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Situated gender equality in regional research and innovation: Collaborative knowledge production

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Abstract

Research and innovation (RI) policies in Europe aim to promote gender equality in the field of RI. However, gender equality at the regional level of RI has received little attention and has remained under-researched. This article draws on a process of collaborative knowledge production between regional developers and researchers in Finland, aiming to further gender equality in regional RI (2019–20). It examines negotiations about gender equality that occurred in the course of the process through the notion of situated gender equality. The developers initially stated that gender equality was needed as 'a solution' in regional development but did not know how to implement it. The process of collaborative knowledge production, a dialogue between the practices of regional development and the research-based conceptions of gender and participative methods, shows that gender equality in regional RI needs to be closely integrated into the practices of regional developers' main development work.

Key words: gender equality; regional developers; regional research and innovation; situated knowledge; collaborative knowledge production.

1. Introduction

A significant amount of research and innovation (RI) is conducted in regions that have governance structures below national level. RI is, in these cases, conducted in collaboration between various regional actors, ranging from higher education and research institutions to the private and public sectors and civil society (Salomaa and Charles 2021). In Europe, this activity is supported by regional policies and funding instruments such as the European Regional Development Fund (ERDF), which additionally aim to promote gender equality in RI (GERI). Gender equality should be integrated into all RI activity financed by ERDF. However, gender equality is, in practice, both situated and done through specific located gendered practices, which are shaped in intersecting contexts ranging from organisations and projects to regions, nations, and supranational states (Bacchi 2017; Lagesen 2021; Vehviläinen and Brunila 2007). Gender equality in regional RI activity thus focuses on practices that are central to regional activity, such as partnerships and networking in regional RI collaboration. Nevertheless, the specificities of gender equality at the regional level have not been discussed nor even researched to any significant extent (Lindberg and Jansson Berg 2016; Ljunggren et al. 2010), although there is research on gender equality work in other contexts—for example, supranational and state levels (Mejlgaard et al. 2019), in organisations (Andersson and Amundsdotter 2012) and individual projects (Vehviläinen and Brunila 2007; Lundqvist and Westberg 2012). Those who work at the regional level in RI find even the articulation of gender equality difficult and do not know how to implement the gender equality goals set out in policies and funding

instruments (Kvidal and Ljunggren 2012). There is an urgent need for the research of gender equality planning (GEP) in regional RI, and this article therefore examines the regional level of gender equality work in RI.

Collaborative knowledge production between developers and researchers is a method that has been used to investigate and formulate new emerging phenomena (Lindberg and Jansson Berg 2016; Phillips et al. 2013). In this study, this method was used to collaboratively scrutinise the terms and practices for gender equality work in regional RI and to create new ways of understanding it. The research was conducted as a process wherein two researchers of GERI (the first author and a second researcher who left halfway through the process and was replaced by the co-author) worked together with regional developers in Finland for a year (October 2019–December 2020) for the purpose of collaborative knowledge production on gender equality in regional RI. The regional developers (working in public regional agencies, RI and higher education institutions, and private companies) participate in RI development as well as in GEP in regional RI in the course of their normal work. The collaboration resonated with feminist indigenous researcher Eve Tuck's (2009: 413) two guidelines: (1) the knowledge production should not be damage-centred, analysing only the oppression, harm, inequalities, and injuries that societal practices cause (i.e. the persistent gender inequalities in RI: Murgia and Poggio 2019); instead, (2) while recognising that the analysis of various forms of inequality is important, the collaborative process should sensitively listen to the participants (also Phillips et al. 2013) and produce hope and imaginings for better futures, to create space for visions of change. The addressed topics

were agreed upon together so that they entailed potential for change—for 'hope'—such as the realisation of GERI.

This article examines the collaboration process and analyses how GERI was negotiated and produced in the context of regional development during the research period (2019–20). The process, consisting of three workshops, was considered successful by both the developers and researchers. The developers advanced their practical knowledge of gender equality, for example in European structural fund (SF) projects; indeed, towards its end the process was managed almost entirely by the group of developers, with the researchers only assisting with coordination. The success of the process also allowed us to analyse the tensions which arose—such tensions are both inevitable and useful in collaborative knowledge production. The approach of collaborative knowledge production allowed us to investigate the practices of regional RI work and develop GEP practices closely integrated with the regional development work of our collaborative partners. The developers considered gender equality as a potential solution to a raft of problems in regional development, and the study traced how to turn that thinking into actual practices of situated GERI.

Before going into the details of the collaborative knowledge production process, we will first discuss previous research on GERI and define the concept of situated gender equality employed in the analysis. We will also introduce both our approach to collaborative knowledge production and the regional context of the study and our partners in the study (the regional developers). The research data are integrated into the collaborative process and described in the subsequent section. Next, we will analyse the negotiations on gender equality conducted in the process, including the tensions embedded in them and how these were tackled. In the Conclusions section, we reflect on the lessons learnt about gender equality in regional RI.

2. Gender equality in RI

Gender (in)equalities in RI have been researched for decades, including the way that gendered practices in research organisations cause disadvantages for women and minority groups, for example in recruitment (Nielsen 2016; Murgia and Poggio 2019; Van den Brink and Benschop 2011). The gender biases of research funding organisations have also been studied (Steinþórsdóttir et al. 2020). From a damage-centred perspective (Tuck 2009), the persistence of gender inequalities in RI institutions is extensively documented.

There is activity and research on the 'hope side' as well, mainly regarding the development of GERI (i.e. European resources by CASPER 2021; EFFORTI 2020; European Institute for Gender Equality: EIGE 2016a, 2016b; European Commission 2020; GRACE 2020). These activities and studies understand GERI in many ways, ranging from liberal feminist equal treatment and equal rights for women and men, positive action, and gender mainstreaming approaches focusing on institutional and societal gender structures (Rees 2001), right through to diversity and the intersectionality of gender (Ahmed 2012). These different approaches have been implemented in an even wider variety of (often contradictory) ways (Lagesen 2021). Although Finnish gender equality legislation, for example, emphasises institutional change and gender mainstreaming across societal

sectors and many RI institutions aim to follow this in their GEP, the implementation of these policies seldom covers all the dimensions of the national Gender Equality Act, and GEPs are not well known in organisations (Gender Equality Barometer 2018: 59). Nevertheless, the European She Figures and Organisation for Economic Co-operation and Development Research and Innovation indicators demonstrate some increase in women's participation in some RI dimensions in many countries.

