Forum: Commission on Science and Technology for Development

Issue: Encountering inequality in science due to regional disadvantages

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I.   Description of the Issue

Equality is the right of equal treatment guaranteed to all people in all aspects of life, regardless of their backgrounds, in order to create the same opportunities. Inequality can be defined as an unjust distribution of opportunities and resources directed towards people of given societies. According to the *National Library of Medicine* inequalities in the scientific field occur in the form of resources, (non)monetary rewards and research outcomes across scientists around the globe. This leads to serious impediments in scientific careers and progresses that otherwise would be tackling the world's most urgent problems on an international basis, thereby not being given the chance to strengthen cooperations between nations and experiencing counter productivity in the goal of developing regionally disadvantaged nations. Regionally disadvantaged nations are countries or regions within a country that experience differences in their standards of living, life quality, opportunities and jobs due to limited work opportunities, lack of governance and differences in economic performances. Over the last decade inequalities in the scientific field, with a special focus on scientific research, have intensified due to globally rising social and economic disparities. Due to restricting migration limits and the Covid-19 pandemic the economic prospects of people in science are supporting and growing the inequalities in science.

Moreover, the achievability of success and equal opportunities is dependent on one's socioeconomic position in society, also called social stratification, an example would be the

separation of society into rich vs. poor or racial and ethnic hierarchies. Therefore countries and regions with weak economies, also called less economically developed countries(LEDCs) and underdeveloped educational systems have a disadvantage in science, since they do not possess the same resources as nations with a strong global socioeconomic status and economy, more economically developed countries(MEDCs). Furthermore, profitable institutions from MEDCs receive far more funding amounts and prospects than LEDCs. All member states are in some way affected by this pressing issue that cannot be neglected anymore and has to be taken seriously by all UN bodies and Member States to gain equal accessibility for every human being, regardless of their descent.

II.   Definition of Key terms

LEDCs

Nations with weaker economies are referred to as less economically developed countries, LEDCs, those developing countries are poor due to their low Gross Domestic Product.

MEDCs

Nations with stronger economies are referred to as more economically developed countris, MEDCs, those industrialized countries are wealthy due to their high Gross Domestic Product.

Mertonian norms

The four norms of accessible scientific research (communism, universalism, disinterestedness, organized skepticism) that set the ideal of equal science, introduced by Robert Mert.

UNESCO

United Nations Educational Scientific and Cultural Organization, focuses on disparities and inequalities in the scientific field.

Social stratification

Society's categorization of the citizens into socioeconomic rankings, contingent on the aspects of income, wealth, education, power and race.

STEM

A field of study that stands for Science, Technology, Engineering, and Mathematics.

Regionally disadvantaged nations

Nations that experience that experience differences in their standards of living, life quality, opportunities due to low-quality economic performances.

Matthew effect

The Matthew effect enhances the position of already successful scientists, who are given disproportionate opportunities in regards to collaborations or fundings, creating an increased future success chance for early successes.

III. Background Information

Scientific disadvantages around the globe are caused by poverty, social background and geographical standpoints. Oftentimes LEDCs do not have the resources, research programs or fundings, which are required to work efficiently, therefore LEDCs have an increased inequality in science due to their regional disadvantages in contrast to MEDCs, which have the advantage of technological funding and governmental research programs.

