

RESEARCH ARTICLE

Where to start? Exploring how sustainable startups integrate sustainability impact assessment within their entrepreneurial process

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Abstract

While startups are acknowledged for their potential to address sustainability issues, little is known on how to assess their impact, given the uncertainty they deal with and their lack of resources. This paper investigates the ones that are supposed to be ‘best-in-class’ in that matter, that is, startups targeting sustainability, in order to explore how they integrate sustainability impact assessment in their entrepreneurial process. We conducted a multiple case study of eight sustainable startups, based on a 2-year longitudinal research in their incubator to gather multiple sources of information. Our results revealed that the integration of the triple bottom line in the entrepreneurial process has a major effect on startups’ sustainability impact assessment practices. ‘Born-sustainable startups’, which have aimed for the triple bottom line since idea generation, have more robust tools and routines than ‘Transitioned sustainable startups’, which integrated the triple bottom line during prototype/validation.

Keywords: sustainability impact assessment; startups; entrepreneurial process

Introduction

Traditionally acknowledged for their economic contribution (Audretsch & Thurik, 2001), startups, that is, young, innovative, and growth-oriented ventures (Dee, Gill, Weinberg, & McTavish, 2015), are increasingly considered as key actors to address grand challenges (European Commission, 2013). In France, for instance, the ‘Tech for Good’ movement highlights the entrepreneurs’ ambition to go beyond sole financial targets and tackle sustainability issues (Acquier & Tse, 2021). Such a movement supports the idea that technologies may represent valuable opportunities to tackle environmental and social challenges, which echoes with a time of increased public scrutiny (Scheyvens, Banks, & Hughes, 2016), where entrepreneurs need to convince their stakeholders and society at large that they can contribute to the common good. This, however, comes as an additional burden for these entrepreneurs, who possess limited resources to address these new constraints. Yet, providing evidence of their contribution to sustainability is critical to avoid accusations of green- and social-washing (Delmas & Burbano, 2011; Rizzi, Gusmerotti, & Frey, 2020) and also to legitimize the hopes that entrepreneurship can indeed be instrumental to address environmental and social challenges (Hall, Daneke, & Lenox, 2010).

This matter directly relates to the issue of sustainability impact assessment (SIA) (Malesios, Skouloudis, Kumar Dey, Ben Abdelaziz, Kantartzis, & Evangelinos, 2018), that is, the process by

which ventures ‘identify, structure and evaluate the sustainability impact of past, current and/or planned actions’ (Trautwein, 2021: 3). SIA for startups is a recent and emerging field of research (Fichter, Lüdeke-Freund, Schaltegger, & Schillebeeckx, 2023), which has so far mostly explained why the topic at stake is complex (Di Vaio, Hassan, Chhabra, & Arrigo, 2022; Trautwein, 2021) or tried to find a suitable framework to measure startups’ outcome in terms of contribution to sustainability (Hornes, 2019). Yet, there is a general lack of understanding of the shape SIA can take for startups, at different stages of the entrepreneurial process, from idea generation, prototype, validation, production, to commercialization (Belz & Binder, 2017; Dean & McMullen, 2007; Matzembacher, Raudsaar, de Barcellos, & Mets, 2019; Pacheco, Dean, & Payne, 2010; Terán-Yépez, Marín-Carrillo, Del Pilar Casado-belmonte, & de Las Mercedes Capobianco-uriarte, 2020). In that respect, focusing on sustainable startups, that is, startups aiming for the triple bottom line (TBL) of social, environmental, and economic objectives (Cohen, Smith, & Mitchell, 2006; Elkington, 1997), provide a way to investigate what the ‘best-in-class’ and most motivated entrepreneurs (Voinea, Logger, Rauf, & Roijackers, 2019) are able to do in relation to sustainability. Investigating how such ventures incorporate SIA in their entrepreneurial process is therefore instrumental to shed a light on the related opportunities and challenges that could be relevant to all startups, whether sustainable or not, as they all face increasing scrutiny from their stakeholders (Antarciuc, Zhu, Almarri, Zhao, Feng, & Agyemang, 2018; Johnson, 2015; Magbool, Amran, Nejati, & Jayaraman, 2016). Consequently, this research aims to address the following question:

How do sustainable startups integrate sustainability impact assessment in their entrepreneurial process?

To answer this question, we carried out an exploratory longitudinal study, with a multiple case study design (Yin, 2018) of eight sustainable startups. Thanks to an immersive setting, we gathered multiple data sources, including 19 semi-structured interviews, observations, and archival data, which enabled us to provide an in-depth comprehensive and dynamic understanding of the manner in which those startups integrated SIA at different stages of their entrepreneurial process. While, at the end, all of them can be considered as sustainable startups, to the extent that they all target the TBL, our study reveals the different paths followed.

The main results emphasize two different approaches to SIA among sustainable startups. A first group – that can be qualified as ‘born-sustainable startups’ – embeds a TBL approach within the entrepreneurial process from the very beginning. From idea generation to prototype stage, they make structural choices, enabling them to ensure a contribution to sustainability goals as a whole. Although such an extensive approach to sustainability creates an additional burden, it enables a more solid approach of SIA that is continually improved in an iterative process. In contrast, a second group, designated as ‘transitioned sustainable startups’, focuses first on double bottom line (DBL) objectives, only considering either social or environmental aspects in their impact assessment in the earlier stages of their entrepreneurial process. They shift later to adopt a TBL. While this may appear easier, our research indicates that subsequently ‘upgrading’ their impact assessment to a TBL and encompassing both environmental and social impacts may be quite challenging. In both cases, the construction of the SIA as a part of the entrepreneurial process is explored.

Our paper is organized as follows. First, we review the literature on sustainable entrepreneurship, entrepreneurial process, and SIA, in order to clarify the literature gap addressed. Second, we describe the qualitative methodology. The third part presents the results, emphasizing the different approaches adopted by sustainable startups. A final section concludes this paper by discussing the contributions of this research and providing avenues for further research.

Literature review

The objective of this research is to investigate the manner in which sustainable startups establish their SIA as a part of their entrepreneurial process. Consequently, the following subsection reviews the

literature on sustainable entrepreneurship, with the objective to emphasize specificities of integrating the TBL while launching a startup. We then define SIA and outline the challenges it represents for startups, while also evidencing the dearth of knowledge existing in the literature on startups' practices.

The specificities of the TBL in entrepreneurship and for startups

The idea that entrepreneurs – and consequently startups – have a great innovation and economic potential can be traced back to – at least – Schumpeter (1934). However, their ability to tackle environmental and social challenges has been less obvious. Entrepreneurs' capacity to create value, economic development, and job opportunities are commonly acknowledged (Audretsch & Thurik, 2001). However, doubts emerged with respect to entrepreneurship's ability to have a meaningful impact on sustainable issues (Hall & Vredenburg, 2003). Still, evidence shows that not all entrepreneurs are profit-driven; some of them simultaneously pursue economic, environmental, and social goals (Acs, 2006; Zollo, Cennamo, & Neumann, 2013). Previous research indeed emphasizes that 'entrepreneurship should be seen as an important channel for sustainable products and services' (Ferreira, Fernandes, Veiga, & Caputoo, 2022: 8), thus the emergence of the field.

Consequently, the question of the ability of entrepreneurship to contribute to sustainable development has been investigated in the literature, which identifies different types of entrepreneurship depending on their objectives. 'Traditional entrepreneurship' (Santos, 2012), or 'commercial entrepreneurship' (Smith, Bell, & Watts, 2014), follows a single bottom line, that is, pursues economic objectives only. 'Environmental entrepreneurship' (Bennett, 1991), or 'ecopreneurship' (Schaltegger, 2002), aims a double bottom line (DBL), that is, targets economic and environmental objectives. 'Social entrepreneurship' (Saebi, Foss, & Linder, 2019; Zahra, Gedajlovic, Neubaum, & Shulmand, 2009), also follows a DBL, but this time pursuing economic and social objectives. 'Sustainable entrepreneurship' (Dean & McMullen, 2007; Schaltegger & Wagner, 2011) targets a TBL.

