

United Nations Entity for Gender Equality and the Empowerment of Women (UN WOMEN)

STUDY GUIDE

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TOPIC:

Promoting Women's Participation
and Leadership in STEM
and Space Exploration



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Introduction to the Committee

UN Women, formally known as the United Nations Entity for Gender Equality and the Empowerment of Women, was established by the United Nations General Assembly in 2010 to lead and coordinate the UN system's efforts to achieve gender equality and empower women and girls worldwide. Its mandate includes supporting Member States in developing policies, programs, and international standards that advance women's rights, eliminate discrimination, and promote equal opportunities across political, economic, social, scientific, and technological sectors (UN Women, 2023).

Working in more than 100 countries, UN Women provides technical assistance, policy guidance, research, and financial support to governments and partners to strengthen gender-responsive legislation, build institutional capacity, and monitor progress toward gender equality. It also coordinates gender-related initiatives across the United Nations system and promotes the full and equal participation of women in decision-making (UN Women, 2023).

UN Women builds upon landmark international frameworks such as the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and the Beijing Declaration and Platform for Action, which remain fundamental instruments for advancing women's rights and gender equality (United Nations, 1979; United Nations, 1995).

In recent years, the organization has increasingly emphasized closing gender gaps in science, technology, engineering, and mathematics (STEM) and expanding women's participation in space exploration. Equal access to education, scientific research, innovation, and leadership is essential to achieving the 2030 Agenda for Sustainable Development, particularly Sustainable Development Goals 5, 9, and 17 (United Nations, 2015).

Despite significant progress, women remain underrepresented in STEM careers and leadership positions, accounting for only about one-third of the global scientific workforce. Their participation in the space sector is even lower, reflecting persistent barriers such as gender stereotypes, unequal access to education and professional opportunities, limited mentorship, and underrepresentation in leadership roles (UNESCO, 2021). Addressing these challenges is essential for fostering innovation, scientific excellence, and inclusive sustainable development.

As delegates of UN Women, participants will examine how the international community can promote women's participation and leadership in STEM and space exploration through international cooperation, public policy, education, capacity-building, and partnerships. Delegates will be expected to develop practical and inclusive solutions that expand opportunities for women and girls while advancing scientific innovation and sustainable development.

Background to the Topic

Key Terminology

Term	Definition
Gender Gap in STEM	The disparity between women and men in access to education, employment, career advancement, leadership, and recognition within science, technology, engineering, and mathematics (STEM) fields.
STEM Fields	Academic and professional disciplines related to science, technology, engineering, and mathematics that drive scientific research, technological innovation, and economic development.
Space Exploration Sector	The public and private organizations, institutions, and industries involved in space research, astronautics, satellite technology, aerospace engineering, and space missions.
Workplace Inequality	Unequal treatment or opportunities in the workplace, including disparities in recruitment, pay, promotion, leadership opportunities, and working conditions based on gender.
Equal Opportunity	The principle that all individuals should have fair and equal access to education, employment, professional development, and leadership regardless of gender or background.
Leadership Gap	The underrepresentation of women in senior management, executive, research, and decision-making positions despite increasing participation in STEM careers.

Historical Background

Women have made fundamental contributions to scientific discovery and technological innovation throughout history, yet their participation has often been limited by social, cultural, and institutional barriers. During the twentieth century, women played essential roles in mathematics, engineering, computing, and aerospace research, although many of their achievements received little public recognition. Scientists and engineers such as Katherine Johnson, Dorothy Vaughan, and Mary Jackson made critical contributions to NASA's early space missions, while Valentina Tereshkova became the first woman to travel into space in 1963, demonstrating women's ability to participate in one of the world's most demanding scientific fields (NASA, 2016; NASA History Office, 2013).

Despite these achievements, women remained significantly underrepresented in STEM education and careers throughout much of the twentieth century. Limited access to higher education, persistent gender stereotypes, workplace discrimination, and unequal opportunities for professional advancement

reduced women's participation in scientific research, engineering, and leadership positions. Even highly qualified women often encountered barriers to research funding, promotions, and decision-making roles, limiting their visibility and reducing the number of female role models available to future generations.

As awareness of these disparities increased, the international community began recognizing gender equality in science and technology as a global development priority. Landmark agreements such as the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) in 1979 and the Beijing Declaration and Platform for Action in 1995 called for equal access to education, employment, and decision-making, including in scientific and technological fields (United Nations, 1979; United Nations, 1995). More recently, the 2030 Agenda for Sustainable Development identified gender equality, quality education, innovation, and international partnerships as essential components of sustainable development (United Nations, 2015).

