Stakeholder Support for Sustainable Venture Creation in Entrepreneurial Ecosystems

We theorize about entrepreneurial ecosystems as ongoing processes by examining the distinct practices of ecosystem stakeholders for (i) providing resources to sustainable entrepreneurs (direct startup support) and (ii) creating and developing the sustainable entrepreneurial ecosystem (sub-ecosystem development). Combining a qualitative research design with a process approach, we conduct 35 semi-structured and outcome-driven interviews with various stakeholders of ecosystems in Germany, Austria, and Switzerland. Our results suggest four distinct process dimensions that describe how ecosystem stakeholders foster sustainable venture creation: *Enabling, Networking, Transforming,* and *Orchestrating*. Those ecosystem processes run diametrically for direct startup support and sub-ecosystem development, implicating different practical approaches.

Keywords: entrepreneurial ecosystems, stakeholders, sustainable venture creation, sustainable entrepreneurial ecosystems, resources

1 Introduction

While there has been a plethora of research examining ecosystem elements and distinctive characteristics (Audretsch et al., 2018; Autio et al., 2018; Isenberg, 2010; Spigel, 2017), the scholarly conversation still searches for a process understanding of ecosystem support and the emergence and development of relations within ecosystems that lead to the creation of new ventures (Bischoff & Volkmann, 2018; O'Shea et al., 2021; Spigel & Harrison, 2018). Moreover, rising awareness in business, society, and academia regarding sustainability challenges like climate change, plastic pollution, and biodiversity loss has sparked the notion of *sustainable* entrepreneurial ecosystems as a sub-system of entrepreneurial ecosystems. Within sustainable entrepreneurial ecosystems, stakeholders support entrepreneurs in creating new *sustainable* ventures that simultaneously address the economic, environmental, and social dimensions of doing business (Cohen, 2006; DiVito & Ingen-Housz, 2017; Theodoraki et al., 2018). Those support processes are either facilitated by a sustainable entrepreneurial ecosystem focusing only on sustainable ventures or by an entrepreneurial ecosystem in which sustainable entrepreneurs search for support that applies to their needs. Due to the scarcity of sustainable entrepreneurial ecosystems in practice (Fichter et al., 2016), our study investigates the later to uncover which processes in entrepreneurial ecosystems are tailored for sustainable venture creation and how sub-ecosystems (in this case, for sustainability) are developed. Therefore, this study investigates the distinct ecosystem support processes of stakeholders within entrepreneurial ecosystems that explain new sustainable venture creation.

As support is often connotated exclusively with formal assistance provided by the government or other publicly funded sources (Hanlon & Saunders, 2007), a definition of support and the institutions that provide support is needed. Therefore, we define the term 'support' as the practice of providing resources to entrepreneurs or other stakeholders of the entrepreneurial ecosystem. Such support comes from stakeholders. We define a stakeholder as any institution or person within an ecosystem that provides support. We do not consider support

within sustainable entrepreneurial ecosystems *distinctively* different from support within entrepreneurial ecosystems. Instead, we see *sustainable* support (support for sustainable venture creation) as an additional layer of needed resources for startups and stakeholders, increasing the overall complexity of sustainable venture creation. As stated, we define support (or support *practice*) as the act of providing resources. In line with process theory (Mohr, 1982), we define an ecosystem *process* as an aggregated conglomeration of support practices. For example, *teaching business modeling* could be labeled as a support practice, while *enhancing entrepreneurial capabilities* could be labeled as an ecosystem process consisting of additional practices like *providing equipment* and *shaping entrepreneurial mindsets*.

So far, entrepreneurial ecosystem literature has focused on the ecosystem constituting elements (Stam & Van de Ven, 2021), identifying ecosystem stakeholder groups (Bischoff & Volkmann, 2018), and relational governance (Colombo et al., 2019). Most studies emphasize descriptive and atheoretical formats (Cao & Shi, 2021; Theodoraki et al., 2022), thus neglecting the dynamic processes and relations within ecosystems. This results in the paradox that we understand what an ecosystem is, how the various stakeholder groups are related, and what kind of output they achieve. However, we do not understand in detail *how* those outcomes are achieved. The claim for more process research was started by Spigel and Harrison (2018, p. 152), stating that "a process perspective on ecosystems provides a more nuanced approach to how ecosystems operate and influence the entrepreneurship process." So far, only a limited number of studies have followed that appeal, such as O'Shea et al. (2021) investigating collaborative sensemaking in designing and structuring ecosystem features and Kriz et al. (2022) identifying retention and dissipation mechanisms in the ecosystem emergence process. For the field of sustainable entrepreneurial ecosystems, Bischoff and Volkmann (2018) conclude in a literature review that future research needs to develop an understanding of *how* stakeholders provide tailored support to sustainable entrepreneurs. In addition, Theodoraki et

al. (2022, p. 352) state that holistic approaches for investigating entrepreneurial ecosystems are rare but needed as entrepreneurial ecosystems can only be uncovered through "consideration of the system as a whole, including spillovers to and consequences for the larger sphere of stakeholders involved."

Based on the scholarly discussions, we see the current research gap in the entrepreneurial ecosystem literature mainly in three avenues: (i) We need a better understanding of *how* entrepreneurs receive needed resources within ecosystems; (ii) We need a better understanding of *how* sustainable entrepreneurial ecosystems emerge and develop; and (iii) we need to apply a process view on entrepreneurial ecosystems to uncover ecosystem processes over time. We address this research gap by asking: *How do stakeholders from entrepreneurial ecosystems foster sustainable venture creation?* We chose an explorative qualitative approach to answer our 'how' question (Eisenhardt & Graebner, 2007) and aim at identifying the processes between ecosystem stakeholders through which, first, entrepreneurs receive needed resources (Hanlon & Saunders, 2007; Spigel & Harrison, 2018) and, second, a sustainable entrepreneurial ecosystem is created and developed (Autio et al., 2018; Scheidgen, 2021). We opted for a processual approach in our methodological design because this allows us to emphasize and focus on the sequential stages, events, and interactions that happen in entrepreneurial ecosystems over time, giving us a more detailed understanding of the phenomena under study than having a descriptive or variance-based approach.

By applying a process perspective, our study refrains from conceptualizing entrepreneurial ecosystems as a collection of descriptive categories but instead sees them as ongoing processes or mechanisms that support sustainable entrepreneurs in their venture creations (Spigel & Harrison, 2018). The process perspective enables us to apply a holistic view, in which we can consider multiple relations, interactions, and events. The analysis of those variables provides a more nuanced picture of the dynamics, causes, and effects involved

in ecosystem support processes. We seek to find a sequential process that exemplifies the practices of ecosystem stakeholders when supporting sustainable entrepreneurs and developing the sustainable entrepreneurial ecosystem.

We conducted 35 face-to-face interviews with stakeholders from various entrepreneurial ecosystems and sub-ecosystems in the DACH region (Germany, Austria, Switzerland) to gain in-depth insight into these multifaceted processes. Including different ecosystems ensures that the observed processes are not only region-specific. Simultaneously, by integrating different stakeholder groups, we employ a multi-level perspective as a multitude of viewpoints and possible spillover effects are included. During the interviews, we focused on explicit practices and actions that stakeholders undertake over time to assist individual entrepreneurs/startups and develop the supportive structure of the sustainable ecosystem. While interviewing, we applied process theory in the sense that we were asking specifically for the sequential application of practices in the daily activities of our interviewed stakeholders. We combined those stakeholder practices or "events" into a sequential process (Langley, 1999) by analyzing the practices according to Gioia et al. (2013). Through this inductive approach, we derive results that propose holistic ecosystem support processes. Those support processes contribute to our scholarly conversation by explaining (i) how ecosystems function processual when supporting entrepreneurs and (ii) how ecosystems shift to sustainability by creating sustainable entrepreneurial ecosystems. Both ecosystem processes explain new sustainable venture creation in entrepreneurial ecosystems. Furthermore, our practice-oriented results can guide practitioners (such as incubators, universities, and policymakers) in implementing strategies that aim at ecosystem development. We discuss our theoretical and practical contributions in the final sections of this paper.

2 Theoretical background

2.1 The growing literature on (sustainable) entrepreneurial ecosystems

The concept of entrepreneurial ecosystems is receiving rising attention from entrepreneurship researchers worldwide, resulting in various academic discussions about the emergence of ecosystems and their contribution to regional and sustainable development (Acs et al., 2016; Audretsch et al., 2023; Bischoff, 2021; Cunningham et al., 2019; Malecki, 2018; Spigel, 2017; Stam & Van de Ven, 2021; Theodoraki et al., 2022). In contrast to clusters, entrepreneurial ecosystems are not bound to specific industries but incorporate manifold stakeholders from various institutions that build processes and infrastructure to enable high entrepreneurial growth potential (Autio et al., 2018; Spigel & Harrison, 2018; Stam, 2015). There is a wide variety of definitions when it comes to entrepreneurial ecosystems, of which most highlight an interconnected group of actors, distinctive elements and characteristics, the exchange of resources, a shared understanding of culture and values, and the focus on entrepreneurial output in the form of new venture creations and regional development (Cukier et al., 2016; Isenberg, 2010; Mack & Mayer, 2016; Mason & Brown, 2014; Roundy et al., 2017; Theodoraki & Messeghem, 2017). Whereas entrepreneurial ecosystems include all variations of entrepreneurship (e.g., social, high-tech, academic, and other), sustainable entrepreneurial ecosystems focus on developing a sustainable economy. According to Bischoff & Volkmann (2018, p. 186), a

> "sustainable entrepreneurial ecosystem refers to an interconnected and collaborating group of stakeholders providing sustainability-focused support to entrepreneurs in order to foster entrepreneurial activities that simultaneously address the economic, ecological and social dimensions of sustainability and thereby contribute to the transformation to a sustainable regional economy."

Sustainable entrepreneurial ecosystems can be viewed as a sub-ecosystem of entrepreneurial ecosystems in that the essential functions and characteristics (e.g., circulation of resources, the interconnectivity of its elements, entrepreneurial output) are similar to entrepreneurial

ecosystems but with a distinguishing feature: the concentration on sustainability. Sub-ecosystems have been mentioned multiple times in the entrepreneurship literature (Malecki, 2018; Moore, 1997; Simatupang et al., 2015; Theodoraki & Messeghem, 2017) without defining a processual relationship between both ecosystems. Therefore, we define an entrepreneurial sub-ecosystem as any ecosystem within an entrepreneurial ecosystem dedicated to supporting a distinct thematic orientation (e.g., sustainability, healthcare, high-tech) or a specific group of entrepreneurs (e.g., academic, female, or migrant entrepreneurs) with multiple connections and interactions between entrepreneurs and stakeholders of both ecosystems, through which resources flow. There can be manifold sub-ecosystems within one regional entrepreneurial ecosystem, and stakeholders from the overall entrepreneurial ecosystems can simultaneously engage in various sub-ecosystems. Figure 1 displays an entrepreneurial ecosystem, including exemplary sub-ecosystems.

