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Report on the United Nations/Republic of Korea Space for Women expert meeting: access and participation of women and girls in the space sector

(16–19 August 2022, Daejeon, Republic of Korea)

I. Introduction

1. The Office for Outer Space Affairs recognizes the benefits of space for humankind and is committed to ensuring an active and equal role for women and girls in space science, technology, innovation and exploration.
2. Women's empowerment is a precondition for achieving the Sustainable Development Goals. While women have a critical role to play in the effort to achieve all the Goals, many targets specifically recognize women's equality and empowerment both as the objective and as part of the solution.
3. *Sustainable Development Goal 5*, known as the stand-alone gender goal, is specifically dedicated to achieving gender equality and empowering all women and girls. Importantly, one of the targets under Goal 5, target 5.b, calls for enhancing the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.
4. In its resolution [76/3](#), entitled "The 'Space2030' Agenda: space as a driver of sustainable development", the General Assembly called for promoting gender equality in space activities and encouraged the strengthening of the participation of women in science, technology, engineering and mathematics (STEM) education.
5. In its roles as a capacity builder and a promoter of international cooperation in space, the Office for Outer Space Affairs has a strong interest in bringing more girls and young women into STEM, both to improve access to the benefits of space activities for everyone, everywhere, and as part of the broader United Nations effort to combat gender inequality.
6. Space for Women is a project of the Office for Outer Space Affairs aimed at promoting gender equality and equal access to the opportunities available in STEM education and the space sector and helping to address the gender gap in those areas by strengthening the relevant capacities and skills of individuals and institutions. The project includes the organization of annual expert meetings.



II. Background and objectives

7. The Space for Women project promotes women's empowerment in the space sector. It falls under the United Nations capacity-building initiative aimed at encouraging women and girls to pursue space and STEM education; raising awareness about career opportunities and the importance of gender equality and empowerment in the space sector; and ensuring that women and girls can benefit from as well as contribute to space science, technology, innovation and exploration.

8. The third Space for Women expert meeting was held in Daejeon, Republic of Korea, from 16 to 19 August 2022. The main objectives of the meeting were as follows:

(a) Raise awareness about the role of women in the advancement of space science, technologies, applications and exploration;

(b) Identify challenges, opportunities and effective interventions to promote the advancement of women in the aerospace sector, building upon the results of the United Nations/Brazil/United Arab Emirates Space for Women expert meeting, held in 2021;

(c) Discuss ways in which to support advocates, mentors and teachers to bring girls into space and STEM sectors;

(d) Explore women entrepreneurship and the role of the private sector in promoting women's careers in space;

(e) Discuss policies and business practices that could make the space sector more inclusive, diverse and accessible for girls and women;

(f) Encourage further collaboration among representatives from different sectors to promote women in space;

(g) Examine and review the status of the participation of women in the space sector, discussing approaches to measuring the share of women in the sector and the impact of gender empowerment activities;

(h) Define tools that could foster the achievement of the objectives and targets proposed and raise awareness about women in the space sector.

9. The event was co-hosted by the Office for Outer Space Affairs and the Ministry of Science and ICT of the Republic of Korea.

10. The Office for Outer Space Affairs and the Korea Aerospace Research Institute served as co-organizers of the expert meeting and handled the administrative and organizational aspects.

11. The expert meeting was held at the Science Culture Center of the Institute for Basic Sciences and at the Korea Aerospace Research Institute. The costs associated with the organization of the meeting as well as with the accommodation of the participants were covered by the Republic of Korea.

III. Attendance

12. The expert meeting brought together experts from governmental institutions, including space agencies and ministries, as well as participants from the private sector, civil society, universities and research institutions.

13. Participants were selected on the basis of their professional and educational background and their experience in implementing programmes and projects relating to the topics addressed. The organizers cooperated in the selection of the participants and the preparations for the meeting.

