

## **Gender equality in regional entrepreneurial ecosystems: the implementation of policy initiatives**

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## **10. Gender equality in regional entrepreneurial ecosystems: the implementation of policy initiatives**

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### **INTRODUCTION**

Policy makers seeking to stimulate regional prosperity and economic growth are increasingly taking more system-oriented approaches to support entrepreneurial activity (Warwick, 2013). The entrepreneurial ecosystem has been put forward in the literature as a model to guide efforts to develop and enhance a network of interconnected organizations that creates and appropriates value through innovation in a region (Spigel, 2015; Spilling, 1996). An entrepreneurial ecosystem is defined as “a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship” (Stam, 2015, p. 5). Hence, the ecosystem approach emphasizes the role of the context for entrepreneurial activity.

It has increasingly been argued that a system perspective should be taken also in analyses and policies related to women’s involvement in entrepreneurial activities. Instead of limiting the focus to women and their (lack of) capabilities, the impact of the context – or the structure – in which they participate, should be taken into account. Extant research has provided evidence that the contextual structures in which entrepreneurial activity is carried out are often inherently gender-biased. Gender bias has been documented in innovation systems (Lindberg et al., 2014), entrepreneurship and innovation policy (Pettersson, 2007), as well as in the supporting infrastructure for entrepreneurship, such as incubators (Marlow and McAdam, 2012) and technology transfer offices (Kochenkova et al., 2015). The gender bias is possibly leading to under-exploitation of resources associated with women as sources of entrepreneurial opportunities. In this study, we examine efforts taken by a policy program to adjust the inherent gender bias in regional entrepreneurial ecosystems.

The role the government plays in the development of an entrepreneurial ecosystem has been portrayed as an important area of study (Neck et al., 2004). Policy aiming at supporting entrepreneurial ecosystems differs from traditional entrepreneurship policy in important ways. Instead of addressing market or structural failure, policy needs to take into account that entrepreneurial ecosystems are complex, dynamic, with a multitude of independent actors, and hence it is not possible to directly control them (Autio, 2015). Hence, developing policies that aim to reduce the inherent gender bias of an entrepreneurial ecosystem is not straightforward. While gender quota policy has been applied to the business sector, for instance in corporate board legislation (Teigen, 2012) and to procurement policy (Aidis et al., 2015), the characteristics of ecosystems require heterodox ideas concerning public policy instruments. Building on implementation literature (Barrett, 2004; Saetren, 2014) and a policy learning perspective (Bennett and Howlett, 1992; Mytelka and Smith, 2002; Sanderson, 2002), we analyze the results of a policy initiative to strengthen the gender balance of regional entrepreneurial ecosystems in Norway.

The policy initiative, the national Program for regional R&D and innovation (VRI), is organized as financial support for networks of regional actors seeking (further) to develop entrepreneurial ecosystems in their regions, complemented with a knowledge support infrastructure made available for the regional systems. Shortly after the initiation of the program in 2007, a requirement was introduced to address gender balance within the ecosystem development projects. We analyze how the regional actors responded to the gender requirements in their project plans, in the actions taken, and how this developed over the time period until 2015. Further, we examine learning from the activities, and the consequences this potential learning has for the planned activities and measures in the following project periods. The following research questions are examined:

1. What is the relationship between planned gender initiatives, activities conducted and reported results and learning from the activities in the regional entrepreneurial ecosystem development?
2. What effects can be seen from the introduction of gender requirements in the regional ecosystem development projects?

The chapter aims to contribute to the knowledge on entrepreneurial ecosystems in at least two ways. First, our analyses of efforts to enhance women's positions and inclusion within entrepreneurial ecosystems add to the scarce literature on entrepreneurial ecosystems' role in women's entrepreneurship, as addressed by this volume. Second, our results also provide insights into the role of policy and government actors in the development of entrepreneurial ecosystems. Additionally, we offer insights into the processes through which (gender equality) policy schemes are implemented, the barriers and drivers for implementation, and the role of learning from previous implementation efforts in the further development of policy initiatives in this area. At a broader level, the chapter investigates whether ecosystem policy can possibly embrace gender equality and contribute to the creation of entrepreneurial ecosystems which promote and equally support both women's and men's entrepreneurial activities.

## **THEORETICAL FRAMEWORK**

### **Entrepreneurial Ecosystems**

Entrepreneurship scholars have long acknowledged that some areas or regions have special characteristics or atmospheres that are particularly conducive for entrepreneurship and innovation (Feldman, 2014), often exemplified by areas such as Silicon Valley in the USA. Inspired by ecology, the term "entrepreneurial ecosystems" has been adopted to analyze "the complexity and diversity of actors, roles, and environmental factors that interact to determine

the entrepreneurial performance of a region or locality” (Spilling, 1996, p. 91). An entrepreneurial ecosystem consists of a number of actors (e.g. individuals, firms, universities, incubators, venture capitalists) that are interconnected and mutually reinforce each other’s influence on the development and growth of entrepreneurial firms. In this perspective, entrepreneurship is not only a result of the system, but entrepreneurs are also seen as central players in the formation, development and maintenance of the system (Stam, 2015).

An entrepreneurial ecosystem consists of several components whose interactions create, determine and move the system. Several accounts or overviews of the components of entrepreneurial ecosystems exist (Neck et al., 2004; Harrison and Leitch, 2010; Stam, 2015; Feld, 2012). Most include components such as companies (large corporations, entrepreneurial firms and spin-off firms), intermediaries (incubator organizations, technology transfer offices), research and development (R&D) institutions (e.g. universities), professional support services, governmental bodies, capital sources, informal and formal networks, physical infrastructure, talent and culture (see also Chapter 1 of this volume). For the purpose of this chapter, we differentiate between components of actors, networks and infrastructure (see Table 10.1).

<Insert Table 10.1 about here>

In their efforts to develop entrepreneurial ecosystems, policy makers, intermediary actors, industry actors and others can address one or several of these components or their interaction.

