Investor Perspective on Impact-driven Startups – The Prioritization of Certainty[1]

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Abstract

Purpose: In this study, we dive into the assessment process of startups by impact investors. In particular, we investigate the preferences impact investors place on different social and environmental criteria. We build on social learning theory to understand the underlying rationale of the investors.

Method: With our research, we simplify the impact category system by conducting a systematic literature review. We then validate these criteria with a survey of 69 impact investors in Europe.

Findings: The results highlight the prioritization of quantifying impact and a discrepancy between essential and desirable impact categories. Due to the clear and significant results changing with the target market and startup stage focus, we assume a tendency of homophily of impact investors.

Originality: With our empirical study, we offer strategic implications for investors and startups as we decrease the complexity of impact categories while validating their significance in the impact assessment process.

Keywords: impact investing, entrepreneurship, assessment

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Introduction

Impact investors play a critical role in achieving the United Nations' Sustainable Development Goals with their investments (Verrinder *et al.,* 2018). Startups are perceived as a means to this end, as the importance of sustainability in entrepreneurship has increased significantly (Hall *et al.,* 2010; Filser *et al.,* 2019). However, there is still no common understanding of impact (Bengo *et al.,* 2021; Agrawal and Hockerts, 2021), and we lack insight into impact investors' criteria for assessing a young venture's impact (Hazenberg *et al.,* 2015; Glänzel and Scheuerle, 2016). For young ventures, it is essential to adjust their strategy accordingly to match the investors' preferences and position their potential impact robustly. Thus, this paper addresses the research question: What impact criteria do impact investors prioritize when assessing sustainable startups for investment?

To address this, we conducted a two-stage research process. Initially, we created a comprehensive set of impact assessment criteria by synthesizing information obtained through a systematic literature search. Furthermore, we incorporated three prominent impact assessment frameworks (GIIN, GRI, MSCI) into the process. The consolidated criteria were then evaluated via a survey by 69 experienced impact investors in the European region, according to the perceived importance in the investor's assessment. The results suggest that the number of jobs provided and the amount of greenhouse gas emissions reduced by the venture are the two most important criteria. We build on social learning theory to interpret the underlying rationale of impact investors' preferences.

Theoretically, we offer a clearer understanding of impact based on specific criteria. Empirically, it furnishes an overview of the current focal points of impact investors, which can be contextualized within social learning theory. From a practical perspective, the results create transparency for investors and startups to identify future pathways and improve communication.

We organize the remainder of this paper as follows: First, we provide a brief overview of the theoretical background. Afterward, we outline the two-step methodological approach for this research. Then, we present the results of the systematic literature search, followed by the survey results. We discuss the results critically, and the paper concludes with limitations and an outline for future research.

Theoretical background

The scientific literature regards entrepreneurship as critical for sustainable development with new ventures developing innovative solutions to social and environmental issues (Bocken, 2015; Pacheco, *et al.,* 2010). Sustainable ventures focus on both financial returns and societal impact, which allows them to access private capital beyond traditional philanthropists (Vecchi *et al.,* 2017; Paetzold *et al.,* 2022). The provision of private capital plays a crucial role in financing and scaling sustainable business models (Bocken, 2015; Holtslag *et al.,* 2021).

There is a lack of consensus about the terminology of sustainable entrepreneurship with multiple inconsistent definitions in different contexts (Vedula et al., 2022). Building on the distillation work by Schäfer et al. (2015), we understand sustainable entrepreneurship as an umbrella term for all types of impact-driven entrepreneurship that intends to enable transformational change by generating social value (for people, communities, and marginalized groups) or ecological value (by preserving or regenerating the natural environment).

Impact assessments consider both product impact and operational impact (Brest and Born, 2013). According to the impact value chain framework (Clark *et al.,* 2004), the impact of a venture reflects the portion of the total outcome achieved through its primary activities that go beyond what would have happened anyway (Grieco *et al.,* 2015). There is growing evidence that specific impact categories exist and are utilized by impact investors to determine a company's potential impact. Studies have identified the UN SDGs as a distinct framework for target setting (Castellas *et al.,* 2018; Santamarta *et al.,* 2021; Paetzold *et al.,* 2022).

Established impact categories exist for environmental impact assessment (Dong and Hauschild, 2017) but assessing social impact is more complex and often relies on qualitative criteria (Souza *et al.,* 2015; Molecke and Pinkse, 2017).

In our study, we draw on insights from social learning theory and social network theory to analyze the empirical findings. Social learning is the "process by which certain mechanisms in society aggregate the information of individuals" (Vives, 1996, p.589). It underscores the significance of social interaction, imitation, and modeling in the learning process. This theory suggests that investors' behaviors influence one another through observations, attitudes, and outcomes, particularly in contexts characterized by high uncertainty, such as investment in early-stage startups (Gangopadhyay and Nilakantan, 2021). This aligns with previous research findings indicating that investors tend to lean towards well-known criteria (Kollmann and Kuckertz, 2010). We aim to contribute to these mechanisms through which social learning occurs within investment communities, as investors observe and emulate the behaviors of their peers.