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Figure 1: Entrepreneurial ecosystem and sub-ecosystems

Sustainable entrepreneurial ecosystems are considered rare in practice (Fichter et al., 2016). However, the emergence of such sustainable ecosystems is a fluid process steered by many stakeholders, including those that focus on traditional entrepreneurship (new ventures that focus predominately on an economic aim instead of a social and/or ecological one). As sustainability and global challenges become pressing in society and business alike, sustainability and entrepreneurship get interconnected. Hence, we need to understand how sustainability "gets into" traditional entrepreneurial ecosystems respectively, how sustainable entrepreneurs get resources, and how sustainable entrepreneurial ecosystems develop. Those are the objectives of this study.

Current scholarly knowledge explains in-depth the entrepreneurial ecosystem constituting elements, institutions, and characteristics that account for the complex structure of

entrepreneurial ecosystems. Those constituting elements can be structured into three clusters: first, structural elements (networks, talent, demand, leadership, knowledge); second, contextual elements (infrastructure, intermediate services, finance); and third, cognitive elements (culture, societal norms) (Isenberg, 2011; Stam & Van de Ven, 2021; Theodoraki et al., 2022). Theodoraki et al. (2022) propose a multilevel perspective to unpack those elements and understand their multiple interactions. Other scholars back this multilevel research approach—especially for sustainable entrepreneurial ecosystems. For example, Wilson and Post (2013) state that investigating sustainability (people, planet, and profit) per se requires a multilevel perspective in the form of a multi-stakeholder perspective. In general, there is a need for future research to uncover the stakeholder interactions on a holistic level when engaging in entrepreneurship support and to explain the joint development of sustainable entrepreneurial ecosystems (Belz & Binder, 2017; Cohen, 2006; Lorne, 2009; Matlay, 2009).

Suppose we switch our perspective from a descriptive approach of defining what makes up ecosystem elements and how they are structured towards a process perspective that examines the relations between various elements within ecosystems. In that case, we will gain insights into ecosystem processes that help us understand how ecosystems function processually, meaning that we understand time-related how stakeholders interact and ecosystems develop. In that sense, ecosystem interactions are not static acts or a category of concepts in which processes are ultimately a fixed entity (Langley et al., 2013; McMullen & Dimov, 2013) but "a sequence of individual or collective events, actions and activities unfolding over time in context" (Pettigrew, 1997, p. 338). An event is a unit within a process, which means that events are what people (or other research subjects) do or what happens to them (Van de Ven & Engleman, 2004). Synonymous events can also be labeled as a practice. Hence, we need to investigate distinctive ecosystem practices (e.g., the exchange of resources from stakeholders to entrepreneurs) and aggregate those practices into a process that explains ecosystem support

on a systems level, meaning a level that accounts for the whole ecosystem. A systems level ultimately means a multi-stakeholder level.

Although many researchers describe the entrepreneurial ecosystem concept as inherently bound to formal institutions like incubators, universities, and venture capital firms, Isenberg and Onyemah (2016) note that the concept does not depend on such institutions. However, it is bound to the processes within and between different formal institutions, organizations, stakeholders, and entrepreneurs. Therefore, a process view of entrepreneurial ecosystems creates a more detailed and nuanced explanation of entrepreneurial ecosystems' functionalities and success factors.

To conclude, entrepreneurial ecosystems hold the potential to explain the creation of new sustainable ventures within regions, yet, the entrepreneurship literature lacks an understanding of the distinct processes among and between different ecosystem stakeholders (Spigel & Harrison, 2018). This missing understanding of a multi-level stakeholder perspective also accounts for the interaction between sub-ecosystems and higher-level systems (Scheidgen, 2021).

2.2 Stakeholder support for new sustainable venture creation

Previous studies in entrepreneurial ecosystem literature note that ecosystems are composed of various stakeholder groups, such as higher educational institutions, business partners, and communities that provide resources for ecosystem development (Bull & Willard, 1993; Hanlon & Saunders, 2007; Jain & Ali, 2013; Motoyama & Watkins, 2014; Simatupang et al., 2015). Ecosystem stakeholders are “entrepreneurial connectors” (Mason & Brown, 2014, p. 77), responsible for sharing resources between each other and entrepreneurs. The interconnectivity of stakeholders in entrepreneurial ecosystems points towards neighboring theories like network theory (Greve & Salaff, 2003), cluster theory (Delgado et al., 2010), innovation systems (Pyka et al., 2019), and social capital (Theodoraki et al., 2018). All research streams alike are the

understanding of the benefits of stakeholder support for the individual journey of entrepreneurs, the creation of new ventures, and regional economic development (Etzkowitz & Klofsten, 2005; Simatupang et al., 2015; Suresh & Ramraj, 2012).

Isenberg (2010) was among the first researchers to map an entrepreneurial ecosystem and show the different institutions and potential stakeholder groups responsible for providing support. Without focusing on the distinct support processes in entrepreneurial ecosystems, Isenberg's (2010) model represents the overall composition of entrepreneurial ecosystems that he clusters into six domains: Policy, markets, finance, support, culture, and human capital. All domains consist of various stakeholders. For a sustainable entrepreneurial ecosystem, Bischoff and Volkmann (2018) developed a constitutional framework that displays nine stakeholder groups and their functionalities: Incubators and accelerators, higher educational institutions, governmental institutions, non-governmental institutions, community, employees, customers, business partners, and financial institutions. Each of the nine stakeholder groups can play an essential role in the creation of new sustainable ventures. As stated, entrepreneurial success most likely depends on various stakeholders, their interconnectivity, and resource provision. Different stakeholders can be responsible for different needs of entrepreneurs or be most critical in different phases of their entrepreneurial process.

Many scholars underline entrepreneurs' need for resources and stress that those resources come from a supportive environment and support network (Bank et al., 2017; Guerrero et al., 2020; Kanda et al., 2018; Lorne, 2009; Malecki, 2018; Wagner et al., 2019). Insights into the process of such support interactions are rare in the entrepreneurship literature. The question of *how* ecosystem stakeholders foster the entrepreneurial process of entrepreneurs within the system remains uncharted land. Bischoff and Volkmann (2018, p. 182) stress this gap in the entrepreneurship literature by stating:

> "Understanding how stakeholders can provide tailored support to sustainable entrepreneurs is crucial for fostering sustainable entrepreneurship on the one hand and for further developing sustainable entrepreneurial ecosystems on the other hand."

Therefore, it becomes critical to focus on support processes explaining how new sustainable ventures are created within entrepreneurial ecosystems. While resources might be at the center of such a theoretical viewpoint, they are not our study's central topic. It is, however, the exchange of resources and their use for new sustainable venture creation. In other words, we are mainly interested in the daily practices and acts and how those play into the emergence of new startups and a sub-ecosystem rather than identifying and understanding the resources that are being shared.

To conclude, the entrepreneurial ecosystem literature can benefit from adopting a multi-level stakeholder perspective, in which the processes between stakeholders and entrepreneurs become the phenomenon under study. Shedding light on the processes, their emergence, and development over time will contribute to a better understanding of thriving entrepreneurial ecosystems.

3 Methods

3.1 Research design

For our aim to study entrepreneurial ecosystems with a holistic, multi-level perspective, we chose a qualitative design, more specifically, a multiple case-study method and a process approach. As we sought to understand complex and dynamic processes between various stakeholders within various ecosystems, the qualitative approach is appropriate for studying our how question (Yin, 2014) and uncovering the underlying mechanisms in entrepreneurial ecosystems. Moreover, Dana and Dana (2005, p. 81) point out that qualitative research helps to "better understand entrepreneurship in the context of its environment." Hence, our 'environment' is entrepreneurial ecosystems, and we want to understand their processes for supporting the creation of new sustainable startups and the emergence of sustainable sub-

ecosystems. We raise the research question: *How do stakeholders from entrepreneurial ecosystems foster sustainable venture creation?*

Our investigation has two objectives:

1. Identify the processes through which ecosystem stakeholders deliver support to sustainable entrepreneurs. In short: *Direct startup support*.
2. Uncover the processes through which ecosystem stakeholders create and continuously develop the sustainable entrepreneurial ecosystem. In short: *Sub-ecosystem development*.

We apply inductive reasoning as we believe that our study's central topic, identifying ecosystem stakeholder support practices, can be best uncovered through an inductive approach, in which we closely stick to a focus group's daily activities. Our study is based on 35 face-to-face interviews with ecosystem stakeholders from various entrepreneurial ecosystems in the DACH region (Germany, Austria, Switzerland) – with one exception from Denmark. All interviews were held between July 2021 and January 2022. Table 1 provides an overview of our interview respondents.

Insert about here
Table 1: Summary of interview respondents

We embed our research in process theory – both for data collection and analysis. A process approach holds its strength at a greater abstraction level than variance-based approaches by showing how processes unfold over time (Chiles, 2003) and emphasizing temporal sequencing and the interplay of events (Mohr, 1982). We are interested in understanding which daily practices stakeholders of entrepreneurial ecosystems undertake to support the creation of new sustainable ventures. Therefore, we focus on the sequence of events in the sense of: first do A, then do B, to get to C (Langley, 1999). The underlying causal logic of our approach is that a sequence of events leads to a specific outcome over time, explaining how and why this outcome

happened. The outcomes we are researching are our two research objectives: *direct startup support* and *sub-ecosystem development*. Overall, the process approach helps to identify patterns, changes, similarities, and interdependencies (Gonçalves et al., 2024) between ecosystem stakeholders that contribute to a more comprehensive understanding of the mechanism of direct startup support in entrepreneurial ecosystems and the emergence of a sustainable sub-system.

3.2 Data collection

We applied a purposive sampling logic for interview respondent identification (Patton, 2009), whereby we based our choice on organizational and ecosystem criteria. For the organizational level, we first derived stakeholder groups from entrepreneurship literature. Based on the identified groups by Bischoff and Volkmann (2018), we structured our prospective interview partners into seven groups: Higher educational institutions, incubators and accelerators, financial institutions, governmental institutions, non-governmental institutions, business partners, and communities. Purposefully, we do not integrate the groups of customers and employees. We acknowledge that both groups are relevant stakeholders within entrepreneurial ecosystems; however, we do not see them as stakeholders who *actively* offer support in a systematic and goal-oriented manner, as the other groups do.

Secondly, the interviewed stakeholders had to have a track record of supporting sustainable startups. As we were primarily investigating the development of sustainable entrepreneurial ecosystems, our interview respondents had to cater to sustainable startups specifically. We checked this criterion by researching based on archival data if the stakeholders had supported at least three or more sustainable startups respectively sustainable (startup) endeavors within the last 18 months. We also asked in the interview for their support practices dedicated to fostering sustainable startups and building the sub-ecosystem. If we could not verify a track record of sustainable support, we abstained from having an interview.

For the ecosystem level, we ensured that our interviewed stakeholders were part of an ecosystem, not single stakeholders without interconnections to a wider sphere of stakeholders. Again, we researched two characteristics based on primary and secondary data. First, the entrepreneurial ecosystem that the stakeholder was part of was indeed an ecosystem in the sense of interconnected stakeholders. Only if we could identify ten or more stakeholders within the region who were forming networks with each other or who were collaborating would we consider the entrepreneurial ecosystem as existent. Second, the stakeholder itself had to have various interconnections with the wider ecosystem. We checked this item based on secondary data and by asking in the interview for examples of such connections. If one of the two items was not met, we abstained from having an interview or did not consider the interview for our analysis.