### **Women in Entrepreneurial Ecosystems**

The gender divide in entrepreneurship is well acknowledged and documented (Kelley et al., 2015). Although the knowledge on gender in entrepreneurial ecosystems is almost non-existent, it can be expected that most such systems are characterized with gender imbalance,

just based on the fact that more men than women are engaged in entrepreneurial activities (Kelley et al., 2015).

There are many reasons why existing entrepreneurial ecosystems may have a gender bias. Economic systems tend to be inert and path-dependent. Hence, they build on and maintain choices made by male actors for decades. Research within economic geography has shown that the failure to focus on agency within research on regional economies leads to concealment of the role of gender divisions and gendered social relations for value creation (Berg, 1997; Blake and Hanson, 2005; Gray and James, 2007). Gender inequalities within entrepreneurial ecosystems constrain female actors' abilities and options, and thereby their contribution to interfirm knowledge exchange and intrafirm use of knowledge (Gray and James, 2007). Consequently, failure to include women in the entrepreneurial ecosystem, and gender bias in interactions and processes within the system, may limit both innovation and value creation regionally (Blake and Hanson, 2005).

Gender skewness can exist in relation to several of the components of an entrepreneurial ecosystem and their interactions. The male dominance among entrepreneurs (Kelley et al., 2015), in corporate boards and management (Terjesen et al., 2009), and among university faculty (Busolt and Kugele, 2009), has the consequence that there are fewer women than men present in the processes taking place within the ecosystem. Further, network constellations tend to sustain traditional masculine notions of innovation and entrepreneurship (Lindberg et al., 2014; Marlow and McAdam, 2012), and informal networks of entrepreneurs have often found to be gender skewed. Moreover, gender stereotypes and gendered processes are characteristics of entrepreneurial systems (Ranga and Etzkowitz, 2010), of new venture financing (Brush et al., 2002), and innovation and entrepreneurship policies tend to be gendered both related to their operationalizations and choices of target areas (Alsos et al., 2013; Nählinder et al., 2012).

### **Governmental Policy Supporting Entrepreneurial Ecosystems**

To evolve, economic systems need new variety and new sources of entrepreneurial opportunities (Fagerberg, 2003). However, entrepreneurial ecosystems, like most evolutionary economic systems, are characterized by inertia (Autio, 2015). Change is believed to happen only very slowly and mainly in relation to existing structures and patterns of interaction which are central to the performance and existing functioning of the system. For more radical change and transformation, strong exogenous influence may be necessary, such as an external shock (Salamonsen, 2015; Simmie and Martin, 2010) or a policy intervention (Aldrich and Martinez, 2001).

Policy aiming to develop or change the functioning of entrepreneurial ecosystems needs to be different from the traditional dominant market failure and system failure policies. Policy makers should acknowledge that ecosystems are complex and dynamic, that value creation is collective, and that no one is really in charge (Autio, 2015). Entrepreneurial ecosystems are relational and not hierarchically governed (Pitelis, 2012), and may be particularly hard to transform. Autio (2015) puts forward four key postulates claiming that effective ecosystem policies should: (1) be bottom-up, not top-down; (2) engage stakeholders in the system; (3) facilitate multipolar coordination; and (4) build collective impact through commitment and mutual awareness among stakeholders. Also in policy on gender equality of the business sector, it has been argued that policy interventions should be advocated from within, focusing on the benefit the system gains from a better balance rather than just advocating to reduce discrimination (Teigen, 2000). The challenge for policy makers addressing the gender balance of entrepreneurial ecosystems is to find and implement initiatives and measures that fertilize the internal ecosystem processes in order to reduce gender imbalances from within the system.

Implementation of policy has a long research tradition, and has developed over time since the early studies in the 1970s and is today a fairly mature research field (Saetren, 2014). Implementation research focuses on the policy-action relationship and argues that implementation should be seen as an integral and continuing part of the policy process, as a dialectic process between policy and action involving negotiation and bargaining between policy makers and those meant to carry out the intended action (Barrett, 2004). Emphasis is placed on power or interest structures and relationships between participating actors. Hence, implementation of policy is not so much about formal organizational hierarchies, communication and control mechanisms, but is instead a process which is influenced by the actors involved (Barrett, 2004). Their interpretation of the policy and its aims influences the actions taken to implement the policy and hence its outcomes. Policy implementation is, therefore, not only influenced by the policy makers, but also by how the policy is communicated and the frame in which implementing actors interpret and act upon the policy – which again is influenced by the interests of these actors. Further, the notion of policy learning has been brought into this literature (Bennett and Howlett, 1992) as a response to needs for more evidence-based policy (Sanderson, 2002). Policy learning emphasizes the value of *evaluation* and *improvement* based on evidence of the effectiveness of policy implementation. This is particularly relevant to complex social and economic situations where it is difficult to assess *a priori* how a policy will work (Sanderson, 2002). The design and redesign of policy, tailored to the actors and systems whose behavior the policy aims to influence, is assumed to benefit from interaction between policy makers, evaluators and researchers (Mytelka and Smith, 2002) through a learning process. Hence, while implementation theory focuses on the limitations related to these interactions in terms of inaccuracy in translation of policy and difficulties in implementing the policy makers' intentions, a policy learning perspective emphasizes the potential for improvement of policy



through the same interactions. In this chapter, we analyze the process through which gender balance has been pursued as a policy aim in a policy program aimed to develop regional entrepreneurial ecosystems, and the extent to which the policy has been adapted and improved based on learning.

In the following sections, we briefly describe the policy program in question, VRI. Then, we present the empirical data and analysis. The analysis is followed by a discussion of the findings and conclusions.