In line with that, social network theory highlights how relationships within networks shape behaviors, attitudes, and outcomes (Sun and Tang, 2011). Previous research has identified factors such as sector specialization, geographical location, and shared social and commercial logic as influential in impact investors' decisions (Agrawal and Hockerts, 2019; Cetindamar and Ozkazanc-Pan, 2017). These findings suggest that investors may rely on their network connections to access information, learn about best practices, and collaborate with stakeholders, thereby influencing their investment decisions. We postulate that preferences change based on the investors' characteristics. By examining the results of our study through the lenses of these theories, we gain a deeper understanding of how impact investors learn about and adopt investment decisions within their social networks.

Method

For this research, we combine a systematic literature review (SLR) with secondary sources to derive a comprehensive set of social and environmental impact criteria for impact investing. Multiple data sources contribute to adequate reliability and robustness of findings (Najmaei, 2016). The criteria identified form the basis for the expert survey with impact investors in the second step of the research process.

Developing a set of impact assessment criteria

The literature search aims to identify studies that explicitly provide criteria for assessing companies' or projects' social and environmental impact. Therefore a SLR is conducted following Kitchenham and Charters (2007) by first defining a search string that includes "social impact" and "environmental impact" combined with the two key terms "assessment" and "criteria" and related terms (Sustainability, Life-cycle, Valuation, Evaluation; Indicators, Measures, Metrics). Thus, we cover research from both the social impact assessment (SIA) as well as the environmental impact assessment (EIA) research area. The literature search was conducted in November and December 2021 using the literature databases EBSCO and Google Scholar and resulted in 186 publications. As the field of impact investing is evolving, the second database's broader result range was considered valuable for the overall findings. Still, to ensure an efficient search process, once we classified all ten publications listed on a page as not relevant based on their title, we stopped the search process for the respective search string.

Additional analysis of the research conducted during the preliminary review involved the exclusion of studies being too industry-specific to facilitate the formulation of a standardized set of criteria. Furthermore, only publications dating from 2000 onwards were incorporated to ensure contemporary relevance. Other inclusionary criteria comprised empirical and conceptual studies, full-text accessibility, and adherence to the English language.

After applying all inclusion and exclusion criteria, we could classify 19 publications as relevant. Five additional publications could be identified via a forward and backward search, increasing the total number to 24. For each of the 24 identified primary studies, we provide various meta-information in a results protocol (see Table I).

Table I. Results of the Systematic Literature Review (Source: Authors own work)

Author(s), year	**Geographic focus**	**Industry focus**	**Source(s) of assessment criteria**	**Impact dimension(s)**
Agyekum, Fortuin, & Harst, 2017	Ghana	Bicycle frames	UNEP/SETAC guidelines	Social
Benoît et al., 2010	No specific focus	No specific focus	UNEP/SETAC guidelines	Social
Bose & Chakrabarti, 2003	No specific focus	No specific focus	Literature Review	Social Environmental
Bribián, Capilla, & Usón, 2011	Europe	Building Materials	CED method; IPPC 2007 methodology	Environmental
Chardine-Baumann & Botta-Genoulaz, 2014	No specific focus	No specific focus	Literature Review	Social Environmental Economic
Chen & Holden, 2017	Ireland	Dairy farms	UNEP/SETAC guidelines	Social
Dong & Hauschild, 2017	No specific focus	No specific focus	UN SDGs; Planetary Boundaries	Environmental
Du, Freire, & Dias, 2014	No specific focus	No specific focus	UNEP/SETAC guidelines	Social
Eslami, Ashofteh, Golfam, & Loáiciga, 2021	No specific focus	Dams	Stakeholder Interviews	Social Environmental Economic
Garbie, 2014	No specific focus	Manufacturing	Literature Review	Social Environmental Economic
Goyal & Rahman, 2014	India	Oil and Gas	Literature Review; Expert Interviews	Social Environmental Economic
Hawkins, Singh, Majeau-Bettez, & Strømman, 2012	No specific focus	Automotive	Own development	Environmental
Jasiński, Meredith, & Kirwan 2016	No specific focus	Automotive	Literature Review	Social Environmental Economic
Kolotzek, Helbig, Thorenz, Reller, & Tuma, 2018	No specific focus	No specific focus	Literature Review; Expert Interviews & Workshops	Social Environmental
Labuschagne & Brent, 2008	No specific focus	Manufacturing	Case Studies	Social Environmental

Mroueh et al., 2000	Finland	Road Construction	Own development	Environmental
Pelletier et al., 2007	No specific focus	Seafood	Literature Review	Environmental
Pun, Hui, Lewis, & Lau, 2003	Hong Kong	Plastic injection molding	Expert Survey	Environmental
Rafiaani et al., 2009	No specific focus	Carbon capture and utilization technologies	UNEP/SETAC guidelines	Social
Souza et al., 2015	Brazil	Waste Management	Stakeholder Interviews	Social Environmental Economic
Takeda, Keeley, Sakurai, Managi, & Norris, 2019	Malaysia	Renewable energy technologies	Social Hotspot Index (SHI)	Social
Umair, Björklund, & Petersen, 2015	Pakistan	Recycling	UNEP/SETAC guidelines	Social
Yıldız-Geyhan, Altun-Çiftçioğlu, & Kadırgan, 2017	Turkey	Packaging waste management system	UNEP/SETAC guidelines	Social
Yıldızbaşı, Öztürk, Efendioğlu, & Bulkan, 2020	Turkey	Automotive	Literature Review	Social

We conducted the criteria aggregation along with three other sources in section 4.1. We consider assessment criteria provided by impact investment organizations and sustainability reporting standards for the criteria, acknowledging their relevance as established reporting frameworks in extant literature (Costa and Pesci, 2016). The included frameworks are (1) IRIS+, the reporting system by the Global Impact Investing Network (GIIN) provides a system for measuring, managing, and optimizing impact (Global Impact Investing Network, 2020). (2) The Global Reporting Initiative (GRI) standards are the most widely used and recognized guidelines for reporting impact. The most recent version of the framework is available in the consolidated set of GRI standards 2021 (Global Sustainability Standards Board, 2021), which we use for this research. (3) The Environmental, Social, and Governance (ESG) standards provided by MSCI (2020) help investors to understand a companies' environmental, social, and

governance risks and opportunities. Relevant to the criteria set of this paper are the 35 ESG key issues.