While gender equality in regional RI is generally little acknowledged by RI actors and researchers (although see Ljunggren et al. 2010), there is some difference between countries and regions. In Sweden, exceptionally, gender equality has been integrated into regional policies since the 1990s (Hudson 2012: 71) and 'women's perspectives' were discussed in the regional context even earlier. Two intersecting discourses have prevailed within regional discourse: 'gender equality for growth', and 'women as a problem' in achieving regional development targets (Hudson 2012: 86). In Norway, Kvidal and Ljunggren (2010, 2012) found that even though a gender analysis is required by funders, and even if gender is considered important, regional actors often find it difficult to articulate gender equality impacts in their concrete projects. Many regions have specific gender-segregated industries, and actors see few means to change gendered structures. Gender is seldom seen as anything beyond the numbers of men and women (Ljunggren et al. 2010). In Finland, gender equality was not even addressed in the 2017 regional development plans (Tasova 2019).

RI work in a regional context often involves participants from many organisations, such as RI institutions, the public sector, and private companies, rather than being limited to individual organisations (Lindberg et al. 2016; Parkkinen and Kolehmainen 2022; Salomaa and Charles 2021). In small regions, actors know each other personally and form networks, including old-boys' networks and preferment systems between industry and RI institutions (Berger et al. 2015). Inclusion and exclusion in these networks may happen through divisions such as gender (all male), but also language (Finnish speakers, for example), and such exclusions may lead to inequalities. The legislation on gender mainstreaming creates (in principle) space for this cross-organisational and regional activity, as it requires GEP in all administrative sectors. However, GEPs seldom extend beyond individual organisations and the specific (often collaborative) regional practices of gender in RI receive little attention from regional actors.

This study examines gender equality in regional RI through the process of collaborative knowledge production between researchers and regional developers, via the notion of situated gender equality. In their study on gender equality projects in information and communication technology (ICT), Vehviläinen and Brunila (2007: 388) define situated gender equality by drawing on Ruth Lister's (1997) notion of feminist citizenship and Donna Haraway's (1988) situated knowledge. As Lister suggests, equal rights—although they should by definition be universal—are shaped in practices as people act in various positions in societal power relations and negotiate their chances of achieving equal agency: 'Equality is a collaborative achievement of several societal actors in institutions and organizations as well as in communities of people' (Vehviläinen and Brunila 2007: 386). Situated gender equality has a point of departure in the local practices of people

but also articulates the socio-material-cultural relations that organise those practices, ranging from relationships between local actors to the levels of institutions, regions, nation states, and the supranational agency of the European Union (EU). Situated knowledge 'reconnects features from equal treatment (rights), positive action (local communal agency), mainstreaming (institutional and societal development)' (ibid) and the approach of hope (Tuck 2009). It creates our research framework for the analysis of GERI within the practices of regional development.

3. Collaborative knowledge production

Collaborative knowledge production (the research approach employed in this paper) belongs to the tradition of action research, in which researchers not only collect data (i.e. by interviewing), but also actively participate in the activity together with the actors, with an aim to facilitate further development of the activity (Svensson and Aagaard Nielsen 2006). Furthermore, in science and technology studies (STS) and in public understanding of science in particular, investigations have addressed the active role of the public in receiving science and creating the contexts of interpretation (Irwin and Wynne 1996) and analysed how people actively and dialogically engage in knowledge production. Our collaborative knowledge production approach shares the participatory and development goals of these previous studies. It acknowledges the active role of both researchers and societal actors as partners in knowledge production and focuses specifically on the dialogic co-production of knowledge between research and practice-based knowing. It emphasises the reflexive analysis of social orders embedded in the processes of knowledge co-production (Phillips et al. 2013). Phillips et al. (2013) further observe that dialogic processes are tense and that it is the task of research to analyse power structures in these dialogues.

Our study examines how gender equality is produced in specific practices of regional development, including collaborative knowledge production between developers and researchers. Research policies and funding programmes in Europe emphasise collaboration between research and societal development. The ERDF supports co-operation between research and the public and private sector actors at a regional level (i.e. Salomaa and Charles 2021), and stakeholders and public authorities in particular are increasingly involved in research-based development and co-production of knowledge (Parkkinen and Kolehmainen 2022; Svensson and Aagaard Nielsen 2006). Additionally, GERI is in our study a goal, shared by both researchers and regional developers of RI. The EU and European Commission have aimed to mainstream gender equality in regional development (i.e. CEMR 2006), including in the context of structural funds that are distributed at regional level (i.e. ERDF). Regional authorities are also obligated to integrate the Gender Equality Act into all their activities. Additionally, researchers on GERI, in their publicly funded research, are required to include collaboration between researchers and stakeholders (cf. EIGE 2016b). This shared commitment to research-based co-operation in the promotion of GERI sets a framework for the collaborative knowledge production discussed here.

Although regional developers and researchers share the goal of advancing GEP in regional RI, they interpret this goal differently. This potentially gives rise to tensions. Regional developers are primarily focused on the improvement of the vitality and wealth of their regions (Parkkinen and Kolehmainen 2022), economic growth being a central goal of the ERDF. The development of RI is, for them, at least partially subordinate to this goal, and gender equality and collaboration with researchers are additionally subordinate to both these aims (Hudson 2012; Kvidal and Ljunggren 2012). Thus, if the participating regional actors do not consider collaboration on GERI to be useful, they will drop out (Svensson and Aagaard Nielsen 2006). The developers are responsible for their development work (some of them even as regional authorities) and cannot change this for the researchers' benefit. Conversely, researchers set out to primarily analyse gender equality as a conceptually and theoretically constructed phenomenon in and of itself: the making of situated gender equality in regional RI. For them, the specificities of development work for regional aims form the context for this phenomenon instead of being the primary focus.