We contacted our interview partners via email and the social media platform LinkedIn. Next to our inquiry, we sent them an expose with two sentences about our research aim and further technical information like date, approximate time, and anonymity. We only included stakeholders engaged for at least a year within their organization to ensure that our respondents were knowledgeable about the phenomenon under study. The interviews were all held virtually in German or English according to the interviewees' preference using the program “Zoom,” and followed a semi-structured guideline that focused on identifying the stakeholders' support processes. In the case of direct support to sustainable entrepreneurs, we asked what kind of support it was and how they managed this support, especially how they interacted with the respective sustainable entrepreneurs over time. To account for the time aspect, we asked the stakeholders to give us examples of startups they accompanied throughout their entrepreneurial process. This way, we could follow the support practices step by step. For the case of ecosystem building, we asked what kind of supporting and collaborating practices they were involved in,

how this process unfolded over time, and how they ensured that this kind of support was beneficial for creating new sustainable ventures.

On average, one interview lasted 43 minutes. We audio-recorded all interviews and transcribed the recordings to code the data later. To ensure the anonymity of our interview respondents, we anonymized the data in our study. Furthermore, we translated the quotes we used in our study for the interviews we conducted in German. All translations, including slang and grammar, were made close to the original language.

3.3 Data analysis

We used the software ATLAS.ti to code our interviews and followed the guidelines and logical structure Gioia et al. (2013) introduced. First, we formed first-order codes; that is, we identified relevant statements of our interview respondents and attached a code closely related to the respondent's statement. Second, we clustered the codes based on similarity and created second-order themes that described the similarity of the codes. Third, we aggregated the themes into higher-level dimensions that describe how ecosystem stakeholders foster the creation of new sustainable ventures. The first-order codes, second-order themes, and third-order dimensions represent a framework that shows an ecosystem process for fostering sustainable venture creation based on supporting and building sustainable entrepreneurial ecosystems. Figure 2 shows our data structure.

Insert about here

Figure 2: Stakeholder support process dimensions for sustainable venture creation

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As we conducted a process study, we analyzed the time aspect specifically. While we asked for sequential storytelling in the interview, we reconstructed this sequence in the analysis. For example, one research aim was to investigate the ecosystem processes for direct startup support. Here, we interpreted the findings based on the moment in time the stakeholders supported the

startups. In detail, this means that we found that (recurringly) stakeholders first enabled entrepreneurs *before* they navigated them to other stakeholders. According to this principle, we found for our second research aim that stakeholders orchestrated infrastructure development *before* they advocated sustainability (endeavors) to other stakeholders. Through this processual analysis, we uncovered that our identified ecosystem processes for the two stated research aims – direct startup support and ecosystem development – run diametrically to each other.

4 Findings

We sought a multilevel, multi-stakeholder perspective in our investigation of stakeholder support for sustainable venture creation within entrepreneurial ecosystems. We applied a holistic approach to study ecosystems as a whole instead of single groups of actors. This allowed us to uncover practices and interactions prevalent in the overall system. In total, we derived four distinct stakeholder process dimensions in entrepreneurial ecosystems that facilitate sustainable venture creation: *Enabling, Networking, Transforming,* and *Orchestrating.* All dimensions are linked to both our research objectives: *Direct startup support* and *sub-ecosystem development*. The presentation of our findings will differentiate between those two aims and explain the meaning of each dimension for each objective. Tables 2 and 3 provide an overview of our interview respondents' statements, empirically supporting our interpretation of second-order themes into aggregate dimensions.

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Table 2: Data supporting the interpretation of second-order themes for direct startup support

Table 3: Data supporting the interpretation of second-order themes for sub-ecosystem development

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4.1 Enabling

Our study shows that one process dimension of ecosystem stakeholders for facilitating new sustainable venture creation is *enabling* entrepreneurs and other stakeholders. Our data structure displays two themes of how ecosystem stakeholders directly support startups (research

objective I): (i) by teaching (sustainable) business-building skills and (ii) by providing equipment and infrastructure; and one theme of how stakeholders support stakeholders and build the sub-ecosystem (research objective II): (iii) by sharing best practices.

RESEARCH OBJECTIVE I: DIRECT STARTUP SUPPORT

First, as most startup founders are first-time founders (Tihula & Huovinen, 2010) business-building skills are highly needed. Consequently, one of the main tasks of ecosystem stakeholders is to equip entrepreneurs with the necessary skill set required to build a business. This skill set lasts from basic legal knowledge (e.g., choosing a legal structure) to using specific entrepreneurial tools (e.g., theory of change). Especially key stakeholders from higher educational institutions, and incubators and accelerators take on the role of teaching relevant skills by providing support programs that can run for several months, as this interview respondent describes:

> "We have this module for bachelor students (…) where we teach the entrepreneurial journey from start to finish. All the necessary tools needed for a successful founding; we start right at the beginning, with personas, who are your target groups, then we go over into business modeling and, in the end, pitching. They pitch their business idea in front of a jury" (HEI01).

The main focus of stakeholders within this theme is knowledge transfer combined with the practical application of the methods and tools taught. This may be in the form of a hypothetical startup (especially in university contexts) or by directly applying the learned lessons to build the entrepreneurs' startups. The following interviewee describes one of their formats in which they teach entrepreneurs financial knowledge with practical application possibilities:

> "It's the "Finance Camp." This is a workshop all-around startup financials, but not just knowledge transfer, meaning all the technical terms and the logic of a cap table. (…) It is combined with a tool from the county of Baden-Württemberg called "Pre-Seed." This is a convertible loan, where startups can get up to 400.000 Euro" (INC02).

The previous statement is an example of not only the first theme of teaching (sustainable) business-building skills but also the second theme of providing equipment and infrastructure.

Stakeholders mainly support by providing tangible resources like capital, office space, and materials. However, intangible resources, e.g., internet or postal service provision, are still being transferred. We see two primary resources popping out of our investigation: access to existing infrastructure (e.g., within an incubator) and the provision or access to capital.

> "So, for example, in the hub, we have resources that can be used by the startups, like a workshop, an open workshop that can be booked free of charge. We have conference rooms, seminar rooms, and many more, which all can be booked free of charge – for [startup] development but also just to have a coffee" (INC04).

Regarding capital and funding, we identified funds and competitions as essential practices where stakeholders were bundling manifold resources, one of which is prize money. One of our interview respondents states:

> "Well, first of all, they get, as I mentioned before, a monetary price. So that's 10.000 Swiss francs. Each startup gets that. And so, yeah, four startups can win. So total prize money is 40k [40.000 Swiss francs]" (NGO02).

Providing equipment and infrastructure is one essential theme in supporting startups, as entrepreneurs get equipped with manifold resources that would otherwise be hard or expensive to obtain.

RESEARCH OBJECTIVE II: SUB-ECOSYSTEM DEVELOPMENT

For ecosystem development, we found that stakeholders build a sustainable entrepreneurial ecosystem by sharing best practices. By definition, stakeholders are unionized by the motivation to build a robust entrepreneurial ecosystem that delivers high-growth entrepreneurship output. As sustainable venture creation requires additional expertise as it adds a layer of complexity to building businesses, stakeholders benefit when they share best practices and educate each other on how to support entrepreneurs best. One respondent states:

> „And our program „Fit for Social Business" (…) is designed specifically for entrepreneurship educators, whom we teach social entrepreneurship. We inform and show how to advise sustainable founders on which topics are most relevant, for example, the impact model next to

> the business model, sustainable financing options, and specific legal forms, which are not possible in traditional business. (…) We do workshops and offer other educational material" (FIN02).

This process builds a more robust sub-ecosystem as stakeholders within the ecosystem become more experienced and professional, leading to higher support standards and tailored support offerings for sustainable startups.

To sum up, *enabling* accounts for an essential step found in all entrepreneurial ecosystems of our interviewed stakeholders. Becoming an entrepreneur is an ongoing learning process. Thus, one prominent function of stakeholders' support processes is contributing to and facilitating this learning process so that sustainable entrepreneurs are best prepared for creating and running their startups. Simultaneously, educating other stakeholders on how to train entrepreneurs best strengthens the sub-ecosystem.

4.2 Networking

Our finding *networking* shows that one core activity of stakeholders in an entrepreneurial ecosystem is developing new connections between themselves, their networks, and the startups they support. We identified again two themes on how stakeholders leveraged their networks for direct startup support: (i) by enabling business contacts and partnerships and (ii) by increasing visibility; and one theme how they networked for sub-ecosystem development: (iii) by developing and strengthening relations.

RESEARCH OBJECTIVE I: DIRECT STARTUP SUPPORT

The first theme shows that when stakeholders enable business contacts and partnerships, they actively connect startups with specific network partners. For example, they could find experts in their network that support the startup in specific questions (e.g., legal, tax, technology). Connecting sustainable entrepreneurs with network partners enables access to knowledge, data, and resources that would otherwise be difficult for the startup to obtain. When

stakeholders have built an extensive network over the years along with a trustworthy reputation, they can transmit this trust to the startup; that trust then functions as a door opener to established and highly professional players. One stakeholder explains this process like this:

> „We have live matchings, where one of our company partners can meet startups. At one of those meetings, we invited [startup], they came to [city], sat for one and a half hours with the respective department, and the innovation managers. (…) And within this process, they [the company] decided: Okay, this has potential. (…). And then we made a sprint, and they could check what exactly is to do, and sign CDAs [confidential disclosure agreements], and in the end, they came to a conclusion: Okay, from an administrative side and from a technical side, it's possible to cooperate. (…) This was when we stepped back, step by step, when we saw this cooperation was running" (INC02).

The previous statement shows that stakeholders can follow a standardized process of integrating startups into their network by facilitating the getting-to-know-each-other and the way of working together. Next to this standardized and facilitated process, network leveraging can also be a simple introduction to one of the network partners. In all cases, such navigation from the stakeholders is highly valuable for the startups as it often translates into high-value resources for the startups, such as a first customer or a field test, as this stakeholder exemplifies:

> " They [startup] had a very good portfolio, very exciting, everything based on AI, and then we said: Okay, let's see, let's create a case. We had to come up with one because we didn't have such a specific problem, but we wanted to see what they could do, so we said: Let's do something" (BP02).

The second theme we identified in our study is the increase of visibility through stakeholders' networking practices. The increase in visibility refers to making the startup more visible in the ecosystem and society. One fundamental practice of ecosystem stakeholders that appeared in our study is hosting networking events and competitions. In fact, for sustainable startups, competitions have become an effective instrument in acquiring resources. Ecosystem stakeholders are responsible for ensuring such events are held. In the last couple of years, the number of such events has risen substantially, as this interviewee states:

> "By now, there are many price-awards for sustainable startups, some with high price money and great equipment. (…) Seven, eight, nine years ago, when we brought our award to life, there was hardly anything; this was pioneering then" (NGO01).

On the one hand, visibility is created through winning and being present at networking events. On the other hand, most award ceremonies are shared in various media channels, and many startups can use their participation at such events in their own channels as a reputation. In general, stakeholders can use existing media channels when promoting sustainable startups. Incubators and accelerators especially tend to have a vast network and established communication channels. Those can be used to introduce startups to the overall ecosystem.