Survey-based criteria evaluation

In the second step, European-based impact investors evaluated and rated the impact criteria according to their relevance. Therefore, we conducted quantitative empirical research following the guidelines provided by Rowley (2014), Singh (2017), and Slattery and colleagues (2011). For data collection, an expert survey was conducted, a widely adopted approach known for its efficiency in yielding generalizable findings (Rowley, 2014).

To ensure that the results have a high degree of informative value, this expert survey addresses only impact investors with adequate experience investing in young sustainability-driven ventures (i.e., startups). Specifically, a participant should have at least three years of experience in impact investing and be responsible for at least USD 1 million in assets under management related to impact investments. To verify the required participant characteristics, we included descriptive questions, for example, gender, the type of investor/investment organization, geographic focus, or the startup stage of investment.

The questionnaire was derived from the consolidated criteria outlined in section 4.1. Considering the relatively high number of criteria the experts needed to evaluate, using a rating scale for the expert survey appeared most appropriate in this research (Eisele *et al.,* 2002; For the evaluation of the individual criteria in the context of this research. Thus, we define a scale with a total comprising of four differentiations, an approach that has demonstrated notable efficacy in previous entrepreneurship research studies which is in line with previous publications in the field of entrepreneurship research (e.g., Eisele *et al.,* 2002; MacMillan *et al.,* 1985). The rating scale's range includes the levels "irrelevant," "desirable," "important," and "essential". The assigned weighting factors used to calculate the mean values range from zero to three and thus constitute an ordinal scale. As we derived the criteria from publications beyond the scope of finance and entrepreneurship research, we ensure their relevance in impact

investing if their average rating is significantly different from zero. We chose a random order in listing the individual criteria in the questionnaire.

We conducted the expert survey via an online data collection tool between January 17 and February 9, 2022. The sample for the survey was drawn using two different channels. First, by searching the keywords "impact investing" and filtering for individuals within the European region, we identified 217 relevant impact investors from the social networking platform LinkedIn. Secondly, another 200 investors were contacted by mail via the CyberForum e.V. network, a European-wide active entrepreneur network located in Germany. A total of 77 out of 417 investors participated in the survey, thus representing a response rate of approximately 18%. Three responders, however, had to be removed as they did not fully complete the questionnaire. Moreover, five investors needed to be excluded, as four lacked the required investment experience, and another did not primarily invest in startups. This leaves a total of 69 survey participants, which form the basis for the analysis in section 4.2.

Results

Aggregation of the identified assessment criteria

In this section, we establish a comprehensive set of impact assessment criteria, which form the basis for the expert survey in the second step of the research process. We derived 47 different assessment criteria from the data sources presented in section 3.1.

In the first step, we excluded all industry-specific criteria to ensure the desired industry neutrality in the context of this paper. Examples of industry-specific criteria include “vehicle interior air quality"; "drive-by noise," or "car vibration" within the automotive sector (Jasiński et al. 2016).

Secondly, to further reduce complexity, relatively similar criteria were summarized and grouped. The groupings were discussed with other researchers to ensure objectivity. This

procedure led to ten environmental and ten social criteria, which we present with their respective references in Table II and Table III.

We classified all environmental-related assessment criteria obtained into two broader categories “human health and ecosystem quality” and “natural resources” (see Table II).

Table II. Environmental-related Impact Assessment Criteria (Source: Authors own work)

Category	**Criteria**	**Description**	**References**
Human health and ecosystem quality	Global warming potential	Amount of greenhouse gas emissions contributing to global warming avoided or reduced by the organization.	*Bribián et al. (2011); Dong and Hauschild (2017); Garbie (2014); Goyal and Rahman (2014); GRI; Hawkins et al. (2012); IRIS; Jasiński et al. (2016); Kolotzek et al. (2018); Mroueh et al. (2000); MSCI; Pelletier et al. (2007); Pun et al. (2003); Souza et al. (2015)*
	Pollution of air, water, or soil	Emission of pollutants with harmful effects on human health and ecosystem quality into the air, water, or soil, such as SO_x, NO_x, particulate matter, or toxic substances, avoided or reduced by the organization.	*Bose and Chakrabarti (2003); Dong and Hauschild (2017); Eslami et al. (2021); Garbie (2014); Goyal and Rahman (2014); GRI; Hawkins et al. (2012); IRIS; Jasiński et al. (2016); Kolotzek et al. (2018); Mroueh et al. (2000); MSCI; Pelletier et al. (2007); Pun et al. (2003); Souza et al. (2015)*
	Biodiversity	The company assesses the impact of locations, business activities, and products on biodiversity and seeks to minimize it.	*Chardine-Baumann and Botta-Genoulaz (2014); Bose and Chakrabarti (2003); Eslami et al. (2021); Garbie (2014); GRI; IRIS; Mroueh et al. (2000); MSCI*
	Environmental investments	Implementation of environmental improvement projects beyond the company's core business, such as reforestation.	*Chardine-Baumann and Botta-Genoulaz (2014); Garbie (2014); Goyal and Rahman (2014); IRIS*
Natural resources	Water use	Fresh and industrial water consumption is saved by the company.	*Bribián et al. (2011); Dong and Hauschild (2017); GRI; IRIS; Jasiński et al. (2016); MSCI; Kolotzek et al. (2018); Mroueh et al. (2000)*