4. The region, regional development, and regional developers

The (anonymous) region discussed here is one of the largest among the roughly twenty regions in Finland, both in terms of its inhabitants (about half a million) and its area. Its economic development is administrated through local regional governance and state governance at regional level, and it further belongs as a (NUT1) sub-region to one of the five larger Finnish (NUT2) regions recognised in EU policies (EUR 2019). It is located within a couple of hours' ride from the capital and from a few other regions with relatively large cities. It consists of roughly twenty municipalities, including one of the biggest cities in Finland. The city hosts the regional authorities, a multidisciplinary university, and several universities of applied sciences. The sources of livelihood in the region are primarily industry, ICT, services, and well-being. These, as well as universities and RI institutions, are strongly gender-segregated. ICT, machine technology, and industry are male-dominated; most services are female-dominated.

Finnish regional strategies have been constructed within the framework of EU regional policies, such as: the Europe 2020 strategy for Smart, Sustainable, and Inclusive growth (European Commission 2010); the national Regional Development Act; and the Finnish government's four-year programme, including the regional policy Sustainability and Vital Regions in 2020–23. The last emphasises the participation of different groups in regional development, which is typical for Finnish policies (Mejlgaard et al. 2019), and also mentions gender in passing. The region discussed here aims to be 'smart, harmonious, sustainable, and accessible'. The development of 'smartness', a local version of smart specialisation policy (Balland et al. 2019; Foray 2015), consists of specialised activity and knowledge that produces economic growth and well-being for the region's inhabitants (Policy of the region). The public sector agencies facilitate research and industry collaboration with financial support from European SF. Smart specialisation policy further promotes a particular mode of thinking: it is about developing new 'solutions' which are closely related to the existing strengths (Balland et al. 2019). Although GEP has been vague in the regional development, accessibility and participatory methods aiming for inclusion partly address equality and diversity (cf. Lindberg

and Jansson Berg 2016), and thus GEP is not entirely absent (Background material: see Appendix).

The regional developers, who were our partners in this research, work in several organisations, most importantly in the (joint municipal authority) regional council that is central to regional development. The tasks of regional councils are defined by the overseeing ministry:

> Regional councils are the main bodies promoting the interests of their regions and they also act as statutory joint municipal authorities. Working in cooperation with central government authorities, central cities, other municipalities and universities in their regions and other parties involved in regional development, they are responsible for the regional development strategy and overall regional development. (https://tem.fi/en/regional-councils, 9 June 2021)

The developers' roles vary from funding agency work with European SF programmes (i.e. preparation of funding decisions and evaluation and follow-up of funded projects) to the planning of regional strategies and representation of the region at a national and European level. Another central organisation is the regional Centre for Economic Development, Transport and the Environment (CEDTE), part of the state regional administration, which participates in regional development and undertakes some implementation tasks (i.e. employment services). These two regional organisations have a legal responsibility to advance gender equality, despite the limited competence they as organisations have to do so. Additionally, there are agencies that support the collaboration between research and industry, municipalities and cities with units for development, and private consultation organisations that specialise in regional development. Experts who work for regional development in these various organisations are here referred to as *regional developers,* the key partners in the collaborative knowledge production process of this study, as described below. Furthermore, many employees of the region's higher education and RI institutions and private companies also belong (with varying frequency) to the group of regional developers (Parkkinen and Kolehmainen 2022), and some of them additionally participated in the process. For these regional developers, the collaborative knowledge production discussed in the following sections is part of their region's smart development policy, as it addresses gender equality within practice-based activity and knowing (which had previously been ignored in regional planning of RI) and this way seeks new solutions related to existing strengths.

5. Process and data

The collaborative process discussed here was initiated by the researchers. The research project funding proposal stated that the researchers would work in dialogue with national- and regional-level policymakers. Following the plan, the authors, together with the Finnish parliamentary Council for Gender Equality, organised a large seminar, *Gender Equality in Research and Innovation,* in 2019, in collaboration with three ministries. The seminar incorporated representatives from the European Commission, Nordic, national, and regional levels, as well as actors working in research, funding, and development of GERI, including developers from the studied region. One of the main conclusions of the seminar, in line with

Kvidal and Ljunggren's (2012) study in Norway, was that it is the regional level of RI that requires gender equality work most urgently. The researchers (Marja Vehviläinen and Minna Leinonen) then contacted key actors from the region: the secretary of the main university GEP group; a specialist from a major research consortium; a consultant in regional development; and a leading expert from one of the three ministries involved in the seminar. All committed themselves to the collaboration. The ministry expert further mediated contact with the regional council.

The researchers next composed an invitation to one of the regional council directors responsible for regional development, to a SF programme director, and to a senior advisor who prepares decisions on the SF project applications. The text aimed to convince them of the significance of GERI, to summarise the research findings discussed earlier in this paper, and to propose a set of workshops, typical for action research (Svenson and Aagaard Nielsen 2006; Andersson and Admundsdotter 2012; Lundqvist and Westberg 2012) and collaborative knowledge production (Phillips et al. 2013):

> While European funders and policymakers, as well as many national ones, are beginning to recognise that research and innovation is losing resources and diversity due to a lack of gender equality, at regional level the conversation about gender equality has barely begun in the policies and funding which steer research and innovation. (Researchers' letter to the regional council, October 2020)

The regional council representatives were very well aware of the national gender equality legislation that binds the council as an authority and the gender equality objectives of the European structural funds that they distribute. As one of them later said, they had 'a very low threshold to accept the researchers' invitation'. They were expecting new kinds of questions to be raised and new solutions, in order to facilitate research, industry collaboration, and smart development of their region, beyond just increasing the number of women (as suggested in the 'equal treatment' approach). They were ready to develop their own practices to recognise the knowledge of diverse actors and gender equality, in a way that would produce new kinds of well-being and growth for the region. In the first meeting, we decided to establish a development group (DG). The group members have backgrounds in higher education (most often in regional and social sciences), many of them also in researcher education; they include one man, nine women, and one non-binary person, ranging from 25 to 65 in age:

- Regional council;
- Director responsible for regional development (until March 2020);
- Funding programme director;
- Senior advisor on funding;
- Manager in regional development in CEDTE;
- Leading expert in the Ministry of Economic Affairs and Employment of Finland (MEAE) (until May 2020, a replacement started May 2020: 'no show');
- Consultant in regional planning;
- University GEP group coordinator (until March 2020);
- Private entrepreneur with a background in gender and leadership (started March 2020);

- Researchers: Marja Vehviläinen; Minna Leinonen (until August 2020; Liekki Valaskivi (started September 2020).