14. Funds provided by the United Nations were used to cover the travel expenses and other costs of 22 participants from 18 countries.

15. The event was attended by a total of 74 participants. The following 27 Member States were represented: Australia, Belgium, Bolivia (Plurinational State of), Brazil, Canada, Colombia, Costa Rica, Ecuador, France, India, Israel, Japan, Latvia, Malaysia, Netherlands, Nigeria, Peru, Philippines, Republic of Korea, Romania, South Africa, Sweden, Uruguay, United Kingdom of Great Britain and Northern Ireland, United States of America, Venezuela (Bolivarian Republic of) and Zimbabwe.

16. Representatives of the Office for Outer Space Affairs attended the event, while representatives of the European Commission and the Organisation for Economic Co-operation and Development delivered presentations virtually.

IV. Programme

17. The programme of the expert meeting was developed by the Office for Outer Space Affairs in cooperation with the Korea Aerospace Research Institute. Preliminary consultations were also held with the host of the previous expert meeting, the Ministry of Science, Technology and Innovation of Brazil, as well as with the host of the 2023 expert meeting, the Canadian Space Agency, to ensure continuity in the programme of work.

18. The main focus of the meeting was to discuss ways to improve the participation of women and girls in, and their access to, the space sector. Participants had the opportunity to engage in presentations, discussions and networking, thereby contributing to the promotion of gender equality and women's empowerment in the space sector, in accordance with Sustainable Development Goals 4 (on quality education) and 5 (on gender equality).

19. The participants were divided into four working groups according to four themes: (a) **“Train the trainers”**; (b) **“Women space entrepreneurs”**; (c) **“Measuring the participation of women in the space workforce”**; and (d) **“Analysis and communication of gender empowerment activities”**. Participants shared their expertise and insights on their assigned theme during three discussion sessions. The first session was aimed at identifying the existing landscape and efforts; the second session was focused on analysing the **gaps and challenges**; and the third session was focused on **actions** to fill the gaps. By the end of the event, participants had identified a set of **recommendations** aimed at ensuring that women and girls achieve an **equal and active role** in the space sector. The recommendations of each working group were presented to all the participants on the last day of the meeting.

20. The experts also participated in plenary sessions, which included a presentation entitled “Initiatives, challenges and opportunities for women in space” on the outcome of the United Nations/Brazil/United Arab Emirates Space for Women expert meeting; an open conversation with the first and only Korean astronaut, Ms. Soyeon Yi; and presentations on women's networks and on adopting a gender lens in space research, development and applications. A networking and poster session was organized for participants to showcase their work and connect with other experts. Feedback was provided to the working groups during an open plenary discussion and dedicated informal sessions.

21. The final programme and presentations are available online on the expert meeting web page (<https://space4women.unoosa.org/news/what-happened-2022-space4women-expert-meeting>).

V. Summary of the expert meeting

22. The expert meeting began on 16 August 2022 with an opening reception organized by the Government of the Republic of Korea. Several distinguished speakers were present throughout the event. Representatives of the Korea Aerospace Research Institute, the Ministry of Science and ICT, and the Office for Outer Space

Affairs gave introductory remarks highlighting the crucial role of women in the advancement of space science, technologies, applications and exploration, especially in the context of the fast-evolving space sector. The presenters also stressed the ambition of the Government of the Republic of Korea to increase women in the space sector workforce. The importance of local grass-roots activities was also highlighted.

23. On the same day, the Government of the Republic of Korea held two side events: a mentoring event with students, and a technical tour of the Korea Aerospace Research Institute and the Korea Astronomy and Space Science Institute.

24. The working sessions of the expert meeting began on 17 August 2022. In opening remarks, representatives of the Office for Outer Space Affairs laid the foundations for the upcoming discussions, stressing the need to build a more inclusive society in which women and girls have an equal and active role, and where everybody, regardless of gender, ethnic origin, age, religious or cultural background or disability, would be able to contribute to the space sector.