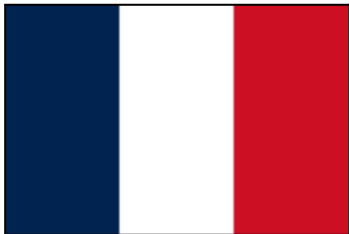
International organizations such as UN Women, UNESCO, and the United Nations Office for Outer Space Affairs (UNOOSA) have since promoted initiatives to encourage girls' participation in STEM education, strengthen women's leadership in scientific research, and increase female representation within the global space sector. These efforts include mentorship programs, scholarships, international cooperation projects, and campaigns to challenge gender stereotypes and expand professional opportunities (UN Women, 2023; UNESCO, 2021).

Despite measurable progress, women remain significantly underrepresented in many STEM disciplines and in leadership positions within the space industry. According to UNESCO, women account for only about one-third of researchers worldwide, while female participation in engineering, aerospace, and space exploration remains comparatively low (UNESCO, 2021). As government agencies and private companies expand space exploration and technological innovation, ensuring women's equal participation has become increasingly important not only for achieving gender equality but also for promoting scientific excellence, innovation, and sustainable development. The international community continues to recognize that diverse scientific teams contribute to more creative solutions, stronger institutions, and more inclusive technological progress.



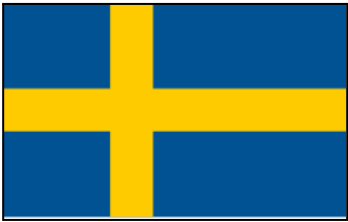
Key Stakeholders and Positions

COUNTRY	POSITION
United States of America 	The United States of America promotes women's participation in STEM through federal initiatives that expand access to education, research, entrepreneurship, and leadership opportunities. Agencies such as NASA have implemented programs encouraging women and girls to pursue careers in science and space exploration, while recent policies emphasize diversity and inclusion across the STEM workforce. The United States also supports international cooperation to advance gender equality while promoting scientific innovation and technological competitiveness (NASA, 2024; U.S. Department of State, 2024).
Russian Federation 	The Russian Federation has a long history of women's participation in science and space exploration, beginning with Valentina Tereshkova, the first woman to travel into space. Russia continues to support women's involvement in scientific research and aerospace industries through national education and research programs. However, women remain underrepresented in leadership positions within many STEM sectors. Russia generally supports international scientific cooperation while emphasizing technological development and national scientific capacity (Roscosmos, 2024; UNESCO, 2021).
People's Republic of China 	The People's Republic of China has expanded opportunities for women in STEM through investments in science education, technological innovation, and its growing space program. Women have increasingly contributed as astronauts, engineers, and researchers, reflecting the country's commitment to scientific development. Although female participation has improved, women remain underrepresented in senior leadership and research positions. China generally supports international cooperation in science and technology while emphasizing innovation and national development (State Council of the People's Republic of China, 2021; UNESCO, 2021).

French Republic 	The French Republic supports gender equality in STEM through policies that promote equal access to education, scientific careers, and leadership opportunities. France has introduced initiatives to increase women's participation in research and innovation while encouraging greater representation in the aerospace sector through organizations such as the Centre National d'Études Spatiales (CNES). France also supports international cooperation to reduce gender disparities in science and technology (CNES, 2024; UNESCO, 2021).
United Kingdom of Great Britain and Northern Ireland 	The United Kingdom promotes gender equality in STEM through national strategies that encourage girls' participation in science, increase female representation in research, and support women's advancement into leadership positions. The UK Space Agency has implemented initiatives to improve diversity and inclusion within the space sector while collaborating with universities, industry, and international partners to expand opportunities for women in aerospace and engineering (UK Space Agency, 2024; UNESCO, 2021).
Canada 	Canada promotes gender equality in STEM through policies that encourage women's participation in research, innovation, and leadership. The Canadian Space Agency (CSA) has adopted diversity and inclusion initiatives that support women in science, engineering, and space exploration while expanding mentorship and educational opportunities for girls. Canada also advocates international cooperation to advance gender equality and considers diversity essential to scientific excellence and technological innovation (Canadian Space Agency, 2024; UNESCO, 2021).
United Mexican States 	The United Mexican States promotes women's participation in STEM through national education policies, scholarship programs, and initiatives encouraging girls to pursue careers in science, engineering, and technology. Institutions such as the Mexican Space Agency (AEM) have supported outreach and educational activities aimed at increasing female representation in the space sector. Mexico also supports international cooperation to advance gender equality and reduce barriers that limit women's access to scientific leadership and innovation (Mexican Space Agency, 2024; UNESCO, 2021).

