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PROMOTING ECO-INNOVATION IN ACADEMIC ECO-SYSTEMS

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ABSTRACT

University incubators are an opportunity to promote the dissemination of research, change teaching practices and contribute to territorial economic development. In this article we present a structural and dynamic analysis of such an innovation system of a Swedish eco-innovation system by proposing elements for analysing the success of such innovation systems.

Keywords: Incubation, Design education, Workspaces for design, Open source design

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1 INTRODUCTION

Since the mid-twentieth century, knowledge has been paramount in creating value through innovation. Thus for the OECD (2015), innovation depends on a skilled workforce that can generate new ideas and technology and bring them to market. It further requires a sound business environment that encourages investment in technology and knowledge-based capital, a strong and efficient system for knowledge creation and diffusion, and specific innovation policies. In the knowledge based-economy, innovation rarely occurs in isolation but in an interactive and multidisciplinary process that involves a diverse network of stakeholders (OECD, 2010). This same interdisciplinary collaboration is required for development of eco-innovations (Yannou-Le Bris & Serhan, 2018). In these conditions, an 'innovation system' is a vital source of knowledge flows and interactions between actors in the environment (Villarreal & Calvo, 2015). In 1950 incubators emerged in the US, but Europe quickly followed suit and in 1984 created a European Business and Innovation Centre Network (Aernoudt, 2004) to support the activities of EC Business Innovation Centres (Grimaldi & Grandi, 2005). This support aimed to facilitate the development of startups. In France, direct funding granted to startups increased 20-fold between 2000 and 2015 (CNEPI, 2016, p58), enabling 10,000 startups to develop between 2011 and 2017. However, 90% of them failed largely due to insufficient input of expert knowledge (scientific, managerial and civil). Sweden has been Europe's undisputed innovation leader every year since 2010 on the European Innovation Scoreboard (EC, 2018) and ranks as one of the top countries for innovation right behind Switzerland and the Netherlands on the Global Innovation Index (Cornell University & al., 2018). Due to the high ranking of Sweden on innovation, it is of particular interest to study the Swedish system to understand different aspects for successful innovation support. Here we report the results of a study led between March and August 2018 on the innovation ecosystem developed in the southern part of Sweden (Scania), with a particular focus around Lund University, the major and leading university in the region. The research question tackled in this paper is "What is the differentiating added value of an innovation ecosystem developed in a university campus framework in terms of start-up development paths?" It is the context of this innovation system that appears to underpin Sweden's innovation performance.

2 CONTEXT

Continuing to improve the innovation environment has been and still is a strategic focus for Sweden 2018 (SMEEC, 2012). In line with Carayannis *et al*. (2012), this strategy hinges on including citizens and users in the product development process to engineer a sustainable system (see fig 1) in which innovation can help drive economic growth without natural capital depletion. This innovation strategy is structured by three objectives: engage in models of sustainable development and make Sweden a more attractive country; create jobs in a global knowledge economy; enhance the quality and efficiency of Swedish public services through innovation. It revolves around engaged contribution of an array of public, private and civil-sector actors to co-develop a collaborative facilitated exchange of ideas and knowledge. This open approach (Chesbrough, 2003) enables valuable ideas to come from inside or outside the firm (Villarreal et Calvo, 2015), and the incubation ecosystem is a means to facilitate their emergence. On a global scale generations of business incubators have evolved into so many different forms and support systems that there is now confusion around the term. Scholars have a hard time defining the concept of an incubator, as no one universal definition has emerged (Hausberg & Korreck, 2018), but a number of them have contributed attributes of business incubators and thus helped to frame the concept boundaries.

