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Committee on the Peaceful Uses of Outer Space

Report on the United Nations Expert Meeting on Space for Women

(New York, 4–6 October 2017)

I. Introduction

1. The year 2018 will mark the fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE+50), a milestone that presents a unique opportunity to highlight the key societal benefits of outer space and to outline stronger future international collaboration in the peaceful uses of outer space for the benefit of all humankind.
2. At its fifty-ninth session, in June 2016, the Committee on the Peaceful Uses of Outer Space endorsed seven thematic priorities for the implementation of UNISPACE+50, including thematic priority 7, “Capacity-building for the twenty-first century”, which is the most cross-cutting of the thematic priorities. Member States seek to define innovative and effective approaches to capacity-building and development needs as a fundamental pillar of global space governance.
3. Under thematic priority 7, the Office for Outer Space Affairs has been tasked with placing special emphasis on activities targeting the needs of women in developing countries. In order to address the objectives of the thematic priority, the Office decided to establish and implement a dedicated “Space for women” project.
4. In that context, the Office for Outer Space Affairs joined forces with United Nations Entity for Gender Equality and the Empowerment of Women (UN-Women) to organize a “Space for women” expert meeting with a view to sharing ideas and expertise regarding space and women, enhancing existing partnerships and forging new ones, strengthening and delivering targeted capacity-building and technical advisory activities, and promoting efforts to encourage the participation of women and girls in science, technology, engineering and mathematics education, with a special focus on developing countries.
5. The outcomes and recommendations of the Expert Meeting will provide input for the report being prepared to address the thematic priority on capacity-building for the twenty-first century.
6. The present report describes the background, objectives and programme of the Expert Meeting, summarizes the observations and recommendations made by the participants and provides concrete conclusions.



A. Background and objectives

7. The mandate of the Office for Outer Space Affairs is to bring the benefits of space to humankind. The Office is committed to ensuring that women and girls are able to access those benefits and play an active and equal role in space science, technology, innovation and exploration.

8. The Sustainable Development Goals seek to change the course of the twenty-first century by addressing key challenges such as poverty, inequality and violence against women. Women's empowerment is a precondition, as women have a critical role to play in efforts to achieve all of the Sustainable Development Goals, with many targets specifically recognizing women's equality and empowerment both as the objective and as part of the solution.

9. Goal 5 is regarded as a stand-alone goal because it is dedicated to achieving gender equality and empowering all women and girls, including at decision-making levels in leadership, through political participation, economic empowerment, the elimination of gender-based violence and other harmful practices, control over reproductive health and rights, and reforms to give women access to economic resources, including natural resources.

10. Target 5B under Goal 5 calls for the enhanced use of enabling technology, in particular information and communications technology, to promote the empowerment of women. In order to achieve gender equality and empower all women and girls, the Office for Outer Space Affairs addresses Goal 5 in an all-inclusive manner and, in particular, promotes space technology in line with target 5B.

11. Space is a significant matter when it comes to the right of women to benefit from science and technology, and to achieving the Sustainable Development Goals. Space-related science, technology, innovation and exploration will benefit humankind and increase the sustainability of our planet in many areas, including agriculture, climate change, disaster response, transportation, health and communications.

12. The Office strives to ensure that women have access to those benefits. Moreover, through the objectives established under thematic priority 7, the Office also works to ensure that needs specific to the empowerment of women and girls and gender equality are prioritized and addressed.

13. Lastly, science, technology, engineering and mathematics in themselves, and as fundamental fields in the space sector, specifically offer economic and career opportunities for women. Those disciplines represent high-growth industries that require a skilled workforce. Women and girls must be given equal access to those opportunities, including at leadership levels.

14. While the Office is the gateway to space at the United Nations, many United Nations entities and other governmental and non-governmental organizations have expertise, skills and experience in both empowering women and encouraging them to pursue a career in science, technology, engineering and mathematics. It is important and valuable for the Office to develop partnerships with such entities and organizations in order to benefit from their expertise and build projects at the intersection of our respective mandates.