	Land use	Loss of land in the sense of being temporarily unavailable due to business activities saved by the company.	*Chardine-Baumann and Botta-Genoulaz (2014); Garbie (2014); IRIS; Jasiński et al. (2016); Mroueh et al. (2000); MSCI; Kolotzek et al. (2018); Souza et al. (2015)*
	Energy use	Energy consumption saved by the company.	*Bribián et al. (2011); Goyal and Rahman (2014); GRI; IRIS; Jasiński et al. (2016); Mroueh et al. (2000); Pun et al. (2003)*
	Energy mix	Use of renewable energy sources.	*Chardine-Baumann and Botta-Genoulaz (2014); Garbie (2014); Goyal and Rahman (2014); Hawkins et al. (2012); GRI; IRIS; Pelletier et al. (2007)*
	Waste generation and management	Amount of waste, especially hazardous waste, avoided or reduced by the company. Furthermore, actions are implemented, such as circular measures to partially recycle generated waste.	*Chardine-Baumann and Botta-Genoulaz (2014); Garbie (2014); Goyal and Rahman (2014); GRI; IRIS; Mroueh et al. (2000); MSCI; Pun et al. (2003)*
	Renewable or recyclable materials	Use of renewable or recyclable materials for production and packaging.	*Chardine-Baumann and Botta-Genoulaz (2014); Garbie (2014); Goyal and Rahman (2014); GRI; IRIS; Jasiński et al. (2016); MSCI; Pun et al. (2003)*

These categories reflect the indicators commonly considered within EIA (e.g., Souza *et al.*, 2015). The two environmental criteria most frequently mentioned are “global warming potential” (i.e., greenhouse gas emissions) as well as "pollution of air, water, or soil." The latter combines various criteria in the context of air pollution and eco- and human toxicity; it represents any pollution with harmful emissions apart from greenhouse gases. This includes a wide range of environmental damage, such as ozone depletion, acidification, eutrophication, photochemical ozone formation, and contamination of soils and waters with toxic substances. However, we can assume that impact investors do not proceed at this level of granularity when assessing the impact of a new venture (Scholda *et al.*, 2021).

We complement human health and ecosystem quality criteria with "biodiversity" and "environmental investments." The latter refers to environmental improvement projects outside the company's core business, such as reforestation (Bansal *et al.*, 2019).

The second environmental impact assessment criteria category is related to the venture's resource consumption. It includes whether the company can reduce water, energy, and land use. Regarding the energy mix used, the company should rely on renewable energy sources rather than fossil fuels. In addition, the impact also depends on whether renewable or recycled materials are used in production and packaging. Finally, the waste generated by the company should also be considered. Of particular interest is the amount of waste that can be avoided and whether the company is acting to reuse some of the waste in the production process or to recycle it.

We classify the identified social-related assessment criteria in Table III in terms of the various stakeholder groups affected by a company's business activities.

Table III. Social-related Impact Assessment Criteria (Source: Authors own work)

Category	**Criteria**	**Description**	**References**
Employees	Diversity and inclusion	High level of diversity in terms of gender, age, and nationality. Furthermore, no discrimination against minorities or vulnerable groups, but offering equal opportunities to all people.	*Benoît et al. (2010); Chen and Holden (2017); Du et al. (2014); Garbie (2014); GRI; IRIS; Kolotzek et al. (2018); Rafiaani et al. (2009); Souza et al. (2015); Umair et al. (2015); Yıldız-Geyhan et al. (2017); Yıldızbaşı et al. (2020)*

	Gender equity	The company is committed to gender equity, especially in terms of equal salaries and development opportunities for women and men.	*GRI; IRIS; Labuschagne and Brent (2008); Takeda et al. (2019)*
	Working conditions	The company is able to improve working conditions, for example, in terms of working hours, fair salaries, labor rights, occupational health and safety, or social benefits.	*Agyekum et al. (2017); Benoît et al. (2010); Bose and Chakrabarti (2003); Chen and Holden (2017); Du et al. (2014); Goyal and Rahman (2014); GRI; IRIS; Jasiński et al. (2016); Kolotzek et al. (2018); Labuschagne and Brent (2008); MSCI; Rafiaani et al. (2009); Takeda et al. (2019); Umair et al. (2015); Yıldız-Geyhan et al. (2017); Yıldızbaşı et al. (2020)*
Community	Employment	A number of local jobs provided by the company.	*Agyekum et al. (2017); Benoît et al. (2010); Bose and Chakrabarti (2003); Chen and Holden (2017); Du et al. (2014); Eslami et al. (2021); Goyal and Rahman (2014); Garbie (2014); GRI; IRIS; Jasiński et al. (2016); Kolotzek et al. (2018); Rafiaani et al. (2009); Souza et al. (2015); Umair et al. (2015); Yıldız-Geyhan et al. (2017)*

