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Review

# A Literature Review of Inter-Organizational Sustainability Learning

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**Abstract:** Sustainable development goals (SDGs) have become increasingly important for today's firms as they build sustainability strategies that integrate SDGs into their core activities. Addressing these goals collaboratively, in line with SDG 17—partnerships for the goals, has gained momentum, hence the growing literature on sustainability-oriented partnerships. However, addressing SDGs through partnerships is not straightforward. For firms, contributing to SDGs through alliances and partnerships requires building environmental capabilities and embracing new value frames; in other words, going through the complex process of inter-organizational learning. This paper reviews the literature on sustainability-oriented partnerships with a focus on the inter-organizational learning process. As a result of the review, a model of inter-organizational sustainability learning is presented. This model captures the different levels and types of the inter-organizational learning process; partner and partnership characteristics that impact learning; the environmental conditions that set the conditions for learning to take place; the catalyst and inhibitors of learning; and finally outcomes of learning. This model expands and re-organizes the existing scholarly conversation about inter-organizational learning in the context of sustainability-oriented alliances and partnerships and offers a learning-based understanding of sustainability partnerships to practitioners. Based on the review, the paper proposes ideas for future research and contributes to the development of a future research agenda in the area of sustainability-oriented alliances and partnerships.

**Keywords:** inter-organizational learning; sustainability; SDGs; collaboration; capabilities; frames

## 1. Introduction

Sustainable development goals (SDGs) “aim the combination of economic development, environmental sustainability and social inclusion” and they can only be addressed with the efforts of the private sector [1]. According to some scholars [2], these goals “present both a significant opportunity and a significant challenge [for the private sector]: an opportunity as it brings the benefits of additional finance, technology, skills and innovation from the business sector; and a challenge in that it bestows unprecedented power and expectations on business as a development agent purposely seeking to deliver sustainable development outcomes.” Overcoming these challenges requires the development of capabilities that address and integrate sustainable development into the core business and also a deeper engagement with value frames that promote sustainable development [3,4]. Partnerships can facilitate a platform to address complex and systemic issues highlighted in the different SDGs collectively [5,6].

SDG 17—partnerships for the goals, invites the private sector to implement SDG 1–16 through collaboration with other societal actors to create value for nature and society by sharing knowledge, expertise, technology and financial resources [7]. In their seminal work, Austin and Seitanidi [8] discuss four different types of value generated as a result of collaborative work: associational value, transferred resource value, interaction value and synergistic value. The authors define associational value as “a derived benefit accruing to another partner simply from having a collaborative relationship

with the other organization”; transferred resource value as a “benefit derived by a partner from the receipt of a resource from the other partner”; synergistic value as “value that arises from the underlying premise of all collaborations that combining partners’ resources enables them to accomplish more together than they could have separately” [9]. While partnerships for SDGs are expected to create these four different types of value, this article specifically focuses on the interaction value which is defined as “the intangibles that derive from the processes of partners working together”. One of these intangibles is considered as inter-organizational learning, which is the focus of this article [9].

Collaborative partnerships trigger inter-organizational learning processes which lead to the development of new capabilities that would help businesses to address sustainability concerns internally [10]. Furthermore, they enable cognitive changes in the private sector to embed sustainability into the core through frameshifts that take place in such collaborations [11,12]. Indeed, Agarwal, Gneiting and Mhlanga [2] proposed that partnerships with various stakeholders can help firms “shift from using a narrow business case approach to aligning their core activities with broader societal values and interests.”

This paper positions itself in this area of inter-organizational sustainability learning that takes place in alliances and partnerships formed to tackle SDG-related challenges. The objective, herein, is to re-organize the pre-existing work on sustainability-oriented alliances and partnerships with a focus on the inter-organizational learning process, its antecedents, and its outcomes. The paper, therefore, uses a review of 122 academic articles to provide a comprehensive review of the field.

The review results in a model which includes the following categories: partner and partnership characteristics that impact the learning process; the environmental conditions that set the conditions for learning to take place; the catalyst and inhibitors that impact learning; and finally firm-level, partnership-level, and system-level outcomes of learning and partnerships. This model organizes the existing literature on inter-organizational sustainability learning. Furthermore, the model demonstrates how different theoretical approaches and concepts fit together, as opposed to competing, when it comes to explaining the process of inter-organizational sustainability learning.

This paper contributes to the literature on sustainability-oriented alliances and partnerships. This contribution is thanks to the model and the future research agenda built in the paper because of the synthesis of different theoretical approaches and concepts that help us explain the complex phenomenon of inter-organizational sustainability learning. Furthermore, the model also contributes to the work of sustainability practitioners who manage alliances and partnerships by demonstrating factors that help them enhance inter-organizational learning and partnership performance.

The remainder of this paper is structured as follows. The Theory section summarizes the literature on SDGs, partnerships for SDGs and inter-organizational learning in the business context. The following Methods section introduces the stages of the systematic review, as well as the role of the metaphor in re-organizing the existing literature. The Findings section introduces a model that shows the antecedents and outcomes of the inter-organizational learning process in the context of sustainability. The Future Research section outlines research gaps in the field based on the review and provides a path for further research. Finally, the Conclusions section draws on the contributions of this paper to theory and practice.

## 2. Theory

### 2.1. Sustainable Development Goals (SDGs) in the Business Context

Sustainable development goals (SDGs) define 17 global targets for all types of organizations to address sustainability issues ranging from healthcare to fighting inequalities to climate change [13,14]. SDGs are positioned to cover the triple bottom line of sustainability (economic, environmental, social) and address concerns to do with people’s well-being, planetary boundaries and an inclusive notion of prosperity [6,14], and equality [15,16].

SDG 17—partnerships for the goals, emphasizes that the first sixteen goals need to be addressed by different constituents of the system [17]. In other words, SDG 17 recommends partnerships as a tool to foster sustainable development, underlining the importance of interactions between different societal actors. Sachs, et al. [18] highlight that achieving SDGs require societal transformations that “engages a different subset of business and civil society, facilitating targeted problem-solving, clear communication and the mobilization of stakeholders.” Similarly, Horan [19] recognizes that various stakeholders would be involved in these partnerships with different perceptions, expectations and interests. Indeed, thanks to the cross-sector interaction space in partnerships, actors from across different sectors can generate different types of value. While this article acknowledges the potential of value creation for different societal actors in a partnership context, the article specifically focuses on the ‘private sector’ and interaction value of ‘learning’ that private sector actors can gain through partnerships.

The private sector has already played an essential role in determining what SDGs should be [2,20–22]. Moving forward, the private sector has a crucial role in addressing the goals, re-designing business models, developing capabilities, accommodating resources and shifting their mission from profits to the wellbeing of the planet and people [2,20–22]. SDGs already impact the private sector, as we see some firms’ innovative products and services address SDGs, while other firms are changing their business models to align their core business with the SDGs [20]. It is important to note that some SDGs are relatively easier for the private sector to address, such as SDG 8—sustainable and inclusive growth, while other SDGs may be too complex to be addressed by a single actor alone [6].

Building sustainability-oriented partnerships, SDG-17, only became a goal in 2015 when the agreement on the SDGs was made. However, research on sustainability-oriented partnerships has been growing since the 1990s, both in the social [23,24] and the environmental sustainability domains [25–28]. Recent studies on SDGs in the business context suggest that a “way to enhance the strategic relevance of the SDGs is to engage in a proper portfolio of cross-sector and intra-sectoral coalitions or partnerships” [6]. These portfolios consist of two distinct types of collaborations: inter-firm alliances and cross-sector partnerships [29,30].

## 2.2. Inter-Firm Alliances and Cross-Sector Partnerships

Inter-firm alliances are defined as “a form of organizational arrangement for ongoing cooperative relationships among firms” [31]. In other words, alliances are “voluntary arrangements [between firms] involving durable exchange, sharing, or co-development of new products and technologies” [32]. Alliances are viewed as a hybrid form of governance “between markets and hierarchy that occur when transaction costs associated with a specific exchange are too high for an arm’s-length market exchange but not high enough to mandate vertical integration” [32,33]. This explanation sets the transaction cost economics motivation for formations of inter-firm alliances [34,35]; however, this is not the only rationale for why alliances exist.

Others explain how alliances help firms access resources [36], acquire knowledge [37], and develop new capabilities [38,39], thanks to inter-firm interactions. Furthermore, alliances help firms comply with institutional norms, values and regulations, and legitimate their actions using alliance arrangements [40]. Inter-firm alliances can occur between suppliers and customers in the firm’s value chain [41,42], with competitors [43] or various other innovation partners from different industries [44]. They may take a form whereby the partners share equity, as in the case of joint ventures, or a non-equity form whereby partners have a legal agreement, such as a memorandum of understanding (MoU), which clarifies the roles of partners and the boundaries of the alliance [34,45].

Cross-sector partnerships are “vehicles to mediate the changing roles and perceived responsibilities of what are commonly referred to as the three primary institutional sectors of society: government, business, and the civil sector” [46]. Firms engage in cross-sector partnerships with similar motivations to that of inter-firm alliances. Existing literature also studies cross-sector partnerships through the transaction-cost economics lens [47], resource and knowledge-based views [48], capabilities [49],

and finally, compliance with institutional norms, values and regulations, and legitimation of their actions [50].

This paper reviews the literature on both inter-firm alliances, and cross-sector partnerships in the context of sustainability since research shows that they both play a crucial role in firms addressing SDGs [6]. However, it is crucial to highlight that there are some differences in inter-firm alliances and cross-sector partnerships.

First and foremost, the partner type; in other words, the heterogeneity of partners' organizational forms, resources and capabilities, are different in these two distinct categories of engagement [51]. Due to the embeddedness of both partners in the private sector, inter-firm partners are often conceptualized as constituting lesser diversity in comparison to cross-sector [11,51].

Second, it is often assumed that public, private and civil sectors are dominated by different logics [50,52–56]. The differences in dominant logics lead partners to focus on different value objectives and introduce further challenges for the partnership [57,58].

Third, other than the differences in organizational forms, resources, capabilities, institutional logics and value objectives, some cross-sector partnerships are often identified with altruistic partnership motivations, aiming to impact systemic and societal grand challenges that go beyond self-interest [11]. However, this may not apply to all cross-sector partnerships, as some may not focus on sustainability challenges [59]. Though there are differences between inter-firm and cross-sector partnerships, they both provide a room for learning, development, and change.

### 2.3. Inter-Organizational Learning in the Business Context

Organizational learning and learning organizations have long been discussed in the domain of organization studies [60–68]. This literature discusses how organizations store knowledge in their memory [69]. Organizations absorb knowledge from external knowledge sources and transfer such knowledge internally [70]. They learn to change their behaviors, develop new capabilities and even alter the embedded collective cognition and, as a result, they shift towards new mental models [71]. Organizations need to learn because they need to fit the external environment [72]; in other words, co-evolve with the institutional environment and settings [73].

The literature on organizational learning could be categorized into two realms depending on the knowledge or value sources [74]. If the learning takes place across different teams and functions within an organization, then this learning or knowledge transfer is often referred to as *intra-organizational* [74]. If the knowledge sources are external to the organization, such as in the case of networks, alliances, consultants, suppliers and customers, then this learning is often referred to as *inter-organizational* learning [74]. The focus of this paper is on the latter, inter-organizational learning, and there are several ways in which it differs from intra-organizational learning [75].

Inter-organizational learning is often described as a paradoxical process due to the competitive tensions between the knowledge partners [76–78]. If two inter-firm partners are engaged in an alliance, scholars observed firms engaging in a competition to outlearn their partner. Indeed, some argue that “creating a successful alliance learning environment is the exception rather than the rule” [79].

Inkpen [79] lists several “explanations for the failure to learn from a partner: the alliance knowledge was undervalued; the necessary knowledge connections were not put into place; the nature of the knowledge itself made learning difficult; the parent corporate culture did not support learning.” Some studies focus on other barriers of inter-organizational learning and highlight that the “fear of loss of ownership, fear of loss of control of knowledge, and fear of loss of competitive edge” negatively affect the creation of a learning environment in an inter-organizational setting [80]. In a similar vein, others highlight that “the dynamics of power, opportunism, suspicion, and asymmetric learning strategies can constitute processual barriers to collective knowledge development” [81]. Generally, explicit knowledge is easier to be acquired from a partner than tacit knowledge [78]. However, “if there is access to, and recombination of, diverse knowledge in a network, it might be difficult to establish barriers to protect the competencies that each network member has in various knowledge fields” [78].

Moreover, the power imbalance between engaged parties may also create difficulties in establishing “inter-firm routines and the sharing of knowledge” [78].

In response to the barrier of partner opportunism and the fear of losing a competitive edge, the literature proposes governance mechanisms to ensure the protection of parties and social capital to improve their relationship. Two distinct forms of governance are relational governance and contractual governance [82]. Scholars highlight that when partners have relational governance based on competence trust which refers to “the confidence in the abilities of the other party to perform its share of the workload in an exchange”; then they are more likely to be engaged in learning [82]. Besides, governance through formal contracting also aims to protect parties and outline the roles and responsibilities of each party involved; hence “formal written contracts accomplish learning objectives by specifying the obligations and expected duties of partners” [82].

Scholars have identified that social capital, defined as “the aggregate of resources embedded within, available through, and derived from the network of relationships possessed by an individual or organization” is also an essential factor in catalyzing the learning process [83]. Indeed, some propose that in networks, thanks to the availability of social capital between network members, inter-organizational learning is facilitated further in comparison to that of inter-firm alliances [83]. Scholars propose that trust impacts the commitment between partners positively [84].

Social capital becomes important in inter-organizational transfer, not only because of possible partner opportunism but also because access to knowledge is more difficult outside the firm boundaries. Outside the firm boundaries, there is an additional issue that will affect the learning performance: cognitive distance or proximity [85–88].

Cognition “denotes a broad range of mental activity, including proprioception, perception, sense-making, categorization, inference, value judgments, emotions, and feelings, which all build on each other” [87]. Differences between organizations in terms of cognition lead to cognitive distance amongst partners [87]. Nooteboom shows that there is an inverted U-shaped relationship between cognitive distance and innovation performance [87]. This means that there is an optimal cognitive distance and “the challenge then is to find partners at sufficient cognitive distance to tell something new, but not so distant as to preclude mutual understanding” [87].

Cognitive distance shows that firms learn something new if they already have an existing knowledge and value base that will allow them to learn, which is a concept called ‘absorptive capacity’ [70,77,89,90]. Absorptive capacity is a dynamic capability that consists of the following processes: recognizing the value of new, external information, assimilating it, and applying it to commercial ends [71]. As a dynamic capability, absorptive capacity helps to create, extend or modify a firm’s resource base and develops other organizational capabilities [71,90]. Therefore, there is “a recursive relationship between organizational learning and absorptive capacity, where increased learning in an area can enhance a firm’s knowledge base and help to build greater absorptive capacity, which in turn can improve learning” [91].