## **THE VRI PROGRAM AND GENDER BALANCE**

The Norwegian Research Council (RCN) operates the VRI program as its main support mechanism for research and innovation in Norway's regions. The applicants are regional ecosystem partnerships in Norwegian regions, altogether 15 regions. The program started in 2007 and ended in 2016, and is divided into three periods: VRI 1 (2008–10), VRI 2 (2011–13) and VRI 3 (2014–16). For each program period there was a program plan and a call for proposals that the applicants needed to respond on to get funding. The primary goal for VRI is “ . . . to encourage innovation, knowledge development, and added value through regional cooperation and a strengthened research and development effort within and for the regions”, i.e. it has an outspoken goal to change (improve) the ecosystem.

The regional partnerships apply for grants for their tailor-made regional VRI projects, where they are able to customize the project to regional challenges and needs. Importantly, the regions need to prioritize two or three industries or target areas which will be worked on during the program period. The call gives each region a list of tools to utilize to reach its objectives, and the possibility to develop new means. Examples of such tools are competence brokers (individuals initiating R&D projects in firms), network entrepreneurs (working with

developing triple helix networks) and recruitment of students (e.g. to write Master theses for firms). Hence, each regional project ends up being unique.

RCN requested the regions to work for gender balance in their projects, and they also had to report their efforts annually and for each three-year program period. RCN's understanding of gender balance has not been consistent during these periods. In VRI 1 gender balance was the goal (but introduced after the funding decisions were made), in VRI 2 diversity was the goal, and in VRI 3 gender balance was the goal again. The Norwegian gender equality policy (e.g. Action plan for more entrepreneurship among women, 2008) trickles down in the ecosystem and in this case ends up as gender balance in RCN and its demand on the VRI projects (Kvidal and Ljunggren, 2014). Hence, the gender balance requested by RCN was governed by political provisions and a wish to strengthen women's participation in economic ecosystems and gender-balanced participation at all levels of the ecosystem. The call in VRI 3 highlights gender balance and “. . . every actor in VRI should be aware of choices made on every level of the project and the effects for women and men and the understanding of innovation” (p. 14, translated). It should be noted that RCN requested measures to gain gender *balance*, not gender *equality*. These are two quite different aims and, while gender equality is difficult to reach without gender balance, gender balance will not automatically give gender equality.

## **METHOD**

For the purpose of this study, three regional ecosystems are analyzed: Agder, Hordaland and Trøndelag. These regions were strategically sampled, selecting one ecosystem that was *proactively* addressing the issue of gender balance (proactive), one ecosystem that *reacted* to the gender balance objective (reactive), and one ecosystem that started by reacting to the objective, but *gave up* during the process (drop-out) (see Alsos and Clausen, 2016). The Agder region in the south of Norway scores low on all gender equality statistics and is

regarded as proactive with regard to its attitude to gender balance. Agder has a diversity of businesses within manufacturing industries much related to oil technology and spin-offs of this. The Hordaland region in the west of Norway has a more diverse industry composition; however, Hordaland also relies on the oil industry, and is regarded as reactive with regard to its attitude to gender balance. The Trøndelag region in central Norway has a diverse industry structure, and is less dependent on the oil industry; it is regarded as drop-out, i.e. starting with good intentions but ending with less focus on gender balance. All three regions have universities as part of their ecosystems.

The analysis is based on document studies, in the following steps:

1. We analyzed proposals of the regional ecosystem development projects with a specific focus on planned initiatives related to gender balance.
2. We analyzed annual reports and end reports from the regional ecosystem development projects to map which activities were conducted and the reported results of these activities.
3. We analyzed proposals for the subsequent period regarding to which extent they considered feedback and learning from previous actions and results when planning new activities.

When analyzing the documents, we obtained an overview of the implementation of gender balance initiatives which were a response to the program requirements, how the requirements were transferred into plans and later to action in the regional project, as well as the results reported from these actions. Having longitudinal data since the first program period until the on-going period (see Box 10.1), we were able to examine how plans and actions are

influenced by previous results and how the potential learning from the evaluation of the implementation of initiatives from the first period affects the later periods.

### **BOX 10.1 OVERVIEW OF DATA**

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Application for regional innovation projects 2008–10 VRI 1 for Agder, Hordaland and Trøndelag

Application for regional innovation projects 2011–13 VRI 2 for Agder, Hordaland and Trøndelag

Application for regional innovation projects 2014–16 VRI 3 for Agder, Hordaland and Trøndelag

Yearly reports 2008, 2009, 2010, 2011, 2012, 2013 for Agder, Hordaland and Trøndelag

End reports 2010 (VRI 1), 2013 (VRI 2) for Agder, Hordaland and Trøndelag

Regional VRI action plans (2014–16) for gender equality for Agder, Hordaland and Trøndelag

Templates for reporting gender equality measures

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Data were analyzed in several steps by the researchers. In the first step, all documents were examined for the key words: women, gender, gender equality, men and diversity (diversity in VRI 2 only). All text fragments where these words appeared were pasted into documents with the analytical categories: (1) planned activities, (2) accomplished activities and (3) results/learning. These were organized chronologically. In the next step, we analyzed each region's actions as responses to the calls, what they reported and the consistency of their work. Next, we compared the implementation of gender balance measures and their learning.

### **DATA PRESENTATION AND ANALYSIS**

In this section we present what the VRI projects planned to do with regard to gender balance, their reported results in the different program periods, and lastly, how we interpret what they learned. The VRI regions organize their part of the ecosystem with a steering committee, a project team, a research group and a more undefined "VRI organization", all required to have at least 40 percent participation by women. In addition, they have a toolkit (e.g. competence

brokers, network entrepreneurs, women's networks and recruitment of students) which also should apply to the 40 percent requirement and which is reported under the "VRI organization" heading. Hence, the ecosystem development project has an organization and tools.

### **Head Counting in Annual Reports**

The template for the annual reports asked for the number of men and women in the different VRI organizational units. All three regions have an aim of reaching 40 percent women in the VRI organizational units, such as the steering committee, the research group etc. Forty percent is a measure of gender balance that is frequently used in different policy documents (e.g. Action plan for more entrepreneurship among women). Counting seems to be the easiest way to report gender balance.

