

## **ANSO-MTA-OWSD Workshop on Women in Science**

18-19 November 2021

### **Joint Statement**

Diversity in science comes about not only through efforts at exploring diverse thematics and methodologies but also through the diversification, along several lines, of scientists and scholars working within the various fields. Gender figures prominently stand out among these lines in the sense that only through the correction of many forms of gender imbalance can true diversity be achieved. To this end, the involvement of female researchers, especially in leadership positions, must be rectified, while we should also recognize the past and present accomplishments of women scientists.

To confront the bottleneck problems for women scientists all around the world, the Alliance of International Science Organizations (ANSO), the Hungarian Academy of Sciences (MTA) and the Organization for Women in Science for the Developing World (OWSD) co-organized a workshop called “Women in Science: Towards a Diversity of Research and Researcher” on 18-19 November 2021. This statement is the outcome of this workshop to call for further action and international collaboration on women’s issues in science fields.

#### **1. Current Status of Women Scientists**

Gender equality (UN SDG No.5) plays a vital role in achieving sustainable, high-quality development. Although gender disparity has significantly narrowed over the past decades with an increasing number of women in various fields of Science, including Technology, Engineering, Math and Medicine (STEMM), as well as Social Sciences and Humanities (SSH),

existing research shows that, while men continue to dominate in these fields, especially in leadership positions, the achievements of female scientists is still not adequately visible in terms of participation, promotion and production <sup>[1][2][3][4]</sup>.

(1) The proportion of women decreases along the education and career path from high schools, undergraduates, graduates, early career scientists, senior scientists and academicians/fellows. Compared to men, women seem to be much less successful from the senior level and beyond, a phenomenon known as the “leaky pipeline”.

(2) Women’s participation is extremely low in the fields of engineering, computer science, or physics, which is regarded as a historical retrogression. For instance, the proportion of women undergraduate students in computer science in U.S. decreased from 27% in 1997 to 19% in 2016.

(3) There are fewer opportunities for women to take leadership positions. For example, in 2017, women working as management staff (such as president, provost, and dean) in the universities of U.S. accounted for 35% of the total.

(4) Women scientists are less productive than men. Participation in research projects and academic publications only amounts to 1/3 to 2/3 of those of men.

(5) The visibility of women scientists is much lower in developing countries, due to the double effects of long-lasting social and gender inequality. Only a few elite women from higher social classes can access enough educational and social resources, thus make outstanding achievements in science and technology.

## 2. Major Issues Affecting the Career of Women Scientists

The underprivileged status of women science talents highlights the survival and development bottlenecks faced by women around the world. In both developed and developing countries, women in science are facing a number of common barriers, including:

**First, science-gender stereotype.** Stereotypes that women possess less talent in science and technology universally exist, and have already penetrated all aspects from parenting and education in kindergarten period, to science education in higher education, talent recruitments, paper review, project initiation, promotion, and granting awards.

**Second, lost confidence.** The way women view themselves is affected by how they are viewed by others. Evidence shows that six-year-old children already have science-gender stereotypes, which directly affects the confidence, motives and career choices of women. Many of them think that they do not have enough talent required in the fields of science and technology.

**Third, conflict with marriage, childbirth and parenting.** These are the primary obstacles in the career advancement of young women scientists. Even if both are married and with young children, female PhDs are 35% less likely than male PhDs to be offered permanent jobs, and 27% less likely to be promoted to tenure.

**Fourth, male-dominated organizational culture.** S&T organizations have a relatively low proportion of women; this culture fails to recognize women's academic achievements, encourage women to pursue excellence, and provide opportunities for women to expand social networks, obtain

research information, initiate projects, communicate and cooperate with others. It is no wonder then that many women scientists gradually lose confidence.

**Fifth, constraint of traditional gender concepts.** In many developing countries, women's social status is generally inferior. The rights of education, employment and even personal security are not necessarily guaranteed, and women might even encounter sexual assaults when they go out alone. In such a social environment women suffer serious disadvantages when pursuing careers in science and technology.

### **3. Recommendations**

**(1) Describe, analyse, characterise, and discuss the situation of “women in science” in your society/culture. Bring this topic into the picture by raising it. Collect and study examples.**

(2) Foster a structural change. Implement impactful institutional changes relating to HR management, funding, decision making and research programmes through inclusive Gender Equality Plans (GEP). The GEP should be signed by the top management, and disseminated within the institution. It should demonstrate a commitment to gender equality, set clear goals and detailed actions and measures to achieve them. Such plan must be evidence-based and founded on sex or gender-disaggregated baseline data collected across all staff categories; and it should consider also capacity building and training actions to develop gender competence and tackling unconscious gender bias among staff, leaders and decision-makers. A GEP should also consider measures against gender-based violence including sexual harassment.

### **(3) Effect change in the perception of women in the educational system**

Provide education on gender equality for primary and junior high school students, and promote personal motivation and self-confidence of girls. Conduct targeted trainings to teachers of universities, high schools and elementary schools as well as parents by realizing their science-gender stereotype and changing their behaviours to students and children.

Reform the textbooks by showing successful women models in science and technology to replace the icy-cold image of women scientists. Use examples that are easy to understand, increase illustrations of women scientists, teachers and students, and advocate more interactive and collaborative teaching methods.

### **(4) Secure bottom line of women's participation in science**

Initiate special programs for women scientists, set up a bottom line of women's participation to upset the gender imbalance. Secure a base gender rate for women in every perspective of career development, such as scholarship awards, application for international exchanges, faculty recruitment, research projects, competition for a Dean of Institute / Director of Department, Academician nomination, etc., which helps to relieve the science-gender stereotype and encourage more young women scientists.

### **(5) Build a childbirth-friendly environment**

Loosen the age restriction for women regarding the application of research and talents programs, extend evaluation deadlines for women, who are in breast-feeding period, support flexible working time to establish a childbirth-friendly research organization.

### **(6) Improve public gender perceptions via mass media**

Encourage media, press, movie producers, and other players to introduce more successful stories of women scientists to the public, particularly children, which will serve as models for children and enhance gender cultural ideology for the whole society.

### **(7) Monitor and share the data of the career development of women scientists**

Enhance gender statistics conducted by relevant functional departments of governments, universities and research institutes; monitor the progress of women scientists on a regular basis, and share the data with various stakeholders, so that new science-based gender policies can be drafted continuously.

### **References**

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[4] Wang M.T., Degol J.L.. Gender Gap in Science, Technology, Engineering, and Mathematics (STEM): Current Knowledge, Implications for Practice, Policy, and Future Directions [J]. *Educational Psychology Review*, 2017, 29(1): 119-140.