The coronavirus disease 2019 (Covid-19) pandemic extended the process from the originally planned half a year to a full year, and consequently not all DG members could continue to the end, having only committed to a six-month process. The MEAE partner first changed and then withdrew as they finished their work in the ministry and moved on, as is typical for organisations that frequently re-organise themselves (i.e. Sennett 1998). The secretary of the university GEP group also withdrew, and a private entrepreneur who had researched gender in the leadership of private businesses joined the group. These changes influenced how the findings of the collaborative process could be communicated. At the end of the project, there was nobody in the ministries to receive the report of the findings of the process or to distribute them there. Reflecting the vague gender equality policies in regional development at the ministry level in Finland, there was no institutional commitment beyond that of the individual experts. The second researcher also had to withdraw before the second workshop, as her employment with the project ended. The co-author, a research assistant, subsequently replaced her and participated in the planning, organisation, and evaluation of the third workshop.

The practical work was done by a 'core organising group' of 2–5 members of the DG, consisting of representatives from the regional council (1–2), CEDTE (1), and the researchers (1–2). This group negotiated the details of the workshops with frequent emails and phone calls, including assessments of the pandemic situation and its implications for the timing and format of the workshops. Despite the change of the second researcher, this organising group remained the same throughout the process.

In line with the regional strategy, other key actors from the region's public sector, research, and higher education organisations were also invited to the workshops, and towards the end the invitation was further expanded to businesses and other regions. The researchers circulated a document on the planned action research to the members of the DG at the beginning of the process. The DG met four times (December 2019–December 2020) to plan the workshops, evaluate the process, and set the goals for the workshops (see the process chart in Fig. 1). Because of the Covid-19 pandemic, only the first workshop took place in person; the other two events were organised online, five to seven months delayed from the original plan.

The workshops will reflect on the status of gender equality in research and innovation in the region, and search for ways to advance gender equality and use it as a solution and a resource. They will discuss how regional networks, with joint effort and in collaboration with national actors, can advance gender equality in research and innovation and on their interfaces. (Minutes of a DG meeting)

Three workshops were organised in Finnish, considering respectively:

1. The current state of gender equality in the region's RI sector (3.5 h; 17 participants: 15 women and 2 men, February 2020);
2. How gender equality could be better employed as a resource in the region's RI (online; 3.5 h; 12 registered participants: 9 women, 2 men, and 1 non-binary person, August 2020);
3. Why would small and medium-sized enterprises (SMEs) benefit from reflecting on equality? (online; 2 h; 34 registered participants: 29 women, 4 men, and 1 non-binary person, December 2020).

DG meetings, organising group discussions, both including the planning and evaluation discussions of the workshops, and the workshops became forums for collaborative knowledge production (Phillips et al. 2013) in which the practices of regional developers, and also entrepreneurs in the third workshop, were discussed in dialogue with research. The data of this article (in Finnish) cover these forums and consist of the planning and evaluation documents of the process, including calls for workshops (13 documents, each 2–5 pages) produced in the DG, researchers' notes during the meetings and workshops, and material delivered in the workshops (see the list of data and the background material in Appendix). The planning and evaluation documents were written by the researchers and were circulated in the DG via email and partly in a shared Google Drive folder. The planning documents in particular were discussed extensively, and the documents intended for audiences outside the group were revised and rewritten in these discussions. The emails between the members of the DG (160 pages) were used as background material by taking notes about the order of events and about discussions and formulations of the documents, the notes being included in the data.

The data were analysed thematically with a close reading of the documented process, by (1) giving space for the voices of all partners involved in the process and by (2) tracing negotiations and tensions in gender equality in regional RI, with reference to the theoretical lens of situated gender equality described earlier. Three themes were selected for further analysis: tensions in the conceptions of gender equality; the making of situated gender equality; and tensions in the making of the market case for gender equality. The researchers, in dialogue with the developers, supplied materials for the workshops and also collaboratively analysed the context for gender equality work (cf. EFFORTI 2020) in regional RI; they then proceeded to a small group exercise on gender equality
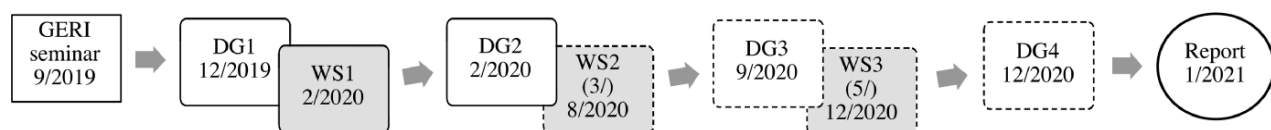

Figure 1. Flow chart of the collaboration process timeline. GERI Seminar took place in autumn 2019. DG and workshops (WS) gathered December 2019–December 2020, up to DG2 in person and from WS2 onward online. The organising group discussions intertwined with the entire process (10/2019–1/2021).

in SF, a concrete device for facilitating collaboration between research and industry, based on the gender analysis of four public application summaries. These will be described in the following sections; the extracts of the data being translated for the purposes of this paper. The regional developers are analysed anonymously.

Below, three themes present in the negotiations of GERI, including tensions therein, are analysed within the collaborative knowledge production process, each related to one of the workshops respectively. The first theme—the tensions in the conceptions of gender equality—emerged from the first workshop, which mapped out the current state of GERI in the particular region. The theme of the making of situated gender equality draws on the second workshop, which tackled SF applications and the funding practices of the regional council. The third workshop involved private enterprises in regional RI activity and negotiated the third theme, tensions in the making of the market case for GERI.

6. Negotiations over gender equality in regional RI

6.1 Tensions in the conceptions of gender equality

The first set of negotiations dealt with the collaborators' understanding of GERI. They started in the DG and were laid out in the first workshop *The current state of gender equality in the region's RI sector*. The researchers introduced gendered RI at regional, national, and organisation levels, the relevant context for gender equality work (cf. EFFORTI 2020), as briefly summarised earlier in this paper. Statistics provided by MEAE databases demonstrated the existence of gender inequalities within the region in question: new RI jobs generated by the ERDF most often went to men, and new enterprises supported by these funds were only rarely started by women (cf. Kvidal and Ljunggren 2010: 88). Along the same lines, a study of the members of the Academic Engineers Labour Union showed bluntly that every third woman in technical fields had faced gender discrimination in Finland and suggested the need for commitment from business leaders to gender equality work (Bairoh 2017). Furthermore, GEP within the local university, corresponding to the national Gender Equality Act and gender mainstreaming goals, and the European Institute for Gender Equality model of the GEP process (EIGE 2016b) was discussed. The talks were followed by two commentaries on regional funding, given by an expert from the MEAE and a director of the regional council. A lively discussion followed.

