

Alessia Zoppelletto

**ORGANIZING
FOR SUSTAINABILITY**

**Resilient Organizational
Architectures to Co-create
Sustainable Transitions**

FrancoAngeli 



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Alessia Zoppelletto

INTRODUCTION

The world today is confronted with numerous sustainability-related challenges in a variety of different domains (Markard *et al.*, 2012).

Addressing climate change requires reaching net-zero emissions by 2050 to limit global warming to 1.5 °C above pre-industrial levels. Reducing social inequality and poverty requires to work on disparities in education, wealth, and access to opportunities create socio-economic divides. Tackling biodiversity loss and environmental degradation calls for a better natural resources and water management practices, as well as reduction of pollution levels.

These challenges are defined by Ferraro *et al.* (2015) “grand challenges” due to their large impact in society. These challenges require multifaceted and continuously evolving responses which need to be coordinated across political, social, and economic systems to create “desired future scenarios” (Gümüşay, Reinecke, 2022; Augustine *et al.*, 2019). For instance, the European Recovery Plan has set strategic priorities to create a greener and more resilient Europe (European Commission, 2020). A temporary

recovery instrument consisting of 800 billion euros is being used to address Europe's most pressing challenges and support those in need, in order to achieve a sustainability or "just" transition.

Due to their large impact in society, grand challenges extend beyond the boundaries of a single organization or community (Gimenez, Rodon, 2012). For this reason, grand challenges call for sustainability transitions at multiple levels (e.g., Safarzynska *et al.*, 2022; Weber, Rohracher, 2012; Sharma, Henriques, 2005; Aguilera *et al.*, 2007; Geels, 2004), affecting socio-technical systems¹ from the macro (societal) level toward inter-organizational, organizational and individual levels (Geels *et al.*, 2018).

Public institutions, profit and nonprofit firms and organizations in general are pressured from different set of stakeholders to seriously engage in sustainability transitions to tackle the global most pressing grand challenges (George *et al.*, 2016).

In this transition, the business sector is tasked both with opportunities and responsibilities in solving world sustainability-related challenges due to its capacity to contribute to the solution of both societal and environmental issues in the service of the "common good" (Dyllick, Muff, 2016). Therefore, *sustainability transformations often entail companies' reconsideration of their established strategies, business models and organizational architectures* (Klein *et al.*, 2021; Addo, 2022).

¹ Socio-technical systems "consists of (networks of) actors (individuals, firms, and other organizations, collective actors) and institutions (societal and technical norms, regulations, standards of good practice), as well as material artifacts and knowledge" (Markard *et al.*, 2012, p. 956).

However, *grand challenges appear to resist the implementation of simple solutions and require holistic, cross-sector approaches to develop sustainable and inclusive solutions.*

For this reason, organizations must also adapt their organizational architectures or create new ones to effectively address sustainability challenges and drive positive change.

Developing resilient organizational architectures is crucial to navigate the sustainable transition since grand challenges needs to be examined with a focus on a constellation of logics (Gümüşay *et al.*, 2020) and sustainable transitions “require collaboration and cooperation between varied interests and actors across space and time” (Addo, 2022, p. 363).

Organizational architectures extends beyond structural design, encompassing elements like formal structures, work practices, and processes for selection and development of people (Nadler *et al.*, 1992). The organizational architecture provides organizations with a framework to interact effectively with stakeholders, offering a potential competitive advantage (MacCormack *et al.*, 2012). In response to external pressures like competition, technological change, and grand challenges, organizations need to rethink their architectures to remain adaptive and flexible (Amit, Zott, 2015). This adaptability, in turn, allows companies to modify their boundaries and architectures, driving strategic and sustainable changes (Baldwin, 2015; Carpenter, Brock, 2008).

In the context of sustainability, traditional unilateral approaches are insufficient to tackle grand challenges. Instead, companies need collaborative, multi-stakeholder organizational architectures, defined as structures that facilitate long-term constructive interactions among diverse

actors (Ferraro *et al.*, 2015). Such architectures can take *formal* (e.g., sustainability-oriented platforms) or *informal* (e.g., alliances, collaborations or partnerships) forms. These participatory architectures enable companies to face grand societal challenges in the long run with a more resilient architecture (Addo, 2022; Cowling, 2017).