Federative Republic of Brazil 	The Federative Republic of Brazil has expanded programs that encourage girls and women to pursue STEM education and scientific careers, recognizing their importance for innovation and national development. The Brazilian Space Agency (AEB) has supported initiatives to increase female participation in aerospace research and engineering, although challenges remain in achieving equal representation in leadership positions. Brazil advocates international cooperation and capacity-building to reduce gender disparities in science and technology (Brazilian Space Agency, 2024; UNESCO, 2021).
Federal Republic of Germany 	The Federal Republic of Germany has adopted policies to encourage girls and women to pursue STEM education and careers, with particular emphasis on engineering, research, and technological innovation. Through organizations such as the German Aerospace Center (DLR), Germany promotes diversity, mentorship, and equal opportunities within the aerospace sector. The country also supports international cooperation and evidence-based policies aimed at reducing gender disparities in STEM and strengthening women's leadership in scientific research (German Aerospace Center, 2024; UNESCO, 2021).
Singapore 	The Republic of Singapore has prioritized women's participation in STEM as part of its broader strategy for innovation and economic competitiveness. Through national initiatives that promote STEM education, digital skills, and lifelong learning, Singapore encourages greater female representation in science, engineering, and technology sectors. The country has also supported women in research, entrepreneurship, and emerging industries, while continuing efforts to increase their presence in leadership positions. Singapore promotes international collaboration in science and innovation and recognizes gender diversity as an important driver of sustainable economic growth and technological advancement (Ministry of Education Singapore, 2024; UNESCO, 2021).



Republic of Korea 	The Republic of Korea has strengthened policies to increase women's participation in STEM through investments in science education, research, and innovation. National initiatives encourage girls to pursue careers in engineering, artificial intelligence, and aerospace, while the Korea AeroSpace Administration (KASA) promotes greater diversity within the country's expanding space sector. South Korea also supports international cooperation to improve gender equality and expand opportunities for women in scientific leadership (Korea AeroSpace Administration, 2024; UNESCO, 2021).
Israel 	Israel promotes women's participation in STEM through strong investments in scientific research, higher education, and technological innovation. Women play an increasingly important role in Israel's high-tech sector and scientific institutions, although gender disparities remain in senior academic and executive positions. Israel supports initiatives that encourage girls to pursue STEM careers and recognizes diversity as an important factor in innovation and scientific competitiveness (Israel Innovation Authority, 2024; UNESCO, 2021).
Netherlands 	The Kingdom of the Netherlands supports gender equality through policies that promote women's participation in higher education, scientific research, and innovation. Dutch institutions actively encourage girls to pursue STEM careers and support initiatives that increase female representation in engineering and the space sector. The Netherlands also promotes inclusive research environments and international cooperation to reduce gender gaps in science and technology (Government of the Netherlands, 2024; UNESCO, 2021).
Sweden 	The Kingdom of Sweden is recognized for its strong commitment to gender equality and inclusive education. National policies encourage equal participation in STEM from an early age while promoting women's leadership in research, innovation, and technology. Sweden also supports international cooperation aimed at reducing gender disparities in science and has integrated equality principles into its research and innovation strategies, including those related to the space sector (Government Offices of Sweden, 2024; UNESCO, 2021).