15. In order to consolidate existing knowledge, create partnerships and develop targeted capacity-building for the twenty-first century, as well as to align capacity-building with the 2030 Agenda for Sustainable Development and deliver recommendations for the "Space for women" project, the Office jointly organized the "Space for women" Expert Meeting in collaboration with UN-Women. The aim of the Expert Meeting was to:

(a) Develop the basis for the "Space for women" project in support of the UNISPACE+50 thematic priority on capacity-building for the twenty-first century, as mandated by the Committee on the Peaceful Uses of Outer Space, and address

Sustainable Development Goal 5, including by gaining an understanding of gaps, opportunities, challenges and ways forward;

(b) Identify mechanisms for integrating gender equality issues and the active participation of women into the UNISPACE+50 process and “Space2030” agenda;

(c) Strengthen capacity-building among multiple stakeholders, focusing on women’s perspectives and the specific needs of developing countries and using space science, technology and innovation to achieve the goals and targets set out in the interlinked 2030 Agenda for Sustainable Development, Sendai Framework for Disaster Risk Reduction 2015-2030 and Paris Agreement. That process includes the development of activities under the “Space for women” project to help Governments to equip themselves with the technical skills and policies required to integrate gender awareness into their strategic planning relating to space technology and applications with a view to implementing those global development frameworks;

(d) Discuss innovative approaches to achieving the targets set out in the 2030 agendas, such as the provision of technical assistance, expert assistance and support for research and advisory services for enhanced operational activity under the Office’s “Space for women” project.

B. Attendance

16. The Expert Meeting brought together decision makers and experts from governments, international organizations and non-governmental organizations, as well other high-ranking officials; experts from United Nations entities; representatives of research institutions and the private sector in space and non-space fields; and civil society leaders.

17. Participants were selected on the basis of their scientific and educational background and their experience in implementing programmes and projects related to the topics addressed. The organizers and the programme committee worked in cooperation on the selections and on the preparations for the Expert Meeting.

18. Funds provided by the United Nations were used to cover the travel, accommodation and other costs of 20 participants from 17 countries. UN-Women provided lunch during the first two days of the Expert Meeting and supported the administrative and logistical preparations.

19. The Expert Meeting was attended by 69 registered participants. The following 22 Member States were represented: Australia, Austria, Botswana, Brazil, Costa Rica, Denmark, Finland, France, Greece, India, Kenya, Mexico, Monaco, Netherlands, Nigeria, Pakistan, Paraguay, Sweden, Thailand, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland and United States of America.

20. Representatives of the International Telecommunication Union, United Nations Educational, Scientific and Cultural Organization (UNESCO), World Intellectual Property Organization, United Nations Office for Disarmament Affairs, United Nations Development Programme, UN-Women and Office for Outer Space Affairs also attended the Expert Meeting.

C. Programme

21. The Expert Meeting was organized around the objective of UNISPACE+50 to strengthen international coordination and cooperation in the use and applications of space science and technology. In particular, the Expert Meeting contributed to thematic priority 7, “Capacity-building for the twenty-first century”, and the objective of promoting efforts to encourage science, technology, engineering and mathematics education, especially for women in developing countries.

22. The programme was designed to cover those objectives and included both plenary and parallel meetings. The programme also left time for group discussions

and breakout sessions to identify the priority areas in which pilot projects could be launched and to examine possible partnerships.

23. The programme of the Expert Meeting was developed by the Office for Outer Space Affairs in cooperation with UN-Women.

24. The two-and-a-half-day event brought together participants to discuss the scope and goals of a “Space for women” project and make recommendations for that project, focusing on the slogan “Space for women and women for space”. In keeping with those goals, the main programme of the Expert Meeting was structured around thematic sessions on the following topics:

(a) Let’s make space work for women’s empowerment;

(b) Let’s make space in the aerospace industry and science, technology, engineering and mathematics fields work for women’s empowerment;

(c) Let’s make the “Space for women” project together.

