

A first exploration regarding gender segregated green entrepreneurship in Norrbotten and indications of theory that might be of interest.

A RESEARCH REPORT FOR THE INTERREG GENGREEN PROJECT

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ABSTRACT

The GENGREEN project's main objective is to develop a cross-border recognized program for green entrepreneurial training directed to women. This is a first report on the Status of (Gender segregated) Green Entrepreneurship from the Swedish Partner Luleå University of Technology. About 3 500 women in Norrbotten may be counted as entrepreneurs. This would cover business owners in executive positions and self-employment. One topic of interest concerns the percentage of women entrepreneurs at regional level, who focus on sustainable/green activities. No data or estimation that can shed light on this could be identified. Regarding Norrbotten's "Green transitions", the current trend is investments in heavy industry that generate entrepreneurial opportunities in male dominated branches. Relevant training and applicable formal education for green women entrepreneurs are offered by among other, ALMI and Luleå University of Technology.

INTRODUCTION

GENGREEN is a project co-funded by EU through the Interreg Aurora Application call: 3.1 Education and lifelong learning. The Application id is 437622 and the Case id is 20361784. As stated in the funding application "The project's main objective is to develop a cross-border recognized program for green entrepreneurial training directed to women (including women belonging to minority communities, immigrants, elderly) organized in cross-border living labs and online learning platforms based on professional mentoring, sharing of best practices and various online and live events."

The project description part of the GENGREEN funding application includes as part of Task 1.1 a "report on the Status of (Gender segregated) Green Entrepreneurship in the 5 regions". The coordinator asked that a set of questions be considered. Also, the Partners were encouraged to contribute to building the theoretical framework.

This document contains the response and contributions from the Swedish GENGREEN Partner Luleå University of Technology, and it covers Norrbotten. One section covers the facts exploration – it includes some references to and results from earlier research. Thereafter follows an outlook on theory on green entrepreneurship that appears fruitful to combine with earlier research on women in innovation, entrepreneurship and specifically in the Arctic economy. But first a few words about the term "entrepreneur".

THE TERM "ENTREPRENEUR" AND GENERAL TERMINOLOGY

The term entrepreneur is not routinely operationalized in general statistics. As working definition, we have for this exploration first used data sorted by the term "operativ företagsledare" as defined in statistics published by The Swedish Agency for Economic and Regional Growth. In English the corresponding term would be approximately "operational executive". "Self-employment" is another term that is sometimes used. We also fetched statistics from Regionfakta (Regional Facts, owned by the Swedish regions and municipalities) where companies are sorted by legal classification: "Joint stock" (Swedish: AB/ Aktiebolag) or "Other". Note that the data on operational executives and joint stock companies concerns companies. One person can lead/own more than one.

FACTS FINDING

The GENGREEN coordinator asked the following questions and topics to be addressed:

- A. *How many female entrepreneurs are there at national level?*
- B. *How many of them are there in Norrbotten?*
- C. *What are their main fields of employment (at national and regional level)?*
- D. *What is their percentage focusing on sustainable/green activities at regional level?*
- E. *Identification of key factors in female entrepreneurship: what is the current status of access to finance, clusters and networks, policies and incentives (data collection at national and regional level)*
- F. *Role of education in female entrepreneurship: which is the educational offer at national and regional level? (i.e. training on (Green) entrepreneurship provided by universities and other organizations, incubators)*
- G. *Info on the role of personal motivation in becoming entrepreneur (if data are available)*
- H. *Identifying factors that hinder or facilitate female green entrepreneurship in Sweden.*
- I. *Are there Swedish female green companies working across the borders? If yes, what do they do?*

A,B & C. NUMBER OF FEMALE ENTREPRENEURS AND MAIN FIELDS OF EMPLOYMENT

Unit	Number of "women entrepreneurs" approximated by "operational executive" as counted in Tillväxtverket's statistics, 2020
Sweden (total)	166 206
Sweden (main fields of employment)	1. Personal and Cultural Services etc. 38 093 2. Business Services 35 914 3. Unknown Industry 16 980 4. Agriculture, Forestry, and Fishing 15 688 5. Trade 15 330 6. Human Health and Social Work activities 11 249
Norrbotten (total)	3 859