Absorptive capacity is necessary but not sufficient for inter-organizational learning to take place. For knowledge transfer to take place between partners, partners would also need to have a disseminative capacity, defined as the “ability of knowledge holders to convey knowledge in a way that a recipient can comprehend it and put it into practice” [92]. In other words, disseminative capacity is “a combination of the sender’s ability to codify and articulate knowledge, the sender’s willingness to share knowledge, and the sender’s propensity to create and use opportunities for knowledge acquisition by the receiver” [93].

Above, different conditions for learning to take place in an inter-organizational setting are outlined, and the impact of different factors are briefly summarized. Other than the above-summarized conditions for learning to take place in an inter-organizational setting, it is essential to highlight that not all learning can be conceptualized in the same way. Crucially, learning can be exploratory and exploitative learning [71,94–97], single or double-loop learning [98]; or higher-level and lower-level [66]. These different levels and types of learning are defined in Table 1.



**Table 1.** Levels and types of learning.

Concepts	Definition
Exploitation vs. Exploration	<p>“Exploration includes things captured by terms such as search, variation, risk-taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution” [68].</p> <p>In other words, exploration is “the pursuit of new knowledge, of things that might come to be known”, exploitation is “the use and development of things already known” [99].</p>
Single-loop vs. Double-loop	<p>While single-loop learning occurs “whenever an error is detected and corrected without questioning or altering the underlying values of the system”, double-loop learning occurs “when mismatches are corrected by first examining and altering the governing variables and then the actions” [100].</p>
Lower-level learning vs. Higher-level learning	<p>“Lower-level learning occurs within a given organizational structure; a given set of rules. It leads to the development of some rudimentary associations of behavior and outcomes, but these usually are of short duration and impact only part of what the organization does. It is a result of repetition and routine and involves association building.”</p> <p>“Higher-level learning, on the other hand, aims at adjusting overall rules and norms rather than specific activities or behaviors. The associations that result from higher-level learning have long-term effects and impacts on the organization as a whole. This type of learning occurs through the use of heuristics, skill development, and insights. It, therefore, is a more cognitive process than lower-level learning, which often is the result of repetitive behavior” [66].</p>

Based on the learning levels and types summarized in Table 1, it is possible to conceptualize two distinct categories of learning outcomes: changes in capabilities, routines, and organizational behavior and changes in mental models, values and beliefs [101].

For the first category of outcomes, this paper focuses on the concept of organizational capabilities which can be defined as the “existing repertoire of the possible actions of the groups and organizations” [86]. Otherwise, the “routinized processes that are embedded in the organization” [102]. Depending on the level and type of learning, organizations can refine and leverage existing capabilities or develop new capabilities using the knowledge acquired from partners [103,104].

For the second category of outcomes, this paper focuses on the concept of ‘value frames’ which refers to perceptions of value that guide different sustainability organizational level interpretations and priorities in terms of economic, environmental and social value creation and preservation [4,12,52,105]. Through higher-level learning, changes or shifts in value frames are also expected [106,107].

The newly developed capabilities or shifted frames are expected to improve a firm’s performance in two ways. First, it may help firms develop combinative capabilities that help a firm’s general innovativeness and, as a result, its competitiveness [73]. Second, firms would also develop capabilities to manage alliances [38,108,109] and alliance portfolios [110], which would improve their partnership performance or success.

### 3. Methods

The objective of this study is to re-organize the pre-existing work on sustainability-oriented partnerships and alliances with a focus on the inter-organizational learning process, its antecedents, and outcomes. Therefore, this article takes a systematic approach to review the existing literature in this area.

A systematic literature review research helps to identify, evaluate and synthesize the existing body of completed and recorded work produced by scholars in a systematic way guided by a reproducible method [111]. The review is guided by the PRISMA checklist, which identifies the steps that researchers need to take when conducting systematic literature reviews [112,113]. The introduction section has identified the rationale behind the review, and the theory section developed the theoretical basis of the review. The focus of this section is to explain how the review is conducted.

The review includes the following stages: searching for academic articles in databases, screening the articles found based on an inclusion and exclusion criteria, processing the selected articles through qualitative content analysis and coding, synthesizing, and presenting the review findings. Table 2 summarizes the searching and screening stages followed in the systematic review.

**Table 2.** Summary of searching and screening.

Stages	Result
Search in the Web of Science	5688 articles
Inclusion Criteria	1655 articles
Exclusion Criteria	75 articles
Snowballing	47 articles
Total	122 articles

In the searching stage, the Web of Science database is selected to gather articles in the field. Web of Science provides access to a wide range of journal articles that are both within business, management and sustainability domains and is commonly used for systematic review purposes [114]. It is necessary to identify keywords that will make up the search string to conduct a thorough and comprehensive review of a field [115,116]. The critical keyword categories for the searching stage are identified as learning, partnerships, and sustainability. The keywords in each category are selected in line with previous studies. For instance, for learning keywords such as knowledge development, knowledge acquisition, knowledge absorption, are also searched in line with prior studies in the field [10,89]. For sustainability, keywords such as green and eco-friendly, or social responsibility are used to cover the broad literature in the field. Even though the terms have slightly different meanings, scholars' use of these terms have been converging, and at times they have been used interchangeably [117]. Finally, for partnerships, keywords such as alliance, cooperation, partnering, and collaboration are also used [118,119]. As a result, the search string below is generated with AND/OR Boolean operators:

*("sustainability" OR "sustainable" OR "CSR" OR "corporate social responsibility" OR "green" OR "eco-friendly") AND ("collaboration" OR "collaborative" OR "partnership" OR "partnerships" OR "partners" OR "partnering" OR "partner" OR "cooperation" OR "alliance" OR "alliances" OR "joint venture") AND ("knowledge development" OR "knowledge absorption" OR "absorptive" OR "capability development" OR "frame shift" OR "knowledge transformation" OR "knowledge exploitation" OR "knowledge assimilation" OR "knowledge acquisition" OR "learning" OR "transformation")*

This string of keywords used to search the Web of Science database for academic articles included that this content be in the English language and that all years are available. This search yielded 5688 articles.

These articles were screened based on two sub-processes: inclusion of articles only from relevant research fields, and exclusion of articles which contain the search string but in a different context. First,



as an inclusion criterion, the following four Science and Social Science Index categories are selected to provide coverage of journals that are both in the business and management and sustainability fields [10]: Green and Sustainable Science Technology, Environmental Studies, Management and Business. Application of this inclusion criterion yielded a sample of 1655 articles.

Second, as an exclusion criterion, the scope of the current study is used. Within the 1655 articles, some studies referred to ‘sustainability of partnerships’ or ‘financial sustainability of businesses’ within business and management studies but were not about environmental or social sustainability issues. Other studies focused on sustainability partnerships but did not consider partnerships whereby a business actor was involved. Instead, they focused on cities, local authorities, communities and NGOs and their sustainability partnerships with each other whereby business actors were not among the partners or the study did not provide learning opportunities for the business context, which is the focus of this paper. As a result of this screening of 1655 articles, 75 articles were identified from the Web of Science.

Furthermore, to further check if any relevant articles were missed in the searching and screening phases, recent reviews on the topic have been used for snowballing. One of these review articles was about capability development in the context of sustainability, which included a subset of articles that studied capability development through collaborations [10]. Another review article was about value frames, which included a subset of articles that studied frameshifts through collaborations [52]. Finally, one study was providing a general overview of environmental collaborations [120], and another was providing an overview of the role of stakeholder engagement for environmental innovations [4]. After cross-checking the references of these previous review papers, 47 other relevant articles were identified.

Overall, 122 articles formed the review database for this study. The review was conducted using qualitative content analysis and coding on NVivo 12 Plus. Inductive two-stage coding is used on NVivo to identify patterns within the review articles. In Figure 1, the coding process is demonstrated with some examples for the development of each category.

In addition to the coding mentioned above, articles are also coded in the following areas: theories and methods, types of partnerships (inter-firm vs. cross-sector) and SDGs, (see Table in the Appendix A). The coding concerning SDGs was conducted using a study which describes the role of businesses in addressing SDGs [6]. The theories and methods were coded based on the relevant sections of the papers. 36% of articles in the review explicitly referred to the resource-based view, 32% to absorptive capacity, 30% to dynamic capabilities, 17% to institutional theory, and 11% to stakeholder theory. Furthermore, more than half of the articles in the review were qualitative, and mostly case-based (64), followed by 43 quantitative studies and 13 studies that are review or theoretical works and only two studies which employed mixed methods.

Finally, the review was dominated by articles that studied cross-sector partnerships (55), followed by studies that studied both forms of partnerships with various stakeholders (36) and finally, inter-firm alliances (31). Studies that focused on inter-firm alliances were mostly from the context of sustainable supply chain relationships [121–124]. Only a few studies discussed inter-firm alliances that were not in the supply chain context [125]. Cross-sector partnership studies focused on engagements between firms and governments [126,127], firms and NGOs or non-profits [25,128,129], or universities and research institutions [130]. Furthermore, a few studies focused on firms’ engagement with several societal actors in the same initiative through multi-stakeholder partnerships [131,132]. Besides, recently some authors studied cross-sector partnerships between firms and social or environmental enterprises as cross-sector [133,134].

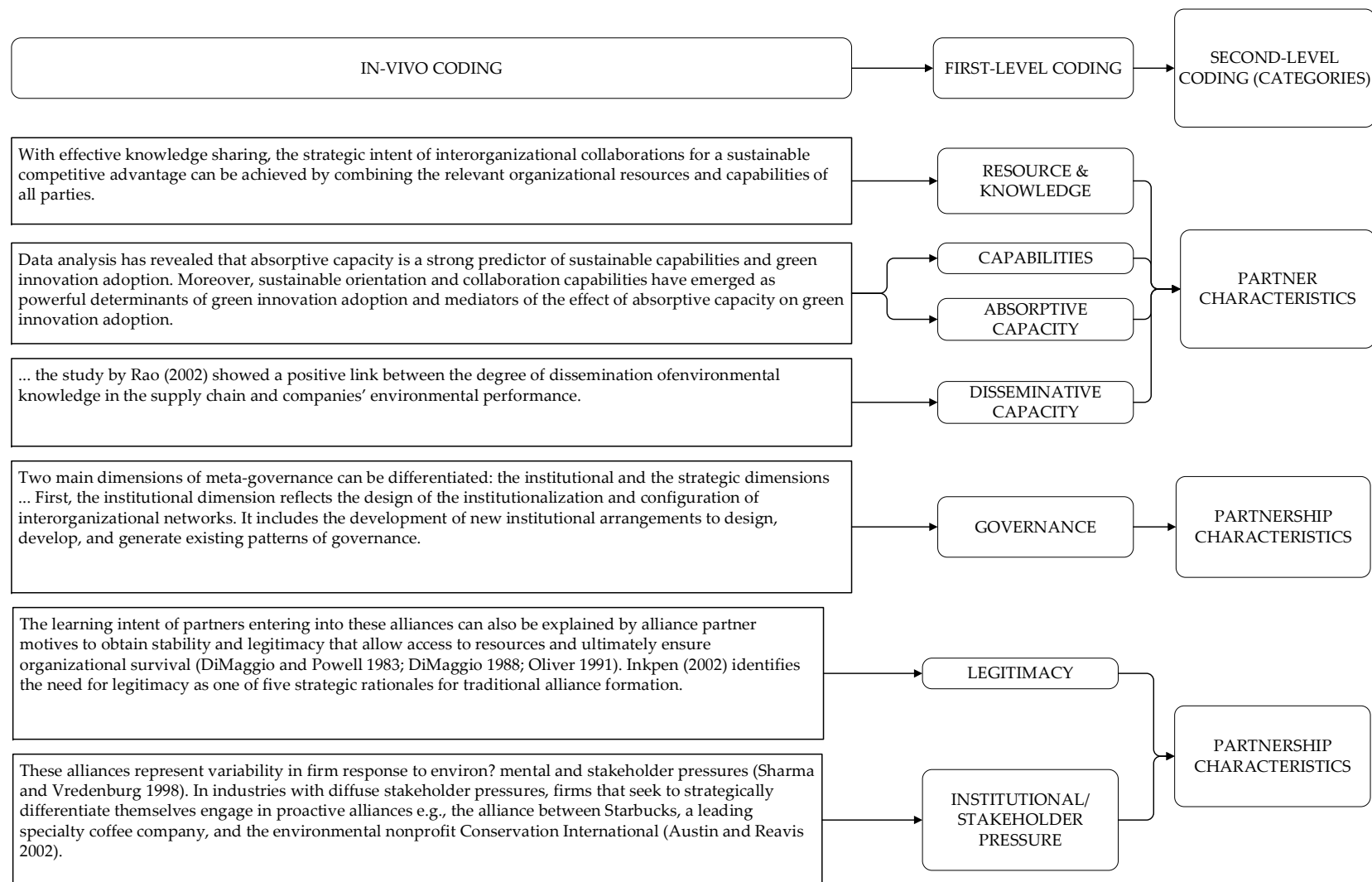


Figure 1. Cont.