Research shows that companies achieve better sustainability performance when engaged in external collaborations (Ghisetti *et al.*, 2015). Thus, leveraging participatory architectures and collaborative strategies may help organizations to navigate complex sustainability transitions while fostering innovation and resilience.

Therefore, the research question guiding this work is: *How are companies adapting their (formalized or informal) organizational architectures to embark in the sustainable transition?*

Global phenomena such as sustainability transitions may be better understood if they are observed within a longitudinal timespan. Therefore, the present work employs three qualitative longitudinal case studies.

These case studies aim to comprehend how organizations shape and unfold their organizational architectures by leveraging on their stakeholders.

This is crucial for understanding the models, best practices, or ideal forms to be implemented tackle sustainability challenges. Understanding how firm organize their architectures at the inter-organizational level to address sustainability concerns is necessary to comprehend which are the pathways in achieving distant future scenarios.

To this extent, the work is organized as follows.

Chapter 1 introduces the essential conceptual categories and provides a brief summary of the academic debate

around sustainability over the past decades, highlighting the company-centric approach that has characterized the traditional debate around sustainability.

Chapter 2 describes the evolution in the sustainability discourse from an organization-centric approach towards a multi-stakeholder one. The chapter aims to highlight and analyze the significance of the collaborative dimension promoted by companies' stakeholders in the ongoing debate around sustainability. The chapter suggests that resilient organizational architectures may enable the aggregation of companies to effectively navigate the sustainability transition.

Chapter 3 addresses the conceptual shift from an organization-centric to a multi-stakeholder approach in sustainability transitions emphasizing the critical role of sustainability-oriented collaborations. Stakeholders, including institutions, customers, suppliers, financial institutions, and nonprofits, can drive companies' sustainability practices. To navigate complex sustainability challenges, firms need to transcend their organizational boundaries and integrate diverse stakeholder perspectives, leveraging collaborative or participatory organizational architectures. These include formal organizational architectures such as sustainable business models and informal architectures such as sustainability-driven alliances. By adopting these resilient collaborative architectures, companies can more effectively navigate sustainability transitions in the long run.

Chapter 4 analyzes a case study of a sustainable business network. Omega is an agricultural business network established in 2016 in Valpolicella, Italy, consisting of 27 micro and small firms led by a focal firm. This architecture was founded with a focus on wine production while preserving and regenerating environmental resources and

common goods. It also aimed to protect its members through an organizational architecture that could increase overall knowledge, experimentation capacity, and safeguard them from risks.

The initial three years of the network were focused on establishing value alignment and collaboration mechanisms. In 2018, the network achieved the “Equalitas” certification, which required all firms to meet high sustainability standards. To enhance performance, the network built a digital platform to track and monitor its sustainability efforts.

Through Omega’s participation in the “Enterprise 4.0” project (2018-2020), the business network developed a digital platform to track and monitor sustainability efforts, enhancing collaboration, and optimizing operations. The platform enables real-time monitoring of vineyards and the environment, a common good resource management, and coordination among network members. Omega’s architecture has strengthened the business network resilience, optimized resource use, and provided a model for sustainable growth in the sector.

Chapter 5 examines the case study of a sustainable supply chain lead by the Brun Gelmino company. The organizational architecture is characterized by a focus on prioritizing environmental and social sustainability across all levels, as organizations are increasingly held accountable for their suppliers’ actions. Sustainable supply chain management emphasizes inter-firm collaboration and data sharing (also through digital platforms), with the aim to monitor sustainability performance in a more holistic way.

The Brun Gelmino’s supply chain partnered with Feelera S.r.l. S.B. to implement dedicated information systems and experiment a platform that measures and tracks sustainability

indicators within the whole supply chain. This approach enabled the value chain to assess its aggregate sustainability performance, facilitating better decision-making and greater transparency.

Despite the initial resistance from some firms, who viewed the increased transparency as a competitive risk, the project strengthened the entire supply chain's sustainability practices. The platform's ability to simulate scenarios and assess the impact of various changes on the overall sustainability score also provided strategic leverage, improving long-term resilience of the organizational architecture.