Norrbottnen (main fields of employment)	1. Agriculture, Forestry, and Fishing 859 2. Personal and Cultural Services etc. 818 3. Business Services 515 4. Unknown Industry 450 5. Trade 323 6. Human Health and Long-term care: social work activities 210
Unit	"Female Entrepreneurs" approximated with number of companies led by women. Source: Regionfakta, 2021. (Note that one person can lead more than one company)
Norrbottnen (total)	Total: 3 429 Joint stock: 931 Other : 2498
Norrbottnen (main field of activity)	1. Agriculture, Forestry, and Fishing 807 2. Personal and Cultural Services etc. 671 3. Business Services 503
Unit	Statistics Sweden: 5 most common occupations for gainfully employed self-employed women aged 16-74, year 2022.
Sweden	Forestry 9 470 Hairdressers 7 740 Mixed crop and livestock producers 5 200 Cleaners 2 880 Sales store managers and department managers in stores 2 590

Figure 1. Table showing numbers of female entrepreneurs and major fields of employment.

The questions answered in the table above are: How many female entrepreneurs are there at national level? How many of them are there in Norrbotten? What are their main fields of employment?

Using as proxy "operational executive" for the term entrepreneur (Swe: operativ företag-ledare) answers are available in the statistics published by Tillväxtverket – The Swedish Agency for Economic and Regional Growth (tillvaxtverket.opfl.scb.se). Finally, some figures on self-employment from Statistics Sweden.

D. PERCENTAGE FOCUSING ON SUSTAINABLE/GREEN ACTIVITIES

One topic of interest concerns the percentage of women entrepreneurs at regional level, who focus on sustainable/green activities. No published data set or estimation that can shed light on this could be identified. Besides trying with regular search engine routines, we talked with people and offices that are likely to know about data compilations, if there are any. This includes conversations with staff at Region Norrbotten's Business and Society Unit, the Quality Strategist for Gender Equality at Luleå municipality Dr. *Eira Andersson*, and *Malin Malmström*, Professor in Entrepreneurship and Innovation at Luleå University of Technology and PhD candidate *Linda Hällerstrand* at the same unit, and others.

It may be possible to so to speak "manually" develop data sets together with regional organizations working with SMEs, like ALMI (that we have spoken with) and perhaps Nyföretagarcentrum (tip from ALMI), and also from municipality offices. For now, we can only conclude that such initiatives would be regarded as research which requires ethical approval, and thus go beyond the scope of GENGREEN as such. Additional resources would also be needed to develop criteria for validity etc. The ambition

may be taken further in other actions, though. Professor Malmström who is known for, among other, research on gender bias in risk capital access, found the topic interesting and we talked about possible funding sources and how to set up criteria for future investigations, especially about manners for producing comparable data sets from statistics and registers.

E. KEY FACTORS SUCH AS ACCESS TO FINANCE. SWEDEN AND NORRBOTTEN

For a general appraisal of the conditions for female business owners, entrepreneurs and innovators we can, based on previous research, state that gender bias has been observed in:

- a) *Access to capital (see for instance Antretter et al 2020; Johansson et al 2021; Malmström et al 2020, 2023).*
- b) *Public funding of research and innovation, and of private-public partnerships (see for instance Lindberg 2016, 2018a, 2018b; Lindberg & Johansson, 2017; Pettersson & Lindberg 2013).*

Norrbottn's population is about 2-2,5 % of Sweden's total population. Therefore, there is no chance that particular conditions in Norrbotten, would there be any, will show in statistics over Sweden. Thus, it cannot be assumed that national statistics, or investigations made at a general "Swedish" level are representative for the Norrbotten case. Yet, capital access and other structures for resource acquisition, permits and licenses etc., are the same in Norrbotten as Sweden at large. On that ground one can assume that the conditions often are similar for women entrepreneurs in Norrbotten and other parts of Sweden.