> "Of course, we create visibility within our channels. But we also try to get them into various media here in [city], may it be within a municipality channel, innovation channel, news broadcast, or even the NDR [North-German-Broadcast Station]. (…) Here, we can support because it's, of course, different when a startup tries to get in there or when we, as part of the university, ask for a media report" (INC01).

RESEARCH OBJECTIVE II: SUB-ECOSYSTEM DEVELOPMENT

Our third theme shows that stakeholders do not only leverage their networks for entrepreneurs but continuously build and strengthen relationships with other stakeholders of the respective ecosystem. This ensures that ties between stakeholders are expanding and becoming more robust. The aim of such networks can be manifold and stretch from setting up programs to integrating new topics into the ecosystem, as this interviewee exemplifies:

> "And third is the community building around topics that we feel are relevant for the future. So, we have partners that push us or finance us to build communities around, for example, now the topic of climate change where we bring together partners from different stakeholder areas like the public sector, private sector startups, but as well affected people or people that you normally don't hear so much. And we bring them together at the table to discuss certain topics and build projects together" (COM01).

Networks can amplify support for the good cause, as various stakeholders bring various resources to the table. Our study shows that it needs stakeholders who take the lead in setting up such network ties by starting an exchange, as this respondent explains:

> "Generally, I see myself as a networker and door opener for the good cause. Here are a few examples: During the first COVID-19 wave in February 2020, when disinfection materials were

> scarce, I collaborated with clients and other people from my network. A few weeks later, I was in the Ministry of Health, consulting the COVID-19 crisis team and also the military's supply chain department. Later, I was using those exact same networks to develop a blockchain application to detect fraud vaccination certifications" (BP06).

Our study shows that stakeholders must act as leaders to establish new relations. One stakeholder of the group of business partners explains their transformation towards a change agent:

> "We have a department that deals with new regulations coming from Brüssel [European Commission]. (…) And by now, it is part of our service to update other companies about all the regulations. We created a network, including the German Department of the Environment" (BP03).

To conclude, the dimension of *networking* accounts for a variety of resource provisions for entrepreneurs. Those could be industry expertise, expert sessions, field projects, higher recognition in the ecosystem and beyond, and connecting sustainable entrepreneurs with like-minded people. On the other side, networking refers to actively building new relations within the ecosystem or strengthening existing stakeholder relations.

4.3. Transforming

Our study suggests that stakeholders engage in *transforming* (i) by shaping the entrepreneurs' sustainability identity and (ii) by advocating for entrepreneurship and sustainability. The first theme is directed at sustainable entrepreneurs, while the second theme develops the sustainable entrepreneurial ecosystem.

RESEARCH OBJECTIVE I: DIRECT STARTUP SUPPORT

The first theme, shaping the entrepreneurs' sustainability identity, embodies different aims that altogether help build the entrepreneurs' sustainable identity. Within this process dimension, stakeholders create a view of sustainable entrepreneurship as a viable career path, both on a purpose and an economic level, so that interested people get the motivation to engage in sustainable entrepreneurship, as this interview respondent describes:

> "The problem we are solving is that universities educate students to make a career in some company, and maybe for some of them, that's good, but for others, it's not because many are born to *build* a company. For example, a social venture, but they don't know that yet. They haven't had the chance to realize that. And this is the problem that we are solving" (HEI01).

Other ways that stakeholders support entrepreneurs is by uncovering and fostering their inner motives and purposes as founders, building confidence and resilience (e.g., against uncertainty), and sensitizing towards impact implications and considerations, as this stakeholder states:

> "Well, and I put sustainability as an impulse into meetings to teach startups to look at the whole picture. Often, they focus on one sustainability goal or one sustainable aspect. But then I say: If you do it, do it right. Go fully sustainable, not just in one small aspect. And, so far, this approach mainly was met with agreement" (BP06).

Within this role, stakeholders ensure that entrepreneurial actions are genuinely directed at sustainability. They challenge current beliefs and (company) practices, guiding entrepreneurs and startups toward the triple bottom line of doing business. This is both a personal and organizational transformation process.

RESEARCH OBJECTIVE II: SUB-ECOSYSTEM DEVELOPMENT

The second theme, advocating for entrepreneurship and sustainability, is a collection of various stakeholder educational and sensitizing activities with the aim of getting other stakeholders to reflect on and engage with entrepreneurial and sustainable topics. Stakeholders aim to promote entrepreneurship and sustainability by sensitizing other stakeholders to ethical issues and creating a sense of ownership. Not least, those practices build on sustainable values and convey norms, as one interviewee respondent describes:

> "This means our practices that have evolved culturally or historically [within societies], also in other countries, are not necessarily ethically correct or can be labeled sustainable. And this needs change and reflection. And our role can only be to encourage that [reflection]. And it should be our role – and this is normative – to be against child labor and bad working conditions. (…) For

> me, that has to do with sustainable companies, which is more than just making the own company sustainable, but we have to think: How do we affect supply chains, markets, society, consumer behavior, our way of living?" (HEI03).

Those practices mainly target potential stakeholders, such as students, incumbents, or associations that are not yet part of the respective entrepreneurial ecosystem. The objective is to engage other stakeholders in sustainability and sustainable entrepreneurship. Practices aiming at those objectives follow an open approach, in which stakeholders do not offer collaborations or require immediate actions from the targeted external stakeholders. However, they want to create awareness for new topics, as this interviewee explains:

> "But we also want to introduce topics such as diversity or public value. And for those, it's a balancing act between we want to inform, but we do not want to missionize" (INC02).

Advocating for entrepreneurship and sustainability aims to transform external stakeholders into internal stakeholders of the ecosystem so that more actors become change agents for sustainability. One stakeholder tells about their practices to achieve those objectives:

> "We were searching for transfer formats and networks that can help firms and employees of firms recognize the impact of sustainability. We want to help those firms become more sustainable and help those firms themselves become role models and have a transformational impact on industries" (HEI03).

To conclude, *transforming* is a crucial process dimension in which stakeholders ensure that entrepreneurs become *sustainable* entrepreneurs. Furthermore, by advocating for sustainability and entrepreneurship, stakeholders turn "outside" stakeholders into "inside" stakeholders, enabling spillovers into the sustainable entrepreneurial ecosystem. Integrating stakeholders who have not been part of the ecosystem enlarges its resource pool, which other stakeholders and startups can obtain.

4.4 Orchestrating

We identified the process dimension of *orchestrating*. For the direct support of startups, we identified the theme (i) mentoring the journey, in which stakeholders mentor entrepreneurs over

time and, therefore, (co-)orchestrate their entrepreneurship process. For the sub-ecosystem development aspect, we identified two themes that give insights into how ecosystems are orchestrated: (ii) by conducting and distributing research and (iii) by governing relationships and creating new concepts.

RESEARCH OBJECTIVE I: DIRECT STARTUP SUPPORT

The first theme, mentoring the journey, shows that stakeholders act as mentors who support startups over a more extended period, making them co-pilots of the startup journey. In contrast to teachers, educators, or coaches, who (typically) come in for a short time (e.g., a workshop or seminar) to educate about a specific topic, mentors accompany startups over several months or years. Hence, their support covers various topics that might occur during the entrepreneurship process. Often, mentors are from the same industry as the entrepreneurs, and they can give insights into standards and procedures. As mentors, they can make sure that startups focus on their businesses and impacts and help avoid known pitfalls, as this interviewee states:

> „It was our job to say: 'Did you think of this and that? Check if you need to do those things.' But it's not like we say that they have to do it. It's like this: We help them find the right paths. We help them to ask the right questions at the right time, (…), so that they avoid mistakes and failures" (INC01).

While ecosystem support is often rather technical and focused on building the product or service, mentors can also care for entrepreneurs' personal development and emotional support. One respondent states:

> "Emotional support is an important point because that's one of the biggest parts because I mean everybody is smart enough to set up the metrics to engineering their product, you know; and that's also the job that people have to do themselves, but we're here to provide a structure in which they can thrive and also feel accepted. I think that's one of the most important things" (COM04).

Mentoring the journey can stretch from technical guidance to emotional support. Its basis is a time aspect, meaning that stakeholders take an interest in the startup over a period of time. This

might be connected to a business angel investment or the aim to use the product or service after market entry.

RESEARCH OBJECTIVE II: SUB-ECOSYSTEM DEVELOPMENT

When it comes to developing the ecosystem, orchestrating becomes a central topic, as one question that remains is how stakeholders structure and define which processes, regulations, and functions to implement within ecosystems. We identified two more themes that give insights into the orchestration of entrepreneurial ecosystems.

Conducting and distributing research, the second theme within the process dimension of *orchestrating* refers to stakeholders analyzing the current entrepreneurial ecosystem and developing and sharing data so that other stakeholders get a more profound and data-backed understanding of the ecosystem, as this interviewee describes:

> "We always try to develop something for each stakeholder group that really is helpful for this stakeholder group. For startups, this could be tools (…), and for the ecosystem, we develop things like the [report name] that we publish. This is interesting for many because we shed light on many topics. And especially for politics, we derive short handouts where we say: Okay, here's a short position paper, those are the most relevant insights from the project" (NGO01).

In this way, the ecosystem and its entrepreneurship output become known within the ecosystem and beyond when insights get shared with the greater public or stakeholders (e.g., politicians) that previously have not been involved in the ecosystem. However, not all data is shared with the greater public, as some data is specifically designed to cater to specialized networks, as this stakeholder exemplifies:

> "So, it's a list that we select really carefully of the top zebras [term for sustainable startups] that we have scouted, and then we have an investor network that they subscribe to, and then we as a service send them the top startups that we chose, that we saw because of our assessment. That would make more sense for them because (…) they're not going to analyze each startup that well. And because we have this enormous amount of data, we can really also make this comparison" (NGO02).

Conducting and distributing research is one theme that accounts for various developmental steps within the ecosystem that aim at strengthening existing ties or setting up new connections. As this theme involves time-consuming practices that require expert knowledge, well-established players within the ecosystem often engage herein.

In the third theme, governing relationships and creating new concepts, we find many stakeholder practices that create (new) output for the sustainable entrepreneurial ecosystem through frameworks, tools, methods, collaborations, programs, or infrastructural funding. The ecosystem outputs aim to establish or improve the structure of the sub-ecosystem directly; therefore, they have to be distinguished from other ecosystem outputs that instead focus on improving parts of the sub-ecosystems. For such *system* outputs, relations have to be governed. Not in the sense of creating collaboration projects but in taking ownership and leadership to integrate new concepts (e.g., the circular economy trend) into the ecosystem. One respondent states:

> "That's why we focus on the question: How can we govern stakeholder arrangements? For me, sustainable entrepreneurship has a lot to do with stakeholder relationship management" (HEI03).

The governance of relations is often not a dedicated practice; however, we identified practices different from standard collaboration projects as described in the networking dimension. Aiming at the whole system means developing system changes, which affect all of the ecosystem's stakeholders and entrepreneurs, leading to an improved system that creates a higher sustainable entrepreneurship output. Below are two examples of stakeholder practices aiming at improving the overall system:

> "In this case, public funding can be a signal for private venture capitalists to see that there is a certain degree of trustworthiness and that there is some sort of pre-due diligence. (…) And for this, we have to adapt our [current] funding possibilities" (GOV01).