All of the regional developers agreed that gender equality had not been sufficiently taken into account in the regional development of RI, although 'transparency and absence of discrimination is the goal' as stated in the SF programmes and 'the gender equality question comes up during this programme period'. One participant from the regional council stated:

> As (regional) funders we have already failed at the legally required operations, but also in how we could support it [i.e. gender equality] in an enabling way. We've discussed how project executors could be supported in the matter, but from an effectiveness perspective, we've failed to implement the goals of the law. (Notes of the researchers)

Gender equality was found to be missing in the practices of the regional funders and the applicants for project funding

and was only vaguely articulated in the strategies and practices of the ministry that oversees regional activity at the national level, as described by a ministry participant: 'There's a lack of know-how at all levels'. Even at the national level, gender equality has only recently been integrated into issues that have been identified as human-centred, such as participation in the government's regional policy. But it is still absent elsewhere, for example in the energy sector, as the ministry participant continued: 'Gender equality doesn't always come up first in the sector politics of ministries. Now it has been increasing in matters directly connected to people, but distant, for example, in energy politics.' At the regional level, the participants did not mention any good examples of gender equality. Many of them explained that 'answering the gender question has been difficult'. The workshop participants expressed that they did not really know how to do it in the context of their own practices (see also Kvidal and Ljunggren 2012).

However, this does not mean that the developers knew nothing about gender. Many participants briefly mentioned gender segregation and the absence of women in regional RI. A council expert who worked with funding decisions stated that projects are shaped through their contexts and through various groups of people, women and men. She suggested that the funding practices should consider the participants throughout the project process:

> If we could create some criteria for selection that would help in getting female researchers on board as well. It's a multifaceted question, how the evaluation should be carried out, who are the executors of the project, who are the targets of the project, who the products of the company are for, does the product development take women and men into consideration. The entire chain would need to be intact. (Notes of the researchers)

The speaker stated that more women are needed in RI activity, indicating that she knew about gender segregation and the fact that the ERDF tends to support more men than women (Kvidal and Ljunggren 2010: 89). However, the need for more women was only mentioned in passing, and the developers did not conclude that they should, for example, start equal treatment or positive action campaigns to get more women involved, nor did they go on to consider the gendered inequalities, structures, or cultures presented by the researchers. Instead, the discussion turned to the practices that they worked with. That was where gender equality should be addressed, according to the ministry expert:

> The subject matter and the gender perspective need to be tied together… Regional development might be found most concretely through projects: What are the things that the region wants to improve? Which actors are participating in projects and what know-how do they have? What things are linked together? (Notes of the researchers)

The regional council participants then suggested that the workshop series should examine actual development projects. Although the funding applications for the funds delivered in the region were seen to describe gender vaguely, 'we get colourful answers for the gender equality perspective'—the workshops could explicate gender more thoroughly and in

more innovative ways: 'What could the projects have done in terms of gender? Would the results have been even more effective?' One woman said that she, as an evaluator of the funding applications, needed 'concrete tools – questions – to act as a sparring partner for project actors'. Many regional developers were involved with projects, either as funders or as applicants, and they wanted to reflect more on gender in those contexts. The workshop participants wanted to understand 'how could gender be seen as a solution and not an artificial explanation of a few sentences?' They wanted to learn how the gender perspective could improve development work and create solutions for regional development, in line with the regional strategy discussed earlier.

There was tension in the varying conceptions of gender equality between the researchers and the regional developers. The researchers' presentations (on the context and current situation in gender equality in regional RI) aimed to map out gender, gender inequalities, and GEP in the regional RI. These overviews, however, did not raise further discussion or reflection among the participants, despite the researchers' attempts to cover the specific region and organisations familiar to the participants. The researchers' introductions only seemed to confirm to the participants what is considered common knowledge in Finland and what the developers had already heard in European and national meetings: that there are gender inequalities in society and in RI (Gender barometer 2018). The participants acknowledged the absence of and difficulty in gender equality (cf. Kvidal and Ljunggren 2010) but could not link these discussions to their own work and consider, for example, the consequences of gender inequalities in that context. Conversely, the talks of the developers pinpointed issues and concrete tasks in the development sphere and prompted a lively discussion on development work. They addressed gender equality only in positive terms, as a solution (cf. Petersson Mcintyre 2021b) and a resource that could potentially improve regional development work. There remained a gap between the researchers' articulations of gender (in)equality and the developers' view of gender as a solution, as the implications of gender inequalities were not reflected collaboratively. Nevertheless, there was a consensus between researchers and developers about the next step: in the following workshop we would move towards considering the practicalities of regional development, which the researchers conceptualised as work for situated GERI.

6.2 Making situated gender equality

The second set of negotiations teased out the idea of gender equality as a 'solution' and situated GERI in the context of SF programme applications. The negotiations took place in the DG and in the second workshop: *How gender equality could be better employed as a resource in the region's RI.* The workshop started with presentations on the equality and diversity work of a local university, and the GEP of the European Horizon 2020 programme (with an EU video) was introduced by an expert from MEAE. These talks were a reminder for the participants of different ways of doing gender equality work, both within organisations and regarding European funding; because of the pandemic, it had been as long as seven months since the first workshop. However, the focus of the second workshop was gender in SF applications, and the key working method was participatory small group work, as is typical in collaborative knowledge

production (Phillips et al. 2013). The small groups were intended to create new kinds of knowledge. The DG had originally imagined the groups sitting around small tables, exchanging their experiences and interpretations of the SF applications, and analysing gender equality implications. As a result of the pandemic, however, the second workshop and its small groups were held online. The small group tasks on SF applications were prepared collaboratively between the researchers and regional council experts. The latter provided four publicly available summaries of projects funded by ERDF (5 pages each), which the researchers analysed from a gender perspective, and the researchers and developers then produced the small group exercises together.