<Insert Table 10.2 about here>

Looking at the annually reported numbers from 2008 to 2013 we find that in Agder the 40 percent goal is reached for the VRI project team and the whole VRI organization (see Table 10.2). The steering committee has increased the percentage of women while the research project virtually has no change. In Hordaland the percentage of women involved in the VRI projects has increased in three of the organizational units, but decreased quite substantially in the research group. The region that started out quite well, Trøndelag, has not been able to maintain the numbers, and the percentage of women has decreased in all organizational units except for the steering committee. Linking this to the components in the entrepreneurial ecosystem we see that the category representing the institutional actors of universities and research institutions actually has decreased its share of women researchers during the periods.

The “VRI organization”, which is a more undefined unit, shows no clear trend in the regions. The steering committees are composed of representatives of different stakeholders and it is difficult to gain a good gender balance as the stakeholder organizations appoint one representative each. However, the VRI project teams, which do not show any significant positive trend in their gender balance, are put together from the regions themselves and should be possible to be gender balanced.

### **Planned Gender-related Activities**

In this subsection we present the data on the planned gender-related activities throughout the VRI program periods in the three regions, i.e. what the regions stated in their proposals to RCN, see Table 10.3.

<Insert Table 10.3 about here>

Neither Agder nor Hordaland mentioned gender at all in their first VRI proposals. Agder had from the beginning almost a gender-balanced VRI organization. In VRI 2, Agder responded to the request for diversity by stating the gender balance in the VRI organization, but that the challenges lay in the gender imbalance in the regional labor market. All the way, Agder had directed efforts to support women’s participation; both strengthening women’s participation in innovation processes and aims directed to women in male dominated industries. For VRI 3, Agder continued to support women’s participation through networks and other means. In the future, it plans to stimulate experimental projects with non-traditional relations – without specifically stating what this implies.

Hordaland’s proposal for VRI 2 was poor on diversity. One heading in the proposal form was about diversity as a strategic advantage. The plan was to have more women in the

VRI organization, albeit the plan did not mention gender, and only stated that few women had been involved in VRI. Hordaland stated it would prioritize the involvement of more women when recruiting operatives and VRI steering committee members. By focusing on knowledge and technology companies, e.g. the MediARENA cluster project, it tried to reach businesses where both men and women to some extent are equally represented. Finally, it stated that it would report on “involved women”. In VRI 3, Hordaland focuses on improved innovation through strengthening relations between product and services, and thereby be able to reach industries employing more women and where women are leaders.

Trøndelag started its VRI 1 period by stating that it would have a gender *equality* perspective when it recruited students, referring to that women students are the majority in higher education, and that graduates are regarded to be a resource for businesses, research, education and public administration. The idea is that students should be offered to do their Master theses in co-operation with firms. It also wanted to prioritize the travel and experience industries and the food value chain, because innovation in these sectors would involve women, and especially women entrepreneurs. In VRI 2, diversity was a key word, and Trøndelag continued its commitment to the food value chain and travel and experience-based industries to increase the share of women in the program. Also it emphasized that two of its four competence brokers are women and that this would be “. . . used in a conscious way to increase the number of women owned firms participating in the innovation projects aimed at firms”. The VRI 3 application has an action plan for gender balance with two main areas: first it states that, by adjusting the reporting internally, it will have an overview of gender balance in the projects it approves grants to. Second, it will have “structured learnings activities” to increase the competence of gender equality when working with regional development, R&D-based value creations, student mobility etc.

According to the entrepreneurial ecosystem components, we see that Agder focuses on networks and participation in projects. Its network focus can be seen as a proactive effort to include women in the existing ecosystem. In contrast, Trøndelag and Hordaland seek to include new actors (other industries) in their present ecosystems to reach their goal. These are only a few of the tools “available”. In addition, we find that there is a lower share of women in the research group compared to other parts of the organization (Table 10.2). When Trøndelag focuses on the women competence brokers to increase the number of women-owned firms, it seems to be optimistic as women competence brokers are marginalized in a biased ecosystem and they are engaged to do a difficult job.

#### **The Regions’ Reported Activities**

In this subsection we present the data on the reported initiatives on gender balance and diversity in the three regions, see Table 10.4.

<Insert Table 10.4 about here>

Agder reported good gender balance in the steering committee and the operative units in VRI, with more than 40 percent women. The challenges emanated from the imbalance in the businesses in the region. To meet this challenge, it supported networks and other activities aimed at women, e.g. Women in business, and Girls and technology at the University of Agder. The VRI projects also reported a better understanding of the lack of gender balance in the priority industries. In VRI 1, Agder reported that one of the priority industries was highly dominated by men, which caused challenges for gender balance in its VRI project. In VRI 1, Agder launched projects to recruit women to male-dominated education and projects to make



them stay in the companies. It reported a broad collaboration and agreement among stakeholders that gender equality had to be improved. In annual reports for VRI 2, Agder reported a gender balanced VRI organization. In every priority industry, it reported collaboration projects with the aim of women participating in innovation processes (3 in 2011, 8 in 2012, not reported in 2013). It had conducted an analysis of problems related to gender imbalance in male-dominated businesses. It had also managed to involve women in projects in male-dominated businesses, and related this to prior networking among women in these businesses. One cluster initiative in the region had been used to improve women's participation in innovation processes. Hence, it used many tools and tried to impact the business actors in the ecosystem.