> „There has to be a political will for change. And this will can build structures, financial possibilities" (GOV02).

Such system changes can be implemented with top-down and bottom-up approaches. In this case, top-down refers to key stakeholders like financial institutions or politicians that can change rules and regulations that apply (legally) to all ecosystem stakeholders. Bottom-up, on the other hand, points towards incremental change, which is sparked by single stakeholders or networks that change their attitudes and actions. This could be, for example, the integration of impact reporting, which gradually becomes the standard for all ecosystem companies.

In conclusion, the process dimension of *orchestrating* is a collective process in which many stakeholders engage. For direct startup support, stakeholders govern most of the startups' entrepreneurial journeys. For sub-ecosystem development, we could not identify any relationship structures or networks where stakeholders discussed how to develop the ecosystem best. In other words, we did not find any strategic consortium that assessed the overall ecosystem and took on the role of implementing improvements. Nevertheless, we found many stakeholder practices that altogether improved the entrepreneurial ecosystem. Many practices cumulated together into a governing structure that develops sustainable entrepreneurial ecosystems for the better.

5 Discussion

Our leading interest in this study was to understand how stakeholders in entrepreneurial ecosystems influence the creation of new sustainable ventures. We subsequently discuss our findings' contribution to the (sustainable) entrepreneurial ecosystem literature and develop practical implications for all stakeholder groups involved in our study. Moreover, we propose a future research agenda based on the study's limitations.

5.1 Theoretical Implications

Our study has several theoretical implications. On a general level, our investigation contributes to a deeper understanding of entrepreneurial ecosystems as processes. In response to Spigel and Harrison's (2018) claim for more process research in the entrepreneurial ecosystem literature,

we applied a process perspective throughout our research; that is, we studied stakeholders' distinct practices for supporting sustainable entrepreneurs and developing the sub-ecosystem, agglomerated those practices into ecosystem processes (Langley, 1999), and put those processes into a sequential model (see Figure 3). Our sequential model shows four process dimensions and their interplay that explain how ecosystem stakeholders foster sustainable venture creation. This study result shows time-related what stakeholders do to achieve the desired outcome of sustainable venture creation. Hence, we follow an outcome-driven process logic instead of a variance logic (Van de Ven & Engleman, 2004), at which end we configured a "whole episode" (Polkinghorne, 1988) that explains how stakeholders from entrepreneurial ecosystems foster sustainable venture creation. This episode will be explained in detail, together with our other theoretical implications, in the following.

First, as our main study result, we developed a theoretical model (Figure 3) that represents our episode of new sustainable venture creation. Our theoretical model contributes to previous research stating two fundamental questions concerning entrepreneurial ecosystems. The first question asks for the underlying mechanisms of how entrepreneurs acquire needed resources (Audretsch et al., 2019; Roundy & Fayard, 2019; Spigel & Harrison, 2018). The second one asks for an explanatory framework of (sub-)ecosystem emergence and evolution (Erina et al., 2017; Roundy et al., 2018; Thomas & Autio, 2015). Our study contributes to both questions by identifying process dimensions that sequentially show how stakeholders support startups directly and how they build a sub-ecosystem.

We applied a multi-level and process approach to our study, allowing us to investigate multiple stakeholders and group them regarding their processes rather than constituting elements. For our interviews, we clustered our respondents according to the literature into seven groups: Incubators and accelerators, higher educational institutions, communities, business partners, financial institutions, governmental institutions, and non-governmental institutions.

This clustering tells us little about the processes and interrelation of the respective stakeholders. However, according to our process dimension, entrepreneurial ecosystem stakeholders can also be clustered according to their support processes, respectively roles within the ecosystem: *Enabler, Networker, Transformer,* and *Orchestrator*. Grouping stakeholders according to the roles they obtain in ecosystems instead of their institutions helps us better understand their interrelations. This way, we can more clearly see which tasks must be fulfilled to achieve ecosystem entrepreneurship output and how those tasks and roles interrelate as a process.

Figure 3 shows that those roles and their associated processes run diametrically to each other. For directly supporting startups, stakeholders first act as *enablers* before taking up the other roles, while for developing sustainable entrepreneurial ecosystems, stakeholders first act as *orchestrators* and then engage sequentially in the following roles. In a nutshell, for direct startup support, stakeholders first *enable* people to become entrepreneurs and then connect them with their *network* before accompanying the *transformation* process of the startup towards sustainability and *orchestrating* the startup's further development. To build sustainable entrepreneurial ecosystems, stakeholders must first *orchestrate* and set up the infrastructure before enlarging the resource pool by *transforming* "outside" stakeholders into "inside" stakeholders. Afterward, they *network* to manage relations and *enable* other stakeholders for a more professional sub-ecosystem. The model is idealized, and, in reality, stakeholders are active in various processes simultaneously and iteratively.

Second, scholars widely agree on the benefits of resource provision to entrepreneurs (Hillman et al., 2009; Jenssen, 2001; Macpherson et al., 2015; Wernerfelt, 1984). While previous researchers mainly focus on explaining resource provision with established theories like network theory (Greve & Salaff, 2003) or social capital (Theodoraki et al., 2018), we focus on stakeholder theory and describe the immediate implication of stakeholders' resource provision on the entrepreneurial process. We derive three critical implications: First,

stakeholders contribute to entrepreneurs becoming entrepreneurial. We show that people are made into sustainable entrepreneurs with the support of stakeholders. The basic knowledge of entrepreneurship and its essential tools, together with an entrepreneurial identity, is facilitated in the relationship between stakeholders and entrepreneurs. Second, we demonstrate that integrating entrepreneurs into relevant networks is an active process facilitated by stakeholders. Stakeholders must build networks and take responsibility for navigating entrepreneurs to and within those networks. Last but not least, we worked out the demand of entrepreneurs for guidance when building a new venture. Stakeholders answer this demand by guiding through the specific steps and phases of the entrepreneurial process – not only with formal knowledge but also with personal companionship. Those implications align with O'Shea et al. (2021), stating that entrepreneurial opportunities evolve dynamically within entrepreneurial ecosystems *based on* social interactions. Stakeholder theory explains how those interactions are facilitated, deepening our understanding of resource provision in entrepreneurial ecosystems.

Third, regarding ecosystem emergence and evolution, previous scholars emphasize various influencing factors like history, culture, firm-level, institutional settings, and governmental involvement (Autio et al., 2014; Barney, 1991; Harima et al., 2021; Mack & Mayer, 2016; Stam, 2015; Thompson et al., 2018; Van de Ven, 1993). Thompson et al. (2018) point out that internal sources like structuring and interactions have a more significant effect on ecosystem development than external sources like governmental policies. This aligns with the evolutionary view of Mack and Mayer (2016), who describe the evolution of ecosystems as the interconnection between core elements of entrepreneurial ecosystems. Our results contribute to the discussion on ecosystem emergence, especially on sub-ecosystem emergence, by highlighting stakeholders' interactions and processes. We show that stakeholders engage in numerous internal ecosystem creation and development processes. Such internal processes are not directed at entrepreneurs but towards other stakeholders who contribute to the overall

entrepreneurship output of the respective ecosystem. As we investigated stakeholder engagement for sustainable venture creation, we found that those processes are initiated by stakeholders who are either part of an existing sustainable entrepreneurial ecosystem or engaged in sustainability on principle. The latter were stakeholders from entrepreneurial ecosystems who created new networks that could evolve into a sub-ecosystem (sustainable entrepreneurial ecosystem) or simply function as dense networks for specific sustainability concerns (like the sharing economy). Such networks are often not institutionalized but merely informal collaborations that structure the support for sustainable entrepreneurs (e.g., a business angel network). Such stakeholder processes raise awareness for sustainability issues and enable knowledge transfer to people and institutions outside the ecosystem, therefore enabling spillovers and enlarging the sphere of stakeholders within the sustainable entrepreneurial ecosystem.

5.2 Practical Implications

Our study offers practical implications for various stakeholders of entrepreneurial ecosystems. We structure this section according to the stakeholder groups involved in our study.

Incubators and Accelerators, and higher educational institutions are key stakeholders in directly supporting sustainable entrepreneurs and startups. Our study identified several practices of both stakeholder groups for enhancing sustainable entrepreneurial capabilities. While all interviewed stakeholders specifically included sustainable entrepreneurs in their support offerings, we often identified missing strategies for supporting sustainable startups. For example, while many stakeholders incorporate impact orientation in their business modeling, we frequently missed structured approaches catering to a sustainable venture's peculiarities, like multiple stakeholder management or storytelling for sustainability. We believe that more specialization among incubators and accelerators, and higher educational institutions for sustainable endeavors will benefit sustainable startups by professionalizing and speeding up the

entrepreneurial process. Both stakeholder groups take on all the identified roles and combine various resources and access points for entrepreneurs. Hence, they hold the possibility of functioning as vast resource pools for startups, which can lower their need to find resources among other stakeholders.

Simultaneously, both stakeholder groups are typically also engaged in building the sub-ecosystem. Due to their intensive connection with startups and their vast networks, both stakeholder groups are at the pulse of sustainability and its challenges. They can function both as leaders and cooperation partners for manifold sustainable endeavors. However, we see their strength as generalists who best accompany sustainability endeavors as project managers or multipliers, which aligns with their core characteristics.

Communities are great informal networks where sustainable entrepreneurs can mingle and follow specific trends within the sustainability sphere. We had a much harder time identifying vibrant communities than we had, for example, with incubators and accelerators. One possible explanation might be their informal character and less professionalization (and funding) in their organizational structures. The informal structure is simultaneously the strength of communities as this structure allows for easy access of interested entrepreneurs or stakeholders into the sustainable ecosystem. We see the main practical implication for communities in strengthening the ties to stakeholders in the ecosystem that hold various resources, like higher educational institutions or governmental organizations, so that members of the communities know where to go next.

Business partners take a unique role within entrepreneurial ecosystems, as they are often single actors connected with only a few startups. However, business partners are highly knowledgeable about the respective startups' industries and hold networks with other industry partners. Our study showed that business partners at large only had a few ties with other ecosystem stakeholders. This is why we think that networking among business partners (e.g.,

in the form of a business angel unit) intending to share best practices might professionalize or maximize the offered support.

Financial institutions are often in the middle between state funding (or other funding) and ecosystem stakeholders who roll out specific programs. Therefore, they are highly engaged in ecosystem development as they create and structure programs and infrastructural support offerings. Especially for sustainable entrepreneurial ecosystems, financial institutions should be aware of sustainable startup challenges, e.g., their financing and business model. We believe that direct exchange between financial institutions and sustainable startups will increase the understanding and matching between both.

The same goes for governmental organizations, which also engage mainly in the structural development of entrepreneurial (sub-)ecosystems. As governmental organizations have the power to change the regulatory framework of ecosystems, we believe regular exchanges with ecosystem stakeholders and startups to uncover pressing needs are indispensable for governmental organizations.

The group of non-governmental organizations is highly diverse, which is why we cannot give generalized implications for this stakeholder group. However, we can see that many non-governmental organizations take on the role of creating or facilitating lasting structures within the ecosystems, either by setting up foundations or by conducting research about the ecosystem. Therefore, they need to hold close ties to governmental and financial institutions so that they can make and share informed decisions about new regulations and programs.