The literature has clearly established differences between these different forms of entrepreneurship (Austin, Stevenson, & Wei-Skillern, 2006; Belz & Binder, 2017; Zahra et al., 2009). For example, a healthtech startup can be considered as traditional entrepreneurship if it only takes into account economic objectives. It can be social entrepreneurship if it explicitly aims to address patients' needs (and may be in a position when it has to balance this social objective against economic goals). Finally, it can be sustainable if its objectives also integrate environmental goals. Some academics (Belz & Binder, 2017; Matzembacher et al., 2019; Schaltegger, Lüdeke-Freund, & Hansen, 2016) investigated how integrating the TBL affects the entrepreneurial process, highlighting the differences with the regular entrepreneurial process (George, Parida, Lahti, & Wincent, 2016; Gregori, Wdowiak, Schwarz, & Holzmann, 2019). Some considered that the sustainable entrepreneurship process starts with the DBL, to reach the TBL during the solution development (Belz & Binder, 2017), while others observed that some entrepreneurs manage to address the TBL since idea generation (Matzembacher et al., 2019).

Matzembacher et al. (2019) were the first to integrate impact assessment into the sustainable entrepreneurial process, considering that this step is what distinguishes the sustainable entrepreneurial process from the regular entrepreneurial process. Nonetheless, further research is needed as authors admitted mixed results due to their heterogeneous sample. They found out that non-for-profit and for-profit organizations have different dynamics, and incubated startups and non-incubated startups follow different patterns as well. The authors stated that 'The process of the sustainable entrepreneurship ends when it produces the effective positive economic, environmental, and social impact on society' (Matzembacher et al., 2019: 22) but did not provide evidence on what is produced, at different steps of the process, to assess such impact.

SIA for startups

SIA can be defined as 'any process aiming to achieve sustainability goals and to make sustainability issues tangible and understandable based on a decision-guiding approach that helps to identify, structure and evaluate the sustainability impact of past, current and/or planned actions'

(Trautwein, 2021: 3). This concept is the result of an increasing proximity between the literature on sustainability assessment and impact assessment (Waas, Hugé, Block, Wright, Benitez-Capistros, & Verbruggen, 2014). While some consider sustainability assessment as an umbrella notion that included impact assessment (Hacking & Guthrie, 2008), others argue that sustainability assessment is a new form of impact assessment, a process of interpreting sustainability challenges, integrating these issues into decision-making by assessing sustainability impact, and fostering sustainability objectives (Waas et al., 2014). Impact assessment is described as ‘the process of identifying the future consequences of a current or proposed action’ (International Association for Impact Assessment, 2020), and academics emphasize that it relies on the integration of the TBL (Visser, Matten, Phi, & Tolhurst, 2009). While acknowledging the proximity of the two concepts, we will use the term SIA for the purpose of this research, consistently with previous papers focusing on startups (Trautwein, 2021).

SIA concerns the business model (Pizzi, Corbo, & Caputo, 2021), and is also related to sustainability reporting or Corporate Social Responsibility-reporting (Fernandez-Feijoo, Romero, & Ruiz, 2014). Bengo, Arena, Azzone and Calderini (2015) reviewed different methodologies used by academics and practitioners to create nonfinancial reporting and highlighted the proliferation of different approaches. Some efforts have been made to guide firms on how to create their sustainability report. In 2006, the United Nations Global Compact and the Global Reporting Initiative jointly provided a framework of processes and indicators to assess companies’ sustainability. The ISO 26.000, launched in 2010, also provided guidelines for firms to define their social responsibility. SIA researchers take into account such tools and techniques that are used for sustainability reporting, but some consider that ‘they play a less significant role’ (Bond, Morrison-Saunders, & Pope, 2012: 55) than their use in the decision-making process.

However, the literature informs us that most entrepreneurs do not implement such methodologies to assess their contribution to their targeted objectives (Håbek, 2014). Some even argue that startups are less likely to address many sustainability goals (Hockerts & Wüstenhagen, 2010), considering the challenges they already face at an early stage (Picken, 2017). Despite the fact that they generally do not provide proof of their contribution (Håbek, 2014), startups are often promoted for their new environmental and social innovations (Hockerts & Wüstenhagen, 2010; Schaltegger & Wagner, 2011) and supported by public policies (Adler, 2011; Bergmann & Utikal, 2021). In that context, the dearth of knowledge on SIA for new ventures (Fichter et al., 2023) appears problematic. So far, the few papers on the topic emphasize that SIA is particularly challenging in the first years of a startup considering the uncertainty it deals with (Hornes, 2019). Entrepreneurs’ intention is key in that context (Di Vaio et al., 2022), and they should measure their contribution according to their stakeholders (Stojanović et al., 2021). Hence, each SIA should be unique and can be considered as a social construction relying on various stakeholders (Matzembacher et al., 2019).

The fact that ‘no previous study has addressed the gap created by the dearth of SIA studies focusing on entrepreneurial ventures’ (Di Vaio et al., 2022: 2) is critical for two additional reasons. First, for stakeholders (Freeman, 1984; Voinea et al., 2019), it is useful to clarify how SIA can be measured to better assess the startups’ sustainability contribution (Hornes, 2019). Moreover, the triple objective of sustainable entrepreneurship corresponds to different stakeholders, and there are complexities in measuring it according to each stakeholder goal (Costa & Pesci, 2016). Second, for startups, which have to cope with the very many different methodologies (Bengo et al., 2015) used by stakeholders (Hassan & Marimuthu, 2018). In particular, investors (Arjaliès, Laurel-Fois, & Mottis, 2022; Bocken, 2015) recently developed various different tools dedicated to startups. This lack of a common framework confuses entrepreneurs, and it takes them a lot of their – scarce – resources to find the most suitable framework (Trautwein, 2021).

To conclude, SIA is an emerging field that has only started to investigate the case of sustainable startups. Recent contributions have either developed more suited frameworks (Hornes, 2019) or emphasized startups’ difficulties while providing SIA (Trautwein, 2021), but none have empirically investigated how, in practice, sustainable startups assess their contribution to sustainability, during their entrepreneurial process.

Method

Design and sample

To investigate how sustainable startups integrate SIA in their sustainable entrepreneurial process, we conducted an exploratory qualitative research. This design is suited considering the phenomenon investigated and the question raised. First, such an approach is appropriate when the ‘focus of the study is contemporary (as opposed to an entirely historical) phenomenon’ (Yin, 2018: 4) that unfolds over time (Alvord, Brown, & Letts, 2004). In addition, Yin (2018) argues that these types of studies favor comprehension of a complex and underexplored phenomenon (Di Vaio et al., 2022; Fichter et al., 2023). Previous authors have indeed emphasized that ‘sustainable entrepreneurship research is still in its infancy’ (Gast, Gundolf, & Cesinger, 2017: 52), and academics are only starting to investigate their SIA practices (Fichter et al., 2023). Second, our research question focuses on actors and their discourse, and is thus suited for comprehensive research (Dumez, 2021). In this approach, researchers seek closeness to actors, which is why it is also considered as ‘engaging research’ (Gioia, Corley, & Hamilton, 2013: 19): proximity with informants should generate new hypotheses (Yin, 2018).