Chapter 6 analyzes multi-stakeholder partnerships role in fostering sustainable transitions. These partnerships enable organizations from various sectors (nonprofit, business, and public) to collaborate toward a common socio-environmental goal. These informal partnerships enhance the ability of socio-technical systems to cooperate in an extensive way to address complex societal challenges. These collaborations are able to leverage diverse resources and expertises to create effective sustainability solutions. Nonprofit organizations often offer specialized knowledge and innovative approaches that complement traditional welfare systems. Traditional companies contribute to these partnerships by leveraging on their capital and managerial expertise. Effective partnerships share aligned leadership, common values, and effective communication channels.

The case study presents a sustainability-driven partnership scheme on the collaboration between public, private, and nonprofit organizations. The goal of this collaboration is to successfully integrate social inclusion practices, training and employment opportunities for disadvantaged groups. These collaborations enhance knowledge sharing, resource

optimization, thus building robust participatory architectures that support social and environmental change.

Chapter 7 concludes the analysis of the case studies, drawing the necessary conclusions. Sustainability-oriented collaborative participatory architectures – ranging from formal business networks or supply chains to informal partnerships – enable organizations to leverage shared capabilities and resources, thereby enhancing their ability to address social and environmental challenges collectively. Indeed, through architectural design, organizational architectures can creatively adapt by adjusting their “technical” and “social” components over time, to enhance the inherent competitive strengths of each organization. By doing so, these architectures not only drive sustainable development but also serve as mechanisms for long-term societal impact. However, the findings from the different case studies highlight that effective collaboration is challenging, as it requires aligning diverse stakeholders, navigating tensions, and addressing power imbalances. Governing such collaborative architectures necessitates an equilibrium between the “technical” component (such as structure, technology adoption, and information flow), and the “social” one (including leadership dynamics, skills, and knowledge management). Digital technologies further enhance these architectures by integrating data, promoting transparency, and facilitating system-level sustainability management. Cross-sectoral strategic partnerships between companies (i.e., with nonprofits, public institutions, etc.) forge strategic partnerships that bring together diverse expertise and foster innovation. Sustainable leaders play a critical role as orchestrators of these architectures, requiring new skills and strategies to adapt designs over time.

To conclude, this work does not claim to comprehensively examine all the typologies of organizational architectures, but rather explores how particular organizational architectures may be implemented to address nowadays major societal and environmental challenges. The work proposes specific case studies of companies attempting to adapt their organizational architecture design with a multi-stakeholder approach to effectively navigate the sustainability transitions and become more resilient in the long run.

THE ORGANIZATION-CENTRIC DEBATE AROUND SUSTAINABILITY

2.1. Sustainability transitions

Nowadays, we face fundamental grand challenges in a variety of different domains (Markard *et al.*, 2012). According to Ferraro *et al.* (2015, p. 365) examples of these challenges are: “climate change, water scarcity, poverty alleviation, and the safeguarding of human rights”. Sustainability-related challenges affect large populations, significantly and adversely impacting on human welfare and well-being (Ferraro *et al.*, 2015).

Due to this, sustainability challenges ask for the creation of alternative “desirable futures” or “desired future scenarios” (Gümüşay, Reinecke, 2022; Augustine *et al.*, 2019). These alternative future scenarios can be elaborated in diverse ways: in the form of visions, pathways and action plans (Miedzinski *et al.*, 2019). These national and international policy and sectoral roadmaps may be expressed as broad qualitative depiction of a desirable future states or as quantified targets, as specific technological milestones or as broader technology pathways, as broad narratives (e.g.,

WBCSD's Vision 2050) or as roadmaps articulating future action plans with specific or softer promises or commitments (*ibidem*).

These desired future scenarios point out that there is a necessity to reconcile the “needs of the present” with the “needs of the future” (Markard *et al.*, 2012).

For this reason, grand challenges necessitate sustainability transitions, which represent a form of progress that fulfills the requests of the present generation without endangering the capacity of future generations to fulfill their own needs (Boudreau, Ramstad, 2005). Indeed, as stated by Kivimaa *et al.*, (2019, pp. 1063) sustainability transitions literature “focus on systemic change for sustainable futures”.

