



Gender and Science Mini-Simulation: Country Backgrounds

Brazil

- In Brazil, less than 40% of people in careers in science and technology are women, even in entry-level roles.
- Strict procedures for research and development makes it difficult for women to find a necessary work-life balance and so many who do enter the field favor teaching positions over research.
- Women report that even though access to education is high, there are still many workplace mentalities that make them feel unwelcome in the field.
- Brazil is unique in that it has a high number of women seeking out degrees in mathematics and engineering, but of these women, very few end up actually practicing their profession.
- The Brazilian government is currently reviewing these facts and seeking out ways to improve its national strategies for gender equality in science and technology.

China

- The Chinese government has been actively attempting to increase the number of women represented in science.
- The government recently passed the Outline for the Development of Chinese Women, a ten year plan with an end goal of increasing representation to 35%.
- Women are still bound by family duties and social expectations which makes it difficult for them to pursue research positions.
- China has hosted the International Workshop on Women in Science which aims to examine the cultural reasons that women are often barred from scientific fields despite progressive legislation.
- Women in China still face difficulties seeking education in rural communities, meaning that most of the women represented are from the upper class, and from urban areas.

Costa Rica

- Studies have shown that women in science in Latin America show little solidarity and do not identify as a group or union.
- Women in Costa Rica often discriminate against other women seeking jobs even more harshly than men do.
- There is a sharp contrast between women in rural versus urban areas as well, with urban women often having access to better education and a greater likelihood of seeking a career in science.
- Women who move from rural to urban areas often begin seeking out equal access to education on their own.
- In Costa Rica, women have been adapting to and seeking out increased gender freedoms and are now getting married at later ages, favoring education over childbearing, and considering living alone a socially acceptable lifestyle.
- The previous facts suggest that underrepresentation is due largely to a lack of support, rather than a lack of interest or motivation.

- Costa Rica has recently undertaken initiatives to ensure that its proactive policies are coming into full effect, rather than existing as empty laws.

Egypt

- Women comprise almost half of the university students in Egypt, and on average, approximately 30% of the STEM faculty.
- These faculty numbers rise considerably for medicine and life sciences, with over 55% representation in pharmacy and 100% representation in nursing.
- That being said, women hold only 2% of higher level positions, including tenured positions.
- The Minister of Higher Education has recently passed reforms that discriminate against women, including actively reallocating resources to male faculty.
- Universities hold only a handful of female deans, and although women have almost equal representation in non-educational scientific fields, very few hold decision-making roles.
- Although Egypt has generally good representation, it has begun to implement policies that actually reverse past progress and continues to exclude women from positions of power in the field.

Germany

- Germany has seen a rise in the number of women working in STEM careers recently but still faces issues with women being grouped into teaching roles or entry-level positions rather than upper level management or research positions.
- The German government has responded to this issue by initiating seminars that encourage and empower women already in the field to advance their careers.
- The program gave them specialized training in interviews, job applications, and grant writing. It also encouraged the women to network with one another and become actors in a more supportive community of female scientists.
- The government has begun researching ways to amend the program and expand its influence to the rest of the nation.

Greece

- Greece suffers from an enormous gender gap in science. In the field of astronomy, for example, only 16% of professionals are female.
- In Greece, working schedules are largely inflexible, with little option for part time work or work with non-traditional hours. It does, however, have a high incidence of guaranteed leave for maternity, time to visit children at school, and time to care for disabled children.
- Childcare in Greece is expensive, and largely unsubsidized. Workplace childcare remains unpopular.
- The generally accepted time schedules for school and workplaces are often offset and incompatible, making it difficult to hold a full time job and have free time during the start and end of school hours.
- Greece is a strong example of how social factors and established status-quo dynamics can keep the gender gap high despite proactive policies to support working women and parents.



India

- The Indian Space Research Organization has recently received large amounts of publicity for its Mars mission that was led and carried out by women. This project is not an exception in the organization, and numerous other projects have been led by women.
- Despite women being involved in science, the media rarely recognizes them for their accomplishments.
- Women in India seeking to pursue higher education in the sciences face challenges with societal expectations and are often looked down upon for rejecting their duties to their homes and husbands.
- Despite having access to education and entry into STEM fields, women are still highly underrepresented.
- What makes India unique is that even in workplaces where women are underrepresented (ISRO has only 20% representation of women, 10% for engineers) they still become projects leads and get to independently oversee important projects.

Italy

- Italy has no national policies or strategies in place to involve women in science and scientific research, for which it has come under scrutiny.
- Italy also rarely gives even small amounts of direct support to independent initiatives to support women in science.
- University enrollment is growing in scientific fields, but is doing so far more quickly for men than women, with less than one third of new enrollments in scientific programs being women.
- Women in Italy continue to favor medical and life science fields over engineering and technology when they do participate in scientific fields.
- Italy has been experiencing gradual growth in the representation of women in STEM fields.

Japan

- The number of female researchers in Japan has been increasing, although very slowly.
- Women still make up only 11.6% of researchers in Japan, which is low by international standards.
- This statistic is especially shocking given Japan's overall national focus on research and development, making up about 3% of its GDP.
- In Japan, the issue is not that the work force does not reflect the volume of educated women, but rather a lack of women majoring in STEM fields.
- The Japanese government has not undertaken any serious policies to encourage women to participate in scientific fields, nor has it taken measures to support those already involved.
- The underrepresentation is something of a cycle, as the lack of professional role models serves to convince young girls that they should not seek out a career in science.



