



Identifying good support practices for eco-innovative  
companies during the covid-19 pandemic:  
Region of Östergötland, Sweden

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# Table of Contents

- EXECUTIVE SUMMARY ..... 3**
- INTRODUCTION ..... 4**
- METHOD ..... 5**
- MAIN RESULTS ..... 8**
  - PANDEMIC-RELATED CHALLENGES ..... 8
  - SUPPORT ACTIVITIES ACCESSED TO ALLEVIATE PANDEMIC EFFECTS ..... 10
- CONCLUSIONS ..... 12**
- REFERENCES ..... 14**

## Executive summary

In March 2020, the covid-19 outbreak was declared by the World Health Organization as a pandemic. The global response to this pandemic has been varied among nations. However, the pandemic has had cross-cutting effects on socio-economic systems for production and consumption. It has proved challenging but also provided entrepreneurial opportunities for companies. As part of the SUPER project, the aim of this study was to analyse specifically how the covid-19 pandemic has influenced eco-innovative companies. By using interviews with 9 companies and 7 support system actors in the region of Östergötland, we provide answers to questions on challenges experienced, support provided, good practices and improvement opportunities. The most common challenges experienced by firms within the region including eco-innovative firms are disruptions in supply chain. Companies also requested frequently for financial support to address challenges related to the pandemic such as decrease in income, and short term leave from work. The support system responded to the pandemic by providing both financial and non-financial support from the EU, national, regional to the local level. Most of the support activities were general for all kind of companies to access. Generally, eco-innovative firms were not particularly affected by the pandemic compared to firms in the tourism and hospitality sectors. Identified good support practices relate to the emergency advice for firms facing urgent problems, business model simulation and scenarios, coupled with special bridging loans to sustain liquidity in firms during the pandemic. Altogether, eco-innovative companies have been well positioned to survive the pandemic as attention was drawn to issues such as resilience, security of supply and short supply chains.

## Introduction

This report is written as part of the SUPER project – Supporting eco-innovations towards international markets – funded by the European Union through the European Union Regional Development Fund. Specifically, this report is an outcome of an extension of the original SUPER project period and focus to include an analysis of how the covid-19 pandemic has influenced the business activities of eco-innovative companies.

In March 2020, the World Health Organization declared the covid-19 outbreak as a pandemic (World Health Organisation, 2020). The pandemic is a global health crisis described as a major landscape shock affecting several socio-economic systems for production and consumption (Kanda and Kivimaa, 2020). However, the national responses have been very different from lockdowns to securitization of the pandemic problem and national protectionism. There have been several challenges and opportunities related to the pandemic not at least for companies and their business development (Zhang and Fang, 2022). However, due to the different national strategies employed to address the pandemic, the pandemic has influenced companies in very different ways depending on their context. Two years after its declaration as a pandemic seems to be an appropriate to analyse the effects of the pandemic on companies based on empirical evidence rather than predictions of different pandemic scenarios.

With this background, the aim of this study is to analyse how the covid-19 pandemic has influenced the business activities of eco-innovative companies. Eco-innovative companies develop and diffuse eco-innovation. Eco-innovation refers to a product or service that causes a significant decrease in environmental impact, while remaining financially viable and not in conflict with social sustainability (Fichter et al., 2013 p. 52). Eco-innovative companies are of keen interest since the pandemic has brought renewed political and business interest in several questions such as short supply chains, resilience, self-sufficiency sufficiency and security of supply. As part of the SUPER project, we focus on eco-innovative companies and support actors in the region of Östergötland Sweden. We limited our scope to the region since this was the default scope of the project but more importantly the region reflects how companies seek support in their proximity.

The region of Östergötland is in the south-east of Sweden, 150 km south of Stockholm and 300 kilometres north of Malmö. Östergötland is at the forefront in the fields of sustainable energy solutions and green technology, simulation and visualization technology, printed electronics and advanced materials, aerospace industry and aircraft product development. The county of Östergötland is the fourth largest county in Sweden with 467 158 inhabitants (2022). There are 13 municipalities with a great variety in size, where Linköping and Norrköping are the two largest and host more than half of the county's total population. With a strong partnership between university, government, and industry, Östergötland has five areas of smart specialization – (i) effective logistics, (ii) business models and arenas for sustainable systems solutions, (iii) smart, robust and secure connected products and systems, (iv) simulation and visualization, (v) advanced materials.

## Method

The overall approach focused on identifying good support practices to assist eco-innovative companies address the challenges posed by the covid-19 pandemic. To do so, we used the gap approached illustrated below by focusing on both eco-innovative companies and their potential support actors.