The annual report for Hordaland in 2008 reported a continuous focus on changes to improve gender balance. More concretely this implies "improve[ment of] gender balance with and for future development and recruitment to VRI Hordaland's programs and projects." Its focus in VRI 1 and VRI 2 was to gain gender balance in the steering committee and it explains why some of the women have not been present all the time. By reorganizing the steering committee it achieved gender balance. In 2012, it reported on improvements in the operative units but not in the research project. It reported that it had failed to reach more women in the companies, because men took part in the collaboration processes. This experience is a good example of different effects depending on what is targeted in the projects. When it directed the effort to the industry, it is difficult to reach the women. Further, it reported one activity – "How do they get it?" – a seminar for female entrepreneurs. In addition, it stated it would keep contact with the "Maritime forum" which has "a female focus" implying that the forum is aware that they engage few women. In 2013, it hoped to involve more women from the companies that are linked to the cluster project. For the VRI 2 period, it reported on stimulating women's participation in VRI activities and projects to

ensure at least 40 percent representation of women. In Hordaland we see less effort to impact the ecosystems' businesses and more efforts to comply with the RCN requirements of a gender-balanced VRI organization which ultimately will have limited effect on the development of the entrepreneurial ecosystem.

In Trøndelag the first annual report (in 2008) follows the template for reporting, but it says nothing about its student mobilization. The report is only about the VRI steering committee and counting women. In 2009, the counting is reported and it is said that "Common for all areas is that gender balance has to be considered always". But, it adds: ". . . it is also necessary to have balance geographically, in industry participation, and among businesses and R&D-actors and public actors and regional actors." It also requests the innovation fora to nominate women. Hence, RCN's reporting "regime" fails to record actual efforts. We also see that Trøndelag eventually gives gender balance a lower priority and focuses on the ecosystem actors it believes will contribute to the overall project goals.

Ecosystems already exist in the regions where the established firms take part. Their participation is strengthened by the chosen target areas/industries. Looking at the components in the entrepreneurial ecosystem, a few components are utilized by the regions. The entrepreneurs and entrepreneurial firms are given little attention while the more established firms are included. The R&D institutions are included in the research projects, but they neither manage to get women researchers in the projects to strengthen the balance, nor do they contribute to gender equality or produce relevant knowledge to solve the gender imbalance. Network activity is a means both Agder and Trøndelag apply. Regarding the infrastructure components, they are not adopted in the projects; however, with some benevolence, the higher awareness of gender imbalance in the regions could be seen as a step forward towards cultural change which can nourish a gender equality objective in the ecosystems. Agder is the only region that involves women in networks and projects and thereby contributes to gender

balance and gender equality by giving women access to the ecosystem. Agder lets women into the existing ecosystem, which can explain why Agder appears as proactive compared to the two other regions.

#### **What the Regions Learned from the VRI Projects**

In both applications and reports, we can trace some learning in the regions (cf. Table 10.5).

This is primarily a combination of the regions' increased awareness of gender imbalance and how to address it.

<Insert Table 10.5 about here>

In VRI 1, Agder was well aware of the unbalanced working life and for the first two periods, it had been very conscious to support networks that mobilize women to take part in innovation processes, i.e. become part of the entrepreneurial ecosystems. In VRI 2, Agder reinforced this by focusing on women's participation in some of the collaboration projects. In VRI 3, the region realized that it needed more knowledge and it investigated gender imbalance in its prioritized industries. Thereby Agder adopted more knowledge-based initiatives, and in our interpretation reached a higher level of insight on how much gender impacts innovation initiatives. Hordaland shows a low awareness of gender in VRI 1. The region is exposed to gender balance demand in the annual report template and ended up focusing on the number of women and men in the VRI organization. In VRI 2, the region included a new industry that it believed would improve the gender balance. In VRI 3, it became aware that the new priority industries did not improve women's participation and included two new industries. Hordaland asked for more knowledge on gender. It did not manage to increase the number of women in

its entrepreneurial ecosystem, and eventually “threw in the towel” realizing it does not have the competence to improve the gender balance in the entrepreneurial ecosystem.

Trøndelag had both focus on its VRI organization and the gender balance in its priority industries. Even though Trøndelag experienced that its prioritized industry “food value chain” does not involve many women, the region continued to prioritize it with the argument that it would provide gender balance. The Trøndelag VRI project mentions learning as important, but still it is not able to adjust when it discovers that the “food value chain” does not bring more women into the project.

Barrett (2004) sees policy implementation as a process which is influenced by the actors involved. The process is based on evaluation and then improvement of how the policy works. This underlines the importance of learning and improvement which can be traced in all three regions. Even if we detect learning in the three regions, the analysis also shows that it takes time to implement changes and the policy intervention initiated by RCN is not strong enough to create radical changes and transformations. However, the recognition for the need for more competence can be seen as a will to work actively to strive for gender balance.

### **Comparison of the Regions**

Even if the VRI projects in the regions are customized to their regional challenges, we can find some overarching structures in how they relate to the implementation of gender balance.

Agder had an almost gender-balanced organization at the beginning of VRI 1 and was well aware of the unbalanced working life in the region. This led to a focus on involving women in the innovation processes through networking, and thereby getting more women into the entrepreneurial ecosystem.

Hordaland had a more narrow perspective of gender balance. Its focus was on the share of women on the steering committee and the operative units, which does not necessarily result in more women in the ecosystem. When it reorganized in VRI 2 to have a balanced steering committee, it enlarged its focus to involve women in companies and particular activities directed towards women. In VRI 2, it started to expand its focus outside the VRI organization and involved new priority industries, which it anticipated would employ women. If successful, this could improve the gender balance in the long run.

Trøndelag had focus on students in the beginning, but this seemed to disappear during VRI 1 and it followed the request of 'head counting' in the annual reports. To reach gender balance it chose to rely on the prioritized food value chain which is supported by means as network entrepreneurs and competence brokers. In VRI 3, it came to the insight that to reach the gender balance goals it needed more knowledge on gender issues and it plans learning activities to increase its competence.

Agder and Hordaland followed a path from focusing on gender balance in the VRI organization, to later including gender balance in companies involved in the program, but at different phases in the project. Trøndelag started out well with the focus on gender balance among students, but changed and probably lost some awareness of gender when it focused on a food value chain to solve the gender balance. Hordaland used a similar strategy to reach gender balance when it introduced new priority industries. Trøndelag with its learning activities and Agder with its investigation of gender balance show that the regions need more insight and competence to reach the gender balance goal. Hordaland states that it is difficult to improve gender balance, but has not yet realized its need for more competence. When realizing it lacks competence this spurs it further in the terms of policy learning, where evaluation and improvement are based on evidence of how well the implemented policy works (Sanderson, 2002).