- Japan also has an enormous amount of private-sector involvement in research and development. The amount of power wielded by the private sector in gender issues is a strong indicator of the government's need to engage large corporations in changing the role of women in science.

Luxembourg

- Luxembourg suffers from gender inequality in the sciences. As a means of investigating and combating the problem, it created a special post at the University of Luxembourg to act as a gender and science representative.
- This representative guided the University in implementing policies that would proactively support women in science by changing the culture of stereotyping in academia.
- Research proposals and designs were made sensitive to the challenges faced by women and young parents of any gender, including deadline extension provisions and special considerations for those raising children.
- Luxembourg began favoring research over teaching for those who must work part time due to household responsibilities, which allowed young mothers, as well as fathers, to engage in research rather than being forced into teaching roles.
- The representation of women in science in Luxembourg, particularly in its research divisions, has increased since these measures were brought into effect.

Myanmar

- In Myanmar, over half of University STEM degrees are being awarded to women.
- 95% of post-secondary teachers of STEM subjects in Myanmar are women.
- While the above statistics seem to reflect a high involvement of women in science, it actually reflects a disparity between access to education and access to careers in research.
- The vast majority of tech startups in Myanmar are run by men, with only a handful of woman entrepreneurs.
- Myanmar is a good example of a nation that is coming online all at once and has managed to involve women in the basic framework of the technology industry, but has simultaneously failed to do so outside of existing gender constraints on career options.
- Myanmar's government has done little to stop gender-based violence against women, let alone promote their involvement in science. Initiatives to change this laissez-faire policy have not garnered a critical mass of support.

Netherlands

- The Dutch government has investigated the situation of women in science within its own nation and found that the bulk of grant applications are submitted by men.
- Similar studies also found that the number of applications from women was far lower than was expected based on the gender proportions of university faculty, meaning that a woman's propensity to put her degree toward research was lower.

- In order to combat this, the Netherlands instituted policy changes that would reverse the effects of some issues uniquely faced by women. It abolished age limits for grants and instituted deadline extensions for pregnancy or parental duties.
- In order to continue the process of enacting proactive policies, legislation was passed that required that the Dutch Research Council have at least one woman on every leadership board.
- The Netherlands continues to amend its current legislation to match new developments and findings on the issue, taking a proactive stance on the issue.

Nigeria

- Women continue to be underrepresented in the sciences in Nigeria, with only half of university students being women.
- Withdrawal from school for early marriage is often cited as the reason that girls do not continue their education.
- While the Nigerian government does have legislation banning discrimination on the basis of gender, tribal and religious customs often counteract these policies.
- Parts of the nation continue to follow Shari'a law, which puts the government in a difficult position. Unlike Saudi Arabia, the head of state does not carry religious authority and the country is not an officially Muslim country, so it is difficult to cater to this group without undermining the legislation it passes for the rest of the nation.
- The competing legal systems in Nigeria make it difficult to make legislation stick, and so grassroots initiatives are often needed.

Saudi Arabia

- Saudi Arabia has gender-segregated education that, while once had unequal quality of education in the sciences, is being improved by new legislation.
- New university campuses for women are being added and female students may now have access to top researchers, even male ones, through closed circuit television.
- Still, the intersection of professional advancement and religious practices is a complicated one. Women may only work in places deemed legitimate by the government and must have a male guardian to accompany them.
- The government is currently attempting to engage women in the workforce and science by creating government-funded research and industrial projects staffed entirely by women, which removes the need for oversight from male guardians.
- Saudi Arabia has also partnered with the private sector to initiate postdoctoral fellowships for women in science, particularly for petroleum engineers.
- Women working independently are additionally limited by lacking the right to drive and the right to move through the streets unescorted. They have difficulty collaborating with other top researchers because of cultural sensitivities surrounding women conversing with men who are not of their family.
- One area that has allowed women to become actively involved in medicine and technology is the necessity for breast cancer clinics in which female doctors might examine other females.



- Saudi Arabia is an example of a nation working around important religious practices to advance women in science. The government is interested in actively encouraging women to contribute to the nation's human capital, provided that these contributions abide by existing social and religious laws.

United States of America

- The United States is working proactively to increase the volume of women entering scientific fields by engaging and mobilizing universities, employers, and non-government organizations.
- Social stereotypes that contribute to women being granted lower pay, less work space, and less access to research grants are still prevalent in the US.
- The government has actively donated money to organizations such as the Institutional Transformation Award that recognizes women in science and distributes grant money to underappreciated scientific contributions from women.
- The United States also has a high degree of community association among female scientists. A key example is an organizations such as the American Association of University Women.
- The government also has a National Science Foundation that has been granted both permission and funding to promote gender equality in the sciences with initiatives like the ADVANCE (Increasing the Participation and Advancement of Women in Academic Science and Careers) Program to support women entering the STEM fields and to recognize the contributions they make.
- The USA also passed the Science and Technology Equal Opportunities Act of 1980 that empowered government organizations like the National Science Foundation to create programs that actively engaged women and were reserved for groups traditionally underrepresented in the field.