The matter of promoting and governing the transition toward sustainability has garnered growing attention in both policy domains (e.g., European Commission, 2020; European Commission, 2021; OECD, 2011; Miedzinski *et al.*, 2019) and social science research (e.g., Kivimaa *et al.*, 2019; Markard *et al.*, 2012; Safarzynska *et al.*, 2012; Frantzeskaki, Loorbach, 2010).

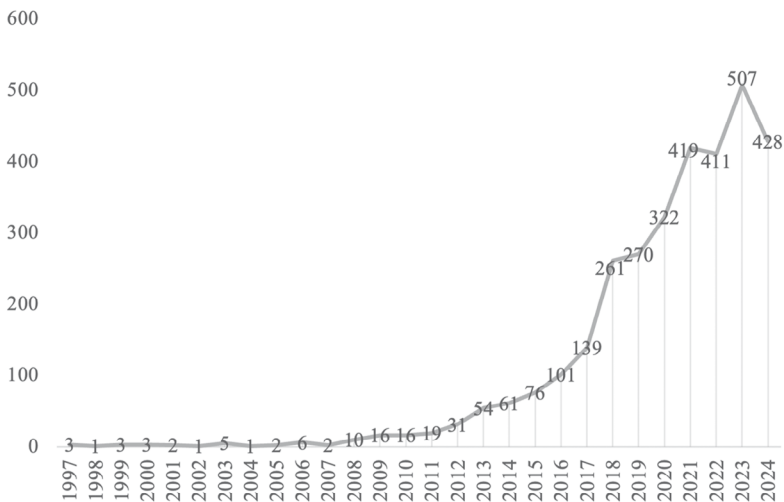
The first academic paper published on sustainability transitions dates back at the end of the 1990s. Ever since the number of publications on sustainability transition has grown considerably (*Figure 1*).

Sustainability transitions are defined as “*long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption*” (Markard *et al.*, 2012, pp. 956).

Given the urgency to take action to tackle the global most pressing grand challenges, the business sector has been called upon to play its part in boosting far-reaching changes

in existing socio-technical systems (e.g., transportation, energy supply, etc.). Indeed, the prevailing approach to sustainability transitions has been centered on individual companies. However, tackling sustainability challenges is difficult for a single organization due to the strong path-dependencies and lock-ins present in business sectors, these issues cannot be addressed in isolation. Indeed, in existent business sectors “established technologies are highly intertwined with user practices and lifestyles, complementary technologies, business models, value chains, organizational structures, regulations, institutional structures, and even political structures” (Markard *et al.*, 2012, pp. 955).

Figure 1. The evolution of sustainability transition research. Number of documents (per year) available in the Scopus database. These documents comprehend: articles, book chapters, reviews, conference papers, books, editorials, notes, short surveys, errata, conference reviews, data papers, letters.



Established socio-technical systems are currently undergoing incremental rather than radical changes (e.g., Markard, Truffer, 2006). However, such incremental changes will not be sufficient to address the prevailing sustainability challenges.

2.2. The debate on organizational sustainability

Traditionally, literature dealing with the exploration of organizational sustainability had a company-centric approach (e.g., Baumgartner, Ebner, 2010; Dyllick, Muff, 2016; Ortiz-de-Mandojana, Bansal, 2016). The dominant paradigm identified companies and their objectives as the main players to make an effective contribution to addressing the sustainability challenges by including social and environmental concerns in business operations (van Marrewijk, Werre, 2003; Ergene *et al.*, 2021).

In scientific literature, organizations' purpose to contribute to the solution of sustainability-related grand challenges refers to the concepts of business sustainability, corporate sustainability or organizational sustainability (Dyllick, Muff, 2016; van Marrewijk, Werre, 2003, Baumgartner, 2014). Organizational sustainability is defined as “the application of sustainability in organizations” (Demastus, Landrum, 2023, p. 2). Moreover, the Chartered Institute of Personnel and Development in London, CIPD, defined the core of organizational sustainability as the principle of strengthening the environmental, societal, and economic systems within business operations” (Mohd Zawawi, Abd Wahab, 2019, pp. 397). Indeed, business or corporate sustainability has emerged as a defining marker in the field, describing “the

inclusion of social and environmental concerns in business operations and in interactions with stakeholders” (van Marrewijk, Werre, 2003, p. 107)

Over time, the academic thinking about organizational sustainability has been strongly enriched by conceptual categories like corporate responsibility, corporate social responsibility (CSR), corporate social responsiveness, business citizenship, business ethics, the triple bottom line (Elkington, 1979), the blended value approach (Emerson, 2003), and the shared value approach theorized by Porter and Kramer (Porter, Kramer, 2011).