5.3 Limitations and future research

Conducting research with a process and multi-level approach within the entrepreneurial ecosystem conversation comes with several limitations. First, the high complexity of the concept of entrepreneurial ecosystems makes it challenging to frame it within a qualitative research setting with a limited number of interview partners per stakeholder category. The

limited number of interview respondents might have led to biased results in which we base our conclusions on our study's most prominent stakeholder groups (e.g., higher educational institutions, and incubators and accelerators).

Second, applying a multi-level and holistic view means deriving results on a high level, including aggregating multiple viewpoints. It also means that detailed support processes and an in-depth view of the various stakeholder groups are missing. Therefore, we do not claim to have uncovered the ecosystem's inner processes par excellence. We uncovered high-level ecosystem processes and potential process antecedents that shed light on a more robust definition of ecosystems as processes. We show that ecosystems deliver benefits to entrepreneurs through processes and interrelations and that those processes need more research to understand their emergence, structure, and impact. We also show that, in addition to exchanging resources, stakeholders also build relations and take on roles to further develop the sustainable entrepreneurial ecosystem. Future research can explore those development processes in greater detail to portray the process of the emergence and development of sustainable entrepreneurial ecosystems. Also, the orchestrational aspect of entrepreneurial ecosystems becomes a topic of interest that needs further and deeper theoretical consideration to explain who the ecosystem leaders are (if any) and how those governing processes work in detail.

Third, as our process research was outcome-driven instead of event-driven (Van de Ven & Engleman, 2004), we were studying new sustainable venture creation retrospectively. This could have led to a hindsight bias, in which we see the identified events as more linear than they really were (Bizzi & Langley, 2012). Future process studies can embrace a real-time longitudinal approach, in which events are observed, and processes are created “on the go.” This would lead to a richer and more detailed understanding of the observed ecosystem processes.

Fourth, aligning theories of ecosystem literature such as network theories, social capital, and cluster theory do have a solid research base that we only considered superficially due to emphasizing the explorative approach of our study and focusing on new insights and their discussion. We propose that future researchers focus on a theoretical discussion to describe ecosystem theory next to established theories and work out their similarities and differences. As sustainable entrepreneurial ecosystems are still rare in practice (Fichter et al., 2016), following clear criteria regarding defining an ecosystem in practice and sampling adequate data when investigating ecosystems is highly important for all ecosystem researchers.

Lastly, our sampling comprises various DACH region ecosystems (Germany, Austria, and Switzerland). Future research could investigate one specific regional ecosystem and see if our results hold. Although we do not claim that our results hold for all entrepreneurial ecosystems, we believe that our high-level structure can be found in various adaptations for the development of entrepreneurial ecosystems as well as for the support of sustainable entrepreneurs. We see many future research possibilities in a more profound research base of sustainable entrepreneurial ecosystems. Some fundamental questions remain unanswered: Who are the leading actors in emphasizing sustainability in entrepreneurial ecosystems? What ecosystem elements are most important for sustainable entrepreneurs? How does the venture creation process in entrepreneurial ecosystems differ between traditional and sustainable entrepreneurship?

6. Conclusion

The need for sustainable venture creation as one way of tackling global challenges like poverty, climate change, and biodiversity loss is present in society, politics, and science alike. For this reason, we see the scholarly role as understanding the concept of sustainable venture creation and enabling policymakers and stakeholders of all kinds to act upon such challenges. Our research aimed to understand better stakeholders' collaborative engagement in entrepreneurial

ecosystems for new sustainable venture creation. The results we derived can be seen as a building block for further research to create a deeper understanding of the functionalities of support processes in entrepreneurial ecosystems. Our study underlines the need to build relationships in regional ecosystems that include triple helix stakeholders from industry, academia, and politics, all of which foster new sustainable venture creation.

Tables

#	Stakeholder	Stakeholder group	Brief description	Location	Position of interviewee
01	INC01	Incubator and accelerator	Collaborative university incubator	Hamburg, Germany	Managing Director
02	HEI01	Higher educational institution	University startup support	Schleswig-Holstein, Germany	Project Manager
03	INC02	Incubator and accelerator	Accelerator for green tech startups	Freiburg, Germany	Managing Director
04	COM01	Community	Impact community of founders, creatives, investors, incumbents and NGOs	Vienna, Austria	Managing Director
05	INC03	Incubator and accelerator	Incubator for social ventures	Leipzig, Germany	Project Manager
06	HEI02	Higher educational institution	University startup support	Leipzig, Germany	Startup Coach
07	COM02	Community	Food community for new (sustainable) innovations in the food market	Hamburg, Germany	Technical Director
08	BP01	Business partner	Consultancy specializing in sustainable business	Berlin, Germany	Managing Director
09	COM03	Community	Community of young people dedicated in achieving the UN sustainable development goals	Berlin, Germany	Project Manager
10	COM04	Community	Impact community of founders, creatives, investors, incumbents and NGOs	Leipzig, Germany	Managing Director & Founder
11	FIN01	Financial institution	Financial institution with a focus on equity and startup funding	Saxony, Germany	Investment Manager
12	FIN02	Financial institution	Foundation of a state bank funding sustainable entrepreneurship projects	Frankfurt, Germany	Project Manager
13	HEI03	Higher educational institution	University research, education and transfer of sustainable entrepreneurship	Lower Saxony, Germany	Professor
14	BP02	Business partner	Energy firm focused on sustainable startup collaboration	North Rhine-Westphalia, Germany	Head of Innovation Management
15	INC04	Incubator and accelerator	Incubator for creative and sustainable projects	Bremen, Germany	Managing Director & Co-Founder

16	NGO01	Non-governmental institution	Research institution for innovation and sustainability	Berlin, Germany	Project Manager
17	NGO02	Non-governmental institution	Impact firm for accelerating, analyzing and investing in sustainable entrepreneurship	Zürich, Switzerland	Project Manager
18	BP03	Business partner	Firm hosting social impact prize	Mainz, Germany	Marketing Manager
19	HEI04	Higher educational institution	University startup support	Münster, Germany	Senior Researcher
20	HEI05	Higher educational institution	University startup support	Cologne, Germany	Research Associate
21	FIN03	Financial institution	Investment and advisory firm for sustainable change	Copenhagen, Denmark	Senior Consultant
22	HEI06	Higher educational institution	University with sustainable entrepreneurship master programs	Berlin, Germany	Program Manager
23	HEI07	Higher educational institution	Regional bundling of startup support services for knowledge-based entrepreneurship	Hamburg, Germany	Head of Project Management
24	HEI08	Higher educational institution	University startup program	Cologne, Germany	Project Coordinator
25	FIN04	Financial institution	VC focusing on deep decarbonization technologies	Berlin, Germany	Investment Manager
26	HEI09	Higher educational institution	University startup support ecosystem	Kaiserslautern, Germany	Project Manager
27	FIN05	Financial institution	Investor focusing on steward ownership	Hamburg, Germany	Project Manager
28	NGO03	Non-governmental institution	Foundation for sustainable projects, especially climate-relevant endeavors	Osnabrück, Germany	Head of Division
29	NGO04	Non-governmental institution	Research institute high-tech startups	Munich, Germany	Project Manager
30	BP04	Business partner	Firm supporting startups with venture capital and cooperation	Arnsberg, Germany	Investment Manager
31	COM05	Community	Community empowering youths to become change agents for a better world	Vienna, Austria	Managing Director
32	INC05	Incubator and accelerator	Incubator with a social program and financing possibilities	Bremen, Germany	Startup Coach
33	BP05	Business partner	Business Coach for Strategy & Sustainability	Bremen, Germany	Business Angel

34	GOV01	Governmental institution	Member of the state parliament	Düsseldorf, Germany	Politician
35	GOV02	Governmental institution	Member of the state parliament	North Rhine Westphalia, Germany	Politician

Table 1: Interview respondents

Dimensions	Themes	Representative Quotes
Enabling	Teaching (sustainable) business-building skills	"We have this module for bachelor students (…) where we teach the entrepreneurial journey from start to finish. All the necessary tools needed for a successful founding; we start right at the beginning, with personas, who are your target groups, then we go over into business modeling and, in the end, pitching. They pitch their business idea in front of a jury. (…) And additionally, the students have theory classes. So first, theory, and then praxis with us" (HEI01).
		"So, the people holding these innovator talks, they're all from within our network, so these our mentors, our experts, that any initiative can talk to basically whenever they want, so if you feel like you need help with any of these subjects just contact this specific expert and they try to help you in whatever way they can (…). The talks in our series that we have on Youtube, they are very generic and not subject-specific. So, it's like more of how to build an initiative. How do I build a company and like, what problems might arise? And what workarounds can I get?" (COM03).
		"This means that they are pitching in front of all coaches (…) and then they get feedback" (INC01).
		"It's are rather the traditional subjects [that I teach] like accounting, business plans, financing, marketing, sales, business development." (BP06).
	Providing equipment and infrastructure	"So, for example, in the hub, we have resources that can be used by the startups, like a workshop, an open workshop that can be booked free of charge. We have conference rooms, seminar rooms, and many more, which all can be booked free of charge – for [startup] development but also just to have a coffee" (INC04).
		"By now, this is mainly support through prize money. In total, there is 25.000 Euro to win for the startups" (BP03).
		"Well, first of all, they get, as I mentioned before, a monetary price. So that's 10.000 Swiss francs. Each startup gets that. And so, yeah, four startups can win. So total prize money is 40k [40.000 Swiss francs]" (NGO02).
		„We have various funding programs. (…) This means, we are granting them a workplace without charge. (…) Simultanouzsly, we coach them through all the startup phases." (INC06)
Networking	Enabling business contacts and partnerships	"And the third one is called „Grow," which is an SME and startup matching format. However, we do not connect them randomly, but we enable partnerships where we understand the innovation needs of SMEs and scout startups for them, quite a lot of startups" (INC02).
		"They [startup] had a very good portfolio, very exciting, everything based on AI, and then we said: Okay, let's see, let's create a case. We had to come up with one because we didn't have such a specific problem, but we wanted to see what they could do, so we said: Let's do something" (BP02).
		"Each startup gets two coaches, and those coaches are from our corporate partners" (NGO02).
		"So, our system is that we have a pool of experts, around a hundred. Then they [startups] do this analysis at the beginning with their mentor. And then, they figure out where are their gaps or where are their challenges; and then we recommend the experts that they should have individual coaching sessions with. And then they can basically, they get a portfolio of expert hours or let's say they have ten expert hours and they can spend them on the different experts that they need. So that is very individualized" (COM01).
		"If someone really wants to go and start up and needs people, we match teams, this is something we we can help with as well. Let's say someone has entrepreneurial skills, we match them to an engineering team which has an idea" (HEI02).
	Increasing visibility	"Of course, we create visibility within our channels. But we also try to get them into various media here in [city], may it be within a municipality channel, innovation channel, news broadcast, or even the NDR [North-German-Broadcast Station]. (…) Here, we can support, because it's, of course, different when a startup tries to get in there or when we as part of the university ask for a media report" (INC01).

