Gender STI Co-Design Labs: Tackling Gender Equality in STI Worldwide

The Gender STI project will host a series of co-design lab workshops to address three of the forefront challenges facing women in science, technology and innovation (STI): **gender equality in scientific careers, gender balance in decision-making bodies and positions and the integration of the gender dimension in research and innovation content**.

CONTEXT OF THE CHALLENGES IN STI

Gender equality in STI has become a strategic issue in the European Union policy dialogue with third countries, especially since the Council of the European Union, in its conclusions adopted on 1 December 2015, invited the Commission and the Member States to consider including the gender perspective within these dialogues in the STI area[1].

On the other hand, gender equality in research and innovation has become a priority of the European Research Area (ERA) and the European Commission has set three objectives to work with EU countries and foster an institutional change:

1. **Gender equality in scientific careers;**
2. **Gender balance in decision making bodies and positions; and**
3. **Integration of the gender dimension in research and innovation content.**

In this context, the Gender STI project analyses the participation of women in STI between Europe and third countries and studies how gender equality is considered and promoted in international cooperation dialogues between European Union Member States, Associated Countries and 10 selected third countries.

The Co-Design Lab workshops aim to identify key issues in these three areas and develop potential solutions using design thinking and online facilitated processes in order to be promoted in international dialogues implemented through bilateral and multilateral agreements. Participants will discuss opportunities in their country or institution; and co-design potential solutions that can be implemented to foment greater equality in these areas in the weeks, months and years ahead.

Input from participants in each challenge will contribute to a roadmap with recommendations that will be presented to the European Commission and shared with other decision makers from different countries interested in gender equality. All participants will be included as contributors to this roadmap, which will also be featured in the project's European Observatory on Gender in STI.

In the following we present a description of the challenges, including background information, underlying issues and guiding questions for the Labs sessions.

[1] Council conclusions on advancing gender equality in the European Research Area, 1 December 2015. Doc. 14846/15. http://data.consilium.europa.eu/doc/document/ST-14846-2015-INIT/en/pdf

Challenge 1: Gender equality in scientific careers

How can conditions be improved to increase the number of women pursuing STI careers?

BACKGROUND

Current statistics still show a gender gap in STI fields. Case in point: Just 30% of the world's researchers are women[2]. Even though the proportion of women in STI fields is increasing, this gender disparity remains. Meanwhile, experts point out that "science, technology, engineering, and mathematics (STEM) occupations are projected to grow over two times faster than the total for all occupations in the next decade."[3] To satisfy this demand and give women the opportunity to shape the future, we must increase the entry rate of women in STI studies[4].

Career choice and encouragement are the two main components of this challenge. The broad scope of STI offers a wide framework and thus many opportunities to create a roadmap with recommendations.

Gender equality is a global societal issue that, like climate change, has to be dealt with on a structural level, not an individual level. Therefore, the framework of these Co-Design labs, with its special composition of partners and stakeholders worldwide, is perfectly suited to address this problem. As a community, we can share best practices and learn from the experiences and policies of various countries to identify systems and initiatives that contribute to gender equality in STI.

UNDERLYING ISSUES

- Science culture: competition-oriented, temporary employment contracts, not family-friendly, lack of balance between personal and professional life.
- Gender-biases and gender inequalities in society.
- Acknowledging the contribution of women in STI.
- Prejudices/stereotypes of women's capability in the workplace and gender-biased education (vs. science culture).
- Leaking pipeline of women talent in higher education.
- Women face more difficult conditions, lower appreciation for their work.
- Lack of women role models in science for girls in school.
- Visibility of women role models in STI, who are often not seen even if they are there.
- Women face a pay gap, glass ceiling.
- Lack of networks of women in STI.

[2] https://en.unesco.org/news/just-30-world%E2%80%99s-researchers-are-women-whats-situation-your-country
[3] https://www.bls.gov/opub/btn/volume-10/why-computer-occupations-are-behind-strong-stem-employment-growth.htm
[4] https://www.iza.org/de/publications/pp/165/gender-differences-in-tertiary-education-what-explains-stem-participation

GUIDING QUESTIONS

- **How can we support STI career choices?**
  - Create a new approach and remove old and inflexible structures in science culture.
  - Work to make science a family-friendly professional field.
  - Implement parental leave policies and flexible work schedule arrangements.
  - Include inclusive language for job vacancies.
  - Ensure job security for women in the long-term.
  - Lift up women role models in STI and increase their visibility.
  - Promote scientific careers for women in culture, religion and politics.
  - Break stereotypes around expected career paths for women and reduce societal pressure to go into predetermined fields.
  - Promote gender equality in recruitment and career progression.
- **How can women be encouraged in STI fields?**
  - Give more visibility to women references in science.
  - Promote and encourage women mentoring other women.
  - Encourage women to take lead positions in science.
  - Provide incentives for women to lead projects.