	Education	Improving the local level of education, for example, by offering training opportunities for employees or collaborating with local schools and universities.	*Bose and Chakrabarti (2003); Chen and Holden (2017); Garbie (2014); GRI; IRIS; Labuschagne and Brent (2008); MSCI; Pun et al. (2003); Yıldızbaşı et al. (2020)*
	Community engagement	High level of local stakeholders (i.e., customers and suppliers) to contribute to the economic development of the local community.	*Benoît et al. (2010); Bose and Chakrabarti (2003); Chen and Holden (2017); Du et al. (2014); Garbie (2014); GRI; IRIS; Jasiński et al. (2016); Kolotzek et al. (2018); Labuschagne and Brent (2008); Rafiaani et al. (2009); S9; Umair et al. (2015); Yıldız-Geyhan et al. (2017); Yıldızbaşı et al. (2020)*
Value chain actors	Corporate governance structure	The company has a strong governance structure and internal control mechanisms to prevent opportunistic behavior by various stakeholder groups, such as corruption.	*Garbie (2014); GRI; Jasiński et al. (2016); Kolotzek et al. (2018); MSCI; Takeda et al. (2019); Yıldızbaşı et al. (2020)*
	Fair competition towards all stakeholders	Improving the way of competition, for example, by offering fair prices to customers and suppliers or respecting intellectual property rights.	*Benoît et al. (2010); Garbie (2014); GRI; IRIS; Kolotzek et al. (2018); MSCI; Rafiaani et al. (2009); Umair et al. (2015)*
	Consumer interaction	Improving the way of consumer interaction, for example, by demonstrating a high level of transparency.	*Benoît et al. (2010); Garbie (2014); GRI; IRIS; Kolotzek et al. (2018); MSCI; Rafiaani et al. (2009); Yıldız-Geyhan et al. (2017)*
	Promoting social responsibility	Increasing the promotion of social responsibility, for example, by setting public commitments or selecting business partners based on social assessments.	*Chen and Holden (2017); GRI; Kolotzek et al. (2018); Umair et al. (2015)*

We differentiate the social impact on employees, the community, business partners, and customers along the value chain. The social impact on the company's employees is characterized in particular by the working conditions, which emerge as the most frequently mentioned aspect. Within the SIA literature, the working conditions for employees are typically assessed using numerous individual criteria. These include transparent employment contracts, reasonable working hours, the payment of a fair wage, social benefits, and securities such as insurance and pensions, a high level of occupational health and safety, no child or forced labor, as well as labor rights such as the right to strike, freedom of association, and collective bargaining. However, we aggregate these into a single criterion, "working conditions", to achieve the necessary reduction in complexity.

The two remaining criteria relating to the venture employees are "diversity and inclusion" and "gender equity." The latter is rarely mentioned, which could be explained by the assumption that the criterion is considered a part of diversity and inclusion. However, for the investigation of this paper, we treat the two criteria separately, as provided in the frameworks by IRIS+ and GRI. Thus, it is possible to separately assess whether the venture has a high level of diversity in terms of age, gender, and nationality, offers equal opportunities to any minorities on the one hand, and strives for equal compensation and development opportunities between men and women on the other hand.

Regarding "employment," which is defined as the number of locally provided jobs, the most frequently mentioned social criterion belongs to the second stakeholder group, "community". Besides the product or service offered, job creation serves as a critical lever for ventures to increase the economic welfare of society. Further criteria to contribute to the development of a community are "education" and "community engagement." The venture can improve the local level of education, for instance, by offering training opportunities to employees or collaborating with universities and schools to facilitate access to job

opportunities. The definition of "community engagement" is inconsistent across the identified publications. Some authors understand the criterion to mean improving living conditions in the community, such as providing essential resources like sanitation. However, the definition in the context of this research considers the share of local stakeholders of the venture as its engagement in the community. With a high share of local stakeholders, it can be ensured that the company uses local business partners and thus contributes to the local community's economic development. At the same time, the company's products should also be available to the local people rather than the location serving only low-cost production.

The third and last category of stakeholders refers to various remaining actors along the value chain, i.e., suppliers to customers. However, based on the number of mentions, these social criteria play a minor role compared to those relating to employees and the community. First, attention can be paid to whether the venture is committed to fair competition, such as paying fair prices to customers and suppliers or respecting the intellectual property rights of other companies. Regarding customers, the venture should place a high value on their well-being, for instance, through a high level of safety of the products sold or a transparent appearance towards the customer. At the same time, the venture should establish a robust governance structure and internal control mechanisms to prevent opportunistic behavior by various stakeholder groups, such as corruption.

Finally, ventures can also increase their impact by promoting social responsibility. Examples include the selection of suppliers with the consideration of social aspects or the declaration of public commitments.

This section's consolidated set of 20 criteria represents an initial valuable contribution to impact investing research. By reducing the complexity across multiple sources, it was possible to create a comprehensive overview of relevant impact assessment criteria, which form the expert survey's basis in the following section.