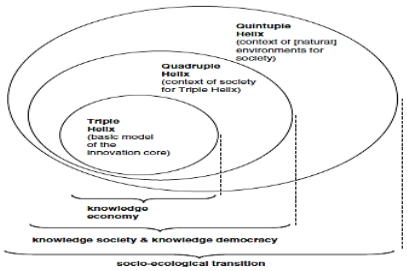

Figure 1: Knowledge production and innovation (Carayannis et al., 2012) based on Etzkowitz et al's triple helix model of innovation

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For instance, for Hackett & Dilts (2004), an incubator is "a shared office-space facility that seeks to provide its incubatees (i.e. "portfolio-" or "clients" or "tenant-companies") with a strategic value-adding intervention system (i.e. business incubation) of monitoring and business assistance". For Bergek & Norrman (2008), incubators are "organizations that supply joint location, services, business support and networks to early stage ventures". For Bruneel *et al.* (2012), incubators are "tools to accelerate the creation of successful entrepreneurial companies". The term 'business incubator' in its strictest sense defines a type of business-incubating organization but is commonly used as a shortcut when referring to business-incubating organizations in the wider innovation system. The added value of the structures can be measured at three different levels. At incubatee or project level, useful indicators for evaluating success are: (1) acquisition of funds, (2) procurement of IPR protection, (3) recruitment of personnel or advisors, (4) sales growth and sustainability of the venture, and (5) failure rates. At incubator level, relevant indicators are: (1) the revenues, (2) the occupancy rate, and (3) graduation rate. Finally, at innovation system level, performance can be analyzed by (1) economic development, (2) job creation, and (3) profit or losses for established organizations (Baraldi & Ingemansson Havendid, 2016). However, good information on the added value and effectiveness of business incubation is in short supply as the literature suffers several deficiencies, including definitional incongruence, heterogeneity, and lack of strong conceptual grounding (Theodorakopoulos *et al*., 2014).

Here we report on a study conducted to understand which innovation systems are being implemented in the southern part of Sweden (Scania) with the focal point around Lund University the main university of the region. The study focuses on which categories of actors are involved, which knowledge elements can be extracted to help better train design students, and finally, how universities can strengthen ties between our research structures and the wider community environment to facilitate a socio-ecological transition.

3 CASE SURVEY: THE INNOVATION ECOSYSTEM IN SOUTHERN SWEDEN

3.1 The innovation system in southern Sweden (Scania)

Lund University (LU) is one of the oldest and largest universities in Sweden and one of the most outstanding universities in Scandinavia. It provides students and researchers various initiatives to drive innovation and develop entrepreneurship. The Sten K. Johnson Centre for Entrepreneurship of Lund University develops knowledge in the entrepreneurship area and conveys it through courses and a master program for students from all faculties to create better entrepreneurs. LU innovation is a combined support unit for innovation and commercialization of the research at Lund University. It aims to mobilize the university's research to foster social and economic growth. Their work encompasses help with business development, financial support, intellectual property rights, legal support, commercialization, networking support, and educational activities. Ideon Science Park, Sweden's first and largest science park, has always been close to Lund University. It started in 1983, in the wake of a recession that hit Sweden and the region, to support the creation of businesses and firms using research and knowledge from the university and higher education (Bengtsson & Lind, 2004). Today the park counts more than 400 companies, most of which come from Lund University research. The Science Park engage around 9000 people and has had a profound and lasting effect on the region's economic growth. Relevant structures for study were selected first according to the broad definition of "business-incubating organizations" (Hausberg & Korreck, 2018) in order to collect data from all kinds of structures participating in business incubation in local Scania innovation system, and then by natural selection according to stakeholders' availability and time constraints. The structures in Scania that were part of the data collection are briefly described below:

LU deploys two local business incubators/pre-incubation programmes: The Climate-KIC Greenhouse, which addresses both academics and professionals, and VentureLab, which is the student business incubator managed by LU Innovation. Three other structures partly managed and financed by Lund University but with a larger target audience, including non-student start-ups or larger companies outside the university exist: Ideon Open and Ideon Innovation, which are located in Ideon Science Park, and the Smile Incubator, which is located in the Science Park Medicon Village, nearby Ideon and Lund University. One additional private structure located in Ideon Science Park works with IoT start-ups but does not have formal ties to the University. Located in Malmö, we interviewed two incubator structures, the first Drivhuset, an incubator for students located in the main university building at Malmö University. The second Open Lab Skåne, an open laboratory project that includes