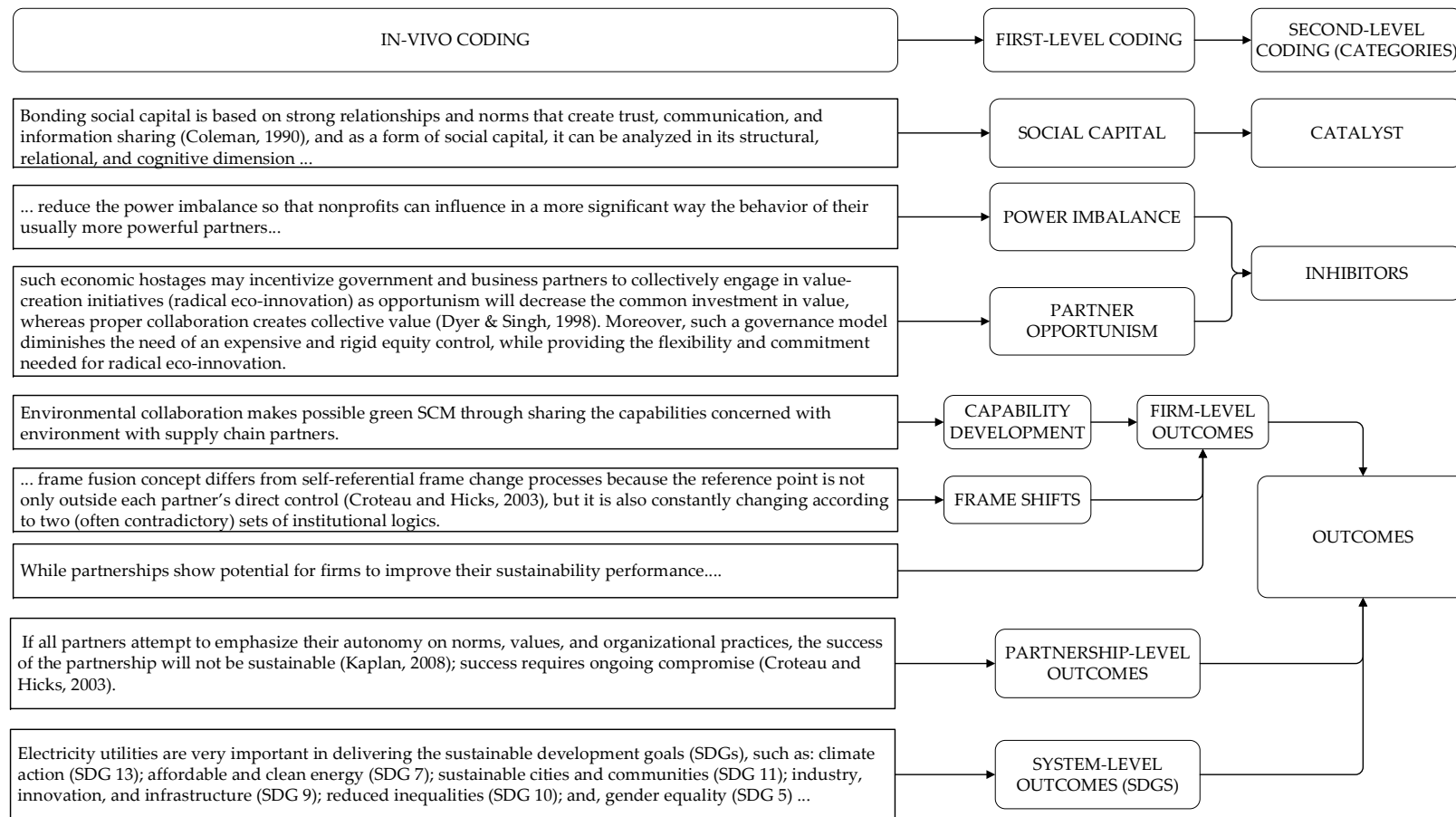


Figure 1. The coding process with some examples.

#### 4. Findings

This section introduces a model based on the review findings as organized in Figure 2. This model includes the following categories: partner characteristics, partnership characteristics, environmental conditions, catalysts and inhibitors, inter-organizational learning process and its outcomes (See Table in the Appendix A to view the articles in the review that contribute to different categories in the model).

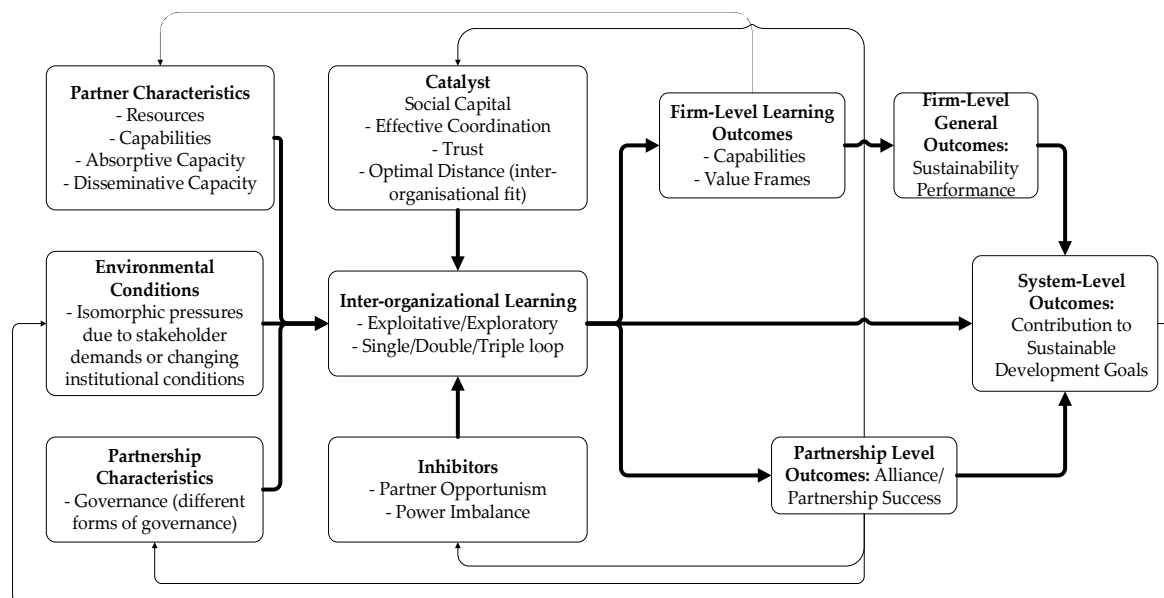


Figure 2. The model of inter-organizational sustainability learning.

This model shows some differences when compared to the inter-organizational learning process that take place in the context of commercial business alliances, which is discussed in the Theory section. First, while the learning literature in the business context discusses both internal and external pressures that motivate actors to learn, in the sustainability context, ‘environmental conditions’ demonstrated mostly isomorphic pressures set by the external environment. Second, there are several feedback loops identified in this review (represented with a thinner curved line in Figure 2). Third, other than firm-level and partnership-level outcomes, in the context of sustainability-oriented alliances and partnerships, system-level outcomes have been identified.

##### 4.1. Partner Characteristics

In his critical review, Wassmer calls partner characteristics as “focal firm-level antecedents” and identifies that existing resources and capabilities, a focal firm’s strategy and existing portfolio of partnerships fall under this category [120]. While these factors are focal-firm level antecedents that explain firms’ entrance into collaborations, based on the review, two critical partner characteristics appear as antecedents of inter-organizational learning: absorptive capacity and disseminative capacity.

Absorptive capacity is the capacity of learning at an organization; in other words, the ability of a firm to assimilate and apply new knowledge successfully to its goals [122]. In the context of sustainability, these goals are not only commercial but also social and environmental. Hence, a firm’s absorptive capacity in the sustainability context is to do with pre-existing alliances and partnerships for sustainability, its sustainability-related management systems and organizational capabilities [135,136].

A recent study expands the notion of absorptive capacity in the area of sustainability from the ability to absorb sustainability-related external knowledge to create economic value to incorporating societal values to create social/environmental value [137]. This study argues that absorptive capacity helps firms to go beyond the acquisition of essential environmental or social sustainability-related knowledge from external sources. At the same time, it explains why some firms are receptive to

a broad understanding of value; they articulate consistently their willingness to engage in value creation with a responsive approach [137]. Studies emphasize that absorptive capacity explains how some firms develop sustainable product and service innovations [136,138–141], proactive sustainability strategies [142], and environmental and CSR practices and capabilities [143].

Absorptive capacity explains why a focal firm would be willing and open to learning in different areas [144,145], and how it can engage in inter-organizational learning using its specific ability to acquire knowledge based on its prior experience [146]. However, inter-organizational learning does not only depend on this focal firm. It also depends on their partner's ability to teach and disseminate knowledge and values [147]. In the context of environmental collaborations with suppliers, "firms that have a high quality of environmental capabilities disseminate green knowledge to supply chain partners by means of diffusing new capabilities to achieve high efficiency in supply chain processes" [146]. Similarly, in multi-stakeholder platforms about climate change, the dissemination of "information about climate change challenges and opportunities to the participants" helped in "motivating them to start innovating new low-carbon products, services, and business models" [132].

Similarly, Lin [148] gives the example of the collaboration between "the Pew Center on Global Climate Change and the World Resource Institute" which "are working closely with firms to promote and disseminate environmental solutions/technologies." Through the knowledge and value dissemination that takes place between the partners, she highlights that a partner may shift their mental models and develop sustainable business models that address complex environmental problems proactively. Others focus on the role broker organizations in disseminating knowledge in public private partnerships (PPPs). They highlight that broker "organizations frequently organize problem-related round tables and disseminate PPP best practice cases with an inspirational purpose" [126].

In sum, in addition to firms' existing knowledge, resources, culture and strategies that motivate them into entering alliances and partnerships for sustainability, firms' absorptive capacity and their partners' disseminative capacity help explaining the extent of their learning from these collaborations. It should be highlighted that absorptive capacity can be enhanced as a result of engaging in collaborations, developing new capabilities, and gaining new perspectives and values, hence the feedback relationship in Figure 2 [145]. In a similar vein to the literature in alliances in the business context [92,93,149,150], the research on sustainability-oriented partnerships also focus much more on focal firm's absorptive capacity, and yet much less attention has been given to partner firm's ability to disseminate knowledge and values.

#### 4.2. Partnership Characteristics

The alliance or partnership characteristics are to do with the bond between the focal firm and its partner. Wassmer refers to this as "partnership-level contingencies" [120]. The review shows that the essential partnership characteristic that impact learning is to do with governance.

Governance, herein, is defined as "the coordination that is characterized by organic or informal social systems" [151]. In other words, it describes "the facilitation and administrative routines" [152]. Governance determines "the structures and processes by which societies share power, shapes individual and collective actions" by introducing "laws, regulations, discursive debates, negotiation, mediation, conflict resolution, elections, public consultations, protests, and other decision-making processes" [153].

Different forms of governance may aim to impact at different levels. For instance, a PPP with local authorities may intend to create a local effect [154,155]. In contrast, initiatives such as the UNGC, the UN Principles for Responsible Investment (UNPRI), and the GRI aim for global impact [151]. Nevertheless, other initiatives such as Extractive Industry Transparency Initiative, Responsible Care, Forest Stewardship Council and Marine Stewardship Council aim impact in specific industrial fields [151,156].

Actors such as governments, firms or NGOs can engage in non-collaborative forms of governance to tackle environmental and social sustainability challenges. A study finds that "firms should first invest in becoming a strongly sustainable firm before investing in external collaboration" since they

“will benefit from co-aligned sustainability collaboration with external partners only if they are leading in sustainability practices within their own practices” [157]. Others, however, highlight that “collaborative forms of governance are best viewed as dynamic, problem-solving processes in which learning about social-ecological change is an essential component” [158].

In the context of sustainability, some studies have referred to polycentric governance, whereby there are many authorities involved that act as centers for decision-making [153]. Polycentric governance “creates possibilities for moderating vertical interplay among institutions” [153]. Such governance is often tripartite; meaning that it includes “representatives from businesses, civil society, and the state; therefore, they can be distinguished from more traditional types of alliances, such as strategic alliances between business organizations, social alliances between business and nongovernmental organizations (NGOs), and public-private partnerships” [132].

Other than tripartite partnerships, studies show various types of collaborative governance that can be applied to environmental and social sustainability challenges, including joint ventures [159], licensing [27], and social franchising [160,161], to other forms of network governance [151]. Generally, scholars, in a similar fashion to the commercial business context, differentiate between formal and informal governance [162]; in other words, contractual and relational governance [125,163]. Indeed, while parties may collaborate by abiding by the rules and norms and contract sets, parties may also rely on trust to create synergistic relational rents [157]. To discuss relational governance, studies often discuss ‘trust’. However, since trust is also a relational dimension of social capital, it will be discussed as a catalyst.

Governance affects how the relationship between different parties are organized and therefore, crucially, it has an impact on how the partners can learn from each other. For instance, some scholars note that the distinct equity and non-equity forms of governance impact inter-organizational learning [164]. They highlight that while equity forms require a tight coupling between the parties, non-equity forms are often associated with loose coupling. These scholars propose that the non-equity forms are likely to be associated with exploratory learning with a diverse set of partners; whereas equity forms are likely to be associated with an exploitative learning homogenous set of partners [164]. Therefore, the way in which the partnership is governed would affect the degree and type of inter-organizational learning.

#### 4.3. Context

Environmental conditions are often used to explain why firms need to engage in inter-organizational learning in the first place [120]. In the words of Liu, Esangbedo and Bai [161], “the purpose of organizational learning is to achieve a new understanding of the external environment of the members and organizations through an effective mechanism of formation, dissemination, and sharing”; hence environmental conditions set a rationale for learning. Indeed, one study finds that “companies adapt their strategies and orient them towards CSR to stakeholder pressures also independently from what they are actually learning from them” [138]. This finding shows the crucial impact of the external environment in shaping firms’ organizational behavior when it comes to sustainability issues. For instance, the “environmental catastrophe following the explosion at the Fukushima nuclear plant in March 2011” has led to “growth in anti-nuclear sentiment, a rise in the stock prices of renewable energy companies, and an interest in clean technology and renewable energy firms” [165]. Such external events often motivate companies to engage in various partnerships with stakeholders.

Environmental conditions are often explained using theories such as stakeholder theory [138,166] or institutional theory [133,164,167]. These scholars focus on ‘institutional pressures’ or ‘stakeholder pressures’ that create a form of legitimacy crisis on firms, which then motivate them to enter collaborative relationships and engage in inter-organizational learning. Most scholars refer to Suchman’s [168] seminal definition of legitimacy which is “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” [137,156,169]. Drawing on the seminal work of DiMaggio and



Powell [170], the review articles discuss three types of isomorphic pressures that lead firms to engage in inter-organizational learning [148,155,167,171,172]: coercive, mimetic and normative.

Coercive pressures are often associated with government policy and regulations about sustainability challenges [139,164,173,174]. For instance, a study highlights how “legal trends, such as the European Union Directives, significantly influence operation systems, product-markets, and business strategies of firms” as well as their collaboration patterns [121]. Another study, on the other hand, highlights how in multinational corporations, depending on the regulatory environment, the absorptive capacity of a subsidiary changes from that shared absorptive capacity of headquarters [143]. Another study highlights that often cross-sector partnerships and multi-stakeholder platforms are positioned to address government failures [120] and the creation of positive externalities [127,174].

Normative pressures may arise from industrial or societal norms [164]. For instance, Lin and Darnall give the example of the participation of electric utilities in the US Department of Energy’s Climate Challenge Program “to collectively improve their public image and reduce the climate emissions for the utility sector as a whole” which helped these firms “to ameliorate normative pressures from their professional networks, and conform to values and social norms exerted by the industrial associations” [164].

Mimetic pressures are to do with the competitive environment of the firms. For instance, one study finds that firms’ engagement in CSR is difficult to imitate by other firms even when there exist conditions for mimetic pressures [167]. The authors highlight that this is because the knowledge that is needed for substantive CSR engagement is sticky. However, the study highlights that such substantive engagement may be facilitated by the selected governance structure, culture, or capability development [167].

It is essential to highlight, however, that coercive, normative and mimetic pressures, of course, affect the actors through their cognitive filters or perceptions. Zou, Xie, Meng and Yang [167] highlight that the perceptions of decision-makers about the institutional pressures faced are shaped by their accumulated experience and knowledge. Therefore, the engagement of firms with a proactive or reactive strategy due to isomorphic pressures also come down to firms’ perceptions of these pressures. This perception, indeed, would both affect the motivation to engage in a partnership and the intention or willingness to learn [175].