## DISCUSSION AND CONCLUSIONS

In summary, there has been little development in the regional entrepreneurial ecosystems towards gender balance despite relatively high ambitions, planned gender initiatives, activities and demand on reporting these. We find that the regions use few tools, and thereby gain little effect. We also find some learning but at a superficial level. The learning can be traced when we compare the VRI 1, VRI 2 and VRI 3 project proposals. The understanding of what gender could imply for innovation has developed and become more complex during the VRI projects. While the first attempts to gain gender balance were quite simplistic and had little or few serious efforts, the latter show a more profound understanding of the challenges the regions face. Comparing Agder, Hordaland and Trøndelag we find that their starting points were quite different. Agder and Trøndelag ended up asking for more competence on gender balance while Hordaland is lagging behind, stating that it is difficult to improve gender balance in companies.

Further, the effect of the gender requirements introduced in the regional entrepreneurial ecosystems is an increased awareness of gender imbalance in the public part of the entrepreneurial ecosystem, but there seems to be little interest in the business sector to make any significant changes, at least as a consequence of VRI initiatives.

The calls from RCN have been changing over the program period, from gender balance to diversity and back to gender balance. This incongruence, together with that the request for gender came after the first VRI 1 applications were granted, made the policy implementation in the regional VRI projects challenging. Also, the gender balance demand does not mirror the policy gap it aims to close, and neither does it help the regions to close their gender gap. There is an unarticulated idea in the RCN that gender balance leads to

gender equality, and – although these are not cause and effect – gender balance *can* pave the ground for gender equality.

Further, the calls and especially the template for annual reports made the VRI projects focus on counting to visualize gender balance in the project and thereby concealed the efforts they made to reach more gender-balanced innovation activities, as these activities were not actually recorded in the reports. Hence, the regions chose the path of least resistance when reporting, i.e. they applied the template from RCN. The ‘head counting’ demand in the reporting might also inhibit work to achieve gender balance because it circumvents further discussions and negotiations about the implementation of gender balance. Still, we find the beginning to this discussion in Trøndelag where gender is set against geographic interests, industry participation, businesses and R&D actors, and public and regional actors – and where gender has to give way to these “more important” interests.

RCN demanded a focus on women’s participation, which implies that gender is all about involving more women. Perhaps not that surprisingly as women are the “missing link” in the entrepreneurial ecosystems, or, as Kvidal-Røvik and Ljunggren (2016) pinpoint, women are missing in the systems and, therefore, wanted. Policy interventions as seen in the VRI program are not enough to make changes towards gender equality due to two reasons. First, the policy is unclear. The second is the inertia (Autio, 2015) of the regional entrepreneurial ecosystem. Autio (2015) put forward four key postulates for effective ecosystem policy and the VRI program fails on at least three of the requirements: (1) it is not bottom-up; (2) it has limited engagement from the stakeholders, and (3) it is not able to build sufficient collective impact through commitment and mutual awareness among the stakeholders. Regarding multipolar coordination, the VRI regions try to facilitate those.

We find tools in the VRI projects that aimed to develop the regional entrepreneurial ecosystem and the knowledge of these and the utilization varies substantially between the three regions in this study. However, they all have an existing ecosystem and in line with Gray and James's (2007) findings, we argue that gender inequality within the ecosystem constrains women's possibilities to contribute to value creation – and thereby to wealth creation in the regions. As ecosystems are relationally governed (Pitelis, 2012), women have to be let in and take part in the relations to be able to influence the system.

Analyzing the policy implementation we find little coherence between policy goals, activities carried out and the reporting regime. The ecosystem approach makes it possible to focus on different levels of the ecosystem, e.g. the industry, firm and individual levels. Applying the ecosystem levels we find that the innovation policy is carried out at the industry and firm levels, e.g. by building and supporting triple helices (systems), while the individual level is related to the counting of women and men. Hence, there are few efforts to let the women take part in the ecosystem. Instead, counting becomes the main "activity". The focus on gender balance has a tendency to be counterproductive when gender balance in the steering committee becomes the main goal for the regions, as achievement of fair gender balance in the steering committee then gives the impression that the goal is fulfilled and no further action is needed.

Is it possible to change entrepreneurial ecosystems in terms of gender equality? Concluding from our research, it is necessary to take broader action and put more components in use than the VRI program has done. The VRI program seems to constrain the regions' gender balance ambitions by unclear order and a strong focus on counting in annual reports. Our conclusion is that it is demanding by only one policy effort to ensure an economic ecosystem suitable for women. Here we follow Alsos et al. (2011) who identify that gender equality in business life needs to be supported by gender equality policies in other policy



domains as well. Gender balance does not automatically render gender equality, so more tools need to be applied to achieve gender equality. This is something that policy makers around the world should keep in mind when designing policy initiatives. However, policy makers should address gender equality or gender balance as it is necessary to bring attention to the issue. Attention alone does not ensure change. Hence, toolboxes on how to achieve goals should follow demands on gender balance. In fact, research has shown that the rationale for gender balance or gender equality needs to be explicitly stated for the stakeholders as this will enable them to better adopt the idea (Kvidal and Ljunggren, 2014).

To extend this research, studies on other gender balance policy initiatives should be carried out both in similar fields (i.e. innovation and business) but also other contextual fields, including policy to improve gender balance in fields dominated by women. In addition, it would be helpful to study gender balance demands in other cultural contexts.