Expert survey

First, we present the descriptive characteristics of the impact investors who participated in the survey to place the later research findings in a broader context. Among the 69 respondents, 71% are male (n = 49) versus 28% are female (n = 19). One person refused to state their gender. Together, the investors show an average industry experience of 7.9 years in impact investing (median = 7). The 69 impact investors are responsible for an average of USD 39.5 million in assets under management, with the median investor in the sample managing USD 25 million. The significant difference between the average and median investors can be explained by the presence of more prominent investors in the sample. The largest six alone are responsible for a combined impact investment portfolio of over USD 950 million. Most respondents (n = 48, 70%) represented asset managers, followed by family office investors (n = 12, 17%). The remaining participants belong to foundations (n = 6; 9%) and development finance institutions (n = 2; 3%), while one investor (1%) conducts private impact investment.

In 2021, these investors collectively invested nearly USD 650 million in 440 impact investments. Most impact investors in the sample (n = 30; 43%) focus on emerging and developed markets. At the same time, 22 respondents (32%) focus primarily on developed markets, whereas 17 (25%) concentrate their investment activities mainly on emerging markets. In addition, two-thirds of the respondents (n = 46; 67%) invest mainly in early-stage startups, while the other third (n = 23; 33%) invest in expansion and late-stage startups. The sectors in which most survey participants invest at least part of their capital are information and communications technology, healthcare, food, agriculture, and manufacturing. Eight respondents (12%) stated to be agnostic.

We highlight the results of the expert survey concerning the rating of the impact criteria in Table IV. The first column indicates the rank of the respective criterion based on the investors' rating as "irrelevant" (0), "desirable" (1), "important" (2), and "essential" (3). To test the significance of the individual criteria, the respective p-values were calculated based on

a two-tailed t-test for a reference mean value of zero (i.e., the criterion does not influence the impact assessment process).

Table IV. Results of the Expert Survey with European Impact Investors (Source: Authors own work)

Rank	**Dimension**	**Assessment criteria**	**Irrelevant (0)**	**Desirable (1)**	**Important (2)**	**Essential (3)**	**Mean**	**SD**	**p-value**
1	Social	Employment	*3%*	*9%*	*14%*	*74%*	**2,59**	0,77	< .00001
2	Environ-mental	Global warming potential	1%	9%	22%	68%	**2,57**	0,71	< .00001
3	Environ-mental	Renewable or recyclable materials	*1%*	*6%*	*43%*	*49%*	**2,41**	0,67	< .00001
4	Environ-mental	Waste generation and management	*1%*	*4%*	*55%*	*39%*	**2,32**	0,63	< .00001
5	Environ-mental	Energy mix	*1%*	*10%*	*51%*	*38%*	**2,25**	0,69	< .00001
5	Environ-mental	Pollution of air, water, or soil	*1%*	*10%*	*51%*	*38%*	**2,25**	0,69	< .00001
7	Social	Working conditions	*1%*	*12%*	*55%*	*32%*	**2,17**	0,68	< .00001
8	Social	Corporate governance structure	*3%*	*9%*	*62%*	*26%*	**2,12**	0,67	< .00001
9	Environ-mental	Water use	*0%*	*17%*	*57%*	*26%*	**2,09**	0,65	< .00001
10	Environ-mental	Energy use	*1%*	*12%*	*71%*	*16%*	**2,01**	0,58	< .00001

(Table IV continued)

11	Social	Education	*0%*	*36%*	*39%*	*25%*	**1,88**	0,77	< .00001
12	Social	Community engagement	*7%*	*29%*	*33%*	*30%*	**1,87**	0,93	< .00001
13	Social	Consumer interaction	*3%*	*22%*	*70%*	*6%*	**1,78**	0,59	< .00001
14	Social	Fair competition	*4%*	*38%*	*49%*	*9%*	**1,62**	0,70	< .00001
15	Social	Diversity and inclusion	*6%*	*45%*	*42%*	*7%*	**1,51**	0,71	< .00001
16	Social	Gender equity	*3%*	*51%*	*42%*	*4%*	**1,48**	0,63	< .00001
17	Social	Promoting social responsibility	*13%*	*54%*	*33%*	*0%*	**1,20**	0,65	< .00001
18	Environ-mental	Biodiversity	*28%*	*55%*	*14%*	*3%*	**0,93**	0,73	< .00001
19	Environ-mental	Environmental investments	*28%*	*61%*	*9%*	*3%*	**0,87**	0,68	< .00001
20	Environ-mental	Land use	*38%*	*54%*	*6%*	*3%*	**0,74**	0,69	< .00001

Since the survey's sample size is sufficiently large, with 69 participants, a normal distribution for the sample mean can be approximated according to the central limit theorem. Assuming that the ratings of the individual participants are independent of each other, we fulfill the requirements for applying a one-sample t-test with an unknown standard deviation of the population. As the p-value for all criteria is close to zero at a significance level of 1%, indicating that their average rating is significantly different from zero, all criteria identified in Section 4.1 prove significant for the impact assessment.

First, the results are analyzed and discussed in terms of the relative importance of each criterion, based on the calculated mean value. The results show that “employment” (rank 1), as well as “global warming potential” (rank 2), were viewed as the two most important criteria by a relatively wide margin. However, the relatively high standard deviation suggests that there is no complete consensus among the respondents on the importance of the individual criteria. Concerning "employment", a possible explanation could be that the number of jobs the organization provides is a leading factor in creating economic welfare for people. At the same time, it is simple for investors to quantify. This makes the criterion well-suited for valuation purposes. The greenhouse gas emissions avoided or reduced by the organization are the leading indicator for environmental sustainability for the impact investors in the sample. Despite the rather complex and often inaccurate calculation (EEA, 2013), the criterion emerges as a key determinant for a startup's impact value.