In the *Recommendation on Science and Scientific Researchers* 13.11.2017, UNESCO calls upon all Member States to take measure how to act in order to "ensure that, without discrimination on the basis of race, colour, descent, sex, gender, sexual orientation, age, native language, religion, political or other opinion, national origin, ethnic origin, social origin, economic or social condition of birth, or disability", every citizen receives equal possibilities and opportunities to access in science. Another aspect in which regional disadvantages manifest in the lack of access to scientific literature, content and data that are generally archived or exclusively attainable in certain nations or places. The lack of partnerships between scientific researchers from MEDCs and LEDCs is a contributing factor to the disadvantage of LEDCs, hindering developing countries from reaching their maximum capacity for the purpose of distributing in allocating and developing scientific outcomes.
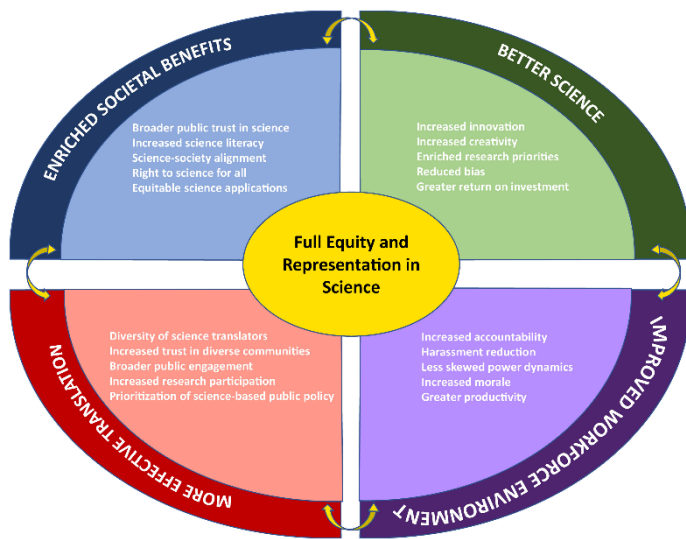
Figure 1: ideological principal of   a diverse and equal scientific   workforce

As portrayed in figure 1, the search for a solution for an inclusive   scientific enterprise can only be achieved if each member state works on taking measures in the scientific field for a fully representative and diverse workforce of today's societies. If no measures are (to be) taken, underrepresented minorities will remain underfunded and the inequality gap between LEDCs and MEDCs in science will continue to rise and inhibit society from accomplishing the highest-quality innovations possible. Due to regional disadvantages, gender inequality in science is a contributing demonstration of inequality in scientific careers and its affect on social, political and economic affairs. The graphic divides the improvement of equality into four sectors in four different colours to demonstrate what needs to be done in order to achieve full equity and representation in science and what the positive outcomes of tackling this issue would look like.

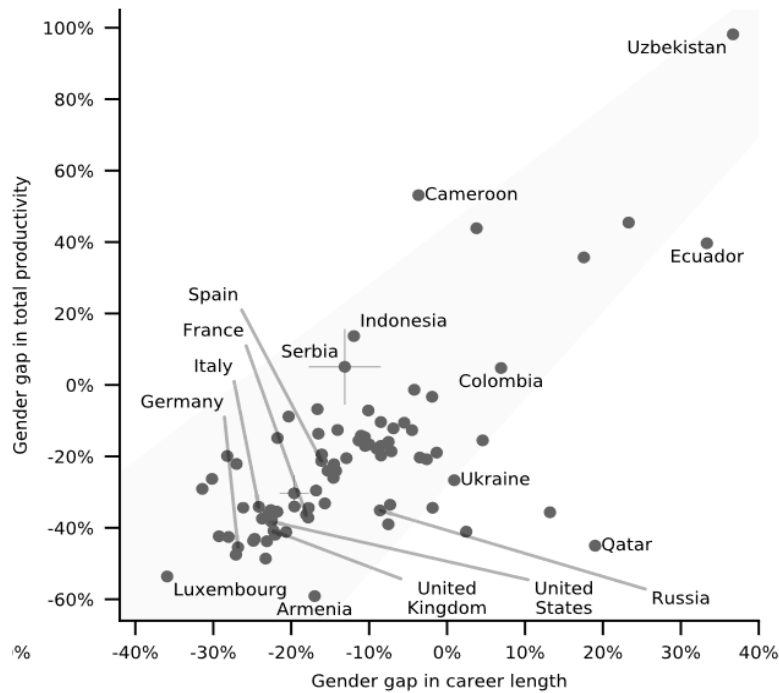*Figure 2: Gender gap in career length and career productivity across different nations*