		"From all the analysis we have done, we realized that prestige and visibility are very helpful. So, for the startups, it was great to be invited to the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Production, to be honored in the auditorium with the state minister (…) and to communicate that with many partners. And most startups still have – many years later – the badge on their website showing that they have won" (NGO01).
		"But then, of course, it's also that we invite different investors, our most important stakeholders, but it's also a live event, depending on the corona situation. Of course, last year it was a hybrid event. So, then we really had a livestream as well, and I think we had 500 people that watched it. So, we really tried to provide them visibility through that in Switzerland. Also, our corporate partners usually shared on their networks as well, which is really, yeah, that's a big amplifier. And they also because we have a lot, we work with a lot of banks. They also have a lot of internal investors that might be interested. So yeah, they also get that part of the visibility" (NGO02).
		"It's also some kind of media representation that we provide. So, on our website, LinkedIn channel. We promote the startups (…) as soon as they make one, two steps in our application process. Then they get supported by us in their social media activities" (BP03).
		"The next step is then the public voting. We introduced that last year because this is additional visibility [for the startups]. So, not only the six finalists but all 20 startups can gain some visibility" (BP03).
Transforming	Shaping entrepreneurs' sustainability identity	"So, for us, it's not only the goal that everyone who participates in our program becomes the best social entrepreneur the world has ever seen but rather that people kind of get into the mindset, understand that this is something they want to become active in. And then we see this quite often that people participate with an idea in our program. And then it kind of after two years or something, it doesn't really work out, but they still stay very active in the field in either working for another social enterprise or finding their own second social enterprise. And this is perfect, then I think we would say mission achieved" (NGO03)
		"Well, and I put sustainability as an impulse into meetings to teach startups to look at the whole picture. Often, they focus on one sustainability goal or one sustainable aspect. But then I say: If you do it, do it right. Go fully sustainable, not just in one small aspect. And, so far, this approach mainly was met with agreement" (BP06).
		"The problem we are solving is that universities educate students to make a career in some company, and maybe for some of them, that's good, but for others, it's not because many are born to build a company. For example, a social venture, but they don't know that yet. They haven't had the chance to realize that. And this is the problem that we are solving" (HEI01).
		"One example is within resource management. Traditionally you would just ask, 'What are your most important resources, and how much do they cost?' However, we try to see if resources can be integrated into the supply chain with sustainability. Might this even be an advantage? For example, this might increase resilience if you source local quality instead of shipping from Asia" (NGO01).
		"On a personality level, they are entering [our program] as anyone and everyone: Scientists, students, whatever, and hopefully, they leave as entrepreneurs. (…) This is a personal development" (INC01).
Orchestrating	Mentoring the journey	"And with this Mentor they basically set up a project plan for four to six months, what they have to deliver, when which workshops to attend, which experts to talk to; because some have a problem with marketing, others have a issue with financial plans. So they get their own package, and the mentor basically guides them through [this process]; normally checks in, at the beginning, in the middle, and at the end, to see what is achieved and what still needs to be done" (COM01).
		"But actually, we're trying more to live those [values]. This is our aim, to show that it's possible to make money, do good business and not be an asshole company. But to be a company that takes social responsibility and shares profit" (INC02).
		„I was part of the "Globaliser X-Program," which was a program across five European countries and 30 startups of the same industry – in my case: energy. Together with four junior consultants, I, as a senior consultant, were mentoring one of those startups. This was a great symbiosis, and we mainly discussed scaling strategies" (BP06).

		„It was our job to say: 'Did you think of this and that? Check if you need to do those things.' But it's not like we say that they have to do it. It's like this: We help them find the right paths. We help them to ask the right questions at the right time, (…), so that they avoid mistakes and failures" (INC01).
		"Emotional support is an important point because that's one of the biggest parts because I mean everybody is smart enough to set up the metrics to engineering their product, you know; and that's also the job that people have to do themselves, but we're here to provide a structure in which they can thrive and also feel accepted. I think that's one of the most important things" (COM04).

Table 2: Data supporting the interpretation of second-order theme for direct startup support

Dimensions	**Themes**	**Representative Quotes**
Enabling	Sharing best practices	„And our program „Fit for Social Business" (…) is designed specifically for entrepreneurship educators, whom we teach social entrepreneurship. We inform and show how to advise sustainable founders on which topics are most relevant, for example, the impact model next to the business model, sustainable financing options, and specific legal forms, which are not possible in traditional business. (…) We do workshops and offer other educational material" (FIN02).
		"We are aiming at ecosystem stakeholders from the private and governmental side like multiplicators, accelerators, incubators and so on. For those, we develop webinars, workshops, we developed guidelines how to improve sustainability. It's a mix of documents, materials, and tools that we provide and describe how to use them" (NGO01).
		"In one research project, we developed a [sustainable business model] canvas. We went to multiple universities within Germany and had seminars introducing our canvas. (…) Currently, we are doing workshops with our ‚sustainable value proposition designer' (NGO01).
		"Since 2019, together with […] we are organizing a financing conference for ecosystem stakeholders to strengthen the dialogue and sharing best practices. The ultimate goal is to foster the ecosystem change which has been quite dynamic the last couple of years" (FIN02).
Networking	Developing and strengthening relations	"And third is the community building around topics that we feel are relevant for the future. So, we have partners that push us or finance us to build communities around, for example, now the topic of climate change where we bring together partners from different stakeholder areas like the public sector, private sector startups, but as well affected people or people that you normally don't hear so much. And we bring them together at the table to discuss certain topics and build projects together. (…) We didn't focus so much on that in the beginning; we focused on a startup community, on building a community of individuals, (…) and in the last years, we realized there are more and more institutions as well that want to be part in this (…) because the law changes and they need to do something or because they don't get talents anymore because people say: ok, I want to work for a company that does something with purpose (…), and through that basically a new field opened with building this community" (COM01).
		"One of the most important points is that we keep our openness so that we can intensify our exchange and see what the expectations are [for sustainability] from the viewpoint of county politicians (GOV01).
		"And so, when we started the climate challenge, we talked to multiple experts in the field to figure out the biggest challenges within this social problem. (…) We try to have as many initiatives as possible that are willing to work together because that's also part of the open social innovation process to have a lot of motivated people and great ideas that work together. (…) By now, we're actually doing what

		we call a ‘rolling intake’. So, it's more like initiatives that are already working with us refer other initiatives to us, with whom we then collaborate” (COM03).
		“Generally, I see myself as a networker and door opener for the good cause. Here are a few examples: During the first COVID-19 wave in February 2020, when disinfection materials were scarce, I collaborated with clients and other people from my network. A few weeks later, I was in the Ministry of Health, consulting the COVID-19 crisis team and also the military's supply chain department. Later, I was using those exact same networks to develop a blockchain application to detect fraud vaccination certifications” (BP06).
		“In general, we try to exchange with all [ecosystem] actors. (…) Those are the office for economic development, the municipality, universities, banks, various services, and more” (FIN04).
		“Sometimes it is ‘just‘ an expert talk, or a round table, or similar, for which we invite several ministries, of which we know that they have people who can actually change something [politically]” (NGO01)
		“We have done a huge research project (…) with investment firms, business angel network Germany, and the federal association of venture capitalists. A lot of positive outcomes happened there; for example, the business angel network Germany founded a sustainability investment circle” (NGO01).
Transforming	Advocating for entrepreneurship & sustainability	“This means our practices that have evolved culturally or historically [within societies], also in other countries, are not necessarily ethically correct or can be labeled sustainable. And this needs change and reflection. And our role can only be to encourage that [reflection]. And it should be our role -and this is normative- to be against child labor and bad working conditions. (…) For me, that has to do with sustainable companies, which is more than just making the own company sustainable, but we must think: How do we affect supply chains, markets, society, consumer behavior, our way of living?” (HEI03).
		“So the high-level goal is to develop entrepreneurship in a way that resources are being saved, that sustainability is respected. (…) This means giving sustainable entrepreneurship more possibilities, first of all, more visibility” (FIN02).
		“We’ve established one of the first sustainability faculties in Germany, Europe, and the world. By now, we are 27 professors. (…) and this faculty has an explicit normative guiding principle. The faculty orientates itself at real-life phenomena, identifying inter- and transdisciplinary sustainability problems and finding solutions that make a difference in the world; that is a contribution towards sustainable development” (HEI03).
		“But we also want to introduce topics such as diversity or public value. And for those, it’s a balancing act between we want to inform but we do not want to missionize” (INC02)
		“We’re mostly addressing people that are interested in food and farming but not necessarily in entrepreneurship. (…) That’s how we're trying to inspire people that are already logged to the subject. It's completely public, so, anyone can join “ (COM03).
		“We were searching for transfer formats and networks that can help firms and employees of firms recognize the impact of sustainability. We want to help those firms become more sustainable and help those firms themselves become role models and have a transformational impact on industries” (HEI03).
		“It is [now] a service [of our company] to update other companies about all the legal regulations. This is a network, including the Department of the Environment” (BP03).
		“And our approach when we started was to change the whole system through showing that it's possible to make money with sustainable business models” (COM01).
		“Together with the [national association of German startups] (…) we press into politics to improve the overall framework conditions. In particular, we are addressing financing issues, new and better funds. But also, classics like administrative improvements, especially for sustainable startups” (NGO01).

Orchestrating	Conducting research	"This is our role as a research institute. We analyze [the ecosystem], and we develop tools. We do research about the [entrepreneurial] ecosystem, provide numbers of the ecosystems, and lobby in politics" (NGO01).
		"So, it's a list that we select really carefully of the top zebras [term for sustainable startups] that we have scouted, and then we have an investor network that they subscribe to, and then we as a service send them the top startups that we chose, that we saw because of our assessment. That would make more sense for them because (…) they're not going to analyze each startup that well. And because we have this enormous amount of data, we can really also make this comparison. So, then we, yeah, we can suggest different startups to our investor network" (NGO02).
		"Yeah, we have like the academy still, and then we have the data part as well. (…) That through the whole time that we have been, since 11 years, we've been able to gather a lot of different data and because we've done so many different assessments. So that's also why a big chunk of what we do is also analyze this data, work with this data. We put out different reports, we usually publish them, we - I don't know how many years we've been doing that - but those, they're usually on our websites. So, we also print them. So, then we hand them out, and we sell them, or we ship them out to our network and just publish it on our social media" (NGO02).
		"Despite doing our own research, we were advocating to alter the already established German startup monitor to include sustainability" (NGO01).
		"We always try to develop something for each stakeholder group that really is helpful for this stakeholder group. For startups, this could be tools (…), and for the ecosystem, we develop things like the [report name] that we publish. This is interesting for many because we shed light on many topics. And especially for politics, we derive short handouts where we say: Okay, here's a short position paper, those are the most relevant insights from the project" (NGO01).
		"So, within our research, we were thinking about how better to understand the phenomenon [of sustainable entrepreneurship]. What are success factors, failure factors? And by that, contribute to practice because the results can be used in consultancy as well as in higher education" (HEI03).
	Governing relationships & creating new concepts	"The new government will face barriers as well. They have budget barriers, and they have a lot of other barriers; that's why they can only be as impactful as they get support from the industry, society, NGOs, and so on. That's why we focus on the question: How can we govern stakeholder arrangements? For me, sustainable entrepreneurship has a lot to do with stakeholder relationship management" (HEI03).
		„There has to be a political will for change. And this will can build structures, financial possibilities" (GOV02).
		"In this case, public funding can be a signal for private venture capitalists to see that there is a certain degree of trustworthiness and that there is some sort of pre-due diligence. (…) And for this, we have to adapt our [current] funding possibilities" (GOV01).
		"Our aim is that we foster infrastructural so as to develop better framework conditions for all of society. One example is our partnership with the Social Impact Labs. (…) Within the project, this is a role of supervision and always asking questions. This can be super tedious, but we have jour fixes in all our projects, which we use to check how the program is going continuously. And if we figure out that something isn't working out, we change and iterate" (FIN02).
		"We collaborate for communal strategies with a focus on innovation, so green city, health city, and whatever else is on the plate for [city]" (INC02).
		"We foster infrastructure. That means that the entrepreneurs do not immediately benefit, but in the long run, they will. This is how we leverage a bigger impact" (FIN02).