The debate on companies’ responsibilities dates back to 1930s, and the literature mainly focused on approaches oriented towards shareholders value (e.g., Berle, 1931). Researchers’ main goal was to understand the social role of companies besides their economic purpose and legal constraints.

Despite the critiques made to this approach by Friedman (1962), both researchers and managers increased their attention to the role of CSR in business activities. Bowen (1953) underlined that businessmen must act in a responsible way, and their business activity should provide desirable outcomes for society.

Later, with his pyramid, Carroll (1979) argue that the responsibilities of an enterprise go beyond its economic and legal responsibilities, having also ethical obligations together with being responsible towards the society.

As a model towards sustainable development of companies Elkington (1997) proposed the concept of the “triple bottom line” (or TBL, popularized also as the “three pillars” approach) promoting with equal importance environmental quality, social justice with economic prosperity.

At the base of the CSR or the TBL concepts there is the idea that companies – beside focusing in making profits – should also engage in “actions that appear to further some social good, beyond the interests of the firm and that which is required by law” (McWilliams *et al.*, 2006, p. 1).

Even though the academic debate on the proposed conceptual categories (e.g., CSR, TBL, etc.) is still open (Baumgartner, 2014; Waddock, 2004), scholars agree on the fact that these concepts aim to trigger a radical transformation in both the nature and definition of management priorities.

Referring to a recent definition proposed by Aguinis (2011) and adopted also by others (e.g., Rupp, 2011; Aguilera *et al.*, 2007) CSR regards: “context-specific organizational actions and policies that take into account stakeholders’ expectations and the triple bottom line of economic, social, and environmental performance” (ivi, p. 855).

Most of sustainability-related research (both academic and practitioner) focused on exploring and describing the conceptual category of sustainability or suggesting new frameworks, approaches or tools to measure or integrate sustainability in organizations (e.g., Schneider, Meins, 2012). For instance, van Marrewijk and Werre’s framework (2002) offered a model for a corporate sustainability self-assessment tool. More recently, Dyllick and Muff (2016) attempted to open the black box of business sustainability reviewing the established approaches and developing a typology framework with three different degrees of business sustainability, namely business sustainability 1.0, business sustainability 2.0 and business sustainability 3.0 or true sustainability. Similarly, various frameworks have sought to systematize decades of management literature on corporate

sustainability, aiming to enhance the current body of sustainability research (e.g., Dyllick, Muff, 2016).

Several evaluation frameworks have been developed also from the practitioner standpoint to support organizations in their sustainable transitions. For instance, “the Global Reporting Initiative” (or GRI) standards created by Global Sustainability Standards Board (GRI, 2024) is one of the most widespread international frameworks for non-financial performance reporting. Other less mainstream frameworks, such as the Common Good Matrix created by the “the Economy for the Common Good” (or ECG) movement proposes a methodology integrating the principles of Civil Economy (Bruni, Zamagni, 2004) in organizations. At the core of this concept is the idea that values-driven businesses are mindful of and committed to: Human Dignity, Solidarity and Social Justice, Environmental Sustainability, Transparency and Co-Determination. Such values-driven businesses are positioned to gain a competitive advantage in this new economy (ECG, 2024).

Despite the academic and practical attempts in creating frameworks to orient companies in their sustainability transition, research on sustainability increasingly interpreted companies as immersed in an environment where they need to meet stakeholder expectations.

Indeed, Carroll previously defined stakeholder management as “a process by which managers reconcile their own objectives with the claims and expectations being made on them by various stakeholder groups” (Carroll, 1999, p. 42).

More recently, Aguilera *et al.* (2007) presented a theoretical model of CSR, illustrating the importance of considering multiple (internal and external) actors and how

they interact pushing firms to engage in positive social change and increasingly robust CSR initiatives. They explained that actors and interest groups have three main motives (i.e., instrumental, relational, and moral) to push organizations to act in a socially responsible manner.