25. The four themes of the expert meeting had been chosen on the basis of the outcomes of the previous meeting to ensure continuity. Discussion groups were organized around each theme.

26. The working session on theme 1, “Train the trainers”, was focused on how to support advocates, mentors and teachers in making STEM and space education accessible and inspiring. Presenters showcased examples of projects and effective teaching methods, replicable in other contexts, to successfully engage girls and women in space and STEM subjects. Following the presentations, participants analysed the landscape of space education and identified gaps and challenges. Among other issues, they highlighted that school curricula and pedagogy, in general, lacked a gender-responsive approach and that the inclusion of few examples of women in STEM sectors made it difficult to challenge gender stereotypes. In addition, the underrepresentation of women in education positions, such as school principals or curriculum directors, was considered to be problematic, since it left decision-making regarding curricula mainly to men, who were less likely to view education through a gender lens. Increased opportunities, tailored educational material, family and community-level support and partnerships were identified as proposals for effective action.

27. The working session on theme 2, “Women space entrepreneurs”, was aimed at promoting the entrepreneurship of women in the space sector by showcasing the experiences of women entrepreneurs and analysing the role of the private sector in the retention of women in the space industry. A lack of role models, support systems and funding was identified as a multipronged challenge to female entrepreneurship. On the basis of a review of the retention of women in the space industry, it was determined that measures to foster the work-life balance of parents and to provide equal opportunities were crucial. It was also highlighted that even such simple measures as using gender-blind curricula vitae, gender-neutral language and making salary data available could help to improve gender balance. The importance of the creation and development of multicultural spaces that allowed women to share their experiences, challenges and ideas relating to the aerospace business sector was also emphasized.

28. The working session on theme 3, “Measuring the participation of women in the space sector”, shed light on the gaps and challenges in measuring the participation of women in the space workforce. Participants identified a number of studies and data on gender diversity within the space sector. However, challenges around the availability and accessibility of data; the lack of standardization for comparability; the limitations of current terminology; and concerns relating to data privacy and safety were indicated as hurdles to gaining a thorough global understanding of women’s participation in the sector. In addition to recommending a more standardized approach to collecting gender disaggregated data, participants stressed the importance of a more inclusive and comprehensive approach to measuring diversity in the sector,

including the consideration of intersectional aspects. Proposals were put forward for improving the measurement of women's participation in the sector.

29. The working session on theme 4, "Analysis and communication of gender empowerment activities", highlighted methods for and roadblocks to measuring the effectiveness of gender empowerment activities as well as the most effective ways of communicating their impact, including how such activities could bring about change at, for example, the policymaking level. Examples of communication measures were presented and carefully examined, and challenges, including cultural differences, unconscious bias, policy-specific language and a lack of access to communication channels, were highlighted. It was recommended that efforts to effect change clearly identify the decision makers and the target audiences, and define strategies to ensure that decision makers implemented the planned actions. Most experts also stressed the importance of involving men by means of targeted communications strategies, since gender equality concerns both men and women and also because most decision makers are men.

VI. Observations and recommendations

30. Given the complexity of and discrepancies in existing information, as well as the lack of standard measurement methods and comprehensive data, the development of related guidelines was proposed. These should include the definition of benchmarks; a methodology to ensure the transparent and accurate collection and monitoring of gender-disaggregated data; and the standardization of terminology and indicators to facilitate comparison across countries and institutions. The work conducted during the group discussions had laid the foundation for conducting such an exercise.

31. The preparation of a comprehensive study on women's participation in the space workforce at the global level was suggested as an important step forward. It was recommended that the Office for Outer Space Affairs lead this project, with the support of Member States, which, among other things, would report their countries' metrics on women's participation in the space sector.

32. Standardized and global commitment was emphasized as a crucial element for the success of such an initiative. Building upon the recommendations of previous expert meetings, the idea of an online platform to support voluntary data-sharing between nations on all aspects of gender empowerment in the space sector was reiterated.