25. A high-level panel, moderated by the Permanent Representative of Austria to the United Nations, was held on the third day of the Expert Meeting. The panel was addressed by the Deputy Secretary-General of the United Nations, the Deputy Executive Director of UN-Women, the Director of the Office for Outer Space Affairs, the Executive Director of the American Institute of Aeronautics and Astronautics, the Costa Rican Minister of Science and Technology, the Director General of the European Space Agency, the President of Women in Aerospace-Europe, the Chief of Staff of the Organization for Economic Cooperation and Development and the United Nations Champion for Space.

26. The Expert Meeting was promoted on various websites and on social media platforms such as Facebook and Twitter, highlighting its importance and the topics of interest. The final programme and presentations, as well as select recordings, were made available on the Expert Meeting website (www.unoosa.org/oosa/en/ourwork/topics/spaceforwomen/2017/expert-meeting.html).

27. The Expert Meeting was streamed via an online platform to allow remote access and participation. The high-level panel discussion was covered live by United Nations Web TV and is accessible on demand through its website.

II. Summary of the Expert Meeting programme

28. At the opening meeting, the link between developments in the space arena and gender equality and the expanded possibilities and inspiration that space offers were highlighted. The fact that women are marginalized in the fields of science, technology, engineering and mathematics and are unable to reap the benefits of those fields, and that it is therefore important for more women to go into such fields and the space sector was also underscored.

29. At the opening meeting, project activities were also established within the UNISPACE+50 framework and the “Space2030” agenda was highlighted as a unique opportunity to raise awareness of the importance of gender equality and gender empowerment in the space sector, as was the Office’s important role as a capacity-builder, global facilitator and gateway for women and girls into the space sector.

30. The first thematic session, on the subject “Let’s make space work for women’s empowerment”, focused on the potential for developing and disseminating space technology applications for women’s empowerment. The topics addressed included space, gender equality and the Sustainable Development Goals; space technologies and applications; women’s empowerment; and challenges and scaling up opportunities.

31. The targets established in Sustainable Development Goal 5 were presented as core elements of the UN-Women mandate and its scope of work. Additionally, it was underlined that gender equality and women’s empowerment were of relevance to all

17 Sustainable Development Goals and were essential for their successful implementation. Furthermore, as a first step in a United Nations system-wide campaign to advance gender parity, the Secretary-General launched the United Nations system-wide strategy on gender parity, which was presented as a comprehensive framework that was designed to guide the system.

32. The importance of supporting the development of women's capacity for the future job market and exploring the skills that would be required for the 2030 labour market was stressed, as was the importance of granting women equal access to all sectors while taking care not to focus on training women and girls in fields of work that were likely to disappear in the near future.

33. It was highlighted that women should reap the benefits of space and that their participation was critical to the success of the space sector. Studies in both the private and public sectors had shown that a diversity of skills and perspectives led to greater innovation and success. It was therefore noted that at the macro level, the talent of all individuals should be more actively harnessed.

34. It was noted that to ensure women were able to have access to and benefit from space technologies, they needed the appropriate awareness, skills and support. The increased relevance of space applications to women's empowerment should be achieved through consultation with and engagement of women, at all stages of development and implementation.

35. The second thematic session, on the subject "Let's make space in the aerospace industry and science, technology, engineering and mathematics fields work for women's empowerment", focused on the current landscape and addressed gaps, opportunities and challenges relating to women's empowerment in those fields and in the aerospace industry. The discussion focused on public sector and policy, education and media, and skills and leadership.

36. It was observed that women were significantly underrepresented in the fields of science, technology, engineering and mathematics, particularly in decision-making positions. The "leaky pipeline" effect could be seen from as early as middle school, when girls began to drop those subjects or were discouraged from pursuing them. That process continued through to tertiary education and employment in the private and public sectors, and was also reflected in the gender imbalance with regard to funding for research, venture capital for entrepreneurship, publications and representation in professional bodies.

37. While there was gender parity in some areas of science, technology, engineering and mathematics, that was often not the case in all the "hard" sciences, such as physics, engineering and computer science. According to UNESCO, only 28 per cent of the world's research scientists were women, although in some countries in developing regions, a positive trend towards gender equality was emerging.