Kingdom of Norway 	The Kingdom of Norway promotes equal opportunities in STEM through policies that encourage women's participation in scientific research, engineering, and technological innovation. Norway emphasizes gender balance in higher education, research institutions, and leadership positions while supporting international initiatives that expand opportunities for women in science and space-related fields. The country considers gender equality an essential component of sustainable innovation and economic development (Government of Norway, 2024; UNESCO, 2021).
Republic of Türkiye 	The Republic of Türkiye has expanded opportunities for women in STEM through national education reforms, research initiatives, and increased investment in science and technology. The country also promotes female participation in aerospace and engineering through organizations such as the Turkish Space Agency. While progress has been made in education, challenges remain in increasing women's representation in leadership positions and advanced scientific research. Türkiye supports international cooperation to promote innovation and gender equality in STEM (Turkish Space Agency, 2024; UNESCO, 2021).
Kingdom of Spain 	The Kingdom of Spain has implemented policies to reduce gender disparities in STEM by promoting equal access to education, research, and innovation. Through the Spanish Space Agency (AEE) and national equality strategies, Spain encourages greater participation of women in aerospace, engineering, and scientific leadership. Spain also supports international initiatives that promote diversity, equal opportunities, and women's leadership in science and technology as part of sustainable development (Spanish Space Agency, 2024; UNESCO, 2021).
Italian Republic 	The Italian Republic promotes women's participation in STEM through national education, research, and innovation policies that encourage girls to pursue scientific careers. The Italian Space Agency (ASI) supports initiatives to increase diversity within the aerospace sector and collaborates with universities and research institutions to expand opportunities for women in science and engineering. Italy also supports international cooperation to advance gender equality and recognizes women's leadership as essential for scientific and technological progress (Italian Space Agency, 2024; UNESCO, 2021).

Kingdom of Saudi Arabia 	The Kingdom of Saudi Arabia has made significant progress in expanding women's participation in STEM as part of Vision 2030, which promotes women's economic empowerment and increased participation in science, technology, and innovation. Female enrollment in higher education, including STEM disciplines, has grown considerably, and women are increasingly participating in the Kingdom's developing space sector. Saudi Arabia continues to support initiatives that encourage women's leadership while balancing these reforms within its national development priorities (Vision 2030, 2024; UNESCO, 2021).
United Arab Emirates 	The United Arab Emirates has emerged as a regional leader in promoting women's participation in STEM and space exploration. Through the UAE Space Agency and national innovation strategies, the country has supported women as scientists, engineers, researchers, and astronauts, including the appointment of women to leadership positions within the space sector. The UAE promotes education, entrepreneurship, and international partnerships as key drivers of gender equality and scientific advancement (UAE Space Agency, 2024; UNESCO, 2021).
South Africa 	The Republic of South Africa promotes gender equality in STEM through policies that seek to expand access to education, scientific research, and technological careers for women and girls. National initiatives encourage greater female participation in engineering, innovation, and space science while addressing historical inequalities that have affected access to higher education and research opportunities. South Africa also supports regional and international cooperation to strengthen women's leadership in science and technology (Department of Science, Technology and Innovation of South Africa, 2024; UNESCO, 2021).
Kenya 	The Republic of Kenya recognizes STEM education as a key driver of economic development and has implemented initiatives to increase girls' participation in science, technology, engineering, and mathematics. Government programs and international partnerships promote digital skills, innovation, and entrepreneurship while expanding women's access to higher education and STEM careers. Kenya supports international cooperation and capacity-building to strengthen women's leadership in STEM and emerging technologies (Ministry of Education of Kenya, 2024; UNESCO, 2021).



Federal Republic of Nigeria 	The Federal Republic of Nigeria recognizes women's participation in STEM as essential for sustainable development and economic growth. Government initiatives and partnerships with international organizations aim to increase girls' access to STEM education, reduce gender disparities in scientific careers, and promote women's entrepreneurship and innovation. Although significant challenges remain, particularly in access to education and leadership opportunities, Nigeria supports international cooperation and capacity-building to strengthen women's participation in science, technology, and engineering (Federal Ministry of Innovation, Science and Technology of Nigeria, 2024; UNESCO, 2021).
Egypt 	The Arab Republic of Egypt has expanded efforts to increase women's participation in STEM through national education reforms, digital transformation initiatives, and programs supporting female researchers and entrepreneurs. The country has also encouraged greater involvement of women in engineering and technology as part of its sustainable development agenda. While progress has been made in expanding educational opportunities, challenges remain in increasing women's representation in leadership and research positions. Egypt supports international cooperation to promote gender equality in science and innovation (Ministry of Higher Education and Scientific Research of Egypt, 2024; UNESCO, 2021).
Chile 	The Republic of Chile has strengthened policies that promote gender equality in science, technology, and innovation through programs supporting women's participation in research, higher education, and entrepreneurship. Chile has also encouraged greater female representation in astronomy and space sciences, areas in which the country plays an increasingly important international role. It supports regional and international cooperation to expand opportunities for women in STEM while reducing structural barriers to leadership and professional advancement (Ministry of Science, Technology, Knowledge and Innovation of Chile, 2024; UNESCO, 2021).