Finally, the institutional environment may also impact the kind of alliances and partnerships that focal firms form. For instance, “in industries with diffuse stakeholder pressures, firms that seek to strategically differentiate themselves engage in proactive alliances, e.g., the alliance between Starbucks, a leading specialty coffee company, and the environmental non-profit Conservation International” [145]. On the contrary, “intense public criticism and impending regulatory pressures in the extractive and energy production industries drive reactive alliances as seen between DuPont and the non-profit World Resources Institute” [149]. In sum, the institutional environment impacts the perception of actors, and shapes their intention to partner, and therefore, affect who they partner with and how much they can learn [145].

#### 4.4. Catalyst

In the context of sustainability-oriented alliances, scholars define social capital as “social cohesion and strength of relationships among partners” [176], or as “a set of resources such as trust, norms, and values that are accessed through a network of social relations and can be mobilized to facilitate action” [126]. These studies discuss how social capital and the idea of investing in social relations can bring about new opportunities for actors [177]. For instance, the social capital of social enterprises offers some benefits to corporations such as access to community and local knowledge when they engage in collaborations [134].

Arya and Salk [145] propose that “firms with greater social capital across hierarchical levels within and between cross-sector alliance partners will positively influence learning that can enhance diffusion

and integration of codes of conduct into corporate culture compared with firms with lower social capital." In a similar vein, others highlight that social capital "instil[s] a shared vision and strategic alignments toward common goals and collective outcomes [151]. At an individual level, boundary spanners can facilitate the accumulation of social capital [145]; at an organizational level, on the other hand, a similar facilitation role is taken by broker organizations who connect otherwise unconnected contacts [126,172].

Scholars identified three dimensions of social capital, in line with the seminal work of Nahapiet and Ghoshal [178]: structural, cognitive and relational. Structural dimension "refers to the overall pattern of connections between actors" [126]. These patterns of connections include the "roles, rules for decision-making and communication, procedures, precedents and networks that facilitate mutually beneficial collective action" [177]. Relational dimension "describes the personal relationships people have developed through a history of interactions" [126]. Finally, the cognitive dimension is described as "shared representation, interpretation, and systems of meaning among partners" [126]. Scholars highlight that social capital "may be produced and/or increased" as a result of inter-organizational learning [158].

#### 4.4.1. Structural Dimension of Social Capital: Effective Coordination

The structural dimension of social capital is to do with coordination patterns, roles and responsibilities of parties involved.

Coordination is to do with "communicating potential solutions, setting priorities for particularly promising ones, and assimilating various solutions" [179]. In a partnership setting, different partners would provide different types of resources, knowledge and values, and effective coordination helps actors integrate these different types of resources, knowledge and values to come up with a solution to a sustainability challenge [179]. In the context of cross-sector partnerships, a study finds that cross-team coordination mechanisms have proved helpful by allowing organizations to "understand each other's unique circumstances" and thanks to these coordination mechanisms, organizations were able to fuse different value frames [12].

Sustainability-related initiatives may require changes in the traditional relationships between some partners. For instance, a firm needs to extend or transform an existing relationship with supply chain partners to align itself with the principles of the circular economy [180,181]. Effective coordination mechanisms and establishment of clear roles and responsibilities improve inter-organizational relationships and, more specifically, inter-organizational learning outcomes [131,157]. Notably, an agreement on how collaboration is coordinated, along with how roles and responsibilities are distributed, require attention in the initial partnership design phase [182].

#### 4.4.2. Relational Dimension of Social Capital: Trust

The relational dimension of social capital that impacts inter-organizational learning is trust. Scholars highlight that trust "facilitates the openness for exchange of tacit knowledge, which is relatively difficult to communicate or trade in markets, and durability of relationships, which otherwise may collapse when problems arise between exchanging partners in pure market relationships" [183]. The literature highlights that the stronger the trust between partners, the stronger their ties and the more they can learn and innovate in a partnership [122,183,184].

Scholars have defined trust in different ways and focused on different types of trust. One definition is "a belief, sentiment or expectation about an exchange partner that results from the partner's expertise, reliability and intentionality, or from the partner's honesty and benevolence" [122]. In other words, trust is identified as "the expectation that the partner will pursue cooperation, fulfil obligations, and try to maintain the relationship between the other parties" [161].

Scholars differentiated between personal trust which is "extended primarily to another human being" and system trust, which "concerns trust in the steering mechanisms of social interaction and the functionality of so-called expert systems (e.g., money, power, companies, and networks)" [156].

Others defined institutional trust, similar to the concept of system trust [185]. They highlighted that trust in institutions specifically play a significant role in the management of relationships between actors from different sectors [185]. Finally, some scholars defined a specific type of trust that makes sustainability collaborations distinct: aspirational trust. Aspirational trust “reflects a vision of the potential that may transcend one’s organization, expressing one’s personal, “pro-social” ideology and motivation for action” [152].

Having prior relationships with a particular partner is identified as a factor that would help trust formation [152,186]. According to Vinke-de Kruijf, et al. [187], “when actors interact with each other over a longer period of time, they gain additional information about other actors that are rooted in relational experiences.” If their experiences are positive, then they will be more inclined to trust others [187]; however, partners may also be engaging for the first time in some sustainability-oriented alliances and partnerships. In these cases, their perceived reputation may yield an initial bonding trust [188]. Trust can even enhance relationships and improve learning when there are cognitive differences between partners since it acts as a glue and helps actors empathize with their differences [184].

#### 4.4.3. Cognitive Dimension of Social Capital: Optimal Distance

The review demonstrates that the cognitive dimension of social capital is to do with shared cognition, values, logics, norms, and culture [120]. However, the review shows that in the context of sustainability-oriented alliances and partnerships, it may not be straightforward to share cognitive elements due to the complexity and subjectivity of sustainability. Although, based on the review, it is possible to identify two characteristics: the proximity (or distance) of cognition and institutional logics [189]. The degree of similarities in these dimensions is also commonly referred to as compatibility between partners or inter-organizational fit [166].

Scholars define cognitive distance as differences of partner organizations with regards to their organizational frames, which are “interpretations used to make sense of the world.” In other words, cognitive distance is to do with the “similarity in actors’ frames of reference, and mental modes facilitate effective and efficient communication and transfer of knowledge, although some extent of differentiation is needed for new ideas, creativity, and innovation to emerge” [183]. On the other hand, institutional distance is referred to as field-level differences between organizations with regards to their institutional logics which are “taken-for-granted assumptions and practices that shape the behavior of organizations in specific societal sectors” [189].

Some scholars highlight that these cognitive and institutional distances between partners pose both opportunities and challenges in terms of inter-organizational learning [189]. Some highlight that an optimum level of frame plurality can be achieved in collaborations [11]. Nevertheless, others argue that “different logics, values, interests, and knowledge systems need to converge” [131]. In other words, they argue that “shared mental models of interpretation may improve the firm’s capability to perceive focal issues in strategic nets and may empower the firm and the network to better respond to environmental challenges” [165].

Some scholars focus on measuring the impact of distance on the partnerships’ and firms’ sustainability performance [189]. Others take a longitudinal understanding of distance and argue that “the initial cognitive distance between the parties reduces through interactions and becomes a bidirectional exchange of knowledge” [140]. Indeed, some argue that it is this process of social learning that lead to changes or shifts in value frames [184]; which will be further discussed in Section 4.7.

For example, the following differences between for-profits and social enterprises due to logics are evidenced [134]: the value creation objectives (private value vs. public value), ownership structure (for-profit vs. non-profit), organizational governance (hierarchical vs. participative), accountability (to shareholders vs. to stakeholders). In the context of environmental research partnerships between scientists and for-profits, a study found that the differences in dominant logics can lead to different expectations regarding the outcome of the research [174]. As such, for-profit firms are associated with

a market or commercial logic that drives them to expect “exploitable results through short-term applied research” from such partnerships, while scientists may target generation of publications out of the research partnership as an outcome [174].

Similar tensions are also commonly observed in firm-NGO interactions [12,128,190]. A recent study highlights that the impact of such cognitive and institutional differences on learning may depend on partners’ “value empathy” [190]. The “value empathy mechanism involves interventions which not only create an exchange of resources in the context of an individual project but also an ongoing capability to absorb knowledge across sectors” [190].

The review shows the learning from a partnership depends on the cognition and institutional backgrounds of collaborating parties. While the differences are more substantial in the context of cross-sector partnerships, even in the context of inter-firm alliances, partners have varying degrees of corporate environmentalism or corporate sustainability, which means varying value frames about sustainability [186,188]. It is plausible to expect that there would be an optimal distance between the partners whereby they are different enough to learn from each other and, at the same time, close enough to be able to understand each other’s language and work together, which would act as a catalyst to inter-organizational learning [11,189].

#### 4.5. Inhibitors

The review shows that partner opportunism and power imbalance may inhibit inter-organizational sustainability learning.

Opportunism is defined as “self-interest seeking with guile, leading to deceit-oriented violation of implicit or explicit promises” [122]. Therefore, an opportunistic partner would manipulate the goals or the outcomes of the partnership towards its interests; which would diminish trust between partners and inhibit inter-organizational learning [122,166,171,180]. It is the various forms of governance that often protects an organization from a potentially opportunistic partner [134]. For instance, through equity-based governance, as in the case of joint ventures, firms can incentivize their partners financially against possible opportunism [127]. Partner opportunism can also be tackled with non-economic mechanisms, including trust and development of social capital [156]. Indeed, the expectation of partner opportunism increases in the existence of another inhibitor: power imbalance; meaning that partners who perceive themselves weak or inferior in the relationship dynamic would expect their partners to act opportunistically, and even engage in opportunism themselves, to shield themselves from potential opportunism and damage the relationship [186].

Scholars note different types of power, including but not limited to operational power, informational power, economic power, or social power [191]. Scholars also highlight that “if the power base of stakeholders is weak or if critical actors use their power to resist, learning is hampered” [191]. Some argue that “where knowledge exchange takes place it is likely to be because power is also being shared—to a greater or lesser extent—helping to provide a more conducive decision environment where the proponent/authority is also willing to receive” [169]. In line with this, others find that power imbalance between partners negatively moderates the relationship between incompatible logics and partnership survival [171]. These scholars highlight that the power imbalance would further amplify the cognitive differences between partners and may lead to situations whereby the more powerful partner imposes their dominant logics and frames to the weaker partner [171]. Relying on resource dependence theory, these scholars argue that one way to combat power imbalance is through the mutual dependence of partners, which are “bilateral dependencies regardless of whether the partners’ dependencies are balanced or imbalanced” [171]. These mutual dependencies are also reflected as complementarities between partners and “the extent of which each partner contributes unique strengths and resources to synergize new value” [166].

Finally, like other discussed characteristics, power imbalance and opportunism are not stable during a partnership relationship [174]. One study found that “balance in power and dependence develops over time” and “in the process of balancing the relationship between power and dependence,

the relative absorptive capacity also increased, especially in the knowledge base and dominant logic dimension" [174].

#### 4.6. Inter-Organizational Learning Process

Studies have discussed different types of learning processes, namely single-, double-, and triple-loop or higher-order learning, and exploitative and exploratory learning are discussed. Here, what is meant by learning is 'relationship learning' which is "a joint activity in which two parties strive to create more value together than they would create individually or with other partners" [192].

Single-loop or first-order learning is identified as "fixing errors from routines" [158] without questioning "boundary conditions, frames, assumptions", in other words, "the usually 'tacit' assumptions implicit in the paradigm" [193]. It "contributes to insights and approaches for improving performance and efficiency (e.g., in skills and practices) to meet existing goals" [194]. This type of learning is characterized as the "optimization of existing routines, practices and systems" [184]. One study highlights that actors do not reflect on whether a particular system is sustainable or not during single-loop learning [184].

Double-loop or second-order learning is identified as "correcting errors by examining values and policies" [158], or "reflecting on the assumptions which underlie our actions" [177]. In other words, it is about "reflecting on existing frames and [that] actors have become capable of viewing and adapting these frames, paradigms, and values by a process that has been coined frame reflection" [193].

Triple-loop learning is identified as "designing governance norms and protocols . . . to improve the capacity of an organization to engage in single- or double-loop learning" [158]. This kind of learning "encourages a more open-ended and deep-seated discussion about what the primary challenges are and ways to reshape the values, norms, and social structures to address it" [194].

Exploitative learning focuses on "applying successful practices into large-scale manufacturing, dissemination of existing technology, and standardization of the current routine to enhance efficiency" [148]. In other words, exploitative learning is to do with "the acquisition of new behavioral capacities framed within existing insights" [191]. On the other hand, exploratory learning is associated with "new searches and experimentation" and "risk-taking and variance-increasing activities in learning, experimentation, flexibility, discovering, and distant search" [195].

It is important to note that, to contribute towards SDGs, all types of learning are needed [158]. While single-loop or first-order learning helps firms with building new or enhancing existing sustainability-oriented capabilities, double- and triple-loop learning helps firms reflect on existing values and shift their frames.

#### 4.7. Outcomes

The review demonstrates different types of outcomes: firm-level, partnership-level and system-level [120].

##### 4.7.1. Firm-Level Outcomes

Firm-level outcomes can be described in two categories: firm-level learning and general outcomes. As introduced earlier in the introduction, the value generated from a partnership is not limited to the interaction value of learning. Therefore, herein, the outcomes of learning are recognized as capability development and shifts in value frames, while other outcomes of partnerships are identified as 'general outcomes' in the model presented in Figure 2.

According to Vinke-de Kruijf, Bressers and Augustijn [187] "there are mutual relations between an interaction process and actor characteristics: the characteristics shape the process and are also shaped by the process"; meaning, "learning involves changes in actor characteristics." As highlighted in the Partner Characteristics section, existing resources, capabilities, and absorptive and disseminative capacity are included in these characteristics. In this paper, the focus as an outcome is on capabilities because a large number of studies focus on how firms can develop new capabilities through learning



that takes place in sustainability-oriented partnerships [49,139,141,165,196–198]. Development of new capabilities and shifts towards different frames are often associated with an improved absorptive capacity [192,197,199]. Therefore, partner characteristics improve as a result of the learning process [187].

In the context of sustainable supply chain management, collaborative relationships with suppliers positively impact the development of organizational capabilities, which then positively impact a firm's sustainability performance [200]. Similarly, in alliances between governments and firms that aim to foster radical eco-innovations, close interactions in alliances have yielded a generation of new capabilities that can help firms address sustainability problems [127]. These can be technical or operational capabilities that can help firms reduce their environmental or societal impact [141]; equally, these capabilities may also be dynamic capabilities such as alliance/partnership management or 'external integration' capabilities [4]. This capability is an organization's ability to organize and manage relationships with external partners [201]. Indeed, through partnerships, firms would not only learn 'what to do' and 'how to do it' to become sustainable; but also, would learn how to engage with various partners better.