Companies, must take into account different perspectives and engage with a variety of (external and internal) stakeholder needs, crossing the companies' boundaries (Gatto, 2020; Sharma, Henriques, 2005). Due to the diversity of environmental, economic, and social stakes involved, sustainability solutions need to go beyond organizational boundaries (Westley, Vredenburg, 1991). This implies that, when it comes to sustainability transitions, companies need to consider a broader range of stakeholders in their value creation process by enlarging the scope to a multi-stakeholder level.

To take into consideration different stakes, firms can employ different strategies to try to satisfy stakeholders' expectations. For instance, companies can undertake mitigating or "compensating actions"¹ that delay the implementation of robust sustainability-oriented actions and try to satisfy stakeholders' expectations and stakeholder pressures (Shevchenko *et al.*, 2016).

This approach was defined by Dyllick and Muff (2016) as an "inside-out" perspective since it allows a firm to satisfy stakeholder expectancies without changing a current (unsustainable) way of creating value. Indeed, the

¹ Compensating actions are defined as actions that "enable a firm to offset its negative impact on the environment and society without changing its current (unsustainable) way of creating value" (Shevchenko *et al.*, 2016, p. 915).

company does not define (internal) goals to reduce or offset its negative external impacts (e.g., business footprint). According to this view, business success is mainly evaluated from an economic view and business strategies are oriented towards shareholder value. By following this approach, the company and its objectives are the starting point and main reference for all responsible social actions. This company-centric approach limits the investigation of organizational sustainability.

A reverse logic has entered the debate suggesting that management priorities must rest on the identification of effective and efficient solutions to increase the value of common goods (Dyllick, Muff, 2016; Porter, Kramer, 2011). In this regard, organizations must pursue not only economic profit, but also social and environmental value in a more extensive way (Gold, Schleper, 2017; Hall *et al.*, 2010; Jennings, Zandbergen, 1995). Instead of working on the improvement of some sustainability issues, this reverse logic suggests that organizations can effectively contribute to solving global challenges by “reviewing pressing sustainability challenges that society faces, and then engaging in developing new strategies and business models that overcome these” (Dyllick, Muff, 2016, p. 166). This logic has been called by the authors “outside-in” perspective.

As companies move to more ambitious and more effective degrees of business sustainability, they also need to redefine their activities in order to create a broader shared value for the society (Porter, Kramer, 2011). Indeed, to make an effective contribution to the sustainability challenges, organizations should review their established sustainability approaches, by developing a strategy that concentrates

on effective contributions to resolving the sustainability challenges we are collectively facing (Dyllick, Muff, 2016). Organizations aiming to reach organizational sustainability need to implement strategies to change their business models (Dyllick, Muff, 2016). By adopting a broader outside-in perspective, companies need to design new organizational architectures able to cross the companies' boundaries.

To this extent, literature suggests that in a context of urgency such as the one related to nowadays world's most pressing and critical challenges (Bansal, 2019), sustainability transitions implies that companies need to consider a broader range of stakeholders in their value creation process and organizational architecture.

FROM AN ORGANIZATION-CENTRIC TO A MULTI-STAKEHOLDER APPROACH TO SUSTAINABILITY

3.1. The role of stakeholder collaborations in sustainability transitions

According to the scientific literature, company stakeholders play a key role in sustainability transitions (e.g., Bansal, Roth, 2000; Dyllick, Muff, 2016; Freeman, 1984; Frooman, 1999).

Indeed, company stakeholders are often described as enablers of sustainability-oriented shifts (Bocken *et al.*, 2014). Stakeholders can enable companies to pursue sustainability-related practices by pushing for regulatory compliance, pursuing competitive advantage, emphasizing ethical concerns, highlighting critical events or also through networking with environmental interest groups (Bansal, Roth, 2000).

Institutions such as Europe can push firms in the adoption of specific practices to increase the sustainability performance of a certain area or country (Consoli, 2023; Kivimaa, Rogge, 2022; Grillitsch *et al.*, 2019; Grandia *et al.*, 2015; Anderies *et al.*, 2013). Notably, the European Green Deal and all

the introduced actions that need to be implemented in the agricultural, forestry, fishery, and seafood sectors, force organizations to comply with a variety of complex and costly policies (European Commission, 2022).