We conclude that it is challenging for an ecosystem policy to embrace gender equality and contribute to create entrepreneurial ecosystems which promote and equally support men and women's entrepreneurial activities. The challenge partly lies in that the issue of gender equality often by the ecosystem actors are seen as not serving the main goals of the ecosystems, sometimes also as contradicting these goals. Further, as ecosystems are relational rather than hierarchical, top-down initiatives that are not fully supported by the internal actors, tend to receive too little attention to give substantial effect. However, the findings from this study indicate that policy can help increasing the acknowledgement of the gender equality issue within ecosystems. Hence, it is necessary to continue to work for gender balance and gender equality to ensure entrepreneurial ecosystems that utilize individuals' resources irrespective of gender and thereby can fulfill societal goals on welfare development.

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## REFERENCES

- Aidis, R., Weeks, J. and Anacker, K. (2015), *The Global Women Entrepreneur Leaders Scorecard 2015: From Awareness to Action, Executive Report*, ACG Inc.
- Aldrich, H.E. and Martinez, M.A. (2001), 'Many are called but few are chosen: An evolutionary perspective for the study of entrepreneurship', *Entrepreneurship Theory and Practice*, **25** (4), 41–56.
- Alsos, G.A. and Clausen, T.H. (2016), 'Inclusion of women in entrepreneurial ecosystems: The influence of gender mainstreaming policy', Working Paper, Nord University, Norway
- Alsos, G.A., Jensen, R. and Ljunggren, E. (2011), 'Gender and entrepreneurship: Revealing constructions and underlying processes. The case of Norway', in C.G. Brush, E.J. Gatewood, A. de Bruin and C. Henry (eds), *Women's Entrepreneurship and Growth Influences: An International Perspective*, Cheltenham: Edward Elgar.
- Alsos, G.A., Ljunggren, E. and Hytti, U. (2013), 'Gender and innovation: State of the art and a research agenda', *International Journal of Gender and Entrepreneurship*, **5**(3), 236–56.
- Autio E. (2015), 'Managing entrepreneurial ecosystems', accessed 14 February 2017 at <https://www.linkedin.com/pulse/managing-entrepreneurial-ecosystems-erkko-autio>.
- Barrett, S.M. (2004), 'Implementation studies: Time for a revival? Personal reflections on 20 years of implementation studies', *Public Administration*, **82** (2), 249–62.
- Bennett, C.J. and Howlett, M. (1992), 'The lessons of learning: Reconciling theories of policy learning and policy change', *Policy Sciences*, **25**(3), 275–94.
- Berg, N.G. (1997), 'Gender, place and entrepreneurship', *Entrepreneurship and Regional Development*, **9** (3), 259–68.
- Blake, M.K. and Hanson, S. (2005), 'Rethinking innovation: context and gender', *Environment and Planning A*, **37** (4), 681–701.
- Brush, C.G., Carter, N.M., Greene, P.G., Hart, M. and Gatewood, E. (2002), 'The role of social capital and gender in linking financial suppliers and entrepreneurial firms: A framework for future research', *Venture Capital* **4** (4), 305–23.
- Busolt, U. and Kugele, K. (2009), 'The gender innovation and research productivity gap in Europe', *International Journal of Innovation and Sustainable Development*, **4** (2–3), 109–22.
- Fagerberg, J. (2003), 'Schumpeter and the revival of evolutionary economics: an appraisal of the literature', *Journal of Evolutionary Economics*, **13** (2), 125–59.
- Feld, B. (2012), *Startup Communities: Building an Entrepreneurial Ecosystem in Your City*, Hoboken, NJ: John Wiley & Sons.
- Feldman, M.P. (2014), 'The character of innovative places: entrepreneurial strategy, economic development, and prosperity', *Small Business Economics*, **43** (1), 9–20.

- Gray, M. and James, A. (2007), 'Connecting gender and economic competitiveness: Lessons from Cambridge's high-tech regional economy', *Environment and Planning A*, **39**, 417–36.
- Harrison, R.T. and Leitch, C. (2010), 'Voodoo institution or entrepreneurial university? Spin-off companies, the entrepreneurial system and regional development in the UK', *Regional Studies*, **44** (9), 1241–62.
- Kelley, D., Brush, C., Greene, P., Herrington, M., Ali, A. and Kew, P. (2015), *The Global Entrepreneurship Monitor Women's Report*, Babson College, Wellesley, MA.
- Kochenkova, A., Giuri, P., Grimaldi, R. and Munari, F. (2015), 'The effect of university-level support policies on female participation in academic patenting', paper presented at Druid15, 15–17 June, Rome, Italy.
- Kvidal, T. and Ljunggren, E. (2014), 'Introducing gender in a policy programme: A multi-level analysis of an innovation policy programme', *Environment and Planning C: Government and Policy*, **32** (1), 39–53.
- Kvidal-Røvik, T. and Ljunggren, B. (2016), 'Governing gendered understandings of innovation: A discourse analysis of a national innovation policy programme', in G.A. Alsos, U. Hytti and E. Ljunggren (eds), *The Research Handbook on Gender and Innovation*. Cheltenham: Edward Elgar.
- Lindberg, M., Lindgren, M. and Packendorff, J. (2014), 'Quadruple Helix as a way to bridge the gender gap in entrepreneurship: the case of an innovation system project in the Baltic Sea region', *Journal of the Knowledge Economy*, **5** (1), 94–113.
- Marlow, S. and McAdam, M. (2012), 'Analyzing the influence of gender upon high-technology venturing within the context of business incubation', *Entrepreneurship Theory and Practice*, **36** (4), 655–76.
- Mytelka, L.K. and Smith, K. (2002), 'Policy learning and innovation theory: an interactive and co-evolving process', *Research Policy*, **31** (8–9), 1467–79.
- Nählinder, J., Tillmar, M. and Wigren-Kristoferson, C. (2012), 'Are female and male entrepreneurs equally innovative? Reducing the gender bias of operationalisations and industries studied', in S. Andersson, K. Berglund, E. Gunnarsson and E. Sundin (eds), *Promoting Innovation – Policies, Practices and Procedures*, Stockholm: VINNOVA.
- Neck H.M., Meyer, G.D., Cohen, B. and Corbett, A. (2004), 'An entrepreneurial system view of new venture creation', *Journal of Small Business Management*, **42** (2), 190–208.
- Petterson, K. (2007), *Men and Male as the Norm? – A Gender Perspective on Innovation Policies in Denmark, Finland and Sweden*, Stockholm: Nordregio.
- Pitelis, C. (2012), 'Clusters, entrepreneurial ecosystem co-creation, and appropriability: a conceptual framework', *Industrial and Corporate Change*, **21**, 1359–88.
- Ranga, M. and Etzkowitz, H. (2010), 'Athena in the world of techne: The gender dimension of technology, innovation and entrepreneurship', *Journal of Technology Management and Innovation*, **5** (1), 1–12.
- Saetren, H. (2014), 'Implementing the third generation research paradigm in policy implementation research: An empirical assessment', *Public Policy and Administration*, **29**, 84–105.
- Salamonsen, K. (2015), 'The effects of exogenous shocks on the development of regional innovation systems', *European Planning Studies*, **23** (9), 1–26.
- Sanderson, I. (2002), 'Evaluation, policy learning and evidence-based policy making', *Public Administration*, **80** (1), 1–22.
- Simmie, J. and Martin, R. (2010), 'The economic resilience of regions: towards an evolutionary approach', *Cambridge Journal of Regions, Economy and Society*, **3**(1), 27–43.