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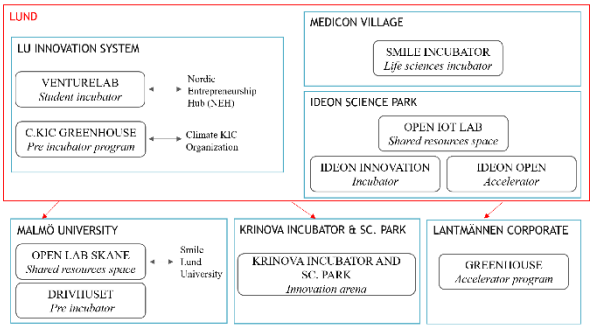
the Biofilms Research Centre for Biointerfaces related to Malmö University, the Department of Food Engineering at Lund University, and the Smile Incubator in Medicon Village. In Kristianstad, we interviewed one structure the Krinova Incubator and Science Park. Krinova acts as an innovation-driving node based on open innovation and design thinking and thus works with all types of stakeholders including public organizations, municipal councils, researchers, companies and start-ups. Krinova is partly owned by Kristianstad University. The last structure interviewed is an educational programme that belongs to the largest farmers' cooperative in Sweden, Lantmännen AB. It has no defined location, as the programme moves around Sweden depending on the programme's partners each year. It has further no direct relation to the universities.

3.2 Qualitative analysis method

In total, 28 interviews were conducted: 11 with management team members of 10 business incubators, 9 with entrepreneurs, and 8 with members of the innovation system in Scania (Table 1).



Municipalities	Lund						Malmö		Kristianstad	Other
Name of the structures	C.KIC Greenhouse (p)	Ideon Innovation	Ideon Open	Smile Incubator	Open IoT Lab	VentureLab	Drivhuset Malmö	Open Lab Skåne (p)	Krinova Incubator & Science Park	Lantmännen Greenhouse (p)
Dominant typology of business-incubating organizations										
Shared resources space					X			X		
Pre-incubators	X						X			
Incubators		X		X		X				
Accelerators			X							X
"Innovation arena"									X	
Interviewed stakeholders										
Management			X		X	X	X	X	X	X
Business developers	X	X		X						
Entrepreneurs	X	X	X			X	X			

UBI PI

Table 1: Overview of structures interviewed (UBI: University Business Incubator; PI: Private Incubator)

A semi-structured interviews was made to enable a better perception of the phenomenon as seen by the interviewees by enabling them to speak more freely of their experience. Through 16 questions the questionnaire investigated three subjects: (1) origins and definitions, (2) the incubation process including operational organization and integration in the innovation system, (3) performance and impact measurement. Even though face-to face interviews were preferred, we had to lead one by phone and another by Skype to accommodate the interviewees' availabilities. All interviews were recorded and transposed as text. A report of the interview was sent to the interviewees for approval and correction, and served as the primary source for data analysis. To facilitate the analysis of the data collected, we used four data reformatting models, as illustrated in Figure 1.