While these capability-related changes are likely to result from single-loop learning [197], more profound changes can also be observed. Thanks to close interactions with partners that lead to cognitive learning, shifts in value frames can also be observed [127]. Collaborative partnerships may require "reframing, which involves perspective-taking and the possibility of enlarging or revising one's frame to take account of how their counterparts view the situation" [202]. Le Ber and Branzei [12] find evidence of "partners not only updat[ing] their frame concerning each other, but they also do so in reference to, and in conversation with, each other" whereby they go beyond the reframing process to frame fusion in which their frames are continually changing.

At the organizational-level, studies have differentiated between narrow or simple and broad or complex frames [189]. While some studies propose that the engagement of various types of partnerships depend on these simple or complex frames [189,203], others focus on how, within a partnership, these frames shift over time. An optimal frame plurality is achieved whereby various frames evolve within the lifecycle of a partnership; some frames lose traction, yet others are sustained [11]. These kinds of frameshifting, frame fusing, or frame-breaking outcomes are likely to be associated with double- or triple-loop learning [191].

There are also general outcomes of partnerships associated with the creation of associational value, transferred resource value and synergistic value [9], as well as interaction value, which is considered as learning in this article. Thanks to the development of new capabilities and shifts in value frames, as well as the creation of associational, transferred resource and synergistic value, partnerships would help firms improve their environmental performance [136,146,147,189,195,198], social performance [133,167], sustainability performance [200,204], innovation performance [205] and may even improve economic performance [121].

It is important to note that not all studies find evidence that inter-organizational learning, or sustainability collaborations, in general, impact performance positively [173,206]. This study, as shown in Figure 2, expects to see an improvement in the sustainability performance of a focal firm, both due to gained capabilities and shifts in frames, as well as other types of value created within a partnership. However, it may also be methodologically problematic to measure the exact contribution of a partnership on a firm's sustainability performance. Often, firms engage in a portfolio of partnerships [203] and it is this portfolio that allows firms to create synergistic value at the portfolio-level [119,120]. Furthermore, realizing the benefits of partnerships either through the value created thanks to learning, or other value dimensions, may require time and, therefore, observation in longitudinal settings.

#### 4.7.2. Partnership-Level Outcomes: Alliance/Partnership Success

Amongst other performance outcomes in the review, partnership-level outcomes have received the least attention. The definition of partnership success has been somewhat vague: while some took



partnership success as the sustenance of the partnership [171], others provided an organization-level definition focusing on what different organizations take away from the partnership [207]. Partnership success can generally be considered as an accomplishment of goals that are set out by the parties involved within the timeframe agreed upon [176]. One study explicitly focuses on the role of institutional logics and resource dependencies on partnership success [171]. Others refer to ‘partnership’ or ‘alliance’ success; however, they do not explicitly measure the impact of various factors on partnership success [186]. Sanzo, Álvarez and Rey [207] proposed that “the existence of a process of learning within the non-profit will probably enhance the firm’s perception (and also the non-profit’s own appreciation) about the non-profit’s capability to contribute to partnership success”.

Partnership-level outcomes are expected to be in a dynamic relationship with (shown as a feedback relationship in Figure 2) to the partnership characteristics, catalysts, and inhibitors. Generally, collaboration experience can help to build capabilities to manage such partnerships more effectively in the future and assess what modes of governance are more appropriate under which circumstances, which was also discussed in the previous section [51,127]. Also, within a continuing partnership, partners can reflect on the partnership outcomes collectively, assess whether the chosen mode of governance allowed creating a solution space for a particular problem, and evaluate whether the expected learning outcomes are achieved by all parties involved. Furthermore, within a continuing partnership, partners can also reflect on the inhibitors and catalysts that impact the learning process.

It should be noted that poor learning may also impact partnership performance negatively and may later act as an inhibitor, or a positive learning experience may enhance trust (feedback relationships). These feedback relationships explain why a focal firm would partner with an organization that they had an amicable relationship with before and why it may refrain from partnering an organization that they have lost trust in due to a previous engagement that resulted in poor performance.

#### 4.7.3. System-Level Outcomes: Contribution to Sustainable Development Goals (SDGs)

System-level outcomes are macro-level societal or environmental benefits [208]. Several studies identified the system-level outcomes of inter-organizational sustainability learning by discussing how these alliances and partnerships help to address SDGs [5,19,131,176,193,203,209], or previously discussed millennium development goals [210]. For instance, Dzhengiz [203] provided evidence from electric utilities focusing on alliances and partnerships that address SDG 7 and 13. Kolk and Lenfant [211] focus on the role of partnerships for SDG 16, promotion of just, peaceful and inclusive societies, while Le Ber and Branzei [12] focus on the role of partnerships for SDG 3, access to healthcare. Even though the majority of the articles have not explicitly referred to how studied alliances and partnerships have contributed to SDGs, all articles in the review focused on alliances and partnerships that addressed various SDGs implicitly (see Table in the Appendix A).

Among others, only SDG 5 was not addressed by the studies in the review. All articles in the review have contributed to SDG 17, as all articles discussed the role of partnerships and alliances to tackle sustainability challenges. SDG 17 was followed by SDG 8, as expected, highlighted in 40% of the articles with the emphasis on sustainability-oriented innovation that can be generated through partnerships. Finally, around 5% of articles focused on partnerships that aimed to tackle SDG 13, climate action and SDG 12—sustainable cities (3%).

## 5. Future Research

As a review article, this study identifies some limitations of the extant research and offers paths for future studies, following the categories in Figure 2.

### 5.1. Partner Characteristics

Articles in the review have frequently focused on partners’ characteristics such as partners’ capacity to learn or absorb knowledge. However, they have not taken ‘learning’ as a bi-directional concept, whereby both partners need to absorb and disseminate knowledge. This shows that studies

that focus on inter-organizational sustainability learning can benefit from a more comprehensive bi-directional understanding of learning, hence, an understanding of both parties' absorptive and disseminative capacities. To do so, future studies should integrate the recently growing literature on disseminative capacity [92,93,149,150].

In line with this comment, it should be also noted that this study also provided a limited understanding of the learning phenomenon since it mostly focused on actors from the private sector, their learning needs and outcomes, and their potential contributions to systemic and wicked sustainability challenges. Future studies can empirically study the partner characteristics of other societal actors and how these different characteristics would impact the bi-directional process of learning.

Moreover, studies in this realm can benefit from a paradoxical understanding of inter-organizational sustainability learning by focusing on how embeddedness into existing capabilities may create vicious or virtuous cycles, drawing on the literature of organizational paradoxes [212–217]. The review shows that, to some degree, a firm's organizational capabilities and absorptive capacity will determine how much it can learn from a sustainability-oriented alliance or partnership. Focusing on longitudinal studies, future studies can further interrogate how firms overcome this embeddedness paradox in the context of sustainability and provide evidence for firms that were able to turn their vicious cycles into virtuous ones through mindful interventions [213,218].

### 5.2. Partnership Characteristics

Articles in the review have frequently referred to “governance” as a partnership/alliance characteristic that would impact learning. However, comparative explorations seeking to understand which modes of governance allow more room for learning, and under what conditions, have been somewhat limited [148,158,164]. Future studies can focus on the relationship between different modes of governance (such as equity vs. non-equity alliances, network governance, polycentric governance) and learning types or levels (exploratory, exploitative, single-/double-/triple-loop).

Besides, it is plausible to expect that different SDGs would require different forms of learning, and hence, different forms of governance. However, a holistic approach to how firms address different SDGs through different types of governance that allow a different type of learning is yet to develop. Such an approach can be developed, drawing on the literature on alliance or partnership portfolios [219].

Furthermore, studies also highlight that there would be differences in the contractual governance of partnerships, depending on the partner type (inter-firm vs. cross-sector) [220]. However, there has generally been limited attention to this area in literature, which requires further attention [221,222]. Notably, future research needs to investigate the differences in inter-organizational learning in inter-firm and cross-sector partnerships for various governance forms and examine the how governance affects the learning mode and type and the impact of learning on sustainability performance.

### 5.3. Context

The review showed that both institutional theory and stakeholder theory highlighted the role of the external environment and legitimacy pressures on firms as a motivator of engaging in inter-organizational sustainability learning. However, articles in the review have not focused on the role of the ‘internal context’ of firms also setting pressures for such engagement. Meaning, employees', and managers' roles in initiating inter-organizational sustainability learning processes need to be understood further.

Furthermore, it would be interesting to measure the impact of ‘legitimacy crisis’ on inter-organizational learning using a quantitative method. While existing studies highlight the legitimacy crisis as a factor that explains partnership formation, it is also evidenced, in some studies, that partnerships formed to address a legitimacy crisis may not always yield learning opportunities [223].

#### 5.4. Catalyst

Articles in the review frequently focused on at least one of the dimensions of social capital, social capital's role in improving inter-organizational sustainability learning and partnership outcomes. However, it is essential to highlight that most studies have analyzed different dimensions of social capital in isolation, with a few exceptions [126]. Some solely focused on trust as a relational dimension [122,156,188]; others on cognitive and institutional differences [12,189]; and yet others on structural dimensions and coordination patterns [179]. Future research needs to address the impact of social capital on inter-organizational sustainability learning, especially using longitudinal studies since social capital changes in different phases of a partnership.

Furthermore, the extant literature often studied how social capital may generally catalyze the relationship between the partners and improve partnership outcomes; however, it is most likely that the impact of social capital on partnership performance is mediated by inter-organizational learning [122]. Future studies can take into consideration more sophisticated models to test these webs of relations.

Finally, future studies should also take into consideration to what extent social capital improves inter-organizational learning when there are strong influences of various inhibitors such as power imbalance and partner opportunism. In line with this, recent literature lacks a longitudinal analysis of both inhibitors and catalysts, looking at whether and how these factors change in different phases of an alliance relationship.

#### 5.5. Inhibitors

The impact of partner opportunism on inter-organizational learning and partnership performance is widely discussed in the context of inter-firm alliances [224–226]. Surprisingly, in the context of inter-organizational learning within sustainability-oriented alliances and partnerships, partner opportunism has not been studied as much. This is likely to do with the researcher bias in the field and the expectation that sustainability-oriented alliances and partnerships are more altruistic [11]. However, this does not mean a firm's relationship with an NGO would involve less opportunism than a firm's relationship with another firm. The review shows that partner opportunism and learning paradoxes must be unpacked further in the context of sustainability-oriented alliances and partnerships. Future research can focus on building a comparative analysis of how firms' opportunistic behaviors differ depending on the partner type and partner status.

Another inhibitor, power imbalance or asymmetries, is rarely studied in this literature. Furthermore, when it is studied, it is typically through the lens of resource dependence theory [171]; and rarely combined with theories of learning and knowledge development [174]. Power imbalance or asymmetries also impact what can be learned from whom within a partnership setting. Future studies in this field can benefit from studying inter-organizational learning, capability development and frameshifts through the lens of political processes of power, and draw on recent literature that integrates learning and power [227–229].

#### 5.6. Inter-Organizational Learning Process

There has been growing attention given to triple-loop learning in the context of sustainability in recent years [106,107,158,194]. However, as a construct, triple-loop learning has also received some criticisms in the broader literature of organizational learning [230]. Studies within the context of sustainability have not elaborated these debates regarding 'triple-loop learning', and the concept appears to be misused or gets reified as did other concepts such as absorptive capacity [231], and recent clarifications about the concept can contribute to the work of future scholars [230].

Second, there have been studies that focused on partnership formation motivations that proposed how "resourced-based motivation is more likely to be associated with firms' participation in exploration alliances" [148]. In contrast "institutional motivation is more likely to be associated with firms' participation in exploitation alliances" [148]. However, these studies have not focused on how some

prior exploitation alliances may, in the future, yield exploration alliances with the same partners or vice versa for exploration.

Longitudinal assessments of partnership portfolios can further enhance our understanding by showing how firms engage with various partners, as well as explore and exploit. Furthermore, it is likely that, as in the context of commercial inter-firm alliances [94,95,232], firms would use their alliance and partnership portfolios: (a) to balance the tensions between exploration and exploitation of sustainable products, technologies and processes, (b) to balance the tensions between the triple bottom line of sustainability (environmental, social and economic sustainability), (c) to balance the tensions between short-term and long-term concerns. However, the literature on partnership portfolios has, thus far, been limited in the sustainability context [203,219]. While some studies highlighted how, at the level of the dyad, a single alliance provides a space for learning, portfolios are likely to provide a broader space for resolving tensions mentioned above.

### 5.7. Outcomes

In the extant literature, there was some focus on frameshifts [11,12] and capability development [49,233], but a limited quantitative assessment of how such learning enhances firm performance (environmental, social, economic). A reason why this has been a barrier is also to do with the dyadic focus of this literature [120]. Future research can, instead, focus on portfolios to measure: (a) what kind of alliances/partnerships improve what kind of performance (environmental, social, economic), and (b) how the impact of partnership type on performance is mediated by various types of learning. Such approaches have been limited [135,234], and often used different measures or different types of collaborations. Therefore, the results have been somewhat conflicting [173], which is why future research should clarify the impact of inter-organizational sustainability learning on various performance outcomes.

Still, in comparison to firm-level outcomes, partnership-level outcomes have been studied even less. In the commercial inter-firm alliance context, partnership effectiveness or success has been frequently discussed [235–237]. However, in the context of sustainability, only a few studies have focused on partnership terminations [186] and partnership success [171,207]. Future studies can further explore how inter-organizational learning and firm-level outcomes impact perceived partnership performance and study the impact of catalysts and inhibitors on this relationship.

Even though many studies used system-level arguments to explain partnership formation motivations, the system-level outcomes of partnerships themselves require further research. Most studies discuss why firms enter partnerships to tackle ‘systemic’ sustainability issues. However, they do not explain whether and how these partnerships effectively solve some societal and environmental sustainability challenges, or which SDGs these partnerships contribute towards and to what extent the impact of these partnerships can be measured. Future research should further focus on the effectiveness of these partnerships and their contribution to tackling sustainability challenges. A way this can be done is by identifying metrics that firms use to measure and communicate their sustainability progress according to different SDG areas, and to measure the improvements or the impact of a partnership using these metrics [238–240]. Another way is to link inter-organizational learning to sustainability transitions literature [241,242] and discuss how the single-, double- and triple-loop learning that takes place in alliances and partnerships may yield changes at the system-level [243,244].

Finally, it should be noted that the model presented in Figure 2 demonstrates potential relationships based on the extant literature. This model can be considered as a conceptual framework that helps us organize the existing literature through the lens of inter-organizational learning. However, this model is not tested empirically in this review article. Therefore, while some relationships and mechanisms are discussed herein, future research should further test this model, and especially investigate how the firm-level learning, firm-level general, partnership-level and system-level outcomes relate to and impact each other.