A comment regarding Norrbotten's contemporary situation, the current so-called "Green Transition"¹ involves very large investments in heavy industry that generate entrepreneurial opportunities in male dominated branches such as building and construction, transportation and similar, related to the construction and operations of new, large production facilities such as Hybrit, H2 Green Steel and other. For instance, in Boden where the H2 Green Steel plant is being prepared, it apparently is more or less impossible to find a contractor with an excavator available for other, smaller projects. A risk is that when male dominated local branches get incomes from the green transition process, the voices from female dominated branches are less listened to.

F. EDUCATION IN FEMALE ENTREPRENEURSHIP

In EU and according to Swedish legislation gender discrimination is prohibited. Thus, training is not offered where the formal criteria prohibit participation of a particular gender. Nonetheless, initiatives to promote interest among the underrepresented sex to start businesses may include educational or training activities.

The training available in Norrbotten includes information and expert advice provided at interest group meetings, social media and other physical and digital platforms connected to the civil society or business networks. There is also a state owned actor, Almi. From the Almi web page: "Almi AB is owned by the state and is the parent

¹ According to the European Commission, climate change and environmental degradation are an existential threat to the European Union and to the world. The term "Green transition" is used by the European Commission and others to highlight the notion of an industrial transition to counter these threats.

company of a group with 16 regional subsidiaries and the sub-group Almi Invest. The regional subsidiaries are 51 per cent owned by the parent company and 49 per cent by regional owners and offer loans and business development."

Interest organizations/ civil society actors include for instance Coompanion. They provide support and training for cooperative businesses. From their web page: "Coompanion Sweden is a national umbrella organization, a cooperative where all regional Coompanion are members. The Coompanion regions are also cooperative enterprises."

Regional authorities, Region Norrbotten and other, take part in and lead projects including co-funded by EU, that include training. Examples of recent initiatives (ended 2022) were Grude – Green Rural Economy and “Vägar till hållbar utveckling” [Eng: Roads to sustainable development].

Formal education includes university courses and so-called MOOCs. At Luleå University of Technology, we have observed an interest from professionals and entrepreneurs in among other the 7.5 ECTS Internet based courses "Design, gender and aesthetics", "Innovation, gender and sustainable development", "Knowledge-based gender equality efforts in organizations and society" and "Gender studies perspectives on engineering science and the technology concept". MOOCs are also offered in subjects such as: Hydrogen for sustainable solutions, Planning for project success, Business models for new entrepreneurs, Sustainable business. Notably, all courses mentioned are given on-line and are open for students without regional or national constraints. There is no study that has analyzed gender, occupation and residential data of the participants (for instance, if it is a female entrepreneur in Norrbotten who takes the course).

G. INFO ON THE ROLE OF PERSONAL MOTIVATION IN BECOMING ENTREPRENEUR

We have not been able to identify a study that shows specifically the role of motivation among female entrepreneurs in Norrbotten. As ingoing value for GENGREEN we must assume that the motivational factors are the same as has been discussed in international studies and research literature. If differences in business areas mirror motivational differences, it can be noted that the agricultural sector is "larger" among female business owners in Norrbotten as compared to Swedish figures at large. But that it makes a difference would be a hypothesis, it is not investigated if it is valid.

H. KEY FACTORS THAT HINDER OR FACILITATE FEMALE GREEN ENTREPRENEURSHIP

Regarding factors that hinder or facilitate green entrepreneurship among women in Norrbotten, it is expected that the challenges are covered under point e. Facilitation is to some degree covered under point f

I. SWEDISH FEMALE GREEN COMPANIES WORKING ACROSS THE BORDERS

Regarding Swedish female green companies working across the borders, we can, at this early stage, refer to the Sámi community. We expect to learn about more surroundings along the way; it is just that our recent work in cross-border projects have been devel-

oped in Sámi and reindeer husbandry environments. Thus, this is the sector we know. The Interreg North Sápmi project RenResurs is one example. The complete name of the project was “Resurspool för entreprenörskap inom rennäringen med binäringar: Kvalitet i slakt och styckning”. The project's main goal was to complete and offer a well-functioning and pedagogically innovative cross-border course package for reindeer slaughter, with SMEs as target group and with structured quality validation. One of the aims was to include green practices such as re-introducing traditional cutting and processing. Initiators were *Annelie Päiviö* and *Kerstin Kemlén* at Sápmi Innovation AB from Sweden and Dr. *Kirsi Muuttoranta* at Lapin Ammattikorkeakoulu from Finland. LTU, Prof. *Maria Udén*, was coordinator.