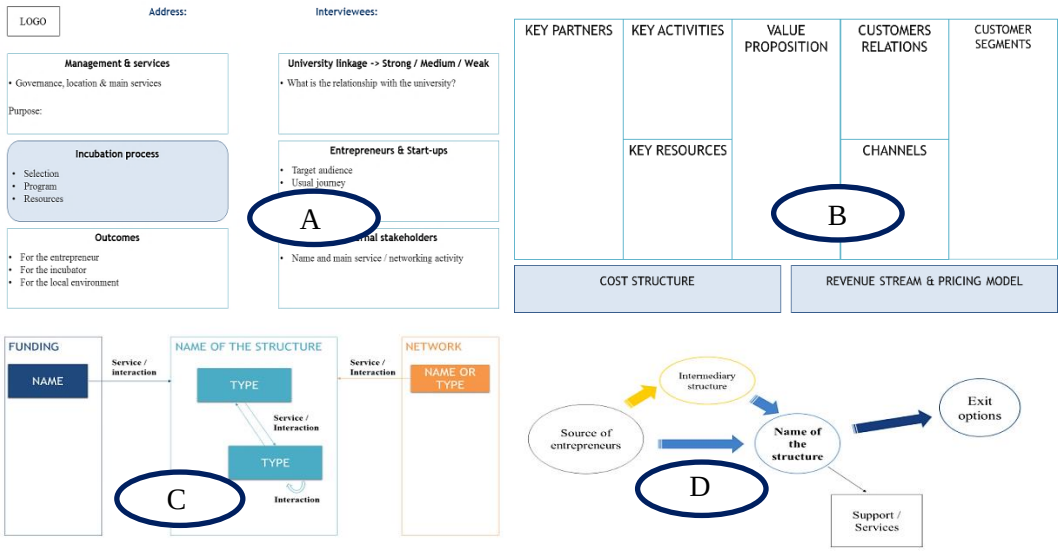


Figure 2: Data formatting models used to analyse the information collected for each of the structures interviewed

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Sheet A (Fig.2) compiles the main input data on capacity to influence the effectiveness of the structures incubated as location, incubation programme (and hence selection), support and exit policies, together with outcomes data. Sheet B focuses in on the business model and thus shows data about the target audience and the main mission, governance, source of funding and fees for the entrepreneurs. Sheet C details the network mediation frame. Sheet D captures information on source of ideas and future of the entrepreneurs post-graduation. These different representations were then analysed to tease out their similarities, complementarities and differences, to serve as basis for the analysis proposed in Part 4.

4 MAIN RESULTS

4.1 Environmental characteristics of incubation structures

The UBIs are located either in university facilities, e.g. Drivhuset, or in a science park. When located in a university, the benefit is that business developers can use the premises to organize meetings with students or knowledge events and thus gain visibility. When located in a science park, the UBIs can still also engage in the university, especially to promote their programmes and discuss with students or give lectures. The main benefit in this case is that entrepreneurs appreciate having a specific place to work and they can access a larger network that enables them to talk to companies, exchange knowledge and experience within the start-up community, or participate in community events like a sales workshop in Ideon Science Park. In Lund and Kristianstad, the science parks are really close to the university premises and even partly managed by the universities, so the linkages are really strong. PIs can also be located in science parks where they can profit from the university environment in terms of student workforce for instance but their access to university premises remains more limited.

Not only do the UBIs target entrepreneurs from universities, but most of them are quite open to other professionals. However, it seems that even though they are open to anyone, most ideas come from academics, i.e. researchers, PhD or master students in some cases, e.g. Climate-KIC Greenhouse, Ideon Innovation or Smile Incubators. Some UBIs are clearly dedicated to a student audience and thus deal with business ideas or projects from students, for example Venture Lab or Drivhuset. As a rule, the UBIs and PIs with an educational purpose accept to work with business ideas, whereas some UBIs only deal with registered companies. Some UBIs even help mature firms to innovate and do not work with start-ups, for example Ideon Open. This broad and inclusive range of target audiences is a way to address all kinds of projects in the innovation system.

Another distinction can be made in terms of features of ideas. Half of the business incubators look for generalist ideas while the other half is specialized. Some entrepreneurs appreciate specialized incubators where they will share an environment with similar entrepreneurs and be able to help each other. PIs appears to be more specialized, as they look for companies in their business field, but this is hard to confirm with so few examples.