- Spigel, B. (2015), 'The relational organization of entrepreneurial ecosystems', *Entrepreneurship Theory and Practice*, **41** (1), 49–72.
- Spilling, O.R. (1996), 'The entrepreneurial system: On entrepreneurship in the context of a mega-event', *Journal of Business Research*, **36**, 91–103.
- Stam, E. (2015), 'Entrepreneurial ecosystems and regional policy: A sympathetic critique', *European Planning Studies*, **23** (9), 1759–69.
- Teigen, M. (2000), 'The affirmative action controversy', *Nora: Nordic Journal of Women's Studies*, **8** (2), 63–77.
- Teigen, M. (2012), 'Gender quotas on corporate boards: On the diffusion of a distinct national policy reform', *Comparative Social Research*, **29**, 115–46.
- Terjesen, S., Sealy, R. and Singh, V. (2009), 'Women directors on corporate boards: A review and research agenda', *Corporate Governance: An International Review*, **17** (3), 320–37.
- Warwick, K. (2013), 'Beyond industrial policy: emerging issues and new trends', *OECD Science, Technology and Industry Policy Papers*.

**Table 10.1 Ecosystem components**

<i>Actors</i>	Entrepreneurs and entrepreneurial firms Established firms and larger corporations Universities and research institutions Professional services Governmental bodies
<i>Networks and interactions</i>	Informal networks Formal networks Arenas for interaction (conferences, meetings, forums)
<i>Infrastructure</i>	Knowledge infrastructure Physical infrastructure Financial infrastructure Culture

**Table 10.2 Reported head counting during the period: percentage of women**

	2008	2009	2010	2011	2012	2013
<i>Agder</i>						
Steering Committee	27	33	40	33	25	38
VRI project team	50	75	50	75	67	50
Research Group	36	20	20	22	22	33
VRI organization	31	35	38	41	36	44
<i>Hordaland</i>						
Steering Committee	30	33	30	67	75	66
VRI project team	11	11	33	57	57	33
Research Group	50	66	0	0	0	33
VRI organization	23	22	32	28	42	43
<i>Trøndelag</i>						
Steering Committee	36	36	29	32	39	41
VRI project team	33	29	29	43	50	29
Research Group		0/57		42	42	20
VRI organization	NA	42		33	37	33

**Table 10.3 Planned gender-balance activities**

	VRI 1	VRI 2	VRI 3
Agder	None planned	Support women's networks and use networks to stimulate women participation	Support networks and activities directed at women Means as projects, network, dialogue and participation to improve gender balance
Hordaland	None planned	Recruit women to VRI organization Knowledge and technology firms should be given attention – MediARENA Number of women as an indicator for activities	Get more women-led firms to participate in R&D-based innovation processes DesignARENA and focus on the districts is a potential to involve more women Listing numeric goals for VRI organization and activities
Trøndelag	Recruiting of students	Listing numeric goals for steering committees. Very focused on a 40% gender balance.	Listing numeric goals for steering committees. Very focused on a 40% gender balance. Also mentioning the food value chain as a potential source for gender balance and diversity

**Table 10.4 Reported activities, VRI 3 excluded as this is still on-going**

	VRI 1	VRI 2
Agder	Supported women network projects outside VRI that already existed Activities aim at recruiting women to male educations and staying in male-dominated industries VRI organization is balanced	VRI organization is balanced Collaboration projects with the aim of women participating in innovation processes Analyses of well-educated women in male-dominated industries Granted mentoring for women
Hordaland	Trying to recruit women to VRI organization	A seminar for women entrepreneurs and dialogue with Maritime forum
Trøndelag	Reporting only on head counting in steering committees	A conference and co-operation with other VRI regions in addition to the 40% goals

**Table 10.5 The VRI projects' learning**

	VRI 1	VRI 2	VRI 3
Agder	"We have large challenges in our region." Networks are effective to mobilize women	Unbalanced work life Networking prior to women's participation in projects	Investigations of gender imbalance gives input to improve gender balance
Hordaland	Low level of women involved in VRI organization	A better gender balance in the steering committee. Difficult to increase the number of women by including media as an industry, in spite of employing many women.	Difficult to get gender balance when working with firms
Trøndelag	Focusing on competence brokers and network entrepreneurs. Value chain food not as women-dominated as assumed.	Not learning: In spite of value chain for food not dominated by women, this is still an industry listed as prioritized due to its women.	In spite of value chain for food not dominated by women, this is still an industry listed as prioritized due to gender balance and diversity, but also more focus on this being a demanding task