The project summaries included space for the project applicants to comment on the relevance of gender in their project (via 'yes/no' tick boxes) and an assessment of the gendered effects of the project. The regional developers had said that gender was very vaguely articulated and often 'impossible to find' in ERDF project plans, as the projects involve organisations and enterprises rather than individual gendered humans. Similar views were heard in the Gender Equality in RI seminar of the previous year (also Kvidal and Ljunggren 2010: 81–83, 88; 2012). The difficulty of discerning gendered implications was a shared experience beyond the specific region. The four summaries all mentioned gender in some way and were thus not meant to be examples of the weakest cases.

One of the selected four project plans, aiming to 'create a basis for mobility and trip chains in the *Neighbourhood Industrial Shore* and elsewhere in the city with the use of mobility experiments', stated that gender was not relevant to the project's operations or to its environment and ticked 'no' for gender relevance. Nevertheless, the assessment stated, without any reflection on the well-known gender divisions in mobility (more men drive cars and more women use public transport), that the project supported gender equality:

> The operational environment has not been analysed from a gender perspective in the preparations of the project, because the theme at the core of the project, mobility of people and businesses, is not tied to gender, and mobility services are developed equally for both genders by default.
>
> Gender equality is actualised in the operations of the project, although it has not been specifically addressed in the planning stages. As stated above, the operations of the project are in no way tied to gender. (Public summary of an SF project)

The authors of the other three project summaries had ticked 'yes' for gender relevance and also included gender equality assessments. However, one of them only explained that there was no need for a gender assessment because they had all the relevant information based on their personal experience and they (self-evidently) took an equal opportunities approach. The assessment did not reflect potential bias in their experiences nor did it pay any attention, for example, to the consequences of gender segregation and gender hierarchies, despite mentioning segregation.

As the project summaries were analysed through the lens of feminist STS (Oudshoorn and Pinch 2003: 4–7, 12–14), gendered patterns were found in all four project summaries, including the examples given above. Based on this analysis,

the first author prepared a talk in which she explained the conceptual tools used in the analysis (not the gendered patterns themselves, but rather the means to discover them) and introduced an exercise for the small group discussions. Before the workshop, the terms and language of the exercise were collaboratively adjusted to better accommodate the workshop participants in the DG. The participants were split into small groups beforehand, and each of the groups was asked to read two project summaries in preparation for the workshop.

Technologies and innovations, as well as SF projects, can be seen as socio-material practices, and implementing these practices involves a diversity of participating actors and knowledge. In addition to designers and developers, implicated and unexpected users participate in the making of technologies/projects (Oudshoorn and Pinch 2003: 6), beyond the well-established regional networks with a tendency for male bonding. Thus, participatory methods that acknowledge the experiences and knowledge of these various actors are an important part of project planning. In line with existing research and the analysis of gendered patterns in situated development activity, the researchers suggested questions for the analysis of gender equality implications (not unlike the musings of the regional council expert in the first workshop, see above):

> Who are the actors in the project and who are the users (including unexpected users) of the planned activity? What is the gendered hierarchy and segregation in these groups, and how would it be possible to involve other kinds of collaborators and users? How might one affect the gender hierarchies and segregation? How do project actors and users act and how do they produce knowledge? What kind of participatory methods are used to involve different groups in knowledge production? How does one recognise and provide a platform for different kinds of expertise? How do the selected pilot cases blur/strengthen gender segregation and hierarchies? (Small group task)

One of the small groups then examined the *Neighbourhood Industrial Shore* project on mobility (described earlier) with these guiding questions. The group started by imagining users and groups whose activities, experience, and knowledge could be connected to the project. Simultaneously they made the gender analysis that was entirely missing in the original project summary:

> Who the users of these services are was central to the group's discussion. There were also gender differences in the users of public transport: transport needs vary (e.g. care, transporting children)… Masculine technology-centredness was observed in the framing of the project. Still, there are also female handicraft entrepreneurs in the area: who are their customers and how do they get around? Experimentation, conversation and meeting these different groups of people were seen as methods for information-gathering. (Workshop report)

The small group collectively reflected on two kinds of knowledge: (1) conceptual methods and guiding questions for seeking gendered patterns in both innovations and funding applications and (2) everyday experiences of project planning. The group co-produced knowledge and practices on situated gender equality by creating a dialogue between these two different kinds of knowledge: research and experience. The small group members learnt a new way of reflecting on their own practices and recognising gender implications in project planning work. They distinguished gendered project and user groups, unexpected users and collaborators, and they noticed processes for the engagement of users and their knowledge, among other things. One of the participants later said that she, in working with project funding decisions in the context of her regular work, had used her new know-how and had supervised a new project group to take gender into consideration: 'going through the example cases gave skills, I can guide project preparation' (planning group minutes).

Compared to the first workshop and its differing views of GERI, the second workshop and its preparation collaboratively produced situated knowledge on GERI. Both researchers and developers concentrated on the specific practices of the developers, improving the SF project planning by addressing gender equality implications. Additionally, the workshop facilitated a dialogue between concepts and practices. Researchers, in collaboration with developers, contributed conceptual tools for recognising gendered divisions and power structures (i.e. groups that would otherwise remain invisible and their contingent roles in development) in project planning, as well as solutions for more diverse participation in knowledge production (i.e. through participatory methods that promote situated bodies of knowledge: Haraway 1988). While the researchers' overview of GERI failed to initiate self-reflection in the first workshop, in the second workshop co-production of the analytical terms and methods closer to the participants' own work was found useful and collaborative knowledge was produced (cf. Lundqvist and Westberg 2012): gender as a solution for the regional developers and situated gender equality for researchers.