38. Participants in the Expert Meeting underlined that while diversity, in addition to opening up opportunities for women, brought many benefits to organizations and contributed to their success, significant cultural change was required. The benefits to gender equality and women's empowerment would truly accrue through broader paradigm shifts around science, technology, engineering and mathematics, and inclusiveness, social well-being and the systemic change would accompany that progress.

39. The programme of the Expert Meeting provided an opportunity to present statistics on the current representation of women in the aerospace industry and the fields of science, technology, engineering and mathematics. It was noted that in the space sector, gender parity had not yet been achieved; according to the AeroSpace and Defence Industries Association of Europe, women represented approximately 20 per cent of space industry employees in 2015.

III. Observations and recommendations

40. The third thematic session, on the subject “Let’s make the ‘Space for women’ project together”, focused on how to consolidate existing knowledge, create partnerships and develop targeted capacity-building for a unique project, addressed topics such as advocacy, programme development and networking, and led to the observations and recommendations set out below.

41. The Space Millennium: Vienna Declaration on Space and Human Development, adopted by UNISPACE III, was highlighted as an important document in which all States had been encouraged to provide children and young people, especially females, through appropriate educational programmes, with opportunities to learn more about space science and technology and their importance to human development and to participate fully in activities related to space science and technology, as an investment in the future.

42. Participants noted that space actors must become the stimulus for the political will to collectively harness the soft power of “Women for space” and “Space for women” in order to raise awareness during UNISPACE+50 of the importance of gender parity in the space sector and of utilizing space to equally benefit all, in line with the “Space2030” agenda.

43. Participants underlined that various points of entry to the space sector should be made available to women and that industry actors should inspire and demystify pathways into the space sector, act as role models and provide access to space technologies.

44. In that regard, it was recommended that the Office should create a network of ambassadors in order to raise awareness of opportunities in the space field and of the importance of science, technology, engineering and mathematics education. The inclusion of mentors who worked in the aerospace industry was stressed as a means of bringing the private sector into education and of ensuring that skills acquired were transferrable and adaptable to the workplace.

45. The appointment of “Space for women ambassadors” at the national level was recommended, to act as role models to raise awareness, perform advocacy and inspire through their personal stories, particularly in developing countries. The need to coach and sponsor women in the space sector was also noted.

46. Participants emphasized the importance of engaging young people and ensuring that young women took an active part in building and implementing the “Space for women” project, as well as being its beneficiaries.

47. Participants identified greater gender awareness as one of the main objectives of the “Space for women” project and therefore recommended the equal inclusion of women and men in the project, as well as evidence-based awareness-raising and the generation and exchange of data on gender equality issues.

48. A multidisciplinary approach through multi-stakeholder engagement was recommended for the project in order to share information, identify cross-sectoral needs and evaluate user needs. A bottom-up approach was also recommended.

49. On the basis of the observation that the motivation to pursue a career in science, technology, engineering or mathematics or in the space sector came from social clusters, peers and especially families, participants stressed the need to address social and cultural norms. Therefore, the “Space for women” project should focus on raising awareness of the benefits of the fields of science, technology, engineering and mathematics and of opportunities in the space sector, as well as on creating peer networks to facilitate outreach and awareness-raising.

50. The Expert Meeting recommended disseminating information about the real-world applications of science, technology, engineering and mathematics education, as well as promoting hands-on training, and underlined that the space field could demystify science and make it accessible, fun and interesting. Furthermore, the need

to provide training to trainers and to specifically educate and otherwise engage with teachers was highlighted.

51. Innovative teaching methods and hands-on training, such as through the use of 3-D printing models, enquiry-based learning and purpose-driven capacity-building focusing on areas such as spatial reasoning were identified as cornerstones of successful training, in that they could convey the multidisciplinary nature of science, technology, engineering and mathematics education and encourage learners to see the big picture.

52. It was observed that for the inclusion of art among the disciplines of science, technology, engineering and mathematics, there should be a clear understanding that art in the context of space did not necessarily mean art in the conventional sense of “visual arts”. In fact, creative disciplines such as augmented reality, virtual reality, 3-D printing and sophisticated software used in design processes were indispensable for the creation of large and small space missions alike. Therefore, art must be introduced in a creative technological context. The oft-noted interest of girls in working towards fair social outcomes would fit well with the concept of the “space 4.0” era and with the involvement of arts in space-related education.