A SUGGESTION FOR THE GENGREEN THEORETICAL FRAMEWORK: THE PAPER “BECOMING A GREEN ENTREPRENEUR”

A suggestion for the GENGREEN theoretical framework is the article *Becoming a green entrepreneur: An advanced entrepreneurial cognition model based on a practiced-based approach* by Séverine Le Loarne Lemaire, Meriam Razgallah, Adnane Maa-laoui and Sascha Kraus. The publication data are: *International Entrepreneurship and Management Journal* (2022) 18:801–828, Vol.:(0123456789), <https://doi.org/10.1007/s11365-021-00791-1>.

The article is a strong candidate as it appears fruitful for combining its’ analysis with earlier research on women in innovation, entrepreneurship and specifically in the Arctic economy. See, for instance, Nierling & Udén (2020), Sloan et al (2004, 2006), Udén (2010, 2020, 2024).

The article can for our current purposes in Task 1.1 of the GENGREEN project be summarized as follows below. Besides the conclusion (as mentioned in the abstract), it is only the first part of the article that is referred to here. It fits with Task 1.1 as it describes a theoretical framework. The main part of the article goes more into details, including a case study. The continuation may thus be of interest to us when our own project proceeds. The article investigates:

“How entrepreneurs develop the intention to make their venture green, even when “being green” doesn’t happen right from the start, or where the company does not operate in a business that is considered green.” (Le Loarne Lemaire et al., 2022)

This is how the authors identify the term “green” entrepreneurship:

“Entrepreneurs that base their activities on sustainable, environmentally friendly, green principles and values.” (Le Loarne Lemaire et al., 2022)

The authors’ conclusion is that:

“‘Becoming green’ is not a radical process, but is instead strongly influenced by the entrepreneurial praxis the entrepreneur progressively adopts and even plays with.” (Le Loarne Lemaire et al., 2022)

The conditions for entrepreneurship, according to the authors of *Becoming a green entrepreneur*:

- Most production companies are not created or run by one single entrepreneur, but by an *entrepreneurial team*, in which some more or less different identities have to collaborate and make decisions.
- This entrepreneurial team acts within a whole *ecosystem* – or entrepreneurial field – and cannot be considered as a singular person who makes the decision to “go green”.

Regarding drivers the authors refer to the following in their literature review (selection):

[S]ociological factors like *personal motivation*, mission including passion and humility, locality, and community drive the green business orientation.

Another driver of green entrepreneurship includes *education*, as it plays an important role in diffusing entrepreneurial values.

In some cases, entrepreneurs engage in sustainable business to respect *governmental obligations*, in other words, as a reaction to the pressure exerted by external stakeholders.

Part of the literature on green entrepreneurship states that the identity of the entrepreneur (his/her gender, education, social class, etc.), or more precisely, personality traits (Arru, 2019) condition the antecedents of the intention to make a venture green. Indeed, Braun (2010) found that women show a stronger, more positive attitude towards green strategies than their male counterparts. [S]ome drivers for engaging in an ecologically sustainable business are opportunity based. Others are necessity based, while others are based on personal values.

- *What can be regarded as personal values are included in the analysis: “entrepreneurs choose to adopt ecological practices for personal reasons /.../ they are convinced that it will generate ecological and social benefits.”*

- *The authors also find that there are opportunity-based entrepreneurs: “entrepreneurs who perceive an opportunity or market gap consisting of ‘creating value in the ecological sphere’”.*
- *Finally, there are necessity-based drivers, mostly motivated by earning money to make a living and support their families.*

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