Commonwealth of Australia 	The Commonwealth of Australia has implemented national strategies to increase women's participation in STEM education, research, and innovation. Through the Australian Space Agency, the country supports initiatives that promote diversity within the space sector and encourage girls to pursue careers in aerospace, engineering, and advanced technologies. Australia also promotes international partnerships and evidence-based policies to reduce gender disparities and strengthen women's leadership in science and technology (Australian Space Agency, 2024; UNESCO, 2021).
New Zealand 	New Zealand promotes gender equality through inclusive education policies and initiatives that encourage women and girls to pursue STEM careers. National programs support women's participation in scientific research, digital technologies, and innovation while seeking to increase female representation in leadership positions. New Zealand also emphasizes international cooperation and the inclusion of Indigenous perspectives in science and innovation as part of its broader commitment to equitable and sustainable development (Ministry of Business, Innovation and Employment of New Zealand, 2024; UNESCO, 2021).
India 	The Republic of India has expanded opportunities for women in STEM through scholarships, education initiatives, and programs supporting female scientists and engineers. The Indian Space Research Organisation (ISRO) has highlighted the contributions of women in major space missions, demonstrating their growing role in aerospace research and innovation. India supports expanding access to STEM education while recognizing that social and cultural barriers continue to affect women's participation and advancement into leadership positions. The country also promotes international cooperation to strengthen women's role in science, technology, and space exploration (Indian Space Research Organisation, 2024; UNESCO, 2021).

Previous United Nations Actions and Resolutions

The promotion of women's participation and leadership in STEM and space exploration is supported by decades of international agreements, United Nations resolutions, and global initiatives that recognize gender equality as a prerequisite for sustainable development, scientific innovation, and inclusive economic growth. Together, these frameworks have progressively expanded opportunities for women and girls while encouraging Member States to eliminate barriers to education, employment, and leadership.

The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), adopted in 1979, remains the principal international treaty on women's rights. Often described as the international bill of rights for women, CEDAW calls on States Parties to eliminate discrimination in education, employment, and public life, ensuring women have equal access to scientific and technical training, professional opportunities, and leadership positions. The Convention continues to provide the legal foundation for many national gender equality policies and international initiatives (United Nations, 1979).

The Beijing Declaration and Platform for Action, adopted at the Fourth World Conference on Women in 1995, established a comprehensive global agenda for advancing gender equality. Among its strategic objectives, it calls for expanding women's access to education, science, technology, decision-making, and leadership while addressing structural barriers that limit their participation in emerging fields. The Platform remains one of the most influential international frameworks guiding UN Women's work and national gender equality strategies (United Nations, 1995).

The 2030 Agenda for Sustainable Development, adopted by the United Nations General Assembly in 2015, reinforced the importance of gender equality as a cross-cutting objective for sustainable development. In particular, Sustainable Development Goal 5 (Gender Equality) seeks to empower all women and girls, while Goal 4 (Quality Education), Goal 9 (Industry, Innovation and Infrastructure), and Goal 17 (Partnerships for the Goals) emphasize equal access to education, scientific research, technological innovation, and international cooperation. Together, these goals recognize that women's full participation in STEM is essential for achieving sustainable and inclusive development (United Nations, 2015).

Recognizing the persistent underrepresentation of women in science and technology, UNESCO has launched numerous initiatives to promote gender equality in STEM education and research. Through global campaigns, policy recommendations, and the publication of reports such as the Science Report and the Cracking the Code initiative, UNESCO supports Member States in addressing gender stereotypes, expanding educational opportunities, and increasing the participation of women and girls in scientific careers (UNESCO, 2021).

UN Women has also developed programs and partnerships that encourage women's leadership in innovation, digital technologies, and scientific research. Through advocacy, technical assistance, and

cooperation with governments, universities, and the private sector, the organization promotes gender-responsive policies that expand women's participation in STEM education, entrepreneurship, and emerging technologies. These initiatives contribute directly to implementing the commitments established under CEDAW, the Beijing Platform for Action, and the Sustainable Development Goals (UN Women, 2023).

Recognizing the importance of gender equality within the space sector, the United Nations Office for Outer Space Affairs (UNOOSA) has promoted initiatives that encourage women and girls to pursue careers in space science, engineering, and technology. Through programs such as Space4Women, UNOOSA works with governments, educational institutions, and the private sector to increase female representation in the global space community, strengthen international cooperation, and inspire future generations of women leaders in space exploration (United Nations Office for Outer Space Affairs, 2024).