53. Media and arts were identified as suitable tools for making science, technology, education and mathematics more accessible and fun, as well as for reaching a broader audience, and specifically for inspiring young girls and women. Storytelling, particularly the telling of personal stories, was a powerful tool for changing the perception of science, technology, engineering and mathematics as non-female-friendly fields and for rebranding science as non-gender-specific.

54. Throughout the meeting, the challenges of negative stereotypes and norms, including self-perceptions and conscious and unconscious biases relating to girls and women and science, technology, engineering and mathematics was raised. Popular culture, the media, educational institutions and workplaces all had an important role to play in combating those stereotypes and norms.

55. The role of the private sector in recruiting, retaining and promoting women in the space industry, including supporting female-owned enterprises through the use of incubators and supply chains, was highlighted as an important area of intervention.

56. With specific reference to existing frameworks for empowering women and achieving gender equality in the workplace, marketplace and community, participants highlighted the seven Women’s Empowerment Principles (www.weprinciples.org), as recognized by the General Assembly.

57. The experts recommended that companies in the space industry sign the seven Women’s Empowerment Principles and noted the need to identify a complementary set of specific space industry-related actions for companies that could make the most difference.

58. In that regard, it was specifically recommended to strive towards a “space 50/50” environment, addressing the goal of achieving gender parity in the wider space sector by 2030.

59. Evidence-based awareness-raising and the collection of critical data were identified as prerequisites for raising awareness, especially among Governments.

60. As an initial step, participants recommended the creation of an online networking platform as a forum for exchanges and for jointly working on specific tasks, such as:

(a) Gathering content for a dedicated “Space for women” website and exchanging views on how experts could support the Office in collecting information;

(b) Collecting and exchanging gender statistics and data disaggregated by sex, and making them available and accessible;

- (c) Creating a list of consultants and experts in different fields in order to connect those experts and promote awareness-raising;
- (d) Establishing a platform to leverage and amplify existing activities and identify and connect established networks;
- (e) Drafting talking points and narratives for non-experts in order to generate targeted awareness-raising and support outreach efforts.

IV. Conclusion

61. Participants in the Expert Meeting recommended that a dedicated “Space for women” project should address the following questions:

- (a) How can more women be attracted to the field of space?
- (b) What can women do for space?
- (c) What can space do better for women?
- (d) What do women need from space?

62. Participants concluded that, in order to increase the awareness, capacity and skills of individuals and institutions with regard to the promotion of gender equality in the space sector and its fundamental educational fields, the “Space for women” project should focus on:

- (a) Communicating the opportunities offered by science, technology, engineering and mathematics education and facilitating access to space sector education, as well to the space sector itself;
- (b) Providing policy-relevant advice, knowledge management, evidence-based awareness-raising, research and data to institutions and governments on “Space for women” and “Women for space”;
- (c) Facilitating capacity-building and training of individuals on access to and use of space technology in order to generate skills and foster knowledge;
- (d) Promoting a “Space for women champions” platform, for mentoring, advocacy and awareness-raising purposes.

63. The structure of the “Space for women” project was defined according to the following three levels:

- (a) The institutional and industry level, to address internal structures, policies, procedures and organization;
- (b) The enabling environment level, to promote the relevant social norms, rules, laws and policies, as well as monitoring and review tools;
- (c) The individual level, which was shaped by the other two levels, focusing on capacity-building, education and training.

64. The establishment of a coordination model under the Office’s leadership was recommended in order to coordinate project management and lead implementation efforts. Participants noted the importance of dedicated resources to ensure that the “Space for women” project had the maximum impact and value.

65. As a starting point to achieve equal opportunities and gender equality in the field of outer space, participants identified the need to establish a set of principles to achieve gender equality and gender empowerment in the space sector and the fields of science, technology, engineering and mathematics.

66. Participants concluded by recommending that a follow-up meeting be organized in the framework of the Office for Outer Space Affairs in order to develop and define a set of principles and initiate concrete actions at each of the three levels of the project.