4.2 Main mission and business model

All the business incubators interviewed—UBIs and PIs—are non-profit or do not seek profit as a goal for the structure. This fits well with the literature for UBIs but less well for PIs. All the UBIs are mainly publicly funded and so have no mandate to seek a profit. The Swedish government is the main source of public funding, but investment is completed by local and regional funds, which demonstrates the importance of innovation as a strategic focus for southern Sweden. There is also some public funding from the European Union. On top of this patchwork of public funding sources, many UBIs claim to have private partners offering specific offers for entrepreneurs or funding as sponsors. This suits the open and collaborative environment advocated in Swedish innovation strategy. The PIs cannot access public funding but fund themselves through a shared economy, i.e. by taking rent from the tenants or in some cases through the parent company. Public funding is tied to the main missions of the UBIs, i.e. educational purpose, facilitation of innovation and growth of companies to foster economic development or regional attractiveness and social impact to better the welfare of society. The scope of educational purpose reaches free testing of one's idea, learning by making, and helping people realize their entrepreneurial mindset. The development of collaborations between academia and industry is also underlined in one case. PIs count on the collaborations with other start-up companies or entrepreneurs.

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4.3 Incubation process

In terms of selection, the UBIs working with open innovation stand out as rarely or never selectively choosing the projects they help but instead try to work with all kind of issues and companies. The two student UBIs, VentureLab and Drivhuset, also offer some non-selective services such as events around the universities or guidance with an option to book a meeting with a business coach. Another interesting feature they share is that both these structures focus solely on the entrepreneurial mindset of the entrepreneurs, and not at all on the business idea. They consider that an idea evolves during the incubation process and that it is therefore impossible to judge its potential before it actually hits the market. This idea is supported by other structures such as the Krinova Incubator or Ideon Innovation that have changed process to focus more on creating a good team or good entrepreneurs than on finding the right idea. Most UBIs do ask for a fee, but usually only to pay for infrastructure, typically to cover rental for office space or infrastructure. When start-up companies can access equipment or labs in the incubator facilities, there might also be an additional fee. The UBIs that have an educational purpose do not ask for monetary compensation, but some do ask start-ups to pay for the business support. Contrary to assertions in the literature, PIs do not differentiate themselves in this regard.

Except under the two incubation programmes, the exit policies are either loosely flexible or inexistent. This characteristic is very dependent on the type of incubator. Shared resource spaces do not have a formal exit policy, as explained in the literature. The purpose of these structures is to keep the tenants and collaborate as long as possible. However, in the other structures, exit is flexible. For instance, entrepreneurs at the Smile Incubator can opt to stay in the community and in the premises by paying a fee at the end of the programme. At Ideon Innovation, companies can pay a minimal rent to access a "co-working space" and thus keep in touch with the start-up community.

The exit issues as challenged with the development of communities and collaborations in all business incubators. For example, Krinova Incubator and Science Park has funded a community of more than a thousand companies that collaborate with them occasionally. This open innovation model relies less on time-limited programmes than on the creation of collaborative relationships between all kinds of stakeholders that intervene when they wish to or when their help is required. This model would even correspond to a new generation of business incubation based on communities of stakeholders.

4.4 Support and service delivered during the incubation process

The incubation process can be divided into three types of support that correspond to the three main generations of business incubators: infrastructures or physical support; business support, i.e. coaching, mentoring or training; and networking mediation.

Almost all UBIs and PIs provide the three types of services that are tangible (1st generation), business coaching and training (2nd generation), and mediation with the network (3rd generation). One exception is the shared resources spaces that provide very few learning opportunities and mediation with a formal network. In these structures, this emphasis is on the tangible infrastructures, e.g. labs and equipment, and sometimes scientific/technical knowledge, e.g. in Open Lab Skåne. The business learning opportunities are not formal but can come around under collaborations with other companies, which fits with the definition from the literature: a science park is "managed by specialised professionals whose main aim is to increase the wealth of their community by promoting the culture of innovation and the competitiveness of innovation-driven businesses and knowledge-based agencies" (IASP, 2015). Even though the types of services are the broadly same, a closer look at the value proposals find strong differences.