Together, these international agreements and initiatives demonstrate the international community's growing recognition that achieving gender equality requires more than equal access to education. Expanding women's participation and leadership in STEM and space exploration depends on sustained investment in education, mentorship, inclusive workplaces, international cooperation, and policies that remove structural barriers while promoting equal opportunities at every stage of scientific and professional development.

Current Challenges and Debates

Despite growing international recognition of the importance of gender equality, women remain significantly underrepresented in STEM careers and the global space sector. Although participation has increased over the past decades, women continue to face barriers to entering, remaining, and advancing in scientific and technological professions. These disparities are driven by a combination of educational, institutional, economic, and cultural factors that continue to limit equal opportunities and leadership (World Bank, 2022; World Economic Forum, 2023).

Equal Access to STEM Education

One of the greatest challenges is ensuring equal access to quality STEM education from an early age. In many countries, girls continue to face limited educational opportunities due to poverty, inadequate infrastructure, and persistent gender stereotypes that discourage them from pursuing science, engineering, and technology. Even where access to education has improved, unconscious bias and a lack of female role models often reduce girls' confidence and interest in STEM careers, affecting their long-term participation in these fields (UNICEF, 2025; UNESCO, 2021).

Gender Stereotypes and Cultural Barriers

Social and cultural norms continue to shape perceptions about women's roles in science and technology. STEM disciplines, particularly engineering, aerospace, and computer science, are often viewed as male-dominated professions, discouraging many girls and young women from pursuing these careers. These stereotypes also influence hiring practices, professional recognition, and career advancement, creating barriers that persist throughout women's professional lives (World Economic Forum, 2023).

Leadership and the "Leaky Pipeline"

Although more women are entering STEM professions, they remain significantly underrepresented in senior academic, research, executive, and decision-making positions. This phenomenon, often described as the "leaky pipeline," reflects the gradual decline in female representation at successive stages of professional advancement. Factors such as limited mentorship, unequal access to research funding, workplace bias, and challenges in balancing professional and family responsibilities contribute to this persistent leadership gap, particularly in highly specialized fields such as aerospace engineering and space exploration (Organisation for Economic Co-operation and Development [OECD], 2023).

Representation in the Space Sector

The space industry illustrates many of these broader challenges. While an increasing number of women serve as astronauts, engineers, scientists, and mission specialists, they continue to represent a minority of the global space workforce, particularly in leadership and technical decision-making roles. As government agencies and private companies expand space exploration, ensuring equal participation has become increasingly important for fostering innovation, strengthening international cooperation, and developing technologies that benefit all members of society (United Nations Office for Outer Space Affairs, 2024).

Policy Approaches and International Cooperation

There is ongoing debate regarding the most effective strategies for reducing gender disparities in STEM. Some Member States emphasize strengthening legislation, public investment, scholarships, and institutional reforms to expand opportunities for women and girls. Others argue that lasting progress depends primarily on transforming social attitudes, eliminating gender stereotypes, and promoting inclusive education from an early age. Increasingly, governments, international organizations, universities, and the private sector recognize that sustainable progress requires coordinated action across all these areas (UN Women, 2023; UNESCO, 2021).

Looking Ahead

Although international initiatives such as the 2030 Agenda for Sustainable Development, the Beijing Platform for Action, and numerous UN Women and UNESCO programs have contributed to measurable progress, significant disparities remain between regions and countries. Achieving gender equality in STEM and space exploration requires sustained investment in education, mentorship, inclusive workplaces, international partnerships, and evidence-based public policies. Expanding women's participation and leadership is not only a matter of equity but also a strategic necessity for advancing scientific excellence, technological innovation, and sustainable development worldwide (United Nations, 2015; World Bank, 2022; World Economic Forum, 2023).

Case Studies

The following case studies illustrate different approaches to promoting women's participation and leadership in STEM and space exploration. Together, they demonstrate the importance of education, international cooperation, institutional reform, and public-private partnerships in reducing gender disparities and expanding opportunities for women and girls.

NASA Artemis Program

NASA's Artemis Program represents a significant milestone in promoting women's participation in space exploration. The program aims to return humans to the Moon while including the first woman and the first person of color among those who will walk on the lunar surface. Beyond its scientific objectives, Artemis reflects a broader commitment to diversity and inclusion within the aerospace sector by encouraging greater female participation in astronaut selection, engineering, mission planning, and scientific research. The program demonstrates how space agencies can integrate gender equality into long-term exploration strategies while inspiring future generations of women to pursue careers in STEM (National Aeronautics and Space Administration [NASA], 2024).