Challenge 2: Gender balance in decision-making bodies and positions

What needs to be addressed to improve the gender balance in decision-making bodies and positions in STI?

BACKGROUND

Women are underrepresented in decision-making processes and positions in areas such as politics, STI advisory groups and business. In politics, gender-balanced participation is an important condition for effective democracy and good governance, and it contributes to citizens' trust in democratic institutions. On the other hand, gender balance in business management and leadership functions can boost innovation, competitiveness and productivity, and contribute to a country's prosperity.

Reasons for the persistent under representation and low participation of women are broad and multifaceted. Root causes include traditional gender roles and stereotypes as well as unequal sharing of household and care responsibilities. Political and working cultures favoring long working hours that clash with care responsibilities traditionally assigned to women are also a factor. Furthermore, women are subject to gender-based harassment and bullying in the workplace, with the emergence of online violence as an increasing concern. These factors discourage and limit women's participation in politics and public life, and ultimately hinder gender equality in decision-making.

Recent research has shown that gender bias has important implications for the content of science itself. Few women are in leadership positions or involved in decision-making. The SHE figures statistics show that there are striking imbalances between the number of women and men at the highest levels of academia in the great majority of EU countries. The proportion of women among heads of institutions in the higher education sector in the EU increased from 20.1 % in 2014 to 21.7 % in 2017. The respective proportion among the heads of universities or assimilated institutions accredited to deliver PhDs increased slightly over the same period from 14.1 % to 14.3%. Women made up only 27 % of board members (including leaders) in the EU in 2017.

The gender gap in decision making and leadership positions is also related to the gender gap in entrepreneurship, which continues to persist. The number of women in business leadership is low. In April 2019, women accounted for just 27.8% of board members of the largest publicly listed companies registered in EU countries[5]. Furthermore, in the second quarter of 2019, women accounted for 31% of parliament members in EU countries. On the other hand, negotiation is a process that creates, reinforces and reduces gender inequality in organizations. However, a larger number of women in the negotiating room does not necessarily translate to better outcomes in agreement negotiations or more gender provisions in agreements.

For most leaders, the past year has demanded more innovation, endurance and creativity than any time in recent history. This period of change, activated by a global pandemic and social justice movements, has called for rapid redeployment of resources while positioning and maintaining equity as a priority. For women, the circumstances have generated new opportunities to demonstrate their leadership talent and also presented new challenges, as studies have shown that the covid-19 pandemic has exacerbated inequalities related to gender.

The low number of women in decision-making positions throughout the science and technology system is a waste of talent that countries' economies cannot afford.

UNDERLYING ISSUES

- Glass ceiling, or the evident but intangible barriers that prevent women from achieving high professional positions or success.
- Lack of dissemination of success stories of women in leadership.
- Traditional family roles (motherhood, spouse, informal caregivers of family members, etc.).

[5] European Commission, https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/gender-balance-decision-making-positions_en

- Societal perspectives / culture.
- Lack of policies that take gender issues into account in hiring processes.

GUIDING QUESTIONS

- **How can we foster the empowerment of women in STI?**
    - Leadership training, including training on unconscious bias in regard to gender balance in leadership positions.
    - Create networks of women in STI (e.g., entrepreneurial, research, etc.) to perform coaching and mentoring and encourage women to seek senior professional positions and leadership roles.
    - Disseminate information and trends on gender equality in decision-making, including success stories.
    - Gender balance quotas in panels and governance bodies.
    - Promote women leadership and decision-making skills in scientific careers.
- **How can we engage all groups involved, including governments, funding organizations, universities and businesses, to tackle traditional gender roles and stereotypes to improve gender balance in decision-making and leadership positions in STI policy dialogues?**
    - Coordinate gender equality policies among different countries signing STI cooperation agreements.
    - Improve conditions to increase the number of women in decision-making positions and in the negotiation of STI agreements.
    - Favor common decision-making and shared responsibilities instead of individual leadership.
    - Involve men in structural changes.

Challenge 3: Integration of the gender dimension research and innovation content

How can the gender dimension and awareness be strengthened in research and innovation content, such as research teams and research projects?

BACKGROUND

In this challenge, we aim to understand how the gender perspective is included in different kinds of Science, Technology and Innovation (STI) dialogues, specifically in those related to research, development and innovation (R&D&I). With STI dialogues we mean official bi- and multilateral agreements, third sector collaboration, university level collaboration and financial/funding agreements[6]. In this challenge, we aim to understand how the gender perspective is included in research and innovation content. We will approach the issue through the innovation process perspective, which allows us to focus on different areas of research and innovation, starting from academic research to commercialization and grassroots entrepreneurship funding agreements. Having an innovation process perspective is important, as the gender dimensions and status quos vary at different stages of innovation processes. Furthermore, adopting an innovation process perspective enables cross-pollination of ideas, practices and results from one field to another, encompassing the whole of dialogues in various innovation processes. As such this perspective also functions as a method of co-creation and knowledge sharing.