The following most important criteria, according to the respondents' view, all relate to the environmental impact, namely “renewable or recyclable materials” (rank 3), “waste generation and management” (rank 4), “energy mix” (rank 5), as well as “pollution of air, water, or soil” (rank 5). The results suggest that the respondents place a higher weight on environmental criteria when assessing the impact of a venture. This is further supported by

Table V, which shows the ten criteria most frequently rated as “essential” by the impact investors in the sample.

Table V. The Ten Assessment Criteria Most Frequently Rated as Essential (Source: Authors own work)

Criterion	Impact dimension	Percent
Employment	Social	73,9%
Global warming potential	Environmental	68,1%
Renewable or recyclable materials	Environmental	49,3%
Waste generation and management	Environmental	39,1%
Energy mix	Environmental	37,7%
Pollution of air, water, or soil	Environmental	37,7%
Working conditions	Social	31,9%
Community engagement	Social	30,4%
Corporate governance structure	Social	26,1%
Water use	Environmental	26,1%

Again, five out of the first six criteria relate to the startup's environmental impact, emphasizing that the respondents determine the value of the impact more significantly with environmental factors. At the same time, Table V highlights that both criteria with the highest average rating, "employment" and "global warming potential," represent the leading factors for the impact assessment. With around 74% and 68% of all investors, respectively, considering them to be "essential," the total value of the impact seems to be significantly determined by these two criteria.

Within the social impact dimension, besides "employment," only the two criteria, “working conditions” (rank 7) and “corporate governance structure” (rank 8), show an average rating of over two, i.e., perceived by investors as “important” to "essential".

Particularly noticeable is the high standard deviation of the two criteria, "education" (rank 11) and “community engagement” (rank 12). Although their average rating is below two (i.e., perceived between “desirable” and “important”), the high standard deviation indicates that part of the investors in the sample consider the two factors to be "essential."

Whether the company is committed to “diversity and inclusion” (rank 15) and “gender equity” (rank 16) or “promoting social responsibility” (rank 17) tends to not be considered in an investment decision within the social impact dimension. Contradicting though are the findings that all three of them are considered by nearly 50% (diversity and inclusion) or more than 50% as “desirable”. Similarly, very few of the respondents considered the impact of the startup on “biodiversity” (rank 18), “environmental investments” outside the core business (rank 19), and the “land used” by the startup (rank 20). Yet again, all three of these criteria are ranked by more than half of the investors as “desirable”.

Considering that “biodiversity” reflects one of the most urgent challenges of the current century (e.g., Ogar *et al.*, 2020), the dilemma between “irrelevant” but “desirable” could be because a company's total impact on biodiversity is often challenging to assess, making the criterion less tangible for investors. In addition, “biodiversity” tends to be a factor without, so far, specific parameters, which makes the criterion less suitable. This holds for the other criteria pointed out as “desirable”.

To determine if investor-specific characteristics influence the choice of impact criteria, the 22 respondents who stated to invest primarily in developed markets versus the 17 who invest primarily in emerging markets will be reviewed and compared separately. This section does not consider the 30 investors who invest in both markets.

The highest rank difference between investments in developed and emerging markets can be observed for the social criteria "community engagement" and "education." Both criteria are significantly more important for investments in emerging markets, with a relatively large ranking difference of 12 and 8, respectively. Also, “employment” and “working conditions” were considered more important by this group of investors.

The four most important assessment criteria in emerging markets relate to the venture’s social impact. These findings show that investors pay more attention to social factors when

assessing the impact of a venture in an emerging market. The relatively low standard deviations of the four criteria mentioned above further indicate a high consensus among investors. Thus, the extent to which the startup can improve the lives of local people is a decisive factor in determining the value of its impact.

In contrast, respondents who primarily invest in developed markets prioritize environmental criteria to assess the value of the impact. With “renewable or recycled materials," “global warming potential," “waste generation and management," as well as the “pollution of air, water, and soil," the four most important assessment criteria for this group of investors all relate to the venture’s environmental impact.

In the third step, we divide the respondents concerning the startup stage in which they primarily invest. For this purpose, we categorize all 69 impact investors in the sample into early-stage investors (n =46) versus expansion-stage and late-stage investors (n =23). We consider the expansion and late-stage investors one group for the analysis, as differences are less significant than investments in early-stage startups. A distinction between the two types of respondents would have resulted in too small subgroups.

The differences between early-stage investors versus expansion and late-stage investors are quite small for most assessment criteria. Notably, in the case of the venture’s environmental impact, a difference in the ranking numbers can only be observed for three criteria. As such, early-stage investors place slightly higher importance on the startup's “energy use," whereas expansion and late-stage investors place a higher value on the “pollution of air, water, or soil," as well as on the venture's greenhouse gas potential. On the other hand, we can observe more differences within the social impact dimension of the startup. In particular, the assessment criterion “community engagement” indicates significantly higher importance for early-stage investors.