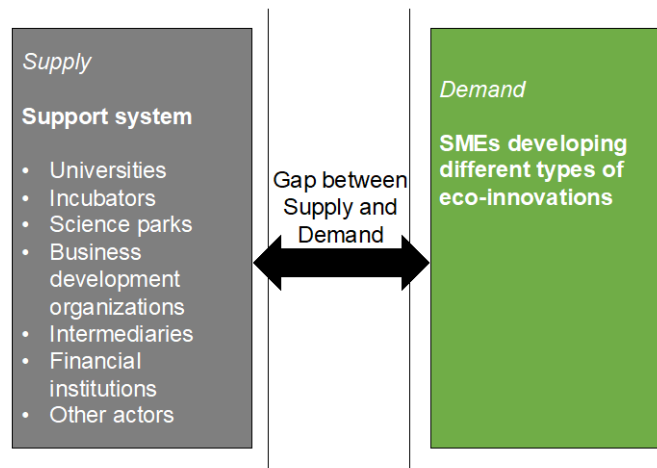


Figure 1: The gap between support systems and eco-innovative companies.

Specifically, we conducted interviews with 9 eco-innovative companies and 7 support system actors in the region of Östergötland. We selected support organizations with a broad expertise and support portfolio and one cluster organization focused on the cleantech sector. The companies selected for interviews also included start-ups, and small and medium sized companies with different types of eco-innovations, company size and age. This variety and broad approach will hopefully help us to identify patterns of cross-cutting interest for several companies and support actors. We complemented these interviews with a review of regional and municipality level surveys conducted to analyse the effects of the pandemic on companies. Table 1 and 2 below presents an overview of the interviewees.

Table 1: Overview of eco-innovative companies interviewed (as of 2022)

Company Name	Line of business	Number of employees	Age of company	Turnover	Interviewee position
1. Finecell Sweden AB	Nano Cellulose Powder for specialists in thermoplastic composites (e.g., automotive interior)	3	7	€ 150,000	Founder, CEO
2. Ligna Energy AB	Small, lignin-based batteries for IoT applications	3	6	€ 90,000	CEO
3. Storbildsfabriken i Sverige AB	Printed and digital communication with a	10	27	€ 2,500,000	Founder

	sustainable business model				
4. Wematter AB	Developing and selling 3D-printers	18	8	€ 130,000	Founder, CEO
5. Vialumina AB	Fleet management system for electrification and optimization	9	1	€ 20,000	Founder, CTO
6. Deviaq AB	General fleet management system for municipalities and regions	5	21	€ 480,000	Founder, CEO
7. Energifabriken i Sverige AB	Eco-fuel retail and production (RME, HVO100)	34	16	€ 100, 000 000	Founder, Chairman of the board
8. Biototal AB	Converting residuals to bio fertilizer	40	16	€ 9, 000 000	CEO
9. Envista AB	Analysis and management system for property heating	3	6	€ 400,000	Founder, CEO

Table 2: Overview of support system actors interviewed (as of 2022)

Support organization	Core responsibility	Position of interviewee
1. Cleantech Östergötland	Cluster organization with 85 member companies using networking activities to promote the efficient and effective resource use	Chief execute officer
2. ALMI Östergötland	Business development organization providing support to firms with up to SMEs from all sectors.	Vice Chief execute officer and Head of business development
3. Norrköping municipality (industry and commerce unit)	Facilitating the start, further development, and establishment of firms in Norrköping. The department also works with the municipality development and using several networks, projects, and activities.	Head of industry and commerce unit
4. The Chamber of Commerce of East Sweden (Östsvenska Handelskammaren)	A membership-based organization with 850 firms using different types of support activities to promote business development in the local, regional, and international contexts.	Chief Executive Officer
5. The Chamber of Commerce of East Sweden (Östsvenska Handelskammaren)	A membership-based organization with 850 firms using different types of support activities to promote business development in the local, regional, and international contexts.	Head of business policy unit
6. Linköping municipality (industry and commerce)	Focused on trade and industry development in Linköping municipality through several networks, project, and activities. Support other actors in the support system through co-financing.	Head of industry and comer unit

7. Linköping municipality (industry and commerce)	Focused on trade and industry development in Linköping municipality through several networks, project, and activities. Support other actors in the support system through co-financing.	Director of industry and commerce unit
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The data collection from the companies and the support system actors was based on qualitative interviews conducted digitally, recorded, and transcribed for thematic analysis. The general focus of the interview questions was to understand the challenge and opportunities eco-innovative companies have experienced due to the pandemic. The second focus of the interview questions was on existing and new support activities developed to help alleviate the challenges and opportunities posed by the pandemic for eco-innovative companies.

