

Extended abstracts

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Riina Bhatia (Technical Research Centre of Finland), Nina Rilla (VTT Technical Research Centre of Finland), Giovanna Sanchez Nieminen (VTT Technical Research Centre of Finland), Maria Merisalo (VTT Technical Research Centre of Finland) and Tuisku Salonen (VTT Technical Research Centre of Finland). *From persisting gender inequality to inclusion in research and innovation content: challenging the gender equality norm in the STI fields.*

Abstract. Introduction

During the last decade, innovation policy paradigm has changed to acknowledge societal challenges as a starting point for innovation. New solutions are required not only to create economic growth but also to solve vicious problems such as climate change or poverty (Diercks et al., 2019; Ghosh et al., 2021). Societal challenges are systemic by their nature, and thus, require extensive and diverse solutions. The science, technology and innovation (STI) fields play an important role in developing these solutions.

However, the literature shows that STI fields are rather exclusive than inclusive and that the fields are still dominated by a hegemonic masculine culture, which impacts research, development and innovation (R&D&I) content to be non-gender sensitive (Linberg and Schiffbaenker, 2013; Balachandra et al., 2019; Pecis, 2016; Cockburn and Ormrod, 1993; Wajcman, 2009). In fact, one of the key challenges for STI in responding and finding solutions to grand challenges is the fields' persisting gender inequality and restricted outlook on inclusiveness, which are reflected for example in lack of discussion or assessment of innovations' wider societal impacts (Sveiby et al., 2012).

There have been various attempts to improve gender sensitivity in research and innovation content in the past. However, traditionally, integration of gender dimension in R&D&I content has mainly been approached in terms of quantitative approaches, such as 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 (Fältholm et al., 2010; She Figures, 2018). Yet, despite various gender equality interventions, women are still under-represented in innovation teams and scientific authorship. For example, international academic collaboration outside the EU (She Figures, 2021) and technology start-up scene in Europe (State of European Tech, 2021) are still male dominated. While there has been a very slight growth (0.5%) in the proportion of women inventors for all technology domains in the 2005-2018 period, majority of inventors' teams are still all male (She Figures, 2021).

Moreover, despite interventions aiming to increase women's participation in the STI fields, the research content itself remains gender insensitive. With this, and in line with the goals of transformative innovation policy, we argue that it is necessary to rethink the foundations of the current socio-technical systems and to evaluate whose knowledge is being taken into account, and whose knowledge matters in shaping the future solutions to tackle societal challenges (Harding, 2004; Haraway, 1988). Drawing from feminist critique of science, achieving social sustainability goals can be argued not to be possible without fundamental reordering of the current hegemonic masculine paradigm within the STI fields.

This means, that for the transformative innovation policy to be socially sustainable there is a need to move from quantitative gender equality to qualitative inclusivity to enable an inclusive research content. This argument lies on two premises. First, due to the historical construction of technology and masculinity as co-constitutive concepts, the underlying normative culture in STI fields is prone to promote gender inequality in work life as well as in research and innovation content (Connell, 1995; Carter and Kirkup, 1990; Cockburn and Ormrod, 1993; Cockburn, 1983). As such, the hegemonic masculine cultures and norms in STI are not inclusive and responsive to the society. Secondly, and related to the first point, gender equality approaches, especially those of the liberal feminist theory, do not fundamentally challenge existing foundations (e.g., norms and cultures) nor create conditions for inclusive knowledge production but merely aims to add women into the picture by quantitative measures (Fältholm et al., 2010; Petterson, 2007).

In this article, we explore the arguments and pathways for moving from quantitative gender equality towards qualitative inclusivity. In line with this, the article explores:

RQ: How to move from quantitative gender equality towards qualitative inclusivity in R&D&I contents?

Case description, data and methods

The study responds to the research question by exploring a co-development of practical solutions to increase inclusivity in different STI settings around the world. The solutions presented in the study are based on a series of six three-hour workshop conducted as part of the EU funded Horizon 2020 "Gender STI" project. Participants

in the workshops came from a variety of countries ranging from Global South to North. They were consortium members and external experts. We (the authors of the article) participated in the workshops as challenge owners, meaning that we steered the discussion in order to co-develop new solutions to enhance inclusion of gender content in research, development and innovation. We used a methodological combination of action research and norm criticism in order to find practical solutions (such as educational materials) to problems that have also theoretical relevance (Huovinen et al., 2007; Greenwood and Morten, 2006).

A norm critical approach enabled a critical reflection of how current hegemonic norms, cultures, everyday practices, and stereotypes increased or decreased integration of gender dimension in research and innovation content (Vinnova, 2018; Isaksson et al., 2017). While an innovation process perspective was applied to enable exploring gender equality at different stages of research and innovation, the work mostly focused on exploring avenues to integrate gender and improve inclusiveness in research and innovation content at research organizations and universities.

Contributions

The study discusses the arguments and pathways about moving from quantitative gender equality towards qualitative inclusivity and finding solutions how STI field becomes more inclusive towards variety of knowledge and perspectives. This is important for enabling transformative innovation policy to better respond and find solutions to complex societal challenges. In line with this, the article explores qualitative inclusivity, rather than quantitative equality, as a pathway to enable including different perspectives, worldviews and ideas in research and innovation content. In other words, the article explores ways in which research and innovation content becomes more socially responsive to the society as a whole by shifting focus from merely fitting women in to the existing normative culture towards shaping inclusive culture in the STI fields.

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