This could be explained by the assumption that as the venture's business grows, it will eventually become inevitable to engage with business partners outside the local community. As such, late-stage startups often enter international markets to expand business activities (Eisele *et al.*, 2002), which should accordingly interest late-stage impact investors, while the focus on the local community decreases. Furthermore, the corporate governance structure of the venture shows a higher significance for assessing its impact in the later stages. This also seems plausible when considering that the corporate structure becomes more complex as the venture grows and therefore carries a higher risk for potentially opportunistic behavior. The criterion “consumer interaction” becomes more critical at a later stage. This suggests that with a startup's increasing scale, investors expect a higher responsibility towards its customers. The same could be assumed for the venture's employees. However, the criterion “working conditions” is perceived as more important in the early stage of the startup, although the mean value’s difference is relatively small. This could be explained by the startup's need to be attractive to employees at an early stage.

There are certain differences in the rating of the ten impact assessment criteria that were most frequently rated as “essential” by the 46 early-stage investors versus the 23 expansion and late-stage investors. The high significance of the criterion “global warming potential” should be noted, which is considered “essential” by almost nine out of ten investors for the impact assessment of expansion and late-stage ventures. At the same time, it can be observed that for most criteria, the share of respondents who perceived a criterion to be "essential" is significantly higher among expansion and late-stage investors than among early-stage investors. In particular, the first five criteria in the category of expansion and late-stage investors each show a share of over 50% of respondents, whereas, in the case of early-stage investors, this only applies to a total of two criteria in the list.

Overall, this result suggests that as the scale of the venture increases, so does the degree to which individual assessment criteria influence the value of the venture's impact. A closer look at all assessment criteria also supports this. As the overall mean value across all criteria, with an average importance of around 1.9 for expansion and late-stage startups, is higher than 1.8 for early-stage startups, it can be assumed that the significance of individual assessment criteria increases over time.

Conclusion

The objective of this research was to improve the understanding of criteria applied by impact investors for the assessment of a sustainable venture's impact. Specifically, we examined the importance of various criteria to determine the most significant impact assessment criteria as perceived by a sample of experienced impact investors in Europe. To implement the empirical investigation, a two-stage research process was conducted.

In the first step, via 24 impact assessment studies and the frameworks provided by GIIN, GRI, and MSCI, it was possible to identify assessment criteria applicable to impact investing. We then combined these into a set of ten social and ten environmental criteria to reduce complexity. Given that existing impact assessment frameworks appear inadequate for the assessment of startups due to their high complexity, the comprehensive set of criteria developed in this research represents a first contribution for investors to perform more efficient due diligence.

The evaluation of the criteria by 69 impact investors via an expert survey subsequently allowed the identification of the most important assessment criteria in the scope of the sample. The results first showed that, on average, the respondents considered only a limited number of criteria to be substantial for assessing impact. In particular, we found that the number of jobs provided and the startup's greenhouse gas emissions are key criteria. Both were considered

essential by most of the investors. In addition, the analysis showed that the most significant assessment criteria were predominantly related to the environmental impact of the startup.

The findings offer several implications: As derived from social learning theory, the tendency to elevate the aforementioned criteria is in line with our assumption that investors demonstrate preferences for certain over uncertain criteria (Kollmann and Kuckertz, 2010). This is per se not bad, as the urgent need to address the UN SDGs demands any kind of action related to positive impact. Nevertheless, all synthesized impact criteria matter, and none should be neglected. We suggest that improved transparency about investors' preferences can help in social learning and might increase the focus on desirable criteria.

Additionally, investments based on the target market or startup stage suggest a tendency for homophily, as stated in social network theory (Sun and Tang, 2011). Dividing the respondents according to their investments in developed and emerging markets indicated that the latter placed a stronger focus on the startup's social impact, while we observed a higher importance on the corporate governance structure and the interaction with customers when the venture enters the expansion and late stage. In contrast, the importance of a high share of local stakeholders (i.e., community engagement) significantly decreases compared to the early stage of the startup.

For entrepreneurship theory, our findings add to the ongoing debate about the conflicting goals of social and environmental entrepreneurship. As we postulated with our definition, the two concepts should be understood as synergistic rather than opposing (Schäfer et al., 2015). The findings of this study support the notion that the different goals are not conflicting but rather sequential in their reconciliation (Vedula et al., 2021). Based on our findings, impact investors foster this with their impact focus at different startup stages.

Despite these implications, we must acknowledge several limitations. Firstly, while we adhere to scientific research standards in data collection and analysis, the limited number of

participants and the survey's European focus may not fully represent the entire population of impact investors. A larger-scale survey could validate and expand upon our findings.

Another limitation arises from our use of rating scales in the expert survey. These scales, while suitable for assessing the relative importance of numerous criteria, come with inherent drawbacks. Cognitive biases may affect investors' assessments, potentially leading to discrepancies between their intentions and responses (MacMillan *et al.*, 1985).

To address these biases and limitations, we recommend employing a conjoint analysis. This approach would allow for a more nuanced understanding of criterion importance (Knockaert *et al.*, 2010). A conjoint analysis with the ten most significant criteria from our expert survey would be appropriate.

Furthermore, while our approach to derive impact criteria is based on existing frameworks and publications from scientific literature, it may not capture impact investors' specific perspectives. Exploring case studies of investor-investee relationships could identify additional influencing criteria.

Lastly, conducting a comprehensive network analysis could test our assumption of homophily within the impact investing network, enhancing our understanding of social learning in criterion preferences. This could open new avenues for impact assessment, such as enhancing the acceptability of qualitative assessment strategies, via the utilization of established frameworks such as the theory of change (Castellas *et al.*, 2018).

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