Regarding infrastructures, tenants can access either a set allocated space in an office, a flexible desk in an open space and/or specific equipment and labs. Note that UBIs are heavily reliant on the university premises for their access to labs and equipment, with only a few offering their own tech infrastructure. Smile Incubator and Open Lab Skåne are two exceptions, as access to equipment is a huge part of their programme, which is logical as both are specialized incubators focused on food engineering or life sciences. PIs also use university premises, but they have to pay. For instance, Lantmännen Greenhouse offers its clients access to labs and expertise from Ideon Agro Food in Ideon Science Park.

Note that two programmes—Climate-KIC Greenhouse and Lantmännen Greenhouse—do not have a specific space for tenants. They can be considered virtual business incubators as they do actually meet with the start-ups in places belonging to other organizations.

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Another point that varies depending on structure is the provision of business support. Sometimes it is only coaching by the business developers that advise the tenants on business steps to follow. A mentor relationship can grow when tenants have regular meetings with the same one business coach, as is the case in Climate-KIC Greenhouse. Access to entrepreneurial knowledge is made through training that in most cases includes lectures or workshops. These types of activities are often hosted at accelerators. The first accelerator, Y Combinator, was created in Cambridge in 2005 and by 2016 there were around 3000 accelerators worldwide (Hausberg & Korreck, 2018). Accelerator programmes are typically short-term packages spanning 3–6 months (InBIA, 2017), and most packages include: (1) a well-established mentoring service, (2) a training program covering finance, marketing and management issues, (3) regular counselling and coaching, (4) networking opportunities with consumers or investors, (5) co-location in a shared open space to stimulate peer-to-peer learning, and (6) investment opportunities. Equity stakes remain the main form of investment for accelerator portfolio companies (Pauwels *et al*., 2016). In the LU's accelerator structures, the training session is the most important tool for business support. The last point of interest is access to a network. Mediation is really strong in most business incubators, with business developers creating relationships between their tenants and the external stakeholders. Close to universities, the network provides access to labs or expertise from researchers and teachers. Business structures located in science parks also provide expertise from private firms or access to consultancy services. Ideon Science Park is very strong on networking, with a number of events held to federate the different actors in the innovation system, e.g. weekly breakfasts or pitch competitions. In some cases, the network can also help with investments. Connect and Almi, located in Ideon Science Park, can be very useful for entrepreneurs in terms of supporting investments.

4.5 Measurement of the innovation structure's contribution to startup success

Output is crucial as it includes measurement of the impact triggered by the business incubators and their incubation process, but also by the innovation system in general, on the local environment or on the incubatees. There is gap in knowledge on the best ways to measure the added value of business incubators. However, some indicators are typically used in the field.

When looking at impact measurement, it is important to factor in the date of creation of the structures, as some programmes are only one or two years old and understandably cannot provide detailed data on their impact or long-term evaluation of the success of their start-ups.

Business incubator's tend to evaluate their success by measuring the number of tenants or projects helped and the capturing their tenants' satisfaction through surveys or Facebook page ratings. For the interviewed structures that track their alumni, data collected on entrepreneurs mainly encompasses survival rate in a more or less long-term horizon and the allied growth indicators such as number of new employees, revenues, or market value. Job creation, total revenues and market value are the metrics most commonly used to measure the impact on the region's/country's economic development.

However, some noteworthy differences are perceived by incubatees in terms of coordinated ongoing support between the structures. Not all structures follow the same indicator or even have long-term tracking. Moreover, in almost half of the structures, there is no tracking of the entrepreneurs' success. In certain cases, this might be related to the fact that the programs or structures were only recently created. Furthermore, certain programmes have an educational purpose and yet fail to measure their impact on students' knowledge or added value for this purpose.