This research was carried out as a part of a long-term research project at a particular French incubator, a setting that has several advantages. First, it enabled access to sustainable startups to conduct a multiple case study (Yin, 2018). This methodology favored the comprehension of similarities and discrepancies among practices (Gustafsson, 2017) and was thus suited for our research question. This provided the researcher with detailed and longitudinal information and documentation, with the opportunity to observe and interact with startups on a regular basis for a significant duration. The proximity with informants revealed itself critical for our topic, as we discovered that sustainable startups actually do a lot more than what is visible externally, or than what they are willing to share with most of their stakeholders. The researcher observed the sustainable entrepreneurial process ‘as it happened’, rather than through a *a posteriori* reconstitution (Demil & Lecocq, 2015). Last, previous research has concluded to mixed results due to sample heterogeneity (see Matzembacher et al., 2019), and our setting provided comparable startups. The focus on incubated startups is consistent with the fact that in France, even if there are exceptions, it is more common for a startup to join an incubator, according to Bpifrance’s website. We choose startups from the same incubator because if startups from different incubators had been considered, there would always have been a doubt that differences observed across startups in the entrepreneurial process or in the SIA were related at least to some extent to the differences between the incubators themselves (training, programs, selection, etc.). Therefore, we argue the ‘revelatory potential’ (Gioia et al., 2013: 15) of our research design.

First, we analyzed startups’ applications to the incubator to determine whether they could be labeled ‘sustainable startups’. We considered ‘startup’ companies that are (i) young – created less than 5 years, and (ii) innovative – with at least one person in the team in charge of research and development. Consistently with Blez and Binder’s (2017) perspective, we considered ‘sustainable’ startups mentioning at least a DBL, that is arguing economic, and social or environmental benefits. To assess that, we looked at startups’ applications to the incubator. We contacted startups’ founders meeting these criteria, and eight of them agreed to participate in our longitudinal research. This number appeared consistent with Yin’s (2018) recommendation to have between 2 and 10 cases for this kind of study. This sample size also enhances the validity and reliability of the study (Crouch & McKenzie, 2006). Table 1 provides summarized information on the cases.

Data collection

Our immersive setting is consistent with an ethnographic approach (Atkinson & Hammersley, 1994). One author has been included into the incubator’s staff since the beginning of the research in 2020. She was present on-site 4 days a week, thus having privileged access to startups. Following an insider–outsider approach (Gioia et al., 2013), the other author was external to confront the different views, thus strengthening the reliability of our results.

To analyze sustainable startups’ SIA and their sustainable entrepreneurial process, we gather multiple data sources.

Table 1. Brief description of cases used for the multiple case study

ID	Year of creation	Sector	Description
S1	2017	Agritech	Promoting made in France agriculture using innovative farms
S2	2018	Health	Developing IA to support pathologists
S3	2019	Clean energy	Enhancing the methanization sector through innovation
S4	2020	Foodtech	Innovative food product for food professionals
S5	2020	Recycling	Computer vision for the transition to circular industry
S6	2021	Health/Data	Enhancing public research through data valuation
S7	2021	Fashion	Lowering the fashion industry emissions using an innovative process
S8	2018	Digital purchase	Making purchasing smarter and more accessible

First, different types of documents were collected for each of our cases: applications to the incubator (about 7 pages per startup), selection committee reports (about 2 pages), applications to public grants (about 30 pages), and pitch decks for investors (about 10 slides). We also monthly checked their social media, in particular their LinkedIn page (all of the startups in our sample have at least created a LinkedIn page), and their interactions on the incubator's Slack, restricted to startups incubated (in 2021, 97% of incubated startups counted at least one founder as an 'active member' on Slack), alumni, and the incubator staff.

Second, regular informal and formal discussions with informants took place and the researcher took notes spontaneously and systematically each time this happened, and then shared them with the other author (Laszczuk & Garreau, 2018). They retraced both direct informal interactions with informants (founders, employees, stakeholders, and incubator staff) and various participant observations (Spradley, 1980), in particular thematic events 'founders only' organized by the incubator (about 70 per year), weekly meetings with the incubator staff, and monthly startups selection committee.

Third, we conducted in-depth semi-structured interviews with startups' founders. We chose CEOs because they appeared as the most legitimate to provide information on their startups. Previous research also emphasized the importance of the founders' vision while considering startups' challenges (Bridge, 2021). During the interview, entrepreneurs were asked about the topics defined in the interview guide (see Appendix A) and encouraged to speak freely (Yin, 2018). Our goal was to identify what they did in terms of SIA and different stages of their development. The interviews were recorded with the participant agreement and lasted from 1 hour and 6 minutes for the shortest to 2 hours and 5 minutes for the longest. These interviews were scheduled in 2021, and in 2022, we conducted additional semi-structured interviews with each founder, which lasted between 35 minutes and 1 hour 02 minutes. The objective was to have a longitudinal approach of the process to confirm some statements made during the first interviews and to observe potential evolution.

Triangulation was guaranteed by the collection of many sources of information. In particular, we presented our results to each Startups' Manager individually to have their opinion on our findings and check the validity of our findings. Table 2 summarizes the data collected for our multiple case study and their use in the analysis.

With respect to our ethical protocol, the incubator allowed us the access to startups, events, and weekly meetings. It was agreed with interviewees that the audios and interviews transcriptions would only be available to authors and destroyed after the research. Authors guaranteed the anonymity of the startup in a rigorous manner as no information provided in any articles should allow identification

Table 2. Data collected

Data source	Type of data	Use in the analysis
Interviews	Sixteen in-depth interviews with CEOs in 2021 (14 hours) and in 2022 (6 hours)	In-depth entrepreneurs' interpretations and intentions for their SEP and SIA with a longitudinal perspective
	Three interviews with Startups' Managers (3 hours)	Triangulation
Observations	Field notes, gathered in a digital siblylline research diary, collected from: <ul style="list-style-type: none"> • direct informal interaction with different informants (employees, founders, stakeholders, and incubator staff) • about 140 'founders' events • Entrepreneurs' discourse in front of peers and stakeholders 	Additional data on entrepreneurs' interpretations and intentions for their SEP and SIA Employees, stakeholders, and incubator staff's interpretations of the SIA conducted by the case Eighty weekly meetings with the incubator staff
Archival data	Applications to the incubator (56 pages), to public grants (240 pages), pitch deck, startups' social media (LinkedIn and Slack)	Chronology of communications, both confidential, for close stakeholders and public for larger audience

CEO, chief executive officer; SEP, sustainable entrepreneurial process; SIA, sustainability impact assessment.

of the interviewees. We validated with entrepreneurs our anonymization process, and they agreed to the publication of any quote used.

Data analysis

We coded our material altogether and organized by information source. First, the 'personal' code was dedicated to any data collected during one-to-one interactions. It mostly concerned interviews and also any other discussion with them noted in the diary. We considered this source of information to be the most reliable with respect to our research question. Second, the 'confidential' code was used for any information the entrepreneur shared with close stakeholders and for any comments made by a stakeholder with respect to the case. It concerned in particular the data collected from documents (applications to the incubator and to public grants, pitch deck, and Slack messages) and observations (weekly meetings with the incubator team, founders events, and any information brought by a stakeholder of a case and noted in the diary). Third, the 'external' code concerned any public information, mostly published in the startup's social media.

We encoded our material following Gioia et al.'s (2013) recommendations. First, we conducted first-order analysis with codes very close to informants' words (e.g., 'disgusted by greenwashing', 'team', 'personal ambition', 'talent', 'normal choices', etc.). Then, our objective was to identify similarities and differences, so we created more readable second-order themes consistent with our research question (e.g., 'sustainability impact assessment tools', 'stakeholders implication', 'resource allocation', 'communication', 'legitimacy', etc.). We then aggregated these themes into four maturity levels: idea generation, prototype, validation, and production and commercialization.

At that point, we used the literature on sustainable entrepreneurship process and decided to look at whether startups started by recognizing a DBL problem, followed a DBL opportunity, constructed a DBL solution, and then developed a TBL solution – consistently with Belz and Binder (2017), or if some of them managed to start the TBL since idea generation – as Matzembacher et al. (2019) suggest. Our results align with the later suggestion, as we identified two clear groups, one who sought the TBL since idea generation and another one who integrated the TBL later in their development. Figure 1 presents – in a very simplified way – our data structure.