Traditionally, integration of gender in research and innovation has been approached in terms of gender-balanced participation in research and innovation output, namely in publication output, publication impact, patent output and the difference between women and men researchers in funding success[7]. According to the European level statistics, women are still underrepresented in scientific authorship. International academic collaboration outside the EU is male dominated. It is, however, delightful to observe a modest growth (+0.4 %) in the proportion of women inventors for all technology domains in the 2005-2016 period, although the majority of inventors' teams are still all-male.

In contrast to the outputs in the academic scene, gender aspects in research and innovation can be approached from invention and innovation perspectives. This is important, as gender is emphasized in the responsible research and innovation (RRI) approach[8] and as such strongly influences research and innovation activity. Moreover, having this perspective brings light to the research, development and innovation processes and outcomes of these processes, namely products, solutions, services, concepts, etc. This so-called input side analysis allows us to discuss inclusion, diversity, equality, gender and intersectionality. We aim to address these issues through questions such as: How gender sensitive are innovation development process? In addition, how are diverse groups of women, such as minorities, included in research content?

Covering the complete innovation process, from academic research to women entrepreneurship, offers a holistic picture of gender in the R&I. For example, the inclusion of women in research differs from the gender challenges encountered in innovation closer to commercialization. Neither R&I processes nor innovation outcomes should be discriminating. While it is acknowledged diversity benefits innovation—resulting in different knowledge bases, skills, capabilities and views—we still observe that, for example, many startup ecosystems have poor records on diversity. According to the State of European Tech 2020 report[9], progress on gender diversity in European technology scene had stagnated, with all-men teams capturing 90.8% of all capital raised in 2020.

To summarize, this challenge will address gender in R&D&I on three main levels, namely on the international high-level cooperation (bi- and multilateral state agreements), innovation financier level (e.g., development financiers, start-up funds) and civil society and university-level engagement. Understanding how the gender dimension is included in contracts and agreements in these three domains enables us to understand gender dimensions in

[6] E.g. Finland Africa STI dialogues consists of three main levels (official agreements, financial agreements and research framework programmes). Kagiri-Kalanzi and Avento. (2018). "Bridging existing and new approaches for science, technology and innovation cooperation between Finland and Africa". UniPID. https://www.unipid.fi/assets/Africa_report_web.pdf

[7] https://data.europa.eu/euodp/repository/ec/dg-rtd/she-figures/2018/She_Figures_2018_Publication.pdf

[8] https://rri-tools.eu/gender-equality

[9] State of European Tech 2020 · State of European Tech 2020

international cooperation holistically. This approach takes into account the whole of innovation processes, starting from agreements to commercialization. Moreover, as international cooperation in R&D&I consist of actions beyond official state level cooperation, it is important to look at how gender issues are accounted and materialized in these international R&D&I domains.

UNDERLYING ISSUES

- Decision-making procedures and protocols in allotting capital to startups are gender biased (consciously or unconsciously).
- General lack of understanding how different R&I projects are gendered[10].
- Lack of political prioritization of gender questions in bi- and multilateral agreements.
- Lack of awareness of the impact of STI agreements in research team settings (e.g., in the male - female ratio).
- Lack of female representation in negotiations.
- Lack of female employees in STEM fields.

GUIDING QUESTIONS

- **How do we ensure and increase gender balance in research and innovation teams?**
    - Lowering number of all-male teams in research and innovation (e.g., startups).
    - Promoting female entrepreneurship.
    - More STI agreements in fields that support women's inclusion in research teams.
- **How do we ensure that the research and innovation process is inclusive and gender sensitive?**
    - Implementation of gender sensitive research as part of international STI dialogues.
    - Increasing gender awareness in STI agreements[11].
- **How do we ensure that innovations are non-discriminating?**
    - Promotion of gender aware startup funding.
    - Implementation of gender clause in bi- and multilateral agreements.

[10] See e.g. Pecis, L. (2016) 'Doing and undoing gender in innovation: Femininities and masculinities in innovation processes', Human Relations, 69(11), pp. 2117–2140. doi: 10.1177/0018726716634445.

[11] Gender impacts of trade agreements are being assessed in some context. They not only look at how trade agreements impact men and women in respective societies, but how the actual agreement can materialize in growing equality. Here the different fields and sectors of economy are assessed through a gender-lense. This enables analysing and selecting which sectors need to be included into the agreements in order to boost equality. See e.g. UNCTAD. (2020). Trade and Gender. Available at: Gender and Trade - Assessing the Impact of Trade Agreements on Gender Equality: Canada-EU Comprehensive Economic and Trade Agreement (unctad.org)