4.6 Incubatees' perceptions of the innovation system

Most of the entrepreneurs in this study come from Lund or Malmö University and were bachelor, master or PhD degree students when they started their entrepreneurial project. More specifically, four projects were started by students from Malmö University or Lund University during a course or a master's project in entrepreneurship, industrial design or food innovation: one project was not related to a course but was related to the entrepreneur's field of study, one project was initiated by a PhD student to materialize their research, and the last two projects interviewed were not related to university research but initiated in private companies.

All the projects interviewed are directed towards a more sustainable society with added value for the environment or social welfare. As mentioned in section 2, sustainable innovation is a real strategic issue for Sweden. Its university's innovation ecosystem reflects this commitment and this explains the recurrence of the "social-entrepreneur" profiles that were interviewed in this project. This observation is similar to an observation also made in the French incubators with which the authors of this article

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are associated. In AgroParisTech's French incubators, even if the start-ups selection is not defined by their desire to contribute to the ecological transition, a majority of the projects housed there are related to this subject. This does not mean that all these projects have a primary objective of a social or societal value creation, but we note that many of them nevertheless share these values. As a result, it would seem appropriate to extend this question on how innovation strategies in university ecosystems can make a concrete contribution to facilitating the development of socially and environmentally more virtuous innovations.

Entrepreneurs chose their business incubators according to four main criteria. The first criterion is location of the business incubator. They favour business incubators that are close to their home or their university. The second criterion is the services sought. For instance, some entrepreneurs simply required a place to go or to get some funding. The third criterion is the price of the programme, which is especially important for students. The fourth and final criterion that leads entrepreneurs to an incubator is the advice they receive. In Malmö for instance, the first contacts of students with the incubators can be channelled through the educational programmes that host entrepreneurship workshops or courses. In Lund University, many students are guided towards incubation structures when they search out LU Innovation for advice.

Teams are quite small, from one individual to six core people, sometimes plus extra part-time workers. Start-ups sometimes employ a student workforce from the university. Some structures in the innovation system facilitate the links between start-ups and student workforce. For instance, AcademicSolutions is a young start-up that connects companies with suitable students to help them develop faster. Another example is Företagsutveckling that can match workers or interns to start-ups in the science park.

The main positive aspects of the incubation process as perceived by the entrepreneurs interviewed are: (1) sharing with a community of similar entrepreneurs, (2) the mental support and motivation they get by being in the incubator's environment or through the coaches, (3) learning opportunities with market or business advice from business developers, and sometimes the pitch training which they really enjoy, (4) access to networking events or contacts. In terms of network, the most commonly cited actors are (1) Lund University with LU Innovation, the researchers, the students, and the Dragons contest at the University, (2) Ideon Science Park that provides a sales programme or regular breakfasts for everyone, (3) Innovation Skåne, (4) municipal councils, which goes to show how far public organizations are engaged in the innovation system, and (5) Connect, which is a platform for meeting investors. Thus, the network is one way to access funding, but other ways are available in the innovation system.

Financial support can be found in some of the structures but the entrepreneurs interviewed use many different structures in the innovation system as complementary sources of funding. Students can be selected for the Leapfrog scholarship to work on their projects during the summer, giving them access to three workshops and 3000 euros offered through LU Innovation. The Sten K Johnson Centre for Entrepreneurship also offers a scholarship for student entrepreneurs. Two governmental structures are the most cited as resources to find funding: Almi, which can provide loans, and Vinnova, which funds a host of different innovative projects. Another potential source of funding comes from contests. An example is VentureCup, which is the number one competition for entrepreneurs in Sweden and has a branch in Ideon Science Park. Moreover, as they develop in an academic context, some entrepreneurs have used research grants as funding. Of course, LU Innovation is still a major actor in the innovation system in terms of funding with accessible money for product development or test grants. Some entrepreneurs have tried to reach investors, especially through Connect, but with a mixed bag of results.

