machine learning, data cubes and automation); (c) the sharing of by-products of imagery analysis outputs; (d) joint collaboration with relevant partners (the European Space Agency, the National Aeronautics and Space Administration of the United States, the Government of the United States, the Government of China and private entities); and (e) liaison, in the context of the Committee of Experts, with relevant expert groups that are also considering the use of Earth observation, such as the Inter-Agency and Expert Group on Sustainable Development Goal Indicators, the Working Group on Geospatial Information and Services for Disasters and the Expert Group on the Integration of Statistical and Geospatial Information.

78. In November 2018, ESCAP was appointed as the secretariat of the Regional Committee of United Nations Global Geospatial Information Management for Asia and the Pacific, the purpose of which is to strengthen the capacity of member States in geospatial information management pursuant to Economic and Social Council resolution 2016/27, entitled “Strengthening institutional arrangements on geospatial information management”. It was decided at the seventh plenary meeting of the Committee, held in Deqing, China, on 22 November 2018, to transfer the secretariat of the Committee to ESCAP to facilitate the dissemination of the outcomes and benefits of the Committee’s activities to Member States in the region.

79. Partnerships are vital for the work of the four global observing systems (the Global Climate Observing System, the Global Ocean Observing System, the WMO Integrated Global Observing System and the global terrestrial networks). The Global Climate Observing System, sponsored jointly by WMO, the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and

Cultural Organization (UNESCO), the United Nations Environment Programme and the International Science Council, was established in 1992 with the aim of ensuring that observations needed to address climate-related issues are obtained and made available to all potential users. In 2016, the Global Climate Observing System programme published the *Global Observing System for Climate: Implementation Needs* in support of the United Nations Framework Convention on Climate Change and the Paris Agreement, which described the proposed implementation of a global climate observing system, built on current actions, and set out a way forward for scientific and technological innovations for the Earth observation programmes of space agencies and for the national implementation of climate observing systems and networks.

80. Satellite data streams are an essential element of the Global Ocean Observing System. The Intergovernmental Oceanographic Commission of UNESCO began planning the Global Ocean Observing System in 1990 at the request of member States, which recognized the importance of a unified ocean observation system. The System is led by the Intergovernmental Oceanographic Commission and sponsored jointly by WMO, the United Nations Environment Programme and the International Council for Science. The System coordinates observations in the world's oceans in three critical areas: climate, operational services and marine ecosystem health. Those areas correspond to the System's mandate to contribute to the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity and the mandates of the Intergovernmental Oceanographic Commission and WMO to provide operational ocean services.

81. Global Climate Observing System activities are closely coordinated with those space agencies that are developing and operating relevant space-borne platforms, including the Committee on Earth Observation Satellites and the Coordination Group for Meteorological Satellites. In 2010, those two bodies jointly established the Working Group on Climate, which coordinates and encourages collaborative activities between the world's major space agencies in the area of climate monitoring. The overarching goal is to improve the systematic availability of climate data records through the coordinated implementation and further development of a global architecture for climate monitoring from space.

82. In March 2019, the Global Climate Observing System Joint Panels Meeting was held in Marrakesh, Morocco. The following sessions were held during the Meeting: the twenty-fourth session of the Atmospheric Observation Panel for Climate; the twenty-second session of the Ocean Observations Physics and Climate Panel; the twenty-first session of the Terrestrial Observation Panel for Climate; the eighth session of the Data Advisory Council of the World Climate Research Programme; and the tenth session of the Working Group on Climate.

83. At the regional level, the ESCAP/WMO Typhoon Committee and WMO/ESCAP Panel on Tropical Cyclones are intergovernmental platforms in the Northwest Pacific, the Bay of Bengal and the Arabian Sea that have been established to promote and coordinate the planning and implementation of measures to minimize the loss of life and material damage caused by typhoons and cyclones in the ESCAP region. They are unique platforms for promoting space-based cooperation to deliver and improve access to high-quality early warning products and services, including those from Earth observation satellites.

84. The Strategic Plan 2017–2021 of the ESCAP/WMO Typhoon Committee contains targets, key result areas and priorities that are fully aligned with the Sendai Framework. Within a regional cooperation framework, data from Earth observation satellites from China (China Meteorological Administration and China National Space Administration), Japan (Japan Meteorological Agency and Japan Aerospace Exploration Agency), the Republic of Korea (Korea Meteorological Administration and Korea Aerospace Research Institute), Thailand (Thai Meteorological Department and Geo-Informatics and Space Technology Development Agency), the United States (National Oceanic and Atmospheric Administration) and Viet Nam support the work

of the ESCAP/WMO Typhoon Committee to implement its strategic plan. At the fifty-first annual session of the Committee, held in March 2019 in Guangzhou, China, space cooperation was reviewed and a strategy was adopted to scale up space cooperation by sharing the products and services of second-generation meteorological and oceanographic satellites. Similarly, at the Committee's forty-fifth annual session, India (India Meteorological Department and Indian Space Research Organization) reaffirmed its commitment to providing Earth observation products and services for States members of the WMO/ESCAP Panel on Tropical Cyclones.

V. Way forward

85. The 2030 Agenda includes, under Sustainable Development Goal 17, a call for enhanced global partnership for sustainable development. The General Assembly regards the means of implementation of the targets under Goal 17 as being equally as important as those of the other 16 Goals and their targets. It is only by leveraging a wide array of partnerships, particularly with the private sector, academia and civil society, that each of the Sustainable Development Goals, and thereby the Agenda as a whole, may be achieved.

86. The General Assembly also believes that greater engagement with industry and the private sector should be pursued in outer space affairs. Building on the present report, which provides an overview of partnerships in the use and applications of space science and technology within the United Nations system, the United Nations, including its funds, programmes and other subsidiary organs, could further identify areas within space-related activities where it could increase its efforts in partnership development and work together towards achieving the Sustainable Development Goals. An avenue for such discussion could be the thirty-ninth session of UN-Space, which is scheduled to be held in New York in October 2019 in cooperation with the Department of Economic and Social Affairs.