## Main results

In this section, we present the pandemic related challenges reported from our interviews and some opportunities experienced by eco-innovative companies. This will then be followed by a presentation of support activities developed to alleviate the influence of the pandemic.

### Pandemic-related challenges

#### ***Supply chain disruptions***

One of the most mentioned pandemic-related challenge was the disruption of supply chains. Among several kinds of disruptions, companies sought to diversify their supply base and to establish shorter and local supply chains since global supply chains were disrupted and became unreliable. The disruption in supply chains resulted in longer lead times to secure the supply of raw materials, lack of raw materials, fluctuations of material prices, lack of components and consequently delays in production processes. Thus, concepts such as global supply chains and just in time supply came under constant questioning in favour of localization and supply stocking. Multinational companies had to reconsider their supply chains and move into more local supply chains when global suppliers could not guarantee supply, a discussion which can be beneficial for cleantech companies which could meet the urgent supply needs. Due to disruptions in freight services, logistics for material supply became costly and hard to organize. Towards the “end” of the pandemic other types of supply challenges have come up specifically related to energy due to the rising energy prices. Russian invasion of Ukraine has introduced other uncertainties for companies related to the security of raw material and energy supply.

#### ***Financial challenges***

Due to the uncertainty the pandemic introduced unto the business environment, there were several financial implications of the pandemic. For example, dialogues with investors were postponed and their investments became smaller than planned. Essentially, investors were more careful with their money with the uncertainty and volatility the pandemic introduced into the business environment and stock markets. Investments into the companies become slower, selling cycles became longer, resulting in a slower growth in personnel and market contacts. Even though it was generally easier to reach customers via digital tools, it was harder to get sales through and customers postponed orders by several months due to uncertainty. Companies were thus worried about the economic impact of the pandemic and could not foresee its full impacts on the sales of products and services especially at the start of the pandemic. Questions about how the pandemic will affect the financial situation of the firm was among the most frequent requests that support actors like ALMI received.

#### ***Human resource challenges***

The pandemic meant that many employees had to work from home if possible and this intervention posed human resource challenges to firms. For example, it was more difficult to build teams online and by extension difficult to develop further competence in teams working remotely (interview, founder, and CEO Finecell Sweden AB). Another human resource



challenge with the pandemic was the wellbeing and mental health of the employees which had to be given extra attention while working from distance and not meeting colleagues daily.

Despite the challenges mentioned about, (eco-innovative) companies also experienced some opportunities related to the pandemic. Companies moved potential customer meetings online and by that could meet a wider scope of potential customers more effectively. Digitalization of work in the form of working from home, online sales, online meetings, and IT and data related services were all accelerated by the pandemic. The pandemic also presented the opportunity to redevelop business models and launch them rapidly.

Figure 2 below provides a qualitative overview of the challenges experienced by (eco-innovative) companies during the pandemic. As depicted, some most of the pandemic-related challenges listed from the interviews related to companies in general and thus were not particularly more pronounced for eco-innovative companies.

