

UZBEK WOMEN IN DEVELOPMENT OF SCIENCE

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Abstract. *The role of Uzbek women has proliferated sharply during last years. Much of the future job growth is projected in science, technology, engineering, and mathematics (STEM). Yet the scarcity of women in STEM careers remains stark. This article describes about what kind of issues face women in Uzbekistan and women scientists in Uzbekistan and importance of encouraging young scientists.*

Keywords: *women scientists, STEM, research.*

Introduction

The General assembly of United Nations signed on 17th of February 2016 decides to proclaim 11 February of each year the International Day of Women and Girls in Science.

Doctoral candidates in Uzbekistan have limited information about scientific journals outside the country and the possibility of submitting articles to international journals is also very limited. This limitation is due to lack of practical knowledge on how to find and access the journals, resulting from insufficient

institutional support and training, poor command of English, or in some cases financial obstacles. Another hurdle is that the list of available journals is strictly limited, contrasting with the free access to all journals via online databases in Europe and internationally. A major effort should be made to improve the visibility of Uzbek journals in international bibliographic databases like Thomson Reuters' ISI Web of Knowledge or Elsevier's SCOPUS. That could significantly improve the visibility of research conducted by Uzbekistan doctoral candidates and scientists. (Further development of Doctoral education in Uzbekistan Recommendations for quality assurance in doctoral education in Uzbekistan)

The last decision was the creation in 2018 of a single El-Yurt Umidi Foundation under the Cabinet of Ministers of Uzbekistan for training specialists abroad and a dialogue with compatriots (hereinafter referred to as the Fund; the website of the Fund - <https://eyuf.uz/>). The activities of the Foundation include, inter alia, state financing of training for citizens of Uzbekistan under the master's and doctoral programs, advanced trainings and internships in foreign countries with the obligation to work for at least three (advanced training, internships) or five years (master's, postgraduate) in universities, scientific institutions, ministries, departments and other state organizations of Uzbekistan. According to President Mirziyoyev, the goal of the El-Yurt Umidi Foundation at the initial stage is to send more than 3,500 specialists abroad to study under the master's and doctoral programs, advanced trainings and internships. It is also planned to attract more than 600 compatriots and about a thousand foreign scientists and experts. The commission created by the Foundation to organize the return of compatriots living in foreign countries to research and higher educational institutions of the Republic of Uzbekistan sets the

goal of attracting at least 5 compatriot scientists living abroad for each research and higher educational institution of the country. In accordance with the terms of the competition for studying abroad, a chosen higher educational or scientific institution should be included, as a rule, in the 500 world's best or in the 200 world's best organizations in the chosen area/major in the internationally recognized rankings. In May 2019, the results of the first scholarship competition for studies abroad for specialists from the higher education system were summed up. The final results are: doctoral studies – 65 scholarships, master's programs – 17 scholarships, advanced training and internships – 435 scholarships. According to the Foundation, in the redistribution of target quotas the priority was given to such specialties as production technologies, engineering, computer technology, communications and information, telecommunications technologies, architecture and construction, agriculture, irrigation and land reclamation, healthcare, mathematics and exact sciences, as well as art and culture. (Modernization of Higher Education in Uzbekistan: Opportunities for Russian-Uzbek Cooperation, Sergey Yun, 2019) A necessary element of people's role is helping women and girls realize their own power to advance the wellbeing of their families, their communities, and their societies. (2014, Melinda French Gates, Putting women and girls at the center of development)

Literature review

In total 88 articles were downloaded and analyzed, including foreign articles.

Analysis and results

Family responsibilities and departments' work-life policies have a bigger effect on the job satisfaction of female than male faculty, given that women do more caregiving for young children and elders than do men. Juggling caregiving is compounded by the fact that most universities do not provide child care. Caregiving responsibilities curtail women's travel to conferences, where colleagues outside the home university can learn about their work. Absence from the conference and invited talk circuit, in turn, interferes with obtaining the international recognition necessary for promotion to full professor. A recent retention study found that women more than men are more likely to cite family-related issues and time as a reason for leaving STEM careers (Frehill, Di Fabio, Hill, Trager, & Buono, 2008).

Research at the Uzbek Academy of Sciences institutes and universities covers a wide range of physical fields: nuclear physics, electronics, materials, semiconductors, solid-state physics, theoretical physics, radiation physics,