Figure 2 demonstrates the gender gaps in the scientific field across different nations, portraying the gender-inequalities in science based on different nations, whereby a gender gap of 0.0% stands for gender equality in science such as in Serbia, where the gender gap stands at 0% in total productivity and about -10% in career length. Negative gaps claim that the career length and productivity is favorable for male careers, for example in nations such as France, Germany, Italy, Spain and Luxembourg, declaring a strong favourism of males in scientific careers. Positive gaps demonstrate that the future holds greater prospects for female careers, with only a few nations being able to set a prospect for this case, for example Cameroon, Indonesia, Columbia or Ecuador. This Graphic showcases that the majority of the nations shown are far away from reaching gender equality in science. Gender inequality in science is dependent on which region or nation women are located at, women in less economically developed countries are encountering far less chances of success in science than women in STEM, women working or studying in the field of science, technology, engineering and mathematics, which are located in highly economically and technological developed countries. In the past, certain actions and strategies have been taken in order to conquer this issue, for example by the *STISA-2024, SCIENCE, TECHNOLOGY AND INNOVATION STRATEGY FOR AFRICA 2024*, which was developed by the African Union as a timeframeinclused action plan for Africa's achievement goal in science. Another example is

the *Budapest Open Access Initiative*, which was developed in 2001 by the *Open Society Institute* (nowadays *Open Society Foundations*) with the intention of making all academic research articles openly available on the internet, which would be beneficial for a global equality in science, ensuring that every scientist has access to research articles, regardless of their current location..

IV. Mayor Countries and Organizations Involved

United States:

In the United States, disparities in scientific opportunities can be observed across different states and counties. For instance, rural counties with limited access to research facilities, educational institutions, and funding may face disadvantages in pursuing scientific careers compared to urban or wealthier areas.

Brazil:

In Brazil, regional disadvantages create inequality in science. Rural and remote areas lack infrastructure, funding, and educational resources, hindering scientific development. Efforts aim to provide equal access to quality education and research facilities, bridging the regional divide for inclusive scientific progress in Brazil.

European Union:

While the European Union strives for cohesion, there can still be inequalities in scientific opportunities between member states and regions. Less developed regions, particularly in Eastern Europe, may face challenges in accessing funding, research infrastructure, and collaborations, which can impact their scientific output and competitiveness.

China :

In China, regional disadvantages give rise to inequality in science. Disparities in resources and opportunities exist between urban and rural areas, limiting scientific development. Efforts are underway to bridge this gap, ensuring equal access to education, research facilities, and

opportunities. Promoting equitable scientific progress across regions is a priority for China's advancement in the field.

V. Timeline of Events

In 1942, the sociologist Robert Merton established the norm of universalism in science, which asserts that factors like race, nationality, gender, class, age or religion hold no value in the decision of whether one can do and partake science or not. Before 1800, exclusively elite-class males had the possibility to pursue science, which developed into an enormous, international and globally well-paid workforce over the last two centuries. The late imperial powers, now regular Member States or P5-Nations, have started scientific studies and development much earlier than other countries, due to their resources and financial advantages. This is one of the contributing factors to why science is not developed to the same level everywhere, which leads to inequalities between social classes and societies, hindering science from becoming a general democracy. The LEDCs have always been disadvantaged in the aspect of gaining access to science, therefore they experience the biggest crisis potential with this issue. Since LEDCs have not possessed the same possibilities to participate in advanced sciences as MEDCs, they have not been able to enforce or include their voices and opinions in the scientific community, which makes the developing countries the main target group of inequality due to regional disadvantages.

VI.   How to prepare as a delegate

To guarantee fruitful debates, the delegate should be well-prepared and informed about the issue, as well as what your country/NGOs view on the issue is. Since this research report only gives you a short insight on the topic, further research on the inequality in science due to regional disadvantages. Make sure to look up in how far your country/NGO is affected by this issue and what actions have been specifically taken to improve the situation on inequality in science. Take a look at possible alliances your country has build with other nations in regard to this issue and if they have not build any, find out which driving factors influenced this

decision. All delegates are obligated to write at least **one draft resolution** and **two position papers** to ensure that all issues of the forum are fully covered. Please send in your position papers and resolutions **until 8th September 2023**, so that the chairs have enough time to go through all documents that have been send in. Beware that any document send in **after the 01.10.2023** shall not be included in decision-making when it comes to awards.

Furthermore, you should be able to answer the following questions after having completed your research:

- Why is inequality in science due to regional disadvantages a concerning issue?

- In how far is my country affected by this issue?

- What actions does my country take to fight against this issue?

- Which nations could be my allies?

- What are possible solutions for this issue?