6.3 Tensions in the making of the market case for gender equality

The third set of negotiations on GERI dealt with the private sector in regional RI development and took place in the planning group and the third workshop event: *Why would SMEs benefit from reflecting on equality*. As the pandemic continued, the event was again organised online. It focused on SMEs, which play a crucial role in regional innovation, but within which there has as yet been little or no discussion of gender equality. The first author indicated that she had no expertise on SMEs to facilitate the planning and the seminar, in contrast with the previous workshops. Instead, a new member of the planning group, a director of an SME with long experience in feminist research on gender and the leadership of SME organisations, took over the task. Diverging from the two earlier workshops, which were constructed in close dialogue between the researches and the developers, it was the developers who led the planning and arrangement of this third event. They invited local businesses and the chair of the local chamber of commerce to speak and present good examples of how they use gender and gender equality as a resource, as well as a MEAE representative to participate in the panel discussion. The researchers only coordinated the planning process and communications for the event. However, the first author provided the closing words for the workshop, as it was the final one in the series.

The DG titled the seminar *Equality in SMEs and innovation*, despite three reminders from the researchers that the focus of the workshop series was 'gender equality'. The developers argued that 'gender equality' was not suitable as the title in the context of SMEs—they thought it would limit the audience, while the more neutral 'equality' would be more accessible for people working in private enterprises, in line with Swedish gender equality consultants who sometimes use terms 'diversity' and 'inclusion' instead of 'gender' (Petersson Mcintyre 2021b). 'Equality' therefore remained in the title. However, the workshop invitation mentioned the know-how of women and men: 'Together we will discuss the profits a company can gain by using the expertise of both women and men in their research and innovation'. As the seminar focused on GERI from the SME perspective and as the Finnish word for 'equality' (*tasa-arvo*) is often understood to mean 'gender equality', the event nevertheless ended up discussing gender equality. The third event became a market case for GERI, in line with the notion of market feminism (Kantola and Squires 2012).

The seminar included a conceptual introduction to gender in the leadership of SMEs, an experience-based talk by a female executive, and a panel discussion involving participants from businesses and MEAE. The introduction presented gender equality in terms of concrete action that can be taken to improve the overall picture, rather than seeking ('equal treatment') opportunities for individuals. It suggested that diversity, especially the participation of women in the leadership of a business, improves innovativeness, resilience, and the likeliness that the best employees will stay in the business. Gender equality was discussed as a requirement for the growth and innovativeness of the business—as a requirement for its survival, even. Conversely, the female executive emphasised the importance of supporting individual women, particularly in male-dominated fields, to enable women to advance in businesses step by step to become managers, chiefs, and board members.

The seminar panel discussed 'how equality creates business, how equality creates growth and resilience, and how equality is achieved through action'. The entrepreneurs in the panel, carefully handpicked by the regional developers, described how gender equality was an integral part of their businesses. Their businesses promoted family-friendly opportunities to support employees' care of children or ageing family members. One company always sent out two workers, a woman and a man, to represent the company, and their products and interaction with collaborators and customers aimed to advance equal participation and well-being in society.

The market case for GERI was shown to be closely connected to the economic success of enterprises. This was not entirely different from the approach of seeing gender equality as a solution addressed in the first workshop or the vision of situated gender equality that was co-produced in the second workshop. The enterprises that contributed to the third workshop were taking gender into account because gender equality provided a solution to their business strategies; it had an effect on their profits, and they had found ways of incorporating gender equality both in their internal work practices and in their collaboration with clients and users of their products. In addition to turning a profit, they also worked to transform themselves and make society more equal (Petersson Mcintyre 2021a; b). These were lessons for the broad range of participants across sectors, including the planning group and regional developers from beyond the particular region, who had been reached through the regional developers' national network (as the third workshop was open to all). Another region organised a workshop on gender equality in business and innovation a few months later.

The tension over having or not having gender specifically mentioned in the workshop's title turned out to be irrelevant for the specific enterprises that were present. When the companies saw gender equality as a resource or 'solution', they seemed to find means to address it (Petersson Mcintyre 2021b). Nevertheless, this does not happen in all enterprises; the regional developers had carefully picked example enterprises that had worked with gender to provide good examples for the discussion. Although the seminar gathered a fair number of participants, the proportion of entrepreneurs remained relatively small. The developers were thus correct to assume that gender equality was not a broadly attractive topic for many businesses in their region, although their strategy of removing the word 'gender' from the title was not enough to counteract that trend.

7. Conclusions

Gender equality in regional RI was negotiated and co-produced between researchers and regional developers in a process that consisted of three workshops. Regional developers, who have seldom been discussed as a group responsible for GEP, consistently talked about 'gender equality as a solution', similarly to Swedish gender equality consultants (Petersson Mcintyre 2021b). Here, the new solutions proposed by gender equality work were needed for the improvement of specific regional development (cf. Foray 2015; Balland et al. 2019), including the developers' own work. However, what that meant in practice was not at all clear (cf. Kvidal and Ljunggren 2010, 2012) at the beginning of the process. The regional developers were aware that they are required (by EU and national legislation) to take action for the development of GERI. They were also more or less aware of the absence of women in SF projects, for example, and gender segregation in RI. Additionally, they recognised that gender implications in regional RI are difficult to perceive and thus considered actions to improve gender equality to be difficult to plan and implement at the regional level (cf. Kvidal and Ljunggren 2010, 2012). This is a strong indication of the lack of research and research-based discussions of the topic and the complexity of the phenomenon, although their term 'gender equality as a solution' is also shaped within the societal discourses of its time (i.e. smart specialisation, neoliberal policy, and market economy: Petersson Mcintyre 2021b).

As 'gender equality as a solution' was an abstract goal when first discussed, this idea was refined in the second workshop. Although it was not named as such, the idea evolved into situated gender equality in regional development work (specifically in the context of the SF project plans) involving many regional actors: funders; ministries supervising regional actors; RI institutions; and enterprises and civil society participants (Salomaa and Charles 2021). Furthermore, gender equality as a solution took the form of a market case for gender equality (Kantola and Squires 2012; Petersson McIntyre 2021b) in the third workshop, which was organised under the leadership of the regional developers. This final workshop examined how gender equality in innovation is profitable for

enterprises. Our collaborative research process suggests that gender equality in regional RI needs to be closely integrated into the practices of regional developers' main work, i.e. regional development based on local regional activity (cf. smart specialisation policy).