Some entrepreneurs regret the lack of space in the business incubators for concrete product development. However, the innovation system fills this gap by enabling access to university resources. One student used a workshop Lund University that she was able to access through her own contacts. Another start-up used a lab and help from a researcher for product development in Lund University.

Some programmes (e.g. Drivhuset) has set up a 'Demo Day' as a pitching competition in front of investors to concretize the end of the program. This is greatly appreciated by entrepreneurs, as it is connects to real-world opportunity. All the entrepreneurs confirm that the incubation process really helped them to create their company or at least accelerate the process, and 4 out of 9 think their project or company would not have survived without it. Most entrepreneurs tried several incubation structures in the innovation system or intend to go to another incubator after the exit in order to keep receiving entrepreneurial support. The key lesson learned from discussions with the entrepreneurs is that they do

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not especially seek complementary services when changing business incubators but more the continuation of the entrepreneurial support they are currently receiving. The project also highlights that many entrepreneurs move into Ideon Science Park after the end of their programme in one of the business incubators. In doing so, they can still access some networking events or learning possibilities, which really is a key asset of Ideon Science Park and almost certainly explains why some startups, once they have the necessary resources (funds and knowledge), establish directly in the park without going through an incubation process.

4.7 The ideal incubator picture

This concept of an ideal incubator was a way to better understand what incubatees see as missing in terms of services offered through business incubation today or what is ultimately most crucial for them. According to the entrepreneurs interviewed, three main elements are fundamental to business incubation and would have to be present in an "ideal incubator":

- A friendly/nice atmosphere (or even better a place) that motivates and allow exchanges;
- Some individual and customized services such as personal follow-up meetings or teaching adapted to the particular needs of the start-ups;
- Networking contacts with industry (e.g. customers) or facilitating meetings with investors.

Overall, the entrepreneurs interviewed are really happy with the services they can access. Some entrepreneurs do point out that the programmes lack tailor ability, nut they nevertheless recognize that the service on offer is already great given that it is either free or entirely affordable.

5 CONCLUSION

This article aimed to examine the added value associated with the innovation system in the vicinity of university campus and consequently how this type of ecosystem is geared to support innovation, especially the innovation needed for transition to the green economy. The relationships that have been developed between different types of structures and actors in the innovation system are strongly intertwined, as students, researchers, labs, firms, and society (through community involvement) are all engaged members of the local innovation ecosystem. Another striking finding of our analysis is the diversity of the offer and the flexibility that drives the system. Structures composing the innovation system can be more or less specialized and more or less open, but always strongly permeable, with the possibility of start-ups moving from one to the other as and when their needs change. These interactions are so numerous and varied that it is sometimes difficult to explain how and when they occur because they do not necessarily have any predefined order. Each actor and start-up is part of a tight community and naturally knows where to go and who to see to get the services they needs. There does not appear to be any competition between the structures, only complementarity to serve regional economic development, which seems to be an appropriate scale of structuring and governance. These elements militate in favour of promoting agile management of incubatees' careers. Moreover, campuses where sustainable development is part of their strategy seem to be places that promote the development of start-ups focused on societal objectives. This aspect would need to be confirmed by further work.

Moreover the universities and labs are able to support the development of innovation by contributing their equipment, facilities and knowledge. An important factor enabling startups to consolidate their value from the beginning of the project is their capacity to develop and improve their prototypes and then validate them as market-relevant. The richness and the diversity of equipment available on a campus and the proximity of the experts who use it facilitates the production of real innovations based on science and technology what is a differentiating factor. Finally, the link between student training and the innovation system also appears to be key as a support for the education system. The innovation system becomes a place of mediation, making it possible to integrate training courses with the skills and networks that cannot be 'taught' and whose knowledge is now a key component of the students' skillsets. However, the value of this specific form of learning was unable to be evaluated in the time-window allocated to this study, and thus warrants a more complete analysis in continuation of this project.

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