Table 3: Data supporting the interpretation of second-order theme for sub-ecosystem development

Figures

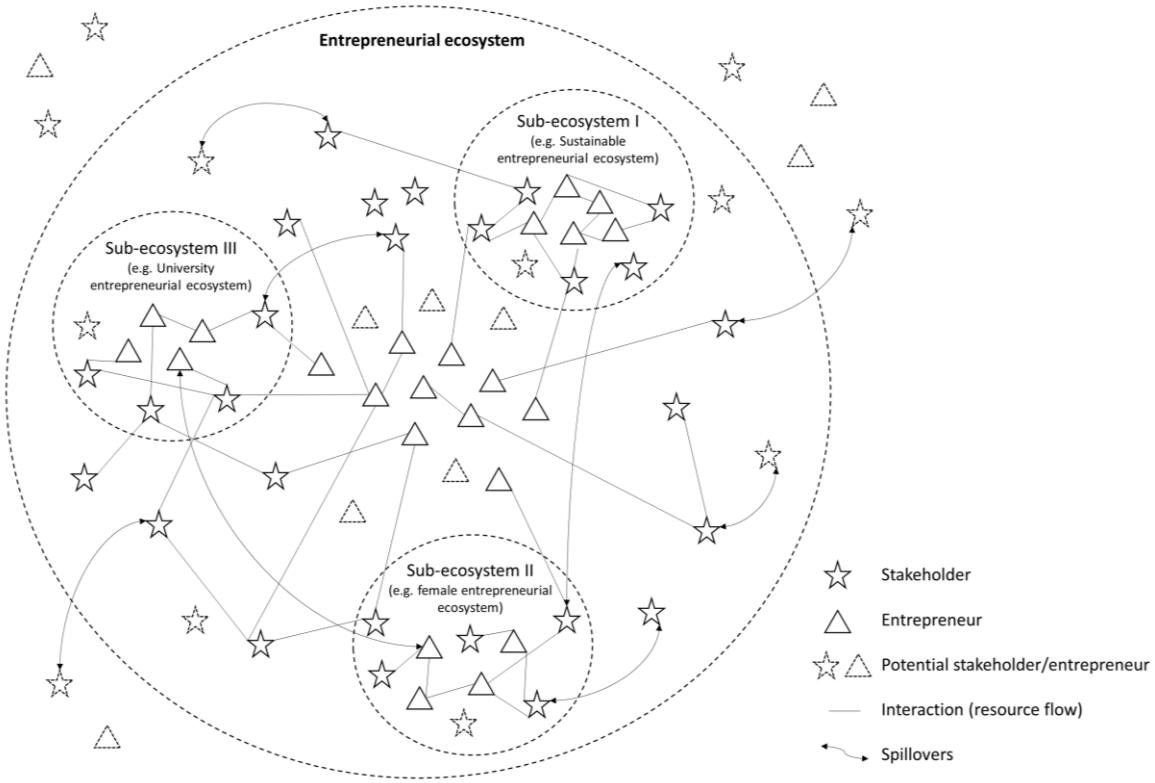

Figure 1: Entrepreneurial ecosystem and sub-ecosystems

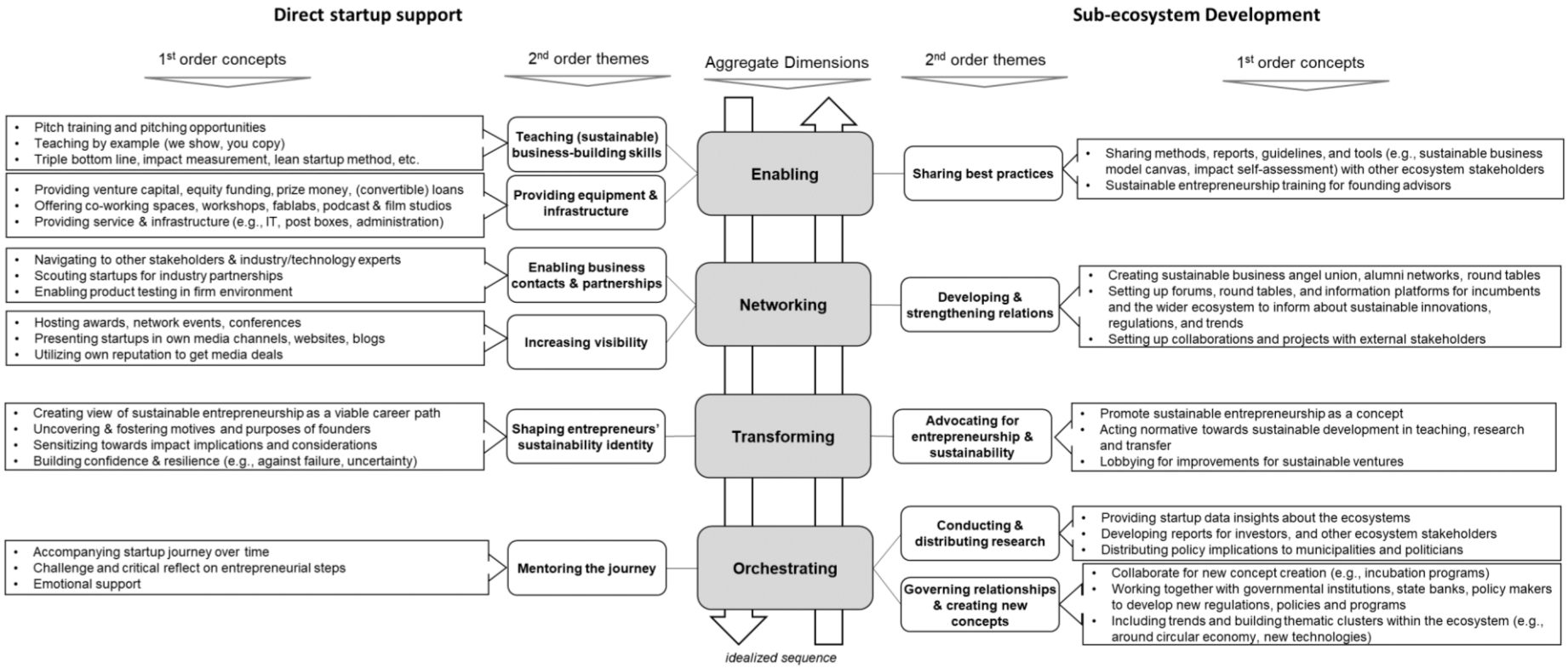

Figure 2: Stakeholder support process dimensions for sustainable venture creation

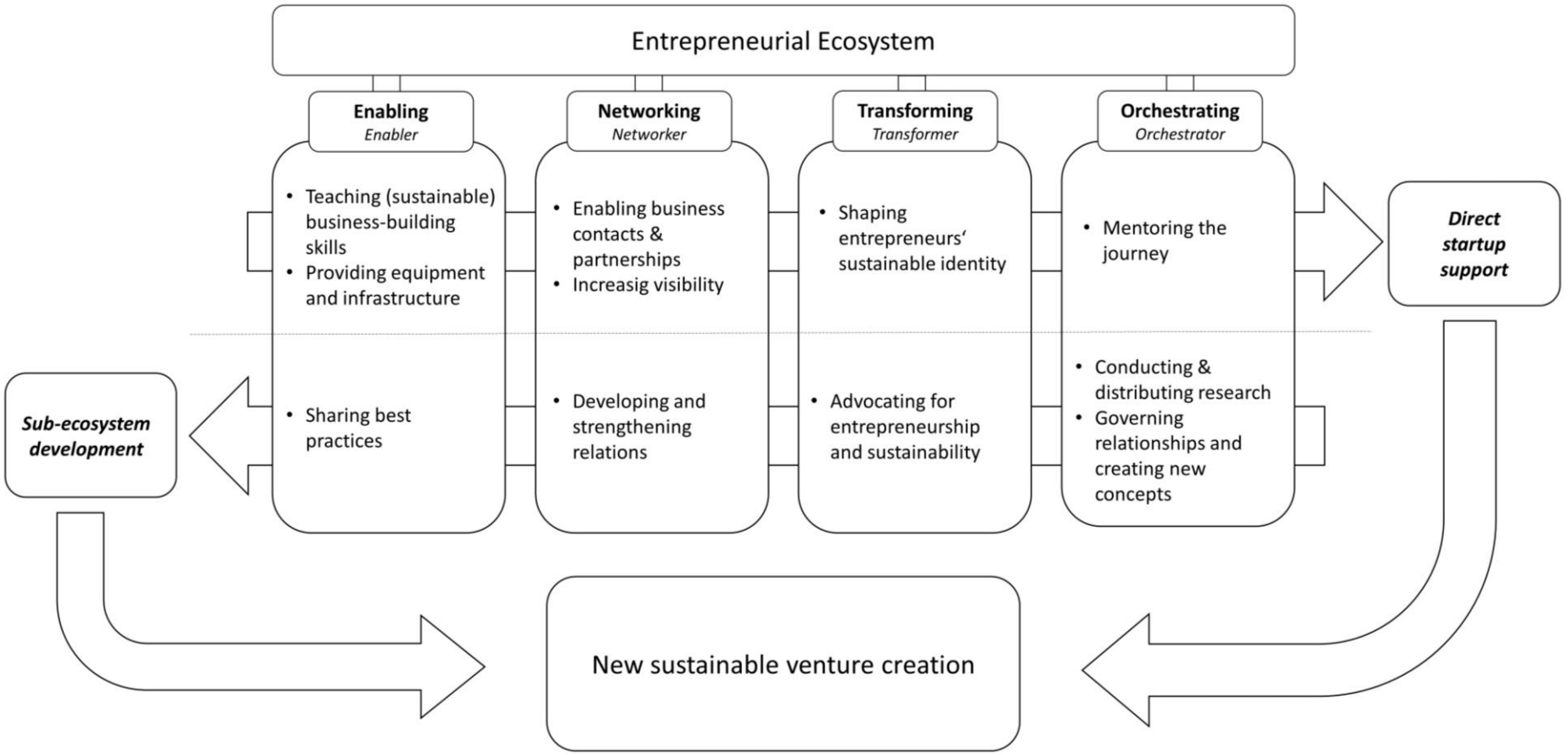

Figure 3: New sustainable venture creation in entrepreneurial ecosystems

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Declaration of conflicting interests

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All interviewees of our study provided written informed consent before enrollment in the study.

Data availability statement

The data supporting this study's findings are available on reasonable request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.