United Nations Space4Women Initiative

The Space4Women Initiative, led by the United Nations Office for Outer Space Affairs (UNOOSA), seeks to increase women's participation in the global space sector by promoting education, mentorship, networking, and international cooperation. The initiative connects students, professionals, governments, universities, and space agencies to encourage greater female representation in science, engineering, and leadership positions. By highlighting successful women in space-related careers and supporting capacity-building activities, Space4Women demonstrates the role of international cooperation in expanding opportunities for women and girls worldwide (United Nations Office for Outer Space Affairs [UNOOSA], 2024).

African Girls Can Code Initiative

The African Girls Can Code Initiative (AGCCI), implemented by UN Women, the African Union, and the International Telecommunication Union (ITU), aims to equip girls and young women with digital and coding skills while encouraging careers in STEM. Through training camps, mentorship, and technology education, the initiative addresses barriers that have historically limited girls' participation in science and technology across Africa. The program illustrates how international partnerships can promote gender equality by improving access to education, digital literacy, and future employment opportunities in emerging technological fields (UN Women, 2024; International Telecommunication Union, 2024).

Girls Who Code

Founded in the United States, Girls Who Code is an international nonprofit organization that works to reduce the gender gap in technology by providing coding education, mentorship, and leadership opportunities for girls. Since its creation, the organization has reached hundreds of thousands of students through clubs, summer programs, and educational partnerships. Although not a United Nations initiative, Girls Who Code demonstrates how collaboration among civil society, educational institutions, governments, and the private sector can complement public policies aimed at increasing women's participation in STEM and preparing future generations for careers in technology and innovation (Girls Who Code, 2024).

Looking Ahead

These case studies demonstrate that increasing women's participation and leadership in STEM and space exploration requires coordinated efforts across multiple sectors. Expanding access to quality education, strengthening mentorship networks, promoting inclusive institutional policies, and encouraging international cooperation have all proven effective in reducing barriers and creating new opportunities. While progress has been significant, continued investment and collaboration remain essential to achieving gender equality in science, technology, engineering, and space exploration.

Possible Solutions and Future Perspectives

Achieving gender equality in STEM and space exploration requires long-term strategies that address barriers at every stage of education and professional development. While significant progress has been made through international initiatives and national policies, closing the gender gap will require sustained investment, international cooperation, and inclusive institutions. The following approaches represent some of the principal solutions currently promoted by governments, international organizations, and the scientific community.

Expanding Access to STEM Education

One of the most effective strategies is increasing access to quality STEM education for girls from an early age. Governments and international organizations have promoted scholarships, teacher training, digital learning initiatives, and mentorship programs that encourage girls to pursue careers in science, engineering, and technology. Expanding these opportunities, particularly in developing countries, can help reduce educational inequalities and strengthen the future scientific workforce (World Bank, 2022; UNESCO, 2021).

Strengthening Women's Leadership in STEM

Increasing participation alone is insufficient if women remain underrepresented in leadership and decision-making positions. Many countries have adopted policies that promote equal career advancement, mentorship networks, leadership development, and fair recruitment practices within universities, research institutions, and the space industry. Creating more inclusive workplaces can improve innovation while ensuring that women contribute to scientific and technological decision-making at all levels (UN Women, 2023; Organisation for Economic Co-operation and Development [OECD], 2023).

Promoting Inclusive Policies and Cultural Change

Addressing gender stereotypes remains essential to achieving lasting progress. Public awareness campaigns, inclusive educational materials, and the promotion of female scientists, engineers, and astronauts as role models can help challenge traditional perceptions about women's roles in STEM. These efforts should be supported by gender-responsive public policies that eliminate discrimination and encourage equal opportunities throughout education and employment (UNICEF, 2025; World Economic Forum, 2023).

Expanding International Cooperation and Partnerships

International cooperation plays a vital role in reducing global disparities in STEM education and space exploration. Partnerships among governments, international organizations, universities, research

institutions, and the private sector can facilitate knowledge sharing, technical assistance, scholarships, research collaboration, and capacity-building programs. Initiatives led by organizations such as UN Women, UNESCO, and UNOOSA demonstrate how multilateral cooperation can expand opportunities for women and girls worldwide (UN Women, 2023; United Nations Office for Outer Space Affairs, 2024).