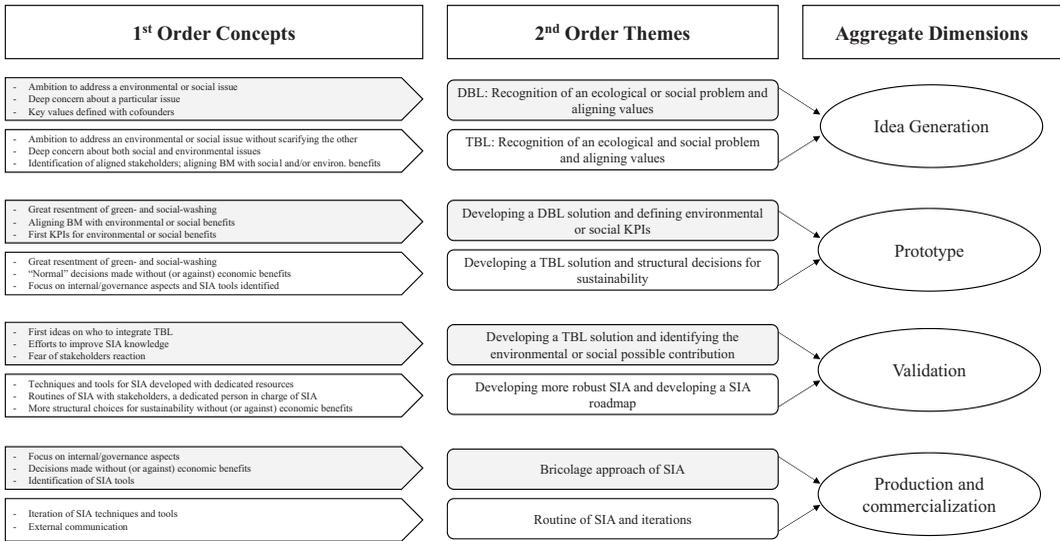


Figure 1. Summary of the data analysis.

Results

In this section, we will present in detail how startups in our panel integrated SIA in their entrepreneurial process, emphasizing choices made, activities conducted, and concerns that emerged in different stages.

Idea generation

Idea generation is related to motivation, previous knowledge and experience, and entrepreneurs' capabilities. All respondents had main concerns about one or several social and environmental issues, for which they had or developed a lot of knowledge, and desired to tackle through the form of a startup. However, while some focused on one specific issue (S1, S2, S4, and S8), others adopted a rather systematic approach (S3, S5, S6, and S7). S1 was concerned about market practices with respect to the production of a specific product; S2 was deeply interested in enhancing pathologists' decision-making process; S4 wanted to find a solution to avoid food waste in the food industry sector; and S8 cared about the decreasing purchasing power of a part of the population.

Others were also deeply concerned with one specific topic, but were as well very demanding to themselves about both social and environmental stakes, and did not want to neglect one aspect for the other. Two of them, one in clean energy (S3) and the other in health (S6), developed a revenue model in which populations with less income contribute to the value creation and perceive revenues for it. They included their mission into their legal status when creating the startup and adopted a specific French status called mission-driven companies (*'société à mission'*). Two others (S5 and S7) did not know about this status but investigated the possibility of becoming a mission-driven organization at commercialization stage. During idea generation, they asked themselves a lot of questions with respect to how they could develop an exemplary startup, how they could positively change their industry's market practices toward more responsibilities, and how their environmental solution could be more inclusive.

The integration of a DBL, on the one hand (S1, S2, S4, and S8), and of a TBL, on the other hand (S3, S5, S6, and S7), impacted the design of their business model, the company's values, and the choice of stakeholders.

Prototype

The prototype phase is set when startups initiate their first studies for their innovative products and test with some clients what could be their minimum viable product. In this phase, the goal is to formulate hypotheses from the problem identified during idea generation. It is also when the first key performance indicators are set and first structuring decisions made.

Those who focused on a DBL (S1, S2, S4, and S8) defined their business models accordingly, as well as their stakeholders and key performance indicators. For example, the ones following economic and environmental objectives (S1 and S4) tried to assess which alternative would benefit the most to the environment. Likewise, the ones addressing social issues (S2 and S8) aimed for the most social performance. Their approach was pragmatic at that point, and they did not investigate in-depth the question of SIA, for which they had, at that point, little knowledge. They considered that focusing on a DBL, in comparison to a triple one, reduces the risk of green- or social-washing: 'The less we use dubious artifacts, the less we do greenwashing' (S4). Another mentioned reason was their lack of resources: 'I would have loved to invest time in assessing our contribution to sustainability from the beginning, but a resource invested there is not invested elsewhere' (S1). Finally, they argued that they felt no pressure from their stakeholders to invest such resources for SIA at that point: 'No one ever asked me that question for our seed' (S2), 'We did things when it appeared it was time to do them, not before' (S8).

On the other hand, those who started with a TBL appeared more concerned about SIA (S3, S5, S6, and S7). For some (S3 and S6), it was included in their process due to their driven-mission status, which requires a 'mission board', composed of key stakeholders, who will determine and enforce indicators, in order to attest whether the firm is pursuing its mission according to stakeholders' needs. In addition, such companies will later face an annual audit led by a trusted third-party organization. Both S5 and S7, environmental solutions, identified key performance indicators for the all TBL. They also made structuring internal decisions for their startups according to their values. One chose to boycott some providers for ethical reasons and adopted a responsible digital strategy (S5), while the other declined professional events for environmental reasons (S7).

They considered governance and internal culture as key issues, and chose to address it at an early stage (S3, S5, S6, and S7). To them, the first impact a company generates is on their employees. They conduct their first recruitment interviews insisting on their sustainability ambition and favored candidates that seem to share this vision and care for such concerns. All of them considered that talents pay attention to SIA, e.g. 'During the interview [the candidate] kept asking questions about what we do for sustainability. It motivated me to make him a proposition, but I also felt like passing a test, he would not have come if he felt we were not serious' (S5).

While aiming for the TBL (S3, S5, S6, and S7), this group also chose not to communicate about it externally (S5, S6, and S7). They also feared of being accused of green- or social-washing, as they considered that they will have a 'real' impact only later in their development. Indeed, all of them also identified gaps in their first SIA, e.g. 'The assessment is not perfect, there is too much uncertainty to be accurate anyway' (S3). Nonetheless, their objectives were clear to them and they identified their partners accordingly, e.g. 'we chose our stakeholders and employees accordingly' (S5). Some stakeholders were supportive, 'They encourage us to pursue our first assessments, it provides concrete evidence, it makes them proud to be on the adventure' (S7); while others were less enthusiastic: 'At best, it's the cherry on the cake, but it does not drive their decision' (S7).

Validation

In the validation phase, startups ensure the validity of hypothesis made in the prototype phase as well as customers' interest. They also have more financial means as they raised funds to increase their capabilities.

From prototype to validation, startups that started with the DBL explored the TBL (S1, S2, S4, and S8). Different factors motivated them. Overall, they pointed out external and internal reasons. Some stated that sustainability concerns increased with the pandemic (S1, S2, and S8). They observed that talents became more demanding (S1, S2, and S8); that private and public investors started to dig further into sustainability criteria (S1, S2, and S4); and that being acknowledged for their sustainable contribution could lead to media attention and business opportunities (S1 and S4). Aside from these endogenous factors, they all mentioned personal interest in these topics. They were also convinced that addressing sustainability before they reached a certain maturity level was incoherent. At a later stage, they considered that they could invest resources to assess their contribution to sustainability. Like for the first group in the prototype phase (S3, S5, S6, and S7), the second group started by investigating their impact on employees, and all of them built an internal well-being strategy. They also needed to improve their comprehension of sustainability management, as they all admitted their scarce knowledge on that matter. Their main difficulty was to determine 'where to start' (S2), as they just acknowledged that 'assessing is so time consuming... but before even assessing anything, just having the data is a challenge' (S1). They asked for help to better understand what can be done in that respect, asking their employees for suggestions (S1 and S8), seeking advice from their incubator (S2 and S4), or looking for advices from more experienced entrepreneurs (S2 and S8).