## 6. Conclusions: Contributions to Theory and Practice

This study contributed to theory in several ways. First, the study synthesized different theoretical perspectives and concepts and demonstrated how these different concepts build a complex picture of inter-organizational sustainability learning that is represented in Figure 2. Second, the study clarified various outcomes of sustainability-oriented alliances and partnerships, and one of these outcomes is at the system-level, which can be understood as a contribution towards SDGs. The paper outlined how such a contribution does not only result directly from the partnership itself but also firm-level outcomes through the development of capabilities and shifts or expansions of firms' value frames. Besides, the paper outlined that these system-level outcomes make sustainability-oriented alliances and partnerships distinct, as commercial alliances and partnerships do not focus on societal or public value creation. Finally, drawing on the review findings, the paper identified gaps and proposed areas for future research. Doing so, this study contributed to the literature on sustainability-oriented alliances and partnerships of firms.

This study also contributed to the practice of sustainability practitioners. Previous research has already evidenced that sustainability practitioners are increasingly involved in managing alliances and partnerships, and therefore, they need skills to work in an interdisciplinary and collaborative manner. This study further adds that to manage sustainability-oriented alliances and partnerships effectively, practitioners need to focus on how best they can learn from their partners, develop capabilities that enhance their sustainability performance and broaden their mental models—their value frames to different interpretations of sustainability. Furthermore, the model presented in the study is intended to guide practitioners in identifying what catalyzes and inhibits their learning relationship with partners and under which environmental conditions. Furthermore, the model helps in interrogating what characteristics a firm and its partners need to enhance the learning outcomes (such as capabilities, resources, absorptive capacity, disseminative capacity). Using such a model can improve the work of practitioners and the impact they can generate from partnerships at the firm-, partnership-, and system-level.

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**Conflicts of Interest:** The author declares no conflict of interest.

## Appendix A

**Table A1.** Articles in the Review: Type of partnership, SDGs, theories, methods, contribution to the framework and a short summary.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[139]	IF	9, 17	Absorptive capacity, Resource-based view, dynamic capabilities	Quant.	Partner characteristics, environmental conditions, outcomes, catalyst	This study shows that absorptive capacity and sustainable collaboration has an essential impact on green innovation adaptation in the context of SMEs.
[183]	CS	2, 3, 17	Proximity (geographical, organizational, institutional, cognitive, social)	Qual.	Catalyst, partnership characteristics, outcomes	This study shows that to understand how collective impact, in other words, system-level outcomes can be generated through multi-stakeholder partnerships, it is necessary to evaluate the partnership using various proximity metrics and their impact on learning and innovation.
[151]	CS	17	Governance, network theory, CSR	Review	Partnership characteristics, catalyst, environmental conditions, inter-organizational learning process	This study reviews the literature on CSR initiatives and finds out how different modes of governance, namely networks as CSR governance, collaborative CSR governance, networked CSR governance, and integrated networked CSR governance, have emerged, and how they differ from each other in terms of their development, structure and form.
[147]	IF & CS	17	Sustainability- oriented partnerships (with various partners) and environmental performance	Quant.	Outcomes, partner characteristics, catalyst, inhibitors	This study shows that sustainability-oriented alliances and partnerships positively affect firms' environmental performance, though the impact of different types of partners varies.
[192]	IF	9, 17	Relationship learning, absorptive capacity, green innovation (eco-innovation)	Quant.	Partner characteristics, outcomes, catalyst, inter-organizational learning process	This study shows that collaborations and absorptive capacity impact firms' green innovation performance positively.
[245]	IF	9, 17	Green innovation, environmental performance, knowledge spill overs	Quant.	Outcomes, partner characteristics, catalyst, inter-organizational learning process	This study shows that external knowledge sources increasingly have more impact on the development of green innovations through spill overs.
[107]	CS	2, 17	Organizational learning	Qual.	Inter-organizational learning process, catalyst, partnership characteristics, outcomes	This study shows how triple-loop learning took place in the setting of a cross-sector partnership that aims to achieve food distribution and improved nutrition in communities while working with a network of volunteers.



Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[158]	IF & CS	17	Organizational learning	Review	Inter-organizational learning process, partnership characteristics, catalyst, partner characteristics, inhibitors	This study “examines five dimensions of the learning paradox in the context of adaptive co-management, where the learning and linking functions of governance are stressed: (i) definitions of learning; (ii) learning goals and expectations; (iii) mechanisms by which learning takes place; (iv) questions regarding who is involved in the process of learning; and (v) the risks and ethical ambiguities faced by different actors expected to willingly participate in a learning process, whether formal or informal.”
[145]	CS	17	Inter-firm alliances and cross-sector partnerships, inter-organizational learning	Review	Catalyst, partner characteristics, environmental conditions, partnership characteristics, outcomes	This study provides propositions to explain how various partner-level, partnership-level and environmental factors would enable or facilitate inter-organizational learning in cross-sector partnerships.
[162]	CS	4, 8, 17	Inter-firm alliances and cross-sector partnerships	Qual.	Partnership characteristics, catalyst, environmental conditions, inter-organizational learning process, outcomes	This study shows that partnerships between businesses and civil society may be dominated by business interests, and therefore, the setup of governance that set goals beyond business interests would enable the creation of system-level outcomes. This study also proposes that coordination that allows shared decision-making would contribute to the success of the partnership.
[189]	CS	13, 17	Networks, organizational cognition, institutional logics	Quant.	Catalyst, outcomes, inhibitors	This study shows that “the differences in frames and logics between firms and their partners in partnerships for sustainability improve focal firms’ sustainability performance, but only up to a turning point after which these differences lead to a decrease in sustainability performance instead.” Therefore, the study signals the role of an optimal distance that allow learning and innovation, hence improve performance.
[171]	CS	13, 17	Networks, organizational cognition, institutional logics	Quant.	Catalyst, inhibitors, environmental conditions, outcomes	This study shows that the differences in institutional logics may lead to tensions in partnerships; especially if there is a power imbalance between partners and a lack of mutual resource dependence in the partnerships.
[131]	CS	17	Cross-sector partnerships in the global south	Qual.	Partnership characteristics, catalyst, inhibitors, environmental conditions, outcomes	This study shows that structural conditions, in other words, the environmental context, may be different in the global south and these conditions may have an impact on the inter-organizational learning process in the multi-stakeholder initiatives; however, factors such as setting clear goals and objectives, establishing clear lines of communication through coordination mechanisms, and creating a shared vision also impact the learning process in the multi-stakeholder initiatives in the global south (Mexico).

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[182]	CS	6, 17	Co-creation and learning	Qual.	Partnership characteristics, catalyst, partner characteristics, environmental conditions, inter-organizational learning process	This study uses lessons learnt from various cases and identifies that there are the following four phases: co-initiation, co-design, co-implementation, and co-evaluation in the context of collaborative, sustainable freshwater management research and practice. The study discusses the different characteristics of each of these four phases.
[146]	IF	8, 17	Organizational culture, organizational learning, environmental collaboration	Quant.	Outcomes, partner characteristics, inter-organizational learning process, catalyst, inhibitors	This study finds that environmental collaborations within the supply chain have a positive impact on environmental performance, thanks to “a focal firm sharing these learned capabilities about the environment with other supply chain partners.”
[233]	IF & CS	13, 17	Stakeholder theory, the resource-based view	Qual.	Outcomes, catalyst, environmental conditions, inter-organizational learning process	This study shows that through engagement and partnerships with various stakeholders, firms can build environmental capabilities which would help them move towards a low-carbon economy.
[[157]]	IF	8, 17	Sustainable supply chain, resource-based view, sustainability performance, market performance	Quant.	Outcomes, partner characteristics, catalyst, partnership characteristics	This study evaluates the impact of different sustainable supply chain collaboration profiles on performance outcomes.
[173]	IF	8, 17	Innovation studies, environmental collaborations	Quant.	Partner characteristics, outcomes	This study shows it is less likely to develop environmental process innovations through collaborations and contests the general understanding in the literature that collaborations yield higher environmental innovation performance.
[195]	IF	8, 17	Ambidexterity, dynamic capabilities, inter-firm alliances	Quant.	Outcomes, inter-organizational learning process, partner characteristics	This study shows that engaging in inter-firm alliances positively impact ambidexterity and reinforces the positive impact of alliances on environmental performance.
[152]	CS	8, 17	Inter-organizational learning, trust	Qual.	Catalyst, partnership characteristics, inter-organizational learning process	This study finds that “Relational Space nourishes collaborative contexts—projects, events, and meetings—that help creates sustainability. As business relations are too often defined by economic and technical transactions, a little space remains for relational ‘glue’ that allows for highly complex, assumption-challenging learning to find new ways to transform competitive relationships into truly sustainable partnerships across multiple stakeholders with tangible benefit for many.”
[246]	IF	8, 17	Resource-based view, relational view, sustainable supply chain	Qual.	Outcomes, catalyst, partner characteristics	This study, based on qualitative cases from the German chemical industry, builds a model of inter-organizational practices which would allow the diffusion of sustainability across the supply chain.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[175]	IF & CS	8, 17	NRBV, stakeholder theory, environmental management	Quant.	Environmental conditions, outcomes	This study shows that stakeholder engagement, including inter-firm and cross-sector alliances and partnerships, help firms to develop proactive environmental strategies.
[209]	IF & CS	8, 17	Dynamic capabilities, systems thinking	Qual.	Outcomes, inter-organizational learning process, catalyst	This study integrates systems to dynamic capabilities literature and demonstrates a conceptual framework for the development of sustainability-oriented capabilities using an in-depth case study.
[121]	IF	8, 17	Environmental management, environmental collaborations	Quant.	Outcomes, catalyst, environmental conditions, partnership characteristics	This study explores the relationships between environmental management, green product strategy, competitiveness, and environmental collaborations in supply chains.
[122]	IF	8, 17	Inter-organizational knowledge sharing and learning, trust	Quant.	Partner characteristics, catalyst, inhibitor, outcomes	This study shows that partner opportunism negatively impacts trust between partners, while communication and participation have a positive effect. The study also shows that the more trust there is between partners, the higher the knowledge sharing and learning between partners.
[247]	CS	17	Collaborative strategy, process approach	Qual.	Partnership characteristics	This study develops a model of collaborative strategic management using two cases from collaborative regional sustainable development strategies.
[248]	IF & CS	8, 17	Dynamic capabilities, organizational design	Qual.	Partner characteristics, outcomes, catalyst, inter-organizational learning process	This study shows that for companies to achieve sustainable competitiveness, they need to develop dynamic capabilities which “entails changing their current organizational design by realigning their activities, partnerships, and routines with the changing external environment”.
[135]	IF & CS	8, 17	Resource-based view, environmental collaborations	Quant.	Outcomes, catalyst, inter-organizational learning process, inhibitors	This study shows how cross-sector partnerships help firms improve their image performance, while both inter-firm and cross-sector partnerships help them improve their market performance.
[136]	IF & CS	8, 17	Product development, dynamic capabilities, environmental collaborations	Quant.	Outcomes, inter-organizational learning process, partner characteristics, catalyst	This paper shows that external knowledge sources such as “as partners, universities and research centers, policymakers, conferences” help with the integration of environmental issues, while forming partnerships within the supply chain helps firms with green product design.
[249]	IF & CS	17	Learning, social networks	Qual.	Partner characteristics, inter-organizational learning process, catalyst, inhibitors	This paper demonstrates how social network software can help in developing learning environments for sustainable development.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[140]	IF	8, 17	Environmental innovation, R&D, environmental collaborations	Quant.	Partner characteristics, outcomes, partnership characteristics, catalyst	This paper demonstrates that environmental innovations develop, thanks to the acquisition of external knowledge, including partnerships within the supply chain, universities, and competitors.
[159]	CS	8, 17	Environmental innovation	Mixed	Partnership characteristics, partner characteristics, catalyst, outcomes	This study finds that a public-private joint venture studied has a positive impact on innovation capacity and “experience sharing; training and education; hiring/transferring qualified personnel to a partner company; and participatory demonstration of new technology with support from technology gatekeepers (technicians)” improve human capital and capability building.
[250]	IF & CS	17	Stakeholder theory, capabilities, environmental management	Quant.	Inhibitor, outcomes, partner characteristics, catalyst, environmental conditions	This study finds that stakeholder integration helps firms to develop proactive environmental strategies and also warns that stakeholder engagement may not always bring about a system-level outcome, or a collective impact, but sometimes only benefit the firm and its managers.
[142]	IF & CS	8, 17	Absorptive capacity, environmental management, environmental collaboration	Quant.	Outcomes, partner characteristics, inter-organizational learning	This study demonstrates how absorptive capacity can trigger organizational and inter-organizational learning and development of organizational capabilities that yield proactive environmental management and shows that amongst others, environmental collaborations are a part of this proactive managements’ strategies.
[49]	CS	2, 17	Dynamic capabilities, stakeholder theory, inter-organizational learning	Qual.	Inter-organizational learning process, environmental conditions, partnership characteristics, outcomes, catalyst	This study demonstrates how, through cross-sector partnerships, firms can co-develop dynamic capabilities via inter-organizational learning that takes place.
[134]	CS	17	Social exchange theory, partnerships, dialectical analysis	Qual.	Environmental conditions, inhibitors, catalyst, partnership characteristics, outcomes	This study proposes that dialectical processes take place between corporates and social enterprises within a collaborative setting and as a result, a synthesis stage emerges as partners resolve their differences.
[177]	CS	17	Social learning, social capital	Quant.	Inter-organizational learning process, catalyst, partner characteristics, partnership characteristics	This study analyzes two different sustainability initiatives through social learning and social capital lenses and discusses how effective and efficient platforms can be built that would enhance learning for sustainable development.
[203]	IF & CS	7, 13, 17	Organizational cognition, partnerships	Qual.	Inter-organizational learning process, outcomes	This study finds that to respond to various SDGs, electric utilities develop alliance portfolios with various partners and the configuration of these portfolios in terms of partner diversity has a relationship with firms’ value frames.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[130]	CS	17	Interdisciplinary collaborative research	Review	Inhibitors, partner characteristics, catalyst, inter-organizational learning process, environmental conditions	This study shows how research partners can learn to collaborate while collaborating by: “(1) creating conditions for learning to take place, which includes paying attention to discomfort as a trigger for learning and (2) engaging in collaborations in ways that strengthen researchers’ collaborative capacities by cultivating particular orientations, knowledge and skills.”
[137]	IF & CS	17	Absorptive capacity, societal values, and value conflict	Qual.	Partner characteristics, catalyst, inhibitors, environmental conditions, outcomes	This paper expands the notion of absorptive capacity from knowledge absorption capacity to value absorption capacity and shows “how technically savvy, economic value-creating firms diverge in their receptivity, articulation, and reflexivity of societal values.”
[156]	CS	17	Network, trust	Qual.	Catalyst, partnership characteristic, partner characteristic, environmental conditions, outcomes	This study analyzes the UN Global Compact (UNGC) through a lens of network theory and trust. The authors highlight that for a collaborative environment to foster at UNGC, trust between different stakeholders need to improve to the extent that it will stimulate social learning.
[160]	CS	1, 3, 17	Inter-organizational collaboration	Qual.	Catalyst, environmental conditions, partnership characteristics, inhibitors, inter-organizational learning process	This study shows that in a collaboration between social enterprises and local councils, there are differences due to the sectors, that these organizations are embedded, and the institutional logics that guide thinking in those sectors. The study finds that while such logic distance creates tensions, creation of shared objectives, synergistic capabilities and relying on known partners can help collaborations work towards a system-level collective impact.
[199]	CS	8, 17	Knowledge management (sharing)	Qual.	Partner characteristic, inter-organizational learning, inhibitors, partnership characteristics	This study discusses the mechanisms of knowledge sharing in an inter-disciplinary collaborative setting and finds that individuals willing to adapt and attempt to translate the disciplinary discourses and modes of communication of researchers and of practitioner specialists enable knowledge sharing.
[202]	CS	15, 17	Inter-organizational collaboration, framing	Qual.	Catalyst, inhibitors, outcomes	This study shows that the frame distance between partners can act as an inhibitor and create resistance to find an agreeable solution between the parties involved.
[251]	IF & CS	8, 17	R&D, knowledge spill overs	Quant.	Partner characteristics, catalyst	This study finds that in the context of chemical companies, research, and development fosters thanks to spill overs in the context of collaborative partnerships within industrial clusters, and even open innovation settings with competitors can help the development of sustainable solutions.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[155]	CS	10, 16, 17	Cross-sector collaboration	Qual.	Environmental conditions catalyst, partnership characteristics, outcomes	This study shows how state and market incentives can trigger companies to form transformational partnerships that are beyond corporate philanthropy.
[27]	CS	8, 17	Cross-sector collaboration	Review	Catalyst, inhibitors, outcomes	This study provides an understanding of why firms would partner with NGOs, what they can gain from it, and what factors should firms take into consideration in selecting, managing, and evaluating partnerships with environmental NGOs.
[26]	IF & CS	17	Inter-organizational partnerships	Review	Inhibitors, outcomes, partnership characteristics, catalyst, partner characteristics	This article provides an overview of research on partnerships for environmental sustainability between different kinds of partners and argues how businesses can frame these kinds of environmental partnerships as a source of competitive advantage.
[252]	IF	8, 17	Open innovation, SMEs	Quant.	Partner characteristics	This study shows “the effect of external technology R&D cooperation network diversity (ETRDND) on the greenhouse gas (GHG) emission reduction and energy saving of small- and medium-sized enterprises (SMEs)” and analyzes “the roles of production time reduction and absorptive capacity in the relationship between SMEs’ ETRDND and their GHG emission reduction and energy-saving.”
[132]	CS	13, 17	Stakeholder theory, multi-stakeholder networks, climate change engagement of businesses	Qual.	Partner characteristics, outcomes, environmental conditions	This study shows that multi-stakeholder networks can help to create platforms for inter-organizational learning and innovation that can address complex sustainability challenges through the engagement of various stakeholders.
[198]	IF	8, 17	Environmental management, inter-firm alliances, dynamic capabilities	Quant.	Outcomes, catalyst, inter-organizational learning process	This study shows that collaboration with customers and suppliers in the value chain help firms develop capabilities to address sustainability challenges.
[205]	IF	8, 17	Sustainable supply chains, innovation, and absorptive capacity	Quant.	Partner characteristics, outcomes, catalyst	This paper shows that inter-organizational collaborations positively impact the innovation performance of firms in the context of sustainable supply chains, and absorptive capacity acts positively as a mediator of this impact.
[19]	CS	17	SDGs, partnerships	Review	Outcomes, catalyst, partnership characteristics, environmental conditions	This paper discusses five potential problems in partnerships for SDGs: “compensation for losers; barriers to partnering; short-time horizons, inadequate coordination mechanisms and misaligned incentives.”
[138]	IF & CS	8, 17	CSR, stakeholder theory, absorptive capacity	Quant.	Partner characteristics, environmental conditions, inter-organizational learning process	This study finds that absorptive capacity helps to develop sustainable product and organizational innovations, and absorptive capacity is reinforced by stakeholder embeddedness and pressure.



Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[174]	CS	8, 17	Environmental policies, innovation, absorptive capacity, R&D collaborations	Qual.	Partner characteristics, catalyst, inhibitors, outcomes	This study finds that the closeness between R&D partners in terms of dominant logics, knowledge bases and organizational structures help them respond coherently to the environmental policies to create environmental innovations.
[253]	IF & CS	8, 17	Knowledge acquisition	Qual.	Partner characteristics, inter-organizational learning process, catalyst	This study shows that external knowledge sources, such as inter-organizational networks and partnerships, help SMEs develop internal capabilities to move them towards sustainability.
[254]	CS	11, 17	Social learning, scenarios	Qual.	Inhibitors, catalyst, partner characteristics, environmental conditions	This study shows that participatory scenarios can enhance social learning in a collaborative environment by helping the development of systemic thinking, enhanced relationships, and awareness of new perspectives, all of which are valuable for developing adaptive capacity.
[11]	CS	2, 17	Framing, cross-sector collaborations	Qual.	Outcomes, inhibitor, catalyst, environmental conditions	This study shows that in a collaborative setting between diverse partners, as opposed to converging to a shared frame, partners may maintain an optimal frame plurality, “not excessive frame variety that may prevent agreements from emerging, but the retention of a select few frames and the deletion of others toward achieving a narrowing frame bandwidth.”
[255]	IF & CS	12, 17	Product service systems, circular economy, business models	Qual.	Partner characteristics, outcomes, catalyst	This study shows that to achieve system-level outcomes from circular economy business models, the interaction between the business model to the broader ecosystem through partnerships are helpful. In other words, partnerships can help businesses to create environmental and social value.
[12]	CS	3, 17	Frames and framing, relational coordination	Qual.	Outcomes, catalyst, inhibitors	This study shows how within a cross-sector partnership, setting partners’ frames may fuse, which the authors define as “partners reach[ing] common ground by coming to appreciate their (complementary) differences rather than espousing and/or enacting a similar frame.”
[153]	CS	14, 15, 17	Governance	Qual.	Partnership characteristics, catalyst, inter-organizational learning process	This study focuses on polycentric governance of environmental commons. It explores how trust can help to build a shared understanding, how polycentric governance improves learning and knowledge sharing and how such initiatives need to take account of justice and inclusivity and consider vulnerable groups and societal impacts.
[181]	IF	12, 17	Circular economy, industrial ecology, sustainable innovation, supply chain collaboration	Qual.	Catalyst, inter-organizational learning process, outcomes, partner characteristics	This study shows that for circular economy transition, firms need to engage in new forms of sustainable supply chain collaborations which require cross-functional engagement, trust, and joint learning and problem-solving.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[164]	IF & CS	8, 17	Inter-firm alliances, resource-based view, institutional theory, organizational learning	Quant.	Environmental conditions, partnership conditions, inter-organizational learning process, catalyst, inhibitors, partner characteristics, outcomes	This study analyzes how some alliances are focusing on capability development, while others are trying to create legitimacy and reputation. The article further discusses how learning and governance would vary depending on whether these alliances are focused on capability development or legitimacy.
[127]	CS	8, 17	Environmental innovations, partnerships, transaction cost economics, resource complementarities	Quant.	Partnership characteristics, inter-organizational learning process, inhibitors, catalyst, partner characteristics	This study shows that transactional cost and complementary logics explain why there are government-business partnerships that aim radical environmental innovations. Furthermore, the study highlights that for these partnerships to work, governance, learning and rulemaking needs to be adequately addressed.
[148]	IF & CS	8, 17	Inter-firm alliances, resource-based view, institutional theory, organizational learning	Quant.	Partnership characteristics, inter-organizational learning process, environmental conditions, inhibitors	This study argues that “competency-oriented alliances (COAs), characterized with exploration learning, diverse partnership, and nonequity structure, tend to engage firms for more proactive environmental strategies.” In contrast “conversely, legitimacy-oriented alliances (LOAs), characterized by exploitation learning, homogeneous partners, and equity structure, tend to engage firms for less proactive environmental strategies.”
[51]	CS	8, 17	Cross-sector partnerships, environmental innovations, proactive environmental management	Quant.	Outcomes, inter-organizational learning process, partnership characteristics, catalyst	This study shows that more diverse alliance partners contribute more to the development of proactive environmental outcomes. Furthermore, innovative firms that have greater experiences in partnerships and alliances are engaged in more diverse partnerships.
[200]	IF	8, 17	Sustainable supply chain, dynamic capabilities	Quant.	Outcomes, catalyst	This study shows that supplier orientation and innovation orientation improve sustainability performance.
[256]	IF	8, 17	Environmental innovation, sustainable supply chain	Quant.	Partner characteristics, outcomes, environmental conditions, inhibitors, catalyst	This study shows that learning from suppliers and customers has a positive impact on environmental innovations and turbulence moderates these relationships.
[161]	IF	17	Inter-organizational partnerships	Quant.	Partner characteristics, catalyst, outcomes, catalysts, inter-organizational learning process	This study shows that inter-organizational learning which is catalyzed by trust-building and knowledge sharing patterns has a positive effect on identity and adaptability of partnerships.
[257]	IF & CS	17	Sustainability, absorptive capacity, open innovation	Qual.	Partner characteristics, outcomes, inter-organizational learning process	This study shows that through open innovation with partners, organizations can absorb knowledge and improve sustainability outcomes.
[258]	CS	8, 17	Sustainability-oriented innovation, business models, partnerships	Qual.	Catalyst, outcomes	This study shows how Interface, a global carpet manufacturer, has created a sustainable business model that puts partnerships at its core by working in a networked relationship with communities and an NGO whereby they create a safe failure space.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[259]	CS	17	CSR, knowledge sharing	Qual.	Partner characteristics, environmental conditions, partnership characteristics, catalyst	This study shows how firms can enhance CSR outcomes by engaging in knowledge sharing and seeking collaboration opportunities that will help improve inter-organizational learning from communities, which will then improve the collective outcomes and the legitimacy of the firm.
[176]	CS	17	Multi-stakeholder partnerships, organizational design	Quant.	Catalyst, partner characteristics, partnership characteristics, outcomes	This study focuses on how effective multi-stakeholder partnerships can be designed effectively. Furthermore, the authors find that collaborative decision-making systems help coordination and improve learning.
[172]	IF & CS	17	Networks, learning organizations	Qual.	Inter-organizational learning process, environmental conditions, catalyst, partnership characteristics, inhibitors	This study discusses how inter-organizational networks are increasingly becoming more critical as learning organizations and how learning can take place in such networks through collaborative decision-making, consensus building, diffusion of practices, rules, norms, and values.
[260]	IF & CS	8, 17	Capability development (acquisition)	Qual.	Outcomes, catalyst, inhibitors, inter-organizational learning process	This study discusses how firms can build capabilities both due to the impact of societal logics at the macro-level and the “firm’s capacity to search for talent, technology, and ideas and to harmonize what it learns internally” and through cases, the authors discuss how interaction with the external environment through partnerships and networks can help firms develop such capabilities.
[197]	IF	8, 17	Sustainable supply chain, absorptive capacity	Qual.	Partner characteristics, inter-organizational learning process, outcomes, catalyst, partnership characteristics	This study demonstrates various mechanisms that help firms develop capabilities through absorbing knowledge from their collaborative supply chain interactions.
[186]	IF	8, 17	Inter-firm alliances, environmental management	Quant.	Inhibitors, catalyst, outcomes, partner characteristics, partnership characteristics	This study finds that organizational size disparity has a positive effect on alliance terminations, while cultural separation has a negative effect on alliance terminations in the context of environmental alliances.
[163]	IF	8, 17	Sustainable supply chain, resource-based view, sustainability-oriented innovation	Qual.	Partnership characteristics, partner characteristics, outcomes, catalyst	This study shows how supply chain collaboration can allow room for inter-organizational learning, help the development of new capabilities, practices and processes, thanks to knowledge sharing between parties and, as a result, how this learning would lead to sustainability-oriented innovations.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[261]	IF & CS	17	Technological development, knowledge management (knowledge types)	Qual.	Inter-organizational learning process	This study discusses that in studying knowledge development and diffusion, also in partnership settings, it is essential to pay attention to the type of knowledge that is being transferred. The study shows that knowledge can be domain-specific and procedural, and general knowledge and the nature of the knowledge can have an impact on whether and how it can be transferred.
[188]	IF	8, 17	Inter-firm alliances, trust, strategic cognition	Quant.	Catalyst, outcomes, inhibitors, partnership characteristics	This study demonstrates how the environmental reputation of firms have an impact on trust, and perceived partner attractiveness which affects the partnership formation patterns.
[196]	IF & CS	8, 17	Organizational learning, sustainable supply chain	Qual.	Partner characteristics, inter-organizational learning process, catalyst, outcomes	This study discusses the role of organizational learning and collaboration for the improvement of supply chain sustainability and argues that training, knowledge acquisition, stakeholder engagement and collaboration between intra-organizational and inter-organizational partners, including suppliers and NGOs, help firms learn and develop capabilities to address sustainability issues in the supply chain.
[262]	CS	2, 17	Networks	Qual.	Catalyst, inter-organizational learning process, partnership characteristics,	This study discusses how, through networks, farmers can engage in the collective learning process and sustainable agricultural development. The authors argue that within such a network environment, to enhance learning, it is vital to create a feeling of “shared responsibility and balanced leadership.”
[179]	IF & CS	8, 17	Sustainable innovation, partnerships	Quant.	Catalyst, partner characteristics, outcomes	This study discusses “collaborative search strategies led by firms in general and for solving environmental problems in particular” and finds that “the problem-solving potential of a search strategy increases with the diversity of existing knowledge of the partners in a consortium and with the experience of the partners involved.”
[180]	IF	12, 17	Circular economy, business models, innovation ecosystems	Qual.	Catalyst, inhibitors, partnership characteristics, partner characteristics, environmental conditions	This study discusses that the transition to a circular economy requires collaboration between ecosystem partners and an “ecosystem-wide orchestration.”
[169]	IF & CS	17	Knowledge brokerage, environmental impact assessment	Qual.	Partner characteristics, partnership characteristics, inter-organizational learning process, catalyst, environmental conditions	This study demonstrates the role of knowledge brokerage and how it can enable the learning process and knowledge transfer in the context of impact assessment.
[204]	IF	8, 17	Sustainable supply chain, environmental collaboration	Quant.	Outcomes, catalyst, environmental conditions, inter-organizational learning process	This study demonstrates that internal capabilities improve sustainable supply management and sustainability performance and shows that “relational capability” helps firms access resources and capabilities outside the firm and combine capabilities within and outside the boundaries.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[210]	CS	13, 17	Partnerships, climate change mitigation,	Qual.	Partnership characteristics, partner characteristics, inter-organizational learning process, outcomes, inhibitors, catalyst	This study shows that multi-stakeholder partnerships can be an effective form of governance to address climate change by providing a space of learning and participation of actors from different societal sectors.
[143]	IF & CS	8, 17	Absorptive capacity, international business (MNCs)	Qual.	Partner characteristics, outcomes, catalyst, inter-organizational learning process	This study demonstrates that in the context of MNCs, absorptive capacity acts on two levels: shared and unit-specific levels of absorptive capacity. The authors highlight that partnerships are a way of building shared absorptive capacity.
[193]	IF & CS	12, 17	Sustainability-oriented innovation, learning, collaboration, sustainability transitions	Review	Partner characteristics, inter-organizational learning process, outcomes, partnership characteristics, catalyst	This study demonstrates that collaborations help in creating inter-organizational learning opportunities and lead to sustainable innovation. This paper highlights that second-order learning leads to incremental sustainability-oriented innovation. The authors highlight that “to bring about a shift towards the kinds of innovations that will contribute to sustainable consumption and production, the various actors and stakeholders involved need to share knowledge and to learn from pilot experiments, practices, users and communities.”
[123]	IF	8, 17	Sustainable supply chain, dynamic capabilities	Qual.	Outcomes, inter-organizational learning process, inhibitors, environmental conditions, catalyst	This study argues that “sustainable global supplier management (SGSM) capabilities are a source of competitive advantage” due to the value they create when firms are exposed to stakeholder pressures and those firms that were early movers in developing such skills enter into a virtuous cycle by accumulating more resources and learning processes.
[206]	IF & CS	8, 17	Absorptive capacity, international business (MNCs), strategic purchasing	Quant.	Partner characteristics, outcomes, catalyst	This study suggests that realized absorptive capacity has an impact on social sustainability; however, finding that against the expectations, learning capabilities do not have an impact on the environmental sustainability of purchasing practices. The study also finds that there is no significant impact of sustainable practices on economic performance.
[263]	IF	17	Networks, corporate responsibility	Qual.	Inter-organizational learning process, outcomes, partner characteristics, catalyst	This study discusses that learning can be triggered by interactions between a focal firm and its knowledge network “which provide[s] new concepts for inspiration, and an internal network of ideas and actions, which would help define and shape change.”
[191]	CS	17	Stakeholder theory, organizational learning, environmental management	Qual.	Inter-organizational learning process, outcomes, partner characteristics, environmental conditions	This study discusses how stakeholder power affects exploitative and exploratory inter-organizational learning. The study finds that stakeholders may have different sources of power such as “personal skills, knowledge and networks, formal authority and operational capacity; these sources turned out to be different in the two case companies.”