The tensions in the collaborative process further show that the relevant context factors of gender equality work (cf. EFFORTI 2020) discussed in terms of research findings or statistics on gender inequalities in RI and the demonstration of the damage (Tuck 2009) caused by gender inequalities alone *do not* help developers reflect on their own practices and thus do not sufficiently facilitate the gender equality work of regional developers. Furthermore, although it has not been discussed here, the developers pointed out that the well-meant lists of actions intended to support gender equality work (i.e. EIGE; funding instruments) are not very useful. These lists were seen as an unnecessary addition to project planning, which already has to cover many elements, and the developers did not know how to apply them. Instead, the developers were able to reflect on GEP and transform it into 'solutions' in their development practices only when we discussed gender equality in a context closely aligned to their practices and when they had room for collaborative reflection on their own practices in small groups. This was made possible by the collaborative knowledge production between researchers and developers, which reflected on both everyday work and research-based notions around GEP in RI. Collaborative knowledge production, a dialogue between practice-based and research-based knowledge, needs to involve participants that jointly cover both types of knowing. As researchers are seldom available, we suggest that, for example, national-level ministries could build facilitating resources to support the collaborative knowledge production on GERI and developers moving forward. This facilitation would further benefit from collaboration with existing European and worldwide networks, such as Research and Technology Organisations (EARTO n.a.), which could mediate and spread good practices developed locally, in addition to providing tools and inspiration.

There were many further tensions and constraints in the process. First, the use of the Finnish language includes a major tension in current RI in Finland. On the one hand, Finnish is a native language for most of the regional developers, and it was easier for them to address the difficult gender question within their daily work practices in their native language. On the other hand, international research groups operate in English at the local university. One of these research groups had worked on GERI and was interested in participating but could not send anybody who spoke Finnish, and so our choice of language excluded their participation. Furthermore, the regional universities adapted different stances as Gunasekara (2006) suggests; the science university participated by providing speakers to the first two workshops, but beyond this no staff members attended as workshop participants, whereas staff members from universities of applied sciences were interested in regional development with SF and did participate (cf. Salomaa and Charles 2021). These tensions suggest that there is a need for multiple processes that bring together regional actors for future development work on GERI.

Furthermore, Covid-19 extended the process significantly (although the main goals of the process and the contents of the first two workshops remained unchanged), and several members of the DG, including the second researcher, were not able to stay until the end. This meant losing opportunities to share the findings with stakeholders and ministries in particular.

Additionally, continued remote work with its efficient short meetings implied less opportunity for participants' equal participation in collaborative knowledge production towards the end of the process. For example, the third workshop was redesigned and became an open-to-all online event, which was about half of the duration of the previous workshops. However, the implications were not all negative, as the online event involved a considerably larger group of participants than the first two workshops, with participants representing several regions. The event also potentially inspired gender equality work outside of the region in question.

Our process further suggests that regional GEP in RI can take place in networks of regional developers. Although the process started as a dialogue between researchers and developers, it turned into a close collaboration among the regional developers in the third workshop. This kind of network could potentially continue to develop new collaboration and GEP in regional RI in the future (see also Lindberg et al. 2016). It takes time to develop new policies and even longer to establish new practices for GERI—a one-year process is only the beginning.

The notion of situated GERI implies that gender equality is reflected in the specific concrete practices of regional actors. However, situated knowledge—as Haraway (1988) frames it—also involves analysing societal orders that are embedded and have consequences including inequalities, harm, and damage in everyday practices. Work for situated equality, then, should also analyse power structures and gender inequalities and the damage caused by them in everyday practices, within the development of new and better solutions— 'hope', in the terms set out by Tuck (2009). In our collaborative process, reflection on the damage caused by gender inequality in current RI practices remained limited. Although the researchers introduced a broad outline of the gender inequalities in regional RI in the first workshop, they were not reflected on collaboratively. Nevertheless, the following steps in the process were decided upon collaboratively. The researchers further initiated feminist STS research methods for analysing gendered power structures within the life trajectories of SF projects, covering gendered groups of actors and knowledge, as well as users and their understandings, beyond the mere design phase and well-established (male) regional networks (Berger et al. 2015). Following this, the exercises for the second workshop were co-produced. Here, a shared new understanding of situated gender equality in regional RI was co-produced through the dialogue between concrete practices and research-based conceptions and analysis of specific gendered practices (including inequalities) in regional development.

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APPENDIX Data and background material

Background material
Classification of territorial units for statistics (NUTS) https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:02003R1059-20180118&qid=1519136585935 (7 September 2021)

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Ministry of Economic Affairs and Employment of Finland

- Statistics on gender and structural funds
- Web pages on regional development https://tem.fi/en/regional-councils (7 September 2021)

Finnish Gender Equality Act: https://tasa-arvo.fi/en/the-equality-act-in-a-nutshell (23 December 2021)
Gender Mainstreaming in Finland: https://stm.fi/en/gender-equality/mainstreaming (23 December 2021)
GERI seminar (2019) (web page to be added)
Regional council

- Policy of the region
- Statistics on gender in SF decisions
- Evaluation of the regional policy by the Tasova project.

Data
DG meetings

- The planning documents intended for audiences outside the group: programmes and calls for workshops (13 documents, each 2–5 pages)
- Lists of workshop invitees for three workshops, updated for each workshop (WS 1–3: 40 invitees)
- Evaluation documents/minutes concerning the three workshops (4) and of the report the entire process (December 2020, delivered to ministries in January 2021)
- Researchers' notes

Organising group discussions

- Researchers' emails to initiate the collaborative process and the research aims and practices (October–December 2019) and to invite a new participant to the DG
- Invitation emails to the workshops (40 for each workshop)
- Call for participation via Internet (workshop 3: open to all)
- Researchers' reflective summary of workshop 3 published on the webpages of the regional council
- First author's notes (9 pages) about the group's email discussion (160 pages), phone calls
- Public summaries of SF applications (4, each 5 pages) and first author's analysis of gender in them (4 pages)
- Small group tasks, using the public summaries (2 pages)

Workshops

- Talks of three workshops (4 + 3 + 1 sets of slides) delivered to the participants and the DG
- Videos from Horizon 2020 projects in workshop 2:
- Understanding the gender dimension for Marie Skłodowska Curie Actions projects (8 min)
- Gender-Net: Integrating gender analysis into research (4 min)
- Researchers' notes

Lists of the participants: name and organisation
The development, evaluation, and workshop materials were circulated in the DG via email and partly in a shared Google Drive folder.