Startups from our sample which started with the TBL since idea generation (S3, S5, S6, and S7) had, during the validation phase, a clear idea of the SIA they wanted to conduct and invested resources in. They worked either with an external provider (S3, S5, and S7), or with academics (S6) to perform life cycle assessment (S3, S5, and S7), to obtain a carbon footprint report (S5), or to assess their business model's sustainability (S6). Some (S5, S6, and S7) investigated the B Corp certification, which assesses companies based on five impact criteria: governance, workers, community, environment, and customers. These three completed the long questionnaire to obtain a score and one applied to the certification (S7). They also invested in internal resources to implement an SIA strategy. They all designated a manager in charge of this topic, and two recruited an intern dedicated to this task (S3 and S5). The two mission-driven companies (S3 and S6) designated a dedicated employee responsible of the Mission Committee, where stakeholders assess their SIA.

Production and commercialization

At production and commercialization phase, proof of concept and technology have been validated and the company now faces clients management. The startup and its team are therefore more structured.

The group who just explored the TBL (S1, S2, S4, and S8) discovered the work and resources SIA requires. While deciding to establish sustainable impact measurement, these entrepreneurs adopted a bricolage approach. For example, one started by developing recycling at work (S2). They tested different approaches, rather than structuring a strategy. They felt overwhelmed as they 'still discover new challenges, new things to implement, changes needed to be conducted ... it's a lot' (S8). A great difficulty arose from integrating the TBL because the first bricks of their development were based on DBL objectives. Such a shift required changing the foundations of their startup, e.g. 'To follow a social purpose, which is new, we need to review our initial mission' (S1). In that context, SIA was mostly done by founders alone, who needed to prepare the announcement of their new mission to their stakeholders: 'I cannot wake up one day and say this is the way it is going to be. I know that I will have to convince' (S4). They anticipated that investors would not be enthusiastic about this engagement for SIA: 'If my investors knew I started to spend time on these matters, with all the other challenges we are still facing, they would kill me' (S2); 'I did not present my roadmap on these matters clearly to my investors. I came up with a strategy on what I could say to whom ... well, let's say they agree when it is done and it's better if you present it with good news' (S8).

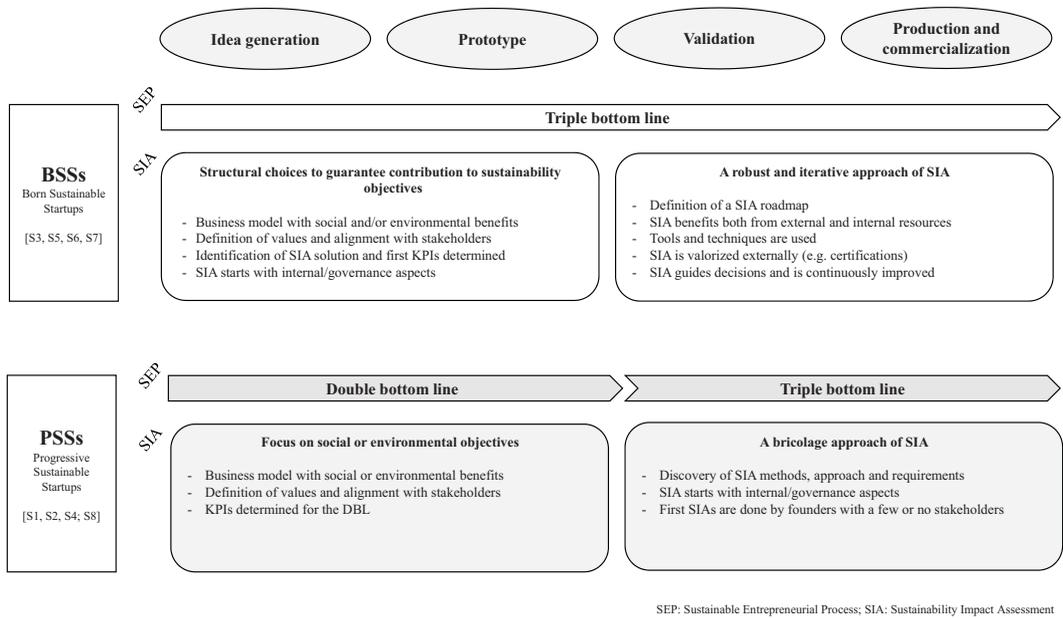


Figure 2. Overview of the sustainable impact assessment practices used by born-sustainable startups and transitioned sustainable startups.

Overview of the process

Our results distinguishes two distinct groups who integrated the TBL at different stages of their entrepreneurial process, which affected their SIA practices. We designated the first group (S3; S5; S6; S7) ‘born-sustainable startups’, as they integrated the TBL since idea generation. We labeled ‘transitioned sustainable startups’ the second group (S1; S2; S4; S8), composed of born-environmental and born-social startups that have created their companies based on a DBL, and integrated the TBL later in their development, during the prototype/validation phase.

On the one hand, born-sustainable startups (S3; S5; S6; S7) made structural decisions in line with their economic, social, and environmental objectives since idea generation and have chosen their stakeholders accordingly and shared with them their first SIA. In later phases, they constructed a more robust approach to SIA, using external and internal resources. Soon, they developed an SIA routine and constructed a roadmap with a continuous iterative process. On the other hand, ‘transitioned sustainable startups’ (S1; S2; S4; S8) focused in their first steps on a DBL and defined their indicators accordingly, while not considering SIA as a priority. As they explored the TBL, they discovered sustainability management and SIA requirements. They adopted a bricolage approach (Lévi Strauss, 1962) to cope with their delay, scarce knowledge and resources, and stakeholder misalignment. Figure 2 summarizes how they, respectively, integrated SIA in their entrepreneurial process. To have a clearer synthesis, we regrouped idea generation and prototype, as well as validation and production and commercialization.

Discussion and conclusion

Summary and discussion of main findings

Sustainability practices of companies have retained the attention of some scholars, but a gap remains with respect to SIA for sustainable startups (Fichter et al., 2023). Such knowledge is critical not only to

guide practitioners, who wish to foster sustainability, but also to better understand the entrepreneurial process, and to draw a line between traditional startups and sustainable startups (Matzembacher et al., 2019). Recent contributions have started to investigate SIA for startups (Di Vaio et al., 2022; Hornes, 2019; Trautwein, 2021), but we still know little about how sustainable startups integrate SIA at different levels of maturity.

This paper addresses this gap by exploring a multiple case study of eight sustainable startups with 2 years spent on the field. As we opened the black box of their SIA practices (Álvarez Jaramillo et al., 2019), we discovered two distinct approaches. In the end, both can be considered ‘sustainable startups’, as they address the TBL, but thanks to our longitudinal approach, we were able to reveal different paths that can be adopted. On the one hand, some startups targeted the TBL since their beginning. From idea generation to prototype, they made structural choices to guarantee contribution to sustainability objectives, which allowed them to have a rather robust approach of SIA, continually improved in an iterative process. On the other hand, other startups have focused on DBL objectives – economic, and social or environmental – from idea generation to prototype, and their indicators were narrowed to these two objectives. They adopted a TBL later, from prototype to validation, which led them to have a bricolage approach of SIA.

We labeled the first group ‘born-sustainable startups’, inspired by the emerging concept of ‘born-sustainable’ firms. It designates firms ‘which were established with explicit strategic intent to operate in a sustainable manner from the outset. BSFs [born-sustainable firms] seek to contribute directly to regenerating the environment and driving positive societal changes’ (Knoppen & Knight, 2022: 1790). It echoes with the wider literature on ‘born-global’ firms and has been, to that point, especially studied in relation to the fashion industry (Dicunzo, Galeone, Ranaldo, & Turco, 2022; Ostermann, da Silva Nascimento, Kalil Steinbruch, & Callegaro-de-Menezes, 2021; Todeschini, Nogueira Cortimiglia, Callegaro-de-Menezes, & Ghezzi, 2017). The second group is named ‘transitioned sustainable startups’. This choice is consistent with the ‘transition’ stream of the literature on sustainable entrepreneurship (Terán-Yépez et al., 2020), investigating how firms integrate the TBL in their business development.