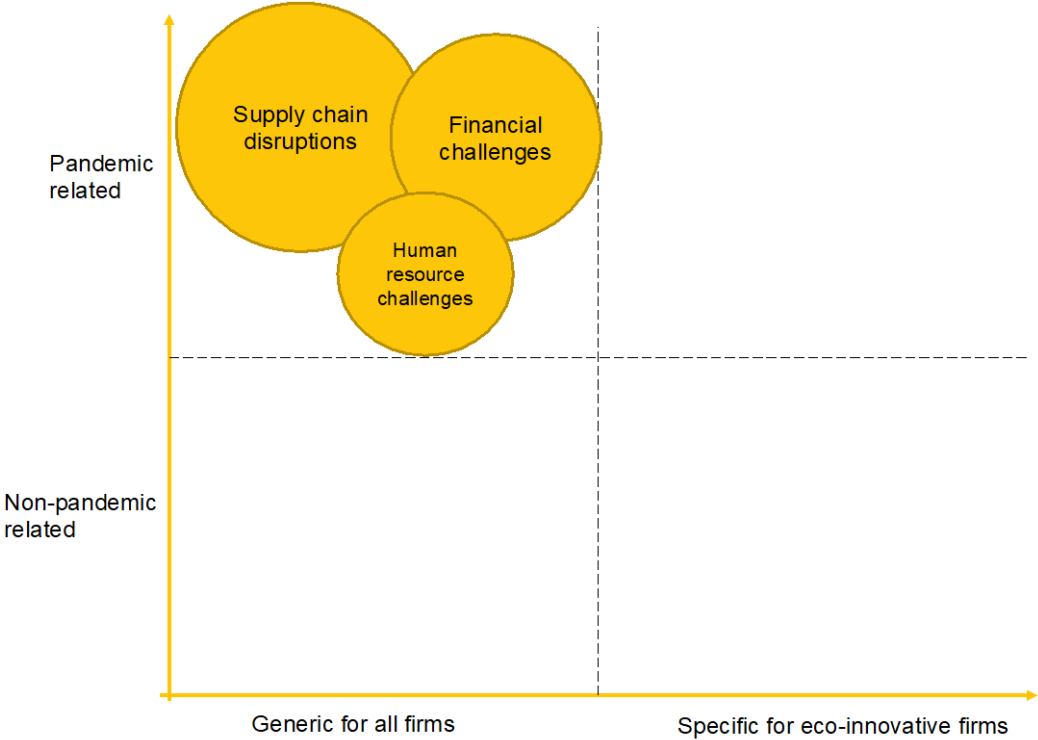


Figure 2: Summary of pandemic related challenges for (eco-innovative) companies in Östergötland

## Support activities accessed to alleviate pandemic effects

When the pandemic struck, several initiatives were put in place to support companies on the EU, national, regional, and even local levels. These support initiatives can be generally categorized as financial and non-financial support and are presented below.

### *Financial support*

On the **European Union level**, regional development funds were made available to extend projects or start new projects focused on the green deal, digitalization, and sustainability in general in the wake of the covid-19 pandemic. Several on-going projects in the region of Östergötland related to resource efficiency and sustainability were thus extended through such funding calls to give the opportunity for further analysis.

On the **national level**, the Swedish Agency for Economic and Regional Growth (Tillväxtverket) offered different kinds of financial support to companies to address challenges posed by the pandemic. One of such financial support was to address changes in the financial status of firms due to the pandemic such as reductions in the income earned by firms. By this support firms can apply for and receive money to increase their liquidity and compensate for potential drops in income due to customers not purchasing their products and service during the pandemic. Another important financial support offered was to give firms the possibility to give their employees a temporary leave of absence from work (or work less) instead of terminating their employment and get financial compensation from the government. The Swedish Tax agency also made it possible for firms to delay payment of taxes to sustain their liquidity during the pandemic and pay later when their financial situation was more sustainable. Financial support on the national level was one of the most accessed support initiatives by companies in the region of Östergötland (interviews, The Chamber of Commerce of East Sweden)

On the **regional level**, ALMI responded to the needs of firms by providing a so-called bridging loan to help firms with sustain their liquidity during the pandemic. These loans had a special condition that firms did not need to amortize the loans immediately, they also had lower interest rates than the company loans that ALMI usually provided. These special conditions meant that, firms could improve their liquidity situation during the pandemic and pay the loan later when their financial situations improved. These special loans will remain to be used in uncertain and crises situations such as wars and pandemics.

### *Non-financial support*

On the regional level, ALMI Östergötland received several calls from firms to assist them project the pandemic effects on their business. In rapid response, ALMI redeployed a business model simulation support. In this support, the firm together with business coaches makes changes to components of the business model to see how the firm will survive in different scenarios of pandemic influence. By doing such business model simulation and scenario exercises, firms could rethink, make changes, and launch new and adjusted business models (e.g., changes from global suppliers to more local and sustainable suppliers) which were more resilient in uncertain times. As part of this process, ALMI also lifted good examples of companies of firms making changes to their business models during the pandemic and success

stories as forms of inspiration. After this business model simulations, companies which were deemed financially viable but have been negatively affected by the pandemic were offered a bridging loan to sustain their liquidity.

Another important non-financial support is the company emergency service (Företagsjouren) provided by the regional county council (Region Östergötland). This company emergency service is a neutral platform with advisors and experts from different fields (e.g., business administration, law, medicine, psychology etc) and many years of experience in entrepreneurship and firm development which work to support firms in acute crises. Their mission is to support small and medium sized companies in solving urgent problems (e.g., economic problems, bankruptcy, company sales etc). The company emergency service first tries to help the firm address the urgent problem and then make an action plan to help the company continue to exist and have a positive development. The company emergency service is active throughout the region of Östergötland and their support services is offered for free to firms under oath of secrecy.

On the municipal-level, the municipalities trade and commerce offices played a key role is in assisting firms to find the right types of national support and how to apply for such support. Since such municipal organizations cannot support individual companies, they channelled their financial support through other support system actors which meet companies on a regular basis to provide support. The municipalities also as customers to firms shortened their payment time to help firms sustain their liquidity during the pandemic. The municipalities and chambers of commerce have also actively collected survey data from firms all through the pandemic to be able to support informed policy making.