Encouraging Public-Private Collaboration

The growing role of private companies in science, technology, and space exploration has created new opportunities to promote gender equality. Partnerships between governments, educational institutions, and private industries can provide internships, mentorship, scholarships, entrepreneurship programs, and professional training that help women develop the skills needed to succeed in emerging scientific and technological sectors. Such collaboration can also encourage more inclusive workplaces and increase female representation in leadership positions (NASA, 2024).

Future Perspectives

The future of scientific innovation and space exploration will increasingly depend on diverse and inclusive workforces capable of addressing complex global challenges. Expanding women's participation and leadership in STEM is not only a matter of gender equality but also a driver of innovation, economic growth, and sustainable development. By strengthening education, promoting inclusive institutions, fostering international cooperation, and supporting women throughout their professional careers, the international community can help build a more equitable and innovative future in which all individuals have the opportunity to contribute to scientific discovery and technological progress.

Guiding Questions for Delegates

1. What are the principal factors contributing to the underrepresentation of women in STEM fields and the global space sector?
2. To what extent have international agreements and initiatives, such as CEDAW, the Beijing Platform for Action, the Sustainable Development Goals, and UN Women programs, contributed to reducing gender disparities?
3. What barriers continue to limit girls' access to quality STEM education, and how can governments and educational institutions address these challenges?
4. Which policies are most effective in promoting women's recruitment, retention, and advancement into leadership positions in STEM and space exploration?
5. How can governments, international organizations, educational institutions, and the private sector work together to expand opportunities for women and girls in STEM?
6. What role should developed countries play in supporting developing nations through funding, technology transfer, capacity-building, and international partnerships?
7. How can public awareness campaigns, mentorship programs, and female role models help challenge gender stereotypes and encourage more girls to pursue STEM careers?
8. What measures can improve diversity, inclusion, and equal opportunities within research institutions, universities, technology companies, and space agencies?
9. How can the rapid growth of the global space industry create new opportunities for advancing women's participation and leadership in science, engineering, and innovation?
10. What practical and realistic actions can Member States implement to promote women's participation and leadership in STEM and space exploration while supporting sustainable development and scientific innovation?

Suggested Readings and Resources

Official United Nations Resources

United Nations – International Day of Women and Girls in Science

Explains the significance of the International Day of Women and Girls in Science and the United Nations' efforts to promote equal participation in STEM worldwide.

<https://www.un.org/en/observances/women-and-girls-in-science-day>

UN Women – Official Website

Provides information on UN Women's global programs, publications, policy recommendations, and initiatives promoting gender equality, women's leadership, and participation in STEM and innovation.

<https://www.unwomen.org>

United Nations Sustainable Development Goals – Goal 5: Gender Equality

Presents the global targets and indicators for achieving gender equality and empowering all women and girls, while highlighting links with education, innovation, and economic participation.

<https://sdgs.un.org/goals/goal5>

United Nations Office for Outer Space Affairs (UNOOSA) – Space4Women

Introduces the Space4Women initiative, which promotes women's participation and leadership in the global space sector through education, mentoring, networking, and international cooperation.

<https://www.unoosa.org/oosa/en/ourwork/space4women/index.html>

International Organizations and Space Agencies

UNESCO – Women and Girls in Science

Provides global statistics, reports, and policy recommendations on gender equality in STEM education and scientific research, including resources on reducing gender disparities worldwide.

<https://www.unesco.org/en/gender-equality/science>

NASA – Artemis Program

Explains NASA's Artemis Program, including its commitment to landing the first woman on the Moon and promoting greater diversity and inclusion in space exploration.

<https://www.nasa.gov/artemis>

European Space Agency (ESA) – Diversity and Inclusion

Describes ESA's initiatives to promote diversity, equal opportunities, and women's participation across Europe's space sector.

<https://www.esa.int>

Open-Access Academic Resources

UNESCO. (2021). UNESCO Science Report: The Race Against Time for Smarter Development

Provides comprehensive global data on scientific research, innovation, and women's participation in STEM across different regions.

<https://unesdoc.unesco.org>

UN Women. (2023). Facts and Figures: Leadership and Political Participation

Offers current statistics and analysis on women's leadership and gender equality that complement broader discussions of representation in STEM and decision-making.

<https://www.unwomen.org/en/what-we-do/leadership-and-political-participation/facts-and-figures>

World Economic Forum - Global Gender Gap Report

Analyzes global progress toward gender equality, including indicators related to education, economic participation, leadership, and STEM professions.

<https://www.weforum.org/reports/global-gender-gap-report>

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