We emphasized that the integration of the TBL has an effect on SIA practices. Doing so, we provided an in-depth analysis of sustainable startups’ practices and challenges. We questioned how sustainable startups integrate SIA in their entrepreneurial process, and showed that it is the results of different initial motivations and choices made, according to different prioritizations, which have consequences on the SIA produced and also on stakeholders’ management and communication. We showed that SIA is less a static object, but rather a process, in which entrepreneurs choose to put their companies, with different trajectories according to trade-offs made.

Contributions

Our research demonstrates the interdependence between SIA and the entrepreneurial process. The SIA is built during the entrepreneurial process but also results from it. Such results strengthen the literature on sustainable entrepreneurship by providing evidence of how it can pursue the TBL. Our results are therefore consistent with Matzembacher et al. (2019), and contradict the ‘convergent’ sustainable entrepreneurial process suggested by Belz and Binder (2017): sustainable startups can start with the TBL since idea generation. Therefore, we argue that sustainable startups can indeed address a broad perspective of sustainability, even though it requires additional efforts, whereas previous research mostly emphasized their narrowed perspective (Hockerts & Wüstenhagen, 2010).

Our paper also answered a call for more investigation of SIA for startups (Fichter et al., 2023). Not much is currently known in that field, but some academics have already offered a literature review (Di Vaio et al., 2022), investigated the challenge it represents for startups (Trautwein, 2021), and offered a suited framework (Hornes, 2019). Consistently with these findings, we observed entrepreneurs’ difficulties, considering their lack of knowledge, their scarce resources, and the uncertainty they deal with. SIA starts for these startups with the investigation of their impact on their employees and

with their governance. This result is consistent with many studies connecting Environmental, Social and Governance criteria with sustainable development (e.g., Theodoraki, Dana, & Caputo, 2022). We emphasized the exploration conducted by sustainable startups to establish their contribution to sustainability, and insisted on the iterative process of SIA, which goes further than just tools and techniques (Bond et al., 2012).

SIA is often considered useful to manage stakeholders' different expectations with respect to the TBL, and to better communicate with them (Costa & Pesci, 2016). Our investigation on the field showed that sustainable entrepreneurs often do more in terms of SIA than what is visible to the outside, and even to their stakeholders. In the literature, SIA is often portrayed as the result of a collaboration among stakeholders (Di Vaio et al., 2022; Hornes, 2019). While it was the case for those who chose their stakeholders according to the TBL, we observed that SIA can be done, in some cases, without key stakeholders, as entrepreneurs fear they might not align with this new ambition. Entrepreneurs also meticulously prepared every communication related to sustainability, as they feared more than all being accused of green- or social-washing (Delmas & Burbano, 2011; Rizzi et al., 2020). In that context, SIA appears as an interesting 'non-human actor' (Akrich, Callon, & Latour, 2006), that takes various forms, and is shared cautiously with the sustainable startup network.

Limitations and further research

We acknowledge several limitations to our research that call for further investigations. Exploratory studies are difficult to extend to a broader population. Our material investigated incubated, innovative, and nascent startups aiming for the TBL. As Matzembacher et al. (2019) found out different results for incubated startups, further research could compare our results with non-incubated startups. We only observed startups in the same ecosystem - the Parisian context in the 2020s. Previous research insisted on the importance of the context on entrepreneurial organizational behavior (Caputo & Ayoko, 2021), and in particular of the geographic context on social startups (Corner & Kearins, 2018). Therefore, a comparative analysis of different countries might reveal discrepancies. Further research could also investigate the discrepancies among the two groups as startups grow, for example, in terms of financial performance (Bartolacci, Caputo, & Soverchia, 2020).

We also found additional results, not directly related to our research question, that emerged more inductively and echoes previous literature. Born-sustainable startups seem to have more talent attraction when compared to transitioned sustainable startups (Nangoy, Mursitama, Setiadi, & Pradipto, 2020), but more difficulties raising funds (De Lange, 2017). Further research could provide more evidence of this first insight, and also dig into the stakeholders' misalignment described by transitioned sustainable startups from our sample. Moreover, the two categories could also be further investigated in the light of the motivation literature (Voinea et al., 2019). Last, some nascent sustainable startups employed a dedicated person for SIA. This appears rather new for such small companies, and this new kind of 'joiner' (Roach & Sauermann, 2015) could retain academic attention to better understand the collective journey of entrepreneurship (Mustar, 2021).

Practical implications and recommendations

Our study has practical implications for startups in particular, and for stakeholders aiming to help them with respect to SIA. From the field, we were able to see that the first question entrepreneurs ask themselves is: 'Where to start?' When entrepreneurs' 'intention' (Di Vaio et al., 2022) to address sustainability is expressed, a long path remains with respect to the appropriate steps. We observed that defining values is key, as the first choices made often concerns internal and governmental aspects. Entrepreneurs should then dedicate time to understand SIA's requirements, and they can learn from our study in that regard. Last, the uncertainty they deal with creates a frustration due to a fear of green- or social-washing. We rather argue that they should consider SIA as an iterative process, continually improved as the uncertainty reduces and their experience increases. We also consider

that green- and social-washing can easily be avoided, to the extent that first attempts of SIA do not need to be communicated.

Last, we answered a call for research for ‘a more profound analysis of the sustainable entrepreneurial dynamics at play during the pre-seed and seed stages of an entrepreneurial venture’s life cycle would provide a more accurate picture of the policies that should be employed to promote sustainable development projects’ (Di Vaio et al., 2022: 15). Public policies could play a significant role in guiding startups with respect to SIA. Governments could support sustainable entrepreneurship with an external perspective and expertise that founders usually do not have (Johnson, 2015), thus reducing the heterogeneity of practices (Brammer et al., 2012). Finally, sustainable startups’ stakeholders and founders themselves can better understand what can be expected from a sustainable startup in terms of SIA, at different stages of maturity, and according to which path the entrepreneur wants to follow.