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[264]	IF & CS	17	Knowledge management (acquisition)	Quant.	Partner characteristics, outcomes, catalyst	This study shows that in the context of SMEs, various external partners, especially trade associations and suppliers, help firms' acquisition of valuable knowledge that help increase environmental commitment.
[265]	IF & CS	17	Organizational capabilities, stakeholder theory, environmental management	Quant.	Inter-organizational learning process, outcomes, environmental conditions	This study finds that external environment impacts the development of firms' stakeholder integration, and uncertainty, positively, with complexity, negatively, impacting firm's environmental strategy.
[165]	IF & CS	17	Networks, organizational change, and learning	Review	Environmental conditions, partner characteristics, catalyst, inhibitors, outcomes	This study discusses how relationships in a network create a platform for organizational learning and change and describe how organizational capabilities built through interaction with network partners improve sustainability.
[133]	CS	17	Collaborations (social alliances), social enterprises	Qual.	Environmental conditions, inter-organizational learning process, outcomes, partner characteristics, partnership characteristics, catalyst	This study shows that businesses may engage in partnerships with social enterprises to create value jointly or for community capacity building. Furthermore, the study discusses how businesses gain appreciation from their stakeholders (concern for legitimacy), while thanks to these partnerships, social enterprises create funds (financial resource dependence).
[207]	CS	17	Business-non-profit partnerships, organizational learning	Quant.	Inter-organizational learning process, catalyst, outcomes, partner characteristics, inhibitors, partnership characteristics, environmental conditions	This study shows that organizational learning in business-non-profit partnerships occur thanks to close relationships between the partners whereby trust and inter-personal relationships play a critical role. Furthermore, the authors argue that non-profits gain resources and capabilities that allow them to "proactively detect, shape, and seize opportunities and threats."
[144]	CS	17	Corporate social responsibility, cross-sector partnerships	Qual.	Catalyst, environmental conditions, partnership characteristics, partner characteristics, inter-organizational learning process	This study discusses three phases of cross-sector partnerships: partner selection, partnership design, institutionalization and (potential) exit. This model also highlights the challenges and risks in each of these phases such as "determining effective criteria for partner selection, designing appropriate risk assessment techniques, experimenting with and adapting agreements, objectives, reporting mechanisms and other systems, managing crises to the benefit of the partnership, and balancing the necessary personal relationships with needs for ongoing organizational institutionalization."



Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[185]	CS	17	Corporate social responsibility, cross-sector partnerships	Qual.	Catalyst, environmental conditions, partnership characteristics, outcomes	This study discusses how firms engage with communities in different forms: corporate philanthropy, benefaction, patronage, sponsorship, and cause-related marketing (CRM) and partnerships. Furthermore, the authors highlight how from one form of engagement that contains less involvement, partners can improve institutional trust and partners can move towards forms of engagement that contain more involvement.
[208]	CS	17	Cross-sector partnerships, sensemaking	Review	Partnership characteristics, catalyst, inter-organizational learning process, outcomes, environmental conditions	This study discusses three platforms that can be used to make sense of cross-sector partnerships that aim to co-create social innovation: resource dependence, social issues, and societal sector platforms.
[266]	CS	17	Cross-sector partnerships, organizational learning	Qual.	Catalyst, outcomes, inter-organizational learning process, partner characteristics	This study highlights that learning from such partnerships that aim systemic changes requires systemic thinking, shared vision and awareness of mental models and effective dialogue. Furthermore, these kinds of cross-sector partnerships need to balance commercial interests and the creation of private value with societal interests and public value.
[128]	CS	17	Organizational paradoxes, cross-sector partnerships	Qual.	Inhibitors, catalyst, outcomes	This study explores the paradoxical tensions between businesses and NGOs and explains how the way actors perceive each other's frames impact the partnership outcomes. Furthermore, the authors found that when partners had a fluid frame, they were able to appreciate the differences of each other, which contributed to the creation of generative outcomes.
[194]	CS	1, 2, 17	Social learning	Qual.	Environmental conditions, inter-organizational learning process, partnership characteristics, catalyst	This study highlights that bi-directional, or two-way learning helps to contribute the system-level outcomes to sustainable development goals. Furthermore, the study provides several examples of which partnerships and networks are channels for knowledge mobilization.
[166]	IF	8, 17	Environmental innovations, inter-organizational fit, sustainable supply chain	Quant.	Partner characteristics, inter-organizational learning process, catalyst, inhibitors, outcomes	This study measures the impact of complementarity and compatibility between firms and their supply partners on environmental innovation (EI) outcomes. The study finds that "complementarity facilitates incremental EI while inter-organizational compatibility plays a more crucial role in radical EI."

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[184]	CS	17	Networks, social learning	Qual.	Catalyst, inter-organizational learning process, partner characteristics	This study highlights that innovation networks allow social learning to trigger sustainable development by creating a platform for different stakeholders and their diverse perspectives to share knowledge and values. The authors find that trust, commitment, and reframing catalyze the social learning process.
[267]	CS	4, 17	Cross-sector partnerships, coopetition, tensions/paradoxes	Qual.	Partnership characteristics, partner characteristics, catalyst, inter-organizational learning process, outcomes	This study evaluates the coopetitive tensions in cross-sector partnerships whereby multiple companies are involved. The study finds that the coopetitive tensions are leveraged in the studied partnerships, and authors conclude that coopetitive dynamics can help to enhance the system-level partnership outcomes.
[126]	CS	17	Public-private partnerships, inter-organizational learning, social capital, brokerage	Qual.	Catalyst, environmental conditions, partner characteristics, partnership characteristics, inter-organizational learning process	This study analyzes the different roles of broker organizations in public-private partnerships as “convener, mediator, and learning catalyst” drawing on social capital and inter-organizational learning literature.
[25]	CS	17	Strategic bridging	Qual.	Environmental conditions, inhibitors, catalyst, inter-organizational learning process, outcomes	This study evaluates the role of NGOs as strategic bridges in their engagement with businesses. The case finds that within a partnership setting, partners may prioritize their private benefits and individual goals which may pose a risk. Furthermore, the study proposes that strategic bridging requires setting and articulating a vision, gaining support and commitment, balancing stakeholder needs and addressing issues to create system-level outcomes.
[268]	CS	17	Multi-stakeholder initiatives, communities of practice	Qual.	Inhibitors, catalyst, inter-organizational learning process, partner characteristics, partnership characteristics	This study shows how multi-stakeholder initiatives, which are communities of practitioners, are organized in the first place thanks to “interpersonal relationships among the participants involved [which] are nurtured through discussions and dialogues on common areas of interest.” The study highlighted that the informal elements were also crucial in building trust, which enables building a sense of community.
[269]	IF	17	Sustainable supply chain, action research	Review/Qual.	Inter-organizational learning process, catalyst, environmental conditions, partnership characteristics, outcomes	This study proposes a research agenda at the intersection of action research and sustainable supply chain management. Furthermore, the authors highlight that due to the emphasis on relational dynamics and collaboration for building sustainable supply chains, action research can reveal dynamics of “resistance, power and discourse” in building sustainable supply chains.
[201]	IF & CS	8, 17	Sustainability-oriented innovation, collaboration, IT	Review	Partner characteristics, outcomes, partnership characteristics, inter-organizational learning process	This study explores the role of IT in facilitating the sustainability-oriented collaborations and building innovation capabilities for sustainability.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[270]	IF	8, 17	Collaboration, sustainable supply chain	Quant.	Outcomes, partner characteristics, catalyst, inter-organizational learning process, partnership characteristics	This study emphasizes that the capability of managing partnerships through building operational, coordinative, and communicative routines improve inter-organizational learning outcomes for cleaner production.
[129]	CS	17	Stakeholder theory, strategic issue management	Qual.	Inter-organizational learning process, catalyst, environmental conditions, partnership characteristics, outcomes	This study evaluates how NGOs and companies engage in dialogue which holds the potential for employees to learn from their NGO partners/stakeholders and create environmental and social value for their companies. The study finds that such engagements are often organized around issues that are perceived risky, and that for the engagement between organizations to create value for the company, the company has to consider the learning from the NGO as strategic and prioritize it as such.
[271]	CS	2, 17	Transformative change, social learning	Qual.	Partnership characteristics, inter-organizational learning process, outcomes, catalyst, inhibitors	This study highlights that in transforming the agricultural system along the lines of sustainable development, it is crucial to understand different perceptions that different societal actors may hold and “identify areas of actionable consensus.” This idea of the cognitive distance between the partners can be addressed through the creation of safe experimentation and learning spaces.
[187]	CS	6, 17	Social learning	Qual.	Catalyst, partnership characteristics, inter-organizational learning process, partner characteristics, catalyst	This study highlights that in a collaborative setting, learning takes place as actors exchange “motivations, cognitions and resources” and while some interactions may yield system-level outcomes, others may not. The authors highlight that the “unconstructive” collaborations led to the termination of partnerships or partnerships that did not continue after the set time frame.
[154]	CS	11, 17	Social learning, sustainability-oriented innovation	Qual.	Partner characteristics, outcomes, partnership characteristics, outcomes, inter-organizational learning process, environmental conditions	This study specifically focuses on the role of local authorities in the transition towards sustainable development through networks and partnerships. Furthermore, the study highlights that local authorities may take a tutor or a teacher role in collaborative environments.
[125]	IF	7, 17	Business models, sustainability-oriented innovation, inter-organizational collaboration	Qual.	Partner characteristics, partnership characteristics, inhibitors, inter-organizational learning process, environmental conditions, outcomes	This study focuses explicitly on inter-firm alliances between firms of different sizes, an incumbent energy firm and a renewable energy company. The study finds that such alliances provide a platform for the incumbent to disseminate sustainable technologies using their access to the market. Furthermore, the study highlights that there may be a competition to learn between the partners, whereby the incumbent may gain private benefits “leaving small firms with limited learning outcomes.” The study finds that intent, culture, receptivity, transparency, and complementary assets act as factors that impact the inter-organizational learning process.

Table A1. Cont.

Ref	IF & CS <sup>1</sup>	SDG	Theoretical Framework/ Main Concepts	Method	Contribution to the Model	Summary
[120]	IF & CS	17	Sustainability-oriented alliances and partnerships (environmental only)	Review	Partner characteristics, partnership characteristics, environmental conditions, outcomes, catalyst, inhibitors	This study reviews the literature on environmental collaborations and identifies partner and partnership characteristics that generally impact inter-organizational collaborations, the environmental conditions that shape partner relationships and engagement, and the factors that facilitate and inhibit the relationships.
[190]	IF & CS	8, 17	Sustainability-oriented innovation, stakeholder engagement	Review	Partner characteristics, outcomes, inter-organizational learning process, environmental conditions, partnership characteristics, catalyst	This study specifically focuses on capabilities that help firms engage with their stakeholders at different levels: “specific operational capabilities; first-order dynamic capabilities to manage the engagement (engagement management capabilities); and second-order dynamic capabilities to make use of contrasting ways of seeing the world to reframe problems, combine competencies in new ways, and co-create innovative solutions (value framing), and to learn from stakeholder engagement activities (systematized learning).”
[4]	CS	8, 17	Sustainability-oriented innovation,	Qual.	Catalyst, partner characteristics, outcomes, inhibitors, environmental conditions, inter-organizational learning process	This study focuses on how businesses engage with non-profits to create environmental, social, and economic value. The authors find that actors involved going after the kind of value they aim to create in the partnership, combine resources and capabilities and empathize each other’s value differences.
[167]	IF	17	Institutional theory, inter-organizational learning	Quant.	Outcomes, environmental conditions, catalyst, partnership characteristics	This study finds that firms’ engagement in CSR is difficult to imitate by other firms even when there exist conditions for mimetic pressures. The authors highlight that this is because the knowledge that is needed for substantive CSR engagement is sticky. However, the study highlights that such substantive engagement may be facilitated by the selected governance structure, culture, and capability development.

<sup>1</sup> Inter-firm vs. cross-sector.

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