Additionally, prepare yourself by practicing your public speaking and debating skills. If any questions occur, do not hesitate to contact me via my Email. Have fun with your writing process :)

VII. UN Resolutions and Documents

- United Nations Department of Economic and Social Affairs, World Social Report 2020, encountering inequality (in science):

https://desapublications.un.org/file/558/download

- UNESCO, Recommendation on Science and Scientific Researchers, 2017:

https://unesdoc.unesco.org/ark:/48223/pf0000265809/PDF/265809eng.pdf.multi.page=5

- UNESCO, SHS/RPF/SSR/PI/19/1, 2019 future monitoring and addition to the Recommendation on Science and Scientific Researchers of 2017:

https://unesdoc.unesco.org/ark:/48223/pf0000370736/PDF/370736eng.pdf.multi

- STISA-2024, African Union:

https://au.int/sites/default/files/documents/38756-doc-stisa_science_tech_innovation_strategy.pdf

- UNESCO, Science and the factors of inequality, 1979, impact of science and inequalities in science:

https://unesdoc.unesco.org/ark:/48223/pf0000219145/PDF/219145engo.pdf.multi.page=1&zoom=auto,-13,676

VIII. Useful links

Official Digital Library of the UN, to find official UN documents:

https://digitallibrary.un.org/

UN Sustainable Development Goal 10, Reduce inequality within and among countries:

https://sdgs.un.org/goals/goal10

United Nations Educational, Scientific and Cultural Organization (UNESCO):

https://www.unesco.org/en

Gender in science, innovation, technology and engineering (SITE):

https://genderinsite.net

International Science Council:

https://council.science

World Inequality Database:

https://wid.world

IX. Sources

https://www.nature.com/articles/537466a

Inequalities in Science, National Library of Medicine:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4159256/

WORLD SOCIAL REPORT 2020, INEQUALITY IN A RAPIDLY CHANGING WORLD:

https://desapublications.un.org/file/558/download

The Origins of Intergroup Resource Inequality Influence Children's Decision to Perpetuate or Rectify Inequality:

https://www.frontiersin.org/articles/10.3389/fpsyg.2020.571570/full

The Lack of Gender Equality in Science Is Everyone's Problem:

https://www.un.org/en/un-chronicle/lack-gender-equality-science-everyone's-problem

Recommendation on Science and Scientific Researchers, 2019:

https://www.unesco.org/en/legal-affairs/recommendation-science-and-scientific-researchers

RECOMMENDATION ON SCIENCE AND SCIENTIFIC RESEARCHERS, 2017:

https://unesdoc.unesco.org/ark:/48223/pf0000265809/PDF/265809eng.pdf.multi.page=5

Revised Recommendation:

https://en.unesco.org/themes/ethics-science-and-technology/recommendation_science

Risk and Resilience, National Science Foundation:

https://www.nsf.gov/news/newsmedia/ENV-discoveries/RR-discovery-series.jsp

Science, Technology and Innovation Strategy for Africa 2024:

https://au.int/en/documents/20200625/science-technology-and-innovation-strategy-africa-2024

Budapest Open Access Initiative:

https://www.budapestopenaccessinitiative.org

Growing inequalities in science:

https://mappingignorance.org/2014/09/01/growing-inequalities-science/

Historical comparison of gender inequality in scientific careers across countries and disciplines:

https://www.pnas.org/doi/10.1073/pnas.1914221117

"Undemocracy": inequalities in science:

https://scholar.princeton.edu/sites/default/files/yuxie/files/xie_2014_science.pdf

Historical comparison of gender inequality in scientific careers across countries and disciplines 2.0:

https://www.researchgate.net/publication/339344596_Historical_comparison_of_gender_inequality_in_scientific_careers_across_countries_and_disciplines

Mertonian norms:

https://embassy.science/wiki/Theme:Ae22e8ee-47a5-4f9d-bc00-a10de0011c76

What Is Social Stratification?:

https://wtcs.pressbooks.pub/introsociology2e/chapter/what-is-social-stratification/

What Does STEM Mean in Education?:

https://www.snhu.edu/about-us/newsroom/stem/what-does-stem-mean-for-you

Figure 1:

https://www.pnas.org/doi/10.1073/pnas.2117831119

Figure 2:

https://www.pnas.org/doi/10.1073/pnas.1914221117