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References

- Acquier, A., & Tse, T. (2021). *TechForGood: What can we really do with technology to achieve good? The Choice, powered by ESCP*. Retrieved June 10, 2023, from <https://thechoice.escp.eu/choose-to-lead/techforgood-what-can-we-really-do-with-technology-to-achieve-good/>.
- Acs, Z. J. (2006). How is entrepreneurship good for economic growth? *Innovations: Technology, Governance, Globalization*, 1(1), 97–107.
- Adler, J. H. (2011). Eyes on a climate prize: Rewarding energy innovation to achieve climate stabilization. *Harvard Environmental Law Review*, 35(1), 1–45. Case Legal Studies Research Paper No. 2010-15, PERC Research Paper No. 12/16. doi:10.2139/ssrn.1576699
- Akrich, M., Callon, M., & Latour, B. (2006). *Sociologie de la traduction*. Paris: Presses des Mines.
- Álvarez Jaramillo, J., Zartha Sossa, J. W., & Orozco Mendoza, G. L. (2019). Barriers to sustainability for small and medium enterprises in the framework of sustainable development – Literature review. *Business Strategy and the Environment*, 28(4), 512–524.
- Alvord, S., Brown, L., & Letts, C. (2004). Social entrepreneurship and societal transformation. *The Journal of Applied Behavioral Science*, 40(3), 260–282.
- Antarciu, E., Zhu, Q., Almarri, J., Zhao, S., Feng, Y., & Agyemang, M. (2018). Sustainable venture capital investments: An enabler investigation. *Sustainability*, 10(4), 1204.
- Arjaliès, D.-L., Laurel, D., & Mottis, N. (2022). Prison break from financialization: The Case of the PRI reporting and assessment framework. *Forthcoming in Accounting, Auditing & Accountability Journal*, 1–39. doi:10.1108/AAAJ-02-2020-4439.
- Atkinson, P., & Hammersley, M. (1994). Ethnography and participant observation. In *Handbook of qualitative research* (pp. 248–260). Thousand Oaks, CA: Sage.
- Audretsch, D. B., & Thurik, R. (2001). Linking entrepreneurship to growth. OECD Science, Technology and Industry Working Papers, 2001/2, OECD Publishing.
- Austin, J., Stevenson, H., & Wei-Skillern, J. (2006). Social and commercial entrepreneurship: Same, different, or both? *Entrepreneurship Theory and Practice*, 30(1), 1–22.
- Bartolacci, F., Caputo, A., & Soverchia, M. (2020). Sustainability and financial performance of SMEs: A bibliometric and systematic literature review. *Business Strategy & the Environment*, 29(3), 1297–1309.
- Belz, F. M., & Binder, J. K. (2017). Sustainable entrepreneurship: A convergent process model. *Business Strategy and the Environment*, 26(1), 1–17.
- Bengo, I., Arena, M., Azzone, G., & Calderini, M. (2015). Indicators and metrics for social business: A review of current approaches. *Journal of Social Entrepreneurship*, 7(1), 1–24.
- Bennett, S. J. (1991). *Ecopreneuring: The complete guide to small business opportunities from the environmental revolution*. John Wiley.
- Bergmann, T., & Utikal, H. (2021). How to support start-ups in developing a sustainable business model: The case of an European social impact accelerator. *Sustainability*, 13(6), 33–37.
- Bocken, N. (2015). Sustainable venture capital – Catalyst for sustainable start-up success? *Journal of Cleaner Production*, 108, 647–658.
- Bond, A., Morrison-Saunders, A., & Pope, J. (2012). Sustainability assessment: The state of the art. *Impact Assessment and Project Appraisal*, 30(1), 53–62.
- Brammer, S., Hoejmoose, S., & Marchant, K. (2012). Environmental management in SMEs in the UK: Practices, pressures and perceived benefits. *Business Strategy and the Environment*, 21(7), 423–434.

- Bridge, S. (2021). Facing uncertainty: An entrepreneurial view of the future? *Journal of Management & Organization*, 27(2), 312–323.
- Caputo, A., & Ayoko, O. B. (2021). Entrepreneurship, innovation and organizational behaviour. *Journal of Management and Organization*, 27(4), 621–625.
- Cohen, B., Smith, B. J., & Mitchell, R. (2006). Toward a sustainable conceptualization of dependent variables in entrepreneurship research. *Business Strategy and the Environment*, 17(2), 107–119.
- Corner, P., & Kearins, K. (2018). Scaling-up social enterprises: The effects of geographic context. *Journal of Management and Organization*, 27(1), 87–105.
- Costa, E., & Pesci, C. (2016). Social impact measurement: Why do stakeholders matter? *Sustainability Accounting, Management and Policy Journal*, 7, 99–124.
- Crouch, M., & McKenzie, H. (2006). The logic of small samples in interview-based qualitative research. *Social Science Information*, 45(4), 483–499.
- Dean, T., & McMullen, J. S. (2007). Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *Journal of Business Venturing*, 22(1), 50–76.
- Dee, N., Gill, D., Weinberg, C., & McTavish, S. (2015). *Startup support programmes, What's the difference?* Nesta. Retrieved June 10, 2023, from <https://www.nesta.org.uk/report/startup-support-programmes-whats-the-difference/>.
- De Lange, D. E. (2017). Start-up sustainability: An insurmountable cost or a life-giving investment? *Journal of Cleaner Production*, 156, 838–854.
- Delmas, M. A., & Burbano, V. C. (2011). The drivers of greenwashing. *California Management Review*, 54(1), 64–87.
- Demil, B., & Lecocq, X. (2015). Crafting an innovative business model in an established company: The role of artifacts. *Business Models and Modelling, Advances in Strategic Management*, 33, 31–58.
- Dicuozzo, G., Galeone, G., Rinaldo, S., & Turco, M. (2022). The key drivers of born-sustainable businesses: Evidence from the Italian Fashion Industry. *Sustainability*, 12(24), 10237.
- Di Vaio, A., Hassan, R., Chhabra, M., & Arrigo, E. (2022). Sustainable entrepreneurship impact and entrepreneurial venture life cycle: A systematic literature review. *Journal of Cleaner Production*, 378, 134–469.
- Dumez, H. (2021). *Méthodologie de la recherche qualitative*. Vuibert, 3e édition, France, 288.
- Elkington, J. (1997). *Cannibals with Forks: The triple bottom line of 21st Century Business*. Oxford: Capstone.
- European Commission. (2013). *Entrepreneurship 2020 action plan. Reigniting the entrepreneurial spirit in Europe*. Retrieved June 10, 2023, from <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0795:FIN:en:PDF>.
- Fernandez-Feijoo, B., Romero, S., & Ruiz, S. (2014). Commitment to corporate social responsibility measured through global reporting initiative reporting: Factors affecting the behavior of companies. *Journal of Cleaner Production*, 81, 244–254.
- Ferreira, J. J., Fernandes, C. I., Veiga, M. V., & Caputo, A. (2022). The interactions of entrepreneurial attitudes, abilities and aspirations in the (twin) environmental and digital transitions? A dynamic panel data approach. *Technology in Society*, 71, 102–121.
- Fichter, K., Lüdeke-Freund, F., Schaltegger, S., & Schillebeeckx, S. J. D. (2023). Sustainability impact assessment of new ventures: An emerging field of research. *Journal of Cleaner Production*, 384(4), 135452.
- Freeman, R. (1984). *Strategic management. A stakeholder approach*. Cambridge: Cambridge University Press.
- Gast, J., Gundolf, K., & Cesinger, B. (2017). Doing business in a green way: A systematic review of the ecological sustainability entrepreneurship literature and future research directions. *Journal of Cleaner Production*, 147, 44–56.
- George, M. N., Parida, V., Lahti, T., & Wincent, J. (2016). A systematic literature review of entrepreneurial opportunity recognition: Insights on influencing factors. *International Entrepreneurship and Management Journal*, 12(2), 309–350.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16(1), 15–31.
- Gregori, P., Wdowiak, M. A., Schwarz, E. J., & Holzmann, P. (2019). Exploring value creation in sustainable entrepreneurship: Insights from the institutional logics perspective and the business model lens. *Sustainability*, 11(9), 2505.
- Gustafsson, J. (2017). *Single case studies vs. multiple case studies: A comparative study*. *Academy of Business, Engineering and Science*. Retrieved June 10, 2023, from <urn:nbn:se:hh:diva-33017>.
- Hąbek, P. (2014). Evaluation of sustainability reporting practices in Poland. *Quality & Quantity*, 48(3), 1739–1752.
- Hacking, T., & Guthrie, P. (2008). A framework for clarifying the meaning of triple bottom-line, integrated, and sustainability assessment. *Environmental Impact Assessment Review*, 28(2–3), 73–89.
- Hall, J. K., Daneke, G. A., & Lenox, M. J. (2010). Sustainable development and entrepreneurship: Past contributions and future directions. *Journal of Business Venturing*, 25(5), 439–448.
- Hall, J., & Vredenburg, H. (2003). The challenges of innovating for sustainable development. *MIT Sloan Management Review*, 45(1), 61–68.
- Hassan, R., & Marimuthu, M. (2018). Contextualizing comprehensive board diversity and firm financial performance: Integrating market, management and shareholder's perspective. *Journal of Management and Organization*, 24(5), 634–678.
- Hockerts, K., & Wüstenhagen, R. (2010). Greening Goliaths versus emerging Davids – Theorizing about the role of incumbents and new entrants in sustainable entrepreneurship. *Journal of Business Venturing*, 25(5), 481–492.