From the results above, it is evident that several support initiatives have been developed on different levels to assist companies during the pandemic. However, many of these initiatives both financial and non-financial are open for all kinds of companies and not dedicated to eco-innovators. Furthermore, eco-innovative companies can be seen as more qualified or prepared to apply for financial support to alleviate the pressures of the pandemic since questions such as resilience, security of supply and local supply chains become topical. This can be regarded as a positive observation since eco-innovative companies were not particularly hit by the pandemic and this generalist approach can be argued as an efficient way of using public resources to support a broad base of companies during a pandemic.

## Conclusions

Generally, eco-innovative firms in the region of Östergötland have not been extremely affected negatively by the covid-19 pandemic compared to firms in the hospitality and tourism sector which are based on human interactions. Furthermore, the pandemic has evolved over the past two years and its effects on companies has also changed accordingly. On the overall the most sought-after support was financial support, and this has been provided on several levels from the EU, regional to the local level. Another dominant challenge particularly pronounced for product-based firms was supply chain disruptions which led eventually led to delay in production activities. For service-oriented companies, one of their biggest challenges was lack of personnel. Most of the non-financial support (e.g., business model simulations and scenarios) was also provided on the regional level in proximity to the companies. Finally, based on our analysis, some good practices can be identified of potential interest for other regions and support actors in times of uncertainty.

### **Our identified good practices of support during the covid-19 pandemic from the region of Östergötland are:**

- The company emergency service (Företagsjouren) provided by the regional county council (Region Östergötland) is a good practise. This service is a neutral platform with advisors and experts from different fields (e.g., business administration, law, medicine, psychology etc) and many years of experience in entrepreneurship and firm development which work to support firms in acute crises. Their mission is to support small and medium sized companies in solving urgent problems (e.g., economic problems, bankruptcy, company sales etc). The company emergency service first tries to help the firm address the urgent problem and together make an action plan to help the company continue to exist and have a positive development. The company emergency service is active throughout the region of Östergötland and their support services are offered for free to firms under oath of secrecy.  
<https://www.regionostergotland.se/Regional-utveckling/Tillvaxt-och-marknadsforing/Naringslivsutveckling/Foretagsjouren/>
- ALMI redeployed a business model simulation and scenario support during the pandemic. In this support, the firm together with business coaches makes changes to components of the business model to see how the firm will survive in different scenarios of pandemic influence if their financial situation changes. By doing such business model simulation and scenario exercises, firms could rethink, make changes, and launch new and adjusted business models (e.g., changes from global suppliers to more local and sustainable suppliers) which were more resilient in uncertain times. As part of this process, ALMI also lifted good examples of firms making changes to their business models during the pandemic and success stories as inspiration. After this business model simulations, companies which were deemed financially viable but have been negatively affected by the pandemic were offered a bridging loan to sustain their liquidity.  
<https://www.almi.se/vara-tjanster/tjanster/affarsutveckling/simulera-din-affar/>

- ALMI also responded to the needs of firms by providing a so-called bridging loan to help firms with sustain their liquidity during the pandemic. These loans had a special condition that firms did not need to amortize the loans immediately, they also had lower interest rates than the company loans that ALMI usually provided. These special conditions meant that, firms could improve their liquidity situation during the pandemic and pay the loan later when their financial situations improved. These special loans will remain to be used in uncertain and crises situations such as wars and pandemics.

From this study, several areas of improvement can be identified for the support system in terms of crises and uncertain situations. Specifically, several of the early-stage companies had experienced problems in setting up external investments as planned. Investments were made, but slower and at a lower valuation than planned. This dilutes the ownership of the founders. Then again, two of the interviewees have raised capital successfully during the pandemic without these problems. One helpful support for early-stage SMEs would have been more R&D funding, for example from Vinnova. This would have helped the most.

The later-stage SMEs mostly were concerned with the wellbeing of the staff. No greater problems have risen in market contacts or production for these companies, but the management were still working on team engagement and general wellbeing of people. A suggestion for improvement could be better support for human resource and employee welfare support from ALMI and support actors alike. The interviewees did not see the support system working with these questions.

Another improvement opportunity was to provide guidance to firms in finding as well as applying for financial and non-financial support since there were several initiatives with different requirements which could be confusing for companies during a pandemic. Essentially, such application processes should be streamlined and less bureaucratic especially in times of crises.

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## Appendix

- Extra information such as statistics.