activation analysis, astronomy, polymer physics, and biophysics among them

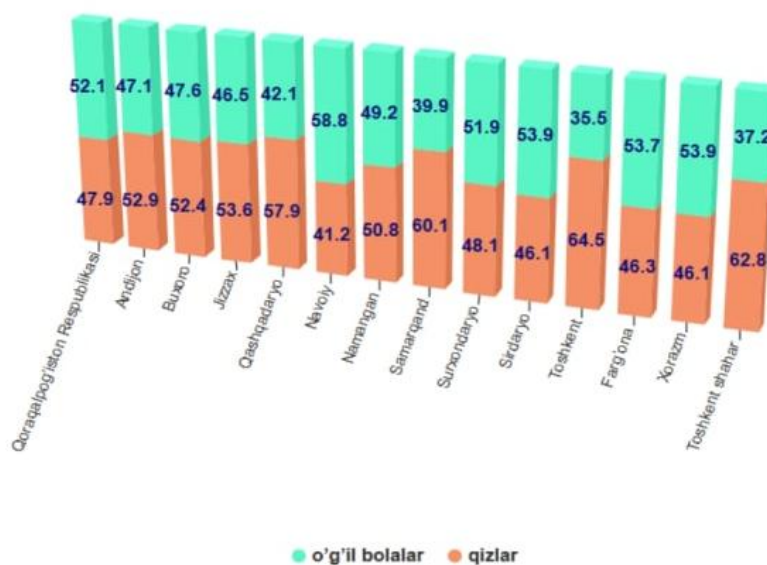
Uzbekistan women scientists are successfully working in almost all of these fields, including:

- Mukhae Rasulova - mathematical physics (Bogolyubov's equations)
- Manzura Usmanova - analytical activation analysis of high-pure materials
- Ella Ibragimova - solid-state radiation physics and high-temperature superconductors
- Feruza Umarova - physics of solid-state theory: calculation of electronic defect structure and the defect's influence on properties of Si semiconductor materials
- Galina Ni- nuclear reaction theory
- Dilbar Gulamova - solar materials physics
- Ada Liderman - semiconductor physics (20.08.2002, Ulmas Gafurov, Women in physics in Uzbekistan)

Dr Dilfuza Egamberdieva is the Head of Research Group Ecobiome R&D, Uzbekistan and Research Associate at the Leibniz Centre for Agricultural Landscape Research (ZALF), Germany. Her research focused on improving crop production and soil health through agricultural biotechnology. She received awards such as the Scopus TWASTWOWS Young Women Researcher Award, the Morrison Rogosa Award, the L'Oréal-UNESCO For Women in Science Fellowship, the Alexander von Humboldt Fellowship and the TWAS Prize in Agricultural Sciences. She has authored four books and co-authored more than 100 publications. In 2017 she was elected to a working group of the German Council of Science and Humanities and in 2018 as a member of the project team of the UN Committee on World Food Security's High Level Panel of Experts on Food Security and Nutrition. She graduated in biology from the National University of Uzbekistan and received her PhD in Agricultural Sciences from the Humboldt University of Berlin, Germany. She conducted her postdoctoral studies at the Helsinki University of Finland, University of Florence, as well as at the Manchester Metropolitan University, and Leiden University of Netherlands. She has a long-term experience in plant and soil biotechnology research and has collaborated widely with scientists across the world. She served as international project coordinator in her home country topic ranged from improving the soil and crop productivity, food security and sustainable management of natural resources. She is a member of several journals' editorial board, authored three books, and co-authored over 100 publications related to plant nutrition, agricultural biotechnology and soil fertility. She is member of the Asian PGPR Society for Sustainable Agriculture. Her contribution to agricultural biotechnology research has been recognized through TWAS and UNESCO awards.

Dr Dilnoza Duturaeva Senior Research Fellow, Academy of Sciences of Uzbekistan. She received my PhD in history from the Academy of Sciences of Uzbekistan in 2011. During postgraduate studies she spent an academic year at the Martin Luther University of Halle-Wittenberg and a term at the University of Wisconsin–Madison. She also carried out postdoctoral research in the School of History at Nanjing University and at the Department of Sinology of the University of Bonn. (2018 Profiles of women scientists in Asia)

Oliy ta'lim muassasalarida ta'lim olayotgan talabalarning jinsi bo'yicha taqsimlanishi, %



This graphic is Gender distribution of students enrolled in universities, % between regions of Republic of Uzbekistan and Republic of Karakalpakstan.

Green are men-students, orange are women-students (2019, Statistics of education in Republic of Uzbekistan)

Conclusion/Recommendations

In recent years, because of experimental equipment becoming out of date, some scientists have changed their field of investigation to theoretical research and modeling. Because of insufficient financial support of science by the government, and a low standard of living, many researchers are forced to find additional work to support their families. (20.08.2002, Ulmas Gafurov, Women in physics in Uzbekistan)

In the last few years some research teams have received international grants, which has served to promote scientific research in our country, attracting some young people, as well as older, more experienced and capable women researchers. (20.08.2002, Ulmas Gafurov, Women in physics in Uzbekistan) There is more need a financial support of science by the government and modern equipment to make research deeply with investigation.

It is important to encourage young people into research and provide them with good opportunities and conditions to pursue science that will help to develop our country. Pursuing research will help them to overcome difficulties, get good jobs and help to improve their social life through networking. The best advice I can give young women is for them to believe in themselves, enjoy doing research as a hobby because it strengthens the mind, to follow their dreams and be a model for their kids and society (2018 Profiles of women scientists in Asia)

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