33. Experts also proposed the development of a hands-on space education toolkit to consolidate educational materials and programmes for teachers, advocates and parents and to foster greater awareness and accessibility. The toolkit should include measures, approaches and other tools that could be tailored to accommodate different gender needs as well as local identities. It should cover both formal and informal education to ensure that children, young people and adults were able to engage with space in an interactive and interdisciplinary manner. Participants highlighted the need for partnerships between public educational institutions and the private sector to create informal space-related programmes for teachers and students.

34. The development of guidelines on responsible and inclusive behaviour was also recommended. The guidelines would showcase existing international, national and regional practices, which could be tailored for implementation in other communities, with an emphasis on a safe-space, gender-inclusive and culture-specific perspective, to empower women in the space workforce. The role of civil society in such an endeavour was highlighted.

35. Participants also emphasized that supporting the advancement of gender equality in the space workforce could be socially and emotionally burdensome for women advocates, mentors and teachers, and they stressed the importance of acknowledging and commending their efforts with a recognition tool. In this

connection, it was highlighted that increased recognition would give meeting experts greater legitimacy with regard to the implementation of recommendations in their countries, when appropriate and in consultation with the Office for Outer Space Affairs.

36. Among other measures, the development and increased accessibility of mentorships, scholarships and training courses was considered crucial to enabling broader participation in STEM education and careers. The mentorship programme of the Office for Outer Space Affairs (<https://space4women.unoosa.org/mentorship-program>) was commended as a valuable opportunity for women and girls, but its sustainability was stressed as necessary for its successful implementation. The participants also recommended the creation of targeted financial schemes, such as scholarships for minorities, as well as financial incentives to encourage entities to achieve a more diverse workforce.

37. The role of the private sector in increasing accessibility to internships, formal mentorships and leadership training opportunities for women was stressed. Participants recommended that the private sector commit to gender equality and empowerment measures in their corporate social responsibility actions, for instance by enabling the participation of employees in gender empowerment activities during working hours or providing financial support to such activities.

38. Experts underlined that increasing diversity in the space sector required targeted communications, including inclusive messaging that promoted the experiences of a diversity of women, whether in terms of age, culture, ethnicity or other intersectional attributes, from a variety of space fields, such as space science, engineering, law and policy.

39. Additional recommendations included conducting research into existing women's associations in the space sector and gathering information in a single location, for example the Space for Women portal (<https://space4women.unoosa.org>), to exchange good practices. The creation of associations and networks of women focused on such areas as entrepreneurship was also suggested.

40. Participants proposed the inclusion of working sessions at future expert meetings dedicated to follow-up to the recommendations of previous years' meetings to examine progress and identify challenges and further areas for action.

VII. Conclusion

41. The Space for Women expert meeting proved to be an excellent opportunity for experts from all over the world to exchange ideas and propose actions for advancing gender equality and women's empowerment in the space and STEM sectors.

42. The detailed discussions allowed a deep dive into the challenges and laid the foundations for continued efforts at the working level. Experts stressed the importance of engaging in the topics throughout the year and taking action to implement some of the recommendations ahead of the following meeting.

43. To achieve the targets set out in the 2030 Agenda for Sustainable Development, including gender parity in the workforce by 2030 – a goal also identified at the 2017 Space for Women expert meeting – more efforts are necessary. Given the limited resources, a multi-stakeholder approach and resource mobilization should be prioritized to ensure follow-up on the recommendations of previous expert meetings.

44. It was evident that the Space for Women project should continue to raise awareness of the benefits and opportunities of the space and STEM sectors as well as provide policy-relevant advice, research and data to institutions and Governments on gender empowerment, equity and equality.

45. A follow-up Space for Women expert meeting will be held in the framework of the Office for Outer Space Affairs, co-hosted by the Government of Canada, in Montreal, in the fourth quarter of 2023.