- Hornes, J. (2019). The sustainability impact of new ventures. Measuring and managing entrepreneurial contributions to sustainable development. Ph.D. Thesis, der Technischen Universität Berlin. Retrieved June 10, 2023, from https://depositonce.tu-berlin.de/horne_jannic.
- IAIA International Association for Impact Assessment. (2020). What Is impact assessment?. Consulted June, 2023, from https://www.iaia.org/pdf/special-publications/What%20is%20IA_web.pdf.
- Johnson, M. P. (2015). Sustainability management and small and medium-sized enterprises: Managers' awareness and implementation of innovative tools: Sustainability management tools and SMEs. *Corporate Social Responsibility and Environmental Management*, 22(5), 271–285.
- Knoppen, D., & Knight, L. (2022). Pursuing sustainability advantage: The dynamic capabilities of born sustainable firms. *Business Strategy and the Environment*, 31(4), 1789–1813.
- Laszczuk, A., & Garreau, L. (2018). The sibylline research diary. *Finance Contrôle Stratégie*.
- Lévi Strauss, C. (1962). *From the savage mind. Chapter one, the science of the concrete*. Chicago: University of Chicago Press.
- Magbool, M. A. H. B., Amran, A., Nejati, M., & Jayaraman, K. (2016). Corporate sustainable business practices and talent attraction. *Sustainability Accounting, Management and Policy Journal*, 7(4), 539–559.
- Malesios, C., Skouloudis, A., Kumar Dey, P., Ben Abdelaziz, F., Kantartzis, A., & Evangelinos, K. (2018). Impact of small- and medium-sized enterprises sustainability practices and performance on economic growth from a managerial perspective: Modeling considerations and empirical analysis results. *Business Strategy and the Environment*, 27(7), 960–972.
- Matzembacher, D. E., Raudsaar, M., de Barcellos, M. D., & Mets, T. (2019). Sustainable entrepreneurial process: From idea generation to impact measurement. *Sustainability*, 11(21), 58–92.
- Mustar, P. (2021). *L'entrepreneuriat en action*. Paris: Presses des Mines.
- Nangoy, R., Mursitama, T., Setiadi, N., & Pradipto, Y. D. (2020). Creating sustainable performance in the fourth industrial revolution era: The effect of employee's work well-being on job performance. *Management Science Letters*, 10, 1037–1042.
- Ostermann, C. M., da Silva Nascimento, L., Kalil Steinbruch, F., & Callegaro-de-Menezes, D. (2021). Drivers to implement the circular economy in born-sustainable business models: A case study in the fashion industry. *Revista de Gestão. Circular Economy and Fashion Industry*.
- Pacheco, F. D., Dean, T., & Payne, D. S. (2010). Escaping the Green Prison: Entrepreneurship and the creation of opportunities for sustainable development. *Journal of Business Venturing*, 25(5), 464–480.
- Picken, J. C. (2017). From startup to scalable enterprise: Laying the foundation. *Business Horizons*, 60(5), 587–595.
- Pizzi, S., Corbo, L., & Caputo, A. (2021). Fintech and SMEs sustainable business models: Reflections and considerations for a circular economy. *Journal of Cleaner Production*, 281, 125217.
- Rizzi, F., Gusmerotti, N., & Frey, M. (2020). How to meet reuse and preparation for reuse targets? Shape advertising strategies but be aware of "social washing." *Waste Management*, 101, 291–300.
- Roach, M., & Sauermaun, H. (2015). Founder or joiner? The role of preferences and context in shaping different entrepreneurial interests. *Management Science*, 61(9), 2160–2184.
- Saebi, T., Foss, N., & Linder, S. (2019). Social entrepreneurship research: Past achievements and future promises. *Journal of Management*, 45(1), 70–95.
- Santos, F. M. (2012). A positive theory of social entrepreneurship. *Journal of Business Ethics*, 111(3), 335–351.
- Schaltegger, S. (2002). A framework for ecopreneurship: Leading bioneers and environmental managers to ecopreneurship. *Greener Management International*, 2002(38), 45–58.
- Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. G. (2016). Business models for sustainability: A co-evolutionary analysis of sustainable entrepreneurship, innovation, and transformation. *Organization & Environment*, 29(3), 264–289.
- Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: Categories and interactions. *Business Strategy and the Environment*, 20(4), 222–237.
- Scheyvens, R., Banks, G., & Hughes, E. (2016). The private sector and the SDGs: The need to move beyond 'Business as Usual'. *Sustainable Development*, 24(6), 371–382.
- Schumpeter, J. A. (1934). The theory of economic development. An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle. *Harvard Economic Studies*, 46, 255.
- Smith, R., Bell, R., & Watts, H. (2014). Personality trait differences between traditional and social entrepreneurs. *Social Enterprise Journal*, 10(3), 200–221.
- Stojanović, A., Mihajlović, I., & Safronova, N. B. (2021). The multi-criteria analysis of corporate social responsibility: a comparative study of Russia, Bulgaria and Serbia. *Journal of Management and Organization*, 27(4), 809–829.
- Spradley, P. (1980). *Participant Observation*. Belmont: Wadsworth Publishing.
- Terán-Yépez, E., Marín-Carrillo, G., Del Pilar Casado-belmonte, M., & de Las Mercedes Capobianco-uriarte, M. (2020). Sustainable entrepreneurship: Review of its evolution and new trends. *Journal of Cleaner Production*, 252, 119742.
- Theodoraki, C., Dana, L., & Caputo, A. (2022). Building sustainable entrepreneurial ecosystems: A holistic approach. *Journal of Business Research*, 140, 346–360.
- Todeschini, B. V., Nogueira Cortimiglia, M., Callegaro-de-Menezes, D., & Ghezzi, A. (2017). Innovative and sustainable business models in the fashion industry: Entrepreneurial drivers, opportunities, and challenges. *Business Horizons*, 60(6), 759–770.

- Trautwein, C. (2021). Sustainability impact assessment of start-ups – Key insights on relevant assessment challenges and approaches based on an inclusive, systematic literature review. *Journal of Cleaner Production*, 281, 125–330.
- Visser, W., Matten, D., Pohl, M., & Tolhurst, N. (2009). *The A to Z of corporate social responsibility: A complete reference guide to concepts, codes and organisations*. Germany: Wiley.
- Voinea, C. L., Logger, M., Rauf, F., & Roijakkers, N. (2019). Drivers for sustainable business models in start-ups: Multiple case studies. *Sustainability*, 11(24), 6884.
- Waas, T., Hugé, J., Block, T., Wright, T., Benitez-Capistros, F., & Verbruggen, A. (2014). Sustainability assessment and indicators: Tools in a decision-making strategy for sustainable development. *Sustainability*, 6(9), 5512–5534.
- Yin, R. K. (2018). *Case study research and applications: design and methods* (6th ed.). Thousand Oaks, CA: Sage.
- Zahra, S. A., Gedajlovic, E., Neubaum, D. O., & Shulmand, J. M. (2009). A typology of social entrepreneurs: Motives, search processes and ethical challenges. *Journal of Business Venturing*, 24(5), 519–532.
- Zollo, M., Cennamo, C., & Neumann, K. (2013). Beyond What and Why. *Organization & Environment*, 26(3), 241–259.

Appendix A: Interview guide – First round of interviews

1. When was your startup created?
2. When did you join the incubator?
3. What is the current TRL of the startup?
4. Why did you create this startup?
5. What are the goals of the startup?
6. What are the main problems you face?
7. When have these goals emerged?
8. What is your ambition in terms of economic, social, and environmental objectives?
9. Do you have examples of choices you made to follow social or environmental objectives?
10. Do you assess your contribution to these objectives?
11. Why do you assess your contribution to these objectives?
12. How do you assess your contribution to these objectives?
13. What are the difficulties you face while assessing these objectives?
14. If you had to do things differently, what would you do?
15. What are your next objectives in terms of sustainability impact assessment?