In addition to institutions, sustainability-conscious clients are among the most powerful stakes that organizations must consider. In the recent years, consumers increased their awareness and demand for sustainable products and services (Sasse-Werhahn *et al.*, 2020). This sustainability consciousness has particularly grown among younger generations, in part bolstered by social movements such as “Fridays For Future” (Wallis, Loy, 2021) or “Extinction Rebellion”.

Beside policymakers, citizens, and customers also business partners, supply chain partners, suppliers, financial institutions and nonprofit organizations exert pressures on organizations’ sustainability transition (Jämsä *et al.*, 2011; Feilhauer, Hahn 2021; Gulati, 1995).

However, not all stakeholder pressures have the same intensity. Stakeholder influence on a company sustainability strategy depend on the resource interdependence that exist among them and on the position of the stakeholder in the firm network (Frooman, 1999). Therefore, to address sustainable transitions, firms need to take cognizance of perspectives from a wide range of internal and external stakeholders (Sharma, Henriques, 2005).

By considering the differing degrees of influence and perspectives held by their diverse internal and external stakeholders, organizations tailor their sustainability objectives and adjust their business strategies accordingly.

Some of them adopt a more proactive approach, while others choose a more defensive strategy (Brown, Yoshioka, 2003).

The academic literature investigated this topic, for example, Frooman's research (1999) analyzed stakeholder influence strategies on firms and different types of sustainability practices adopted by individual firms. Based on the resource dependence existing between them the author studied different scenarios in which a firm's sustainability practices are more or less likely to be influenced by stakeholder pressures.

Additionally, Sharma and Henriques (2005) categorize the strategies employed by different stakeholders to shape corporate sustainability practices. This typology is based on the stakeholder influence literature and on the resource interdependence between the focal firm, and the type of stakeholder (*Figure 2*).

Therefore companies, in order to implement sustainability practices, need to consider a range of stakeholder interests, transcending organizational boundaries (Sharma, Henriques, 2005).

Sustainability-related challenges are complex and risky, and companies must shift from organization-centric approaches towards a multi-stakeholder perspective, considering the diverse interests of stakeholders during their sustainability transitions. Recently, Demastus and Landrum (2023), by assessing the sustainability schemes that companies internally employ to guide sustainability efforts, acknowledge that *most effective levels of sustainability require efforts to work with other organizations to change systems*.

To drive systemic change, literature on sustainability has highlighted the need for organizations to collaborate with a diverse set of stakeholders in order to address global sustainability challenges in a meaningful and impactful

Figure 2. Categorization of stakeholder strategies based on resource dependence between the firm and stakeholders (grounded on Frooman, 1999).

Firm's dependence on stakeholders	Stakeholder's dependence on firm	
	High	Low
High	<p><i>Interdependence</i></p> <p>Customers Investors/shareholders Financial institutions Insurers Trade associations Local communities^a Suppliers^b Managers^c</p> <p>↓</p> <p>Direct-usage influence strategy</p>	<p><i>Stakeholder power</i></p> <p>Regulators/government agencies End consumers Media^d Local communities^a Activist shareholders</p> <p>↓</p> <p>Direct-withholding influence strategy</p>
Low	<p><i>Firm power</i></p> <p>Suppliers^b Employees^c</p> <p>↓</p> <p>Limited influence</p>	<p><i>No interdependence</i></p> <p>Environmental NGOs Social NGOs Special interest groups/activists Aboriginal groups International regimes (UNEP, Kyoto)</p> <p>↓</p> <p>Indirect usage/withholding influence strategy</p>

^a Local communities are resource interdependent for jobs and economic growth on the firm but they are also concerned about ecological and social impacts and can contest the firm on its environmental and social impacts via regulatory hearings and protests and can withhold license to operate.

^b Suppliers may influence a firm's strategy, depending on their size relative to the focal firm, the proportion of their business that the firm represents, and the proportion of inputs that the supplier represents for the firm.

^c A distinction is made between managers who are a unique and valuable resource for the firm and junior employees who can be easily substituted in factor markets.

^d The media can influence other stakeholder groups to withhold legitimacy (a valuable resource) from the firm. Therefore, it has stakeholder power.

Source: Sharma and Henriques (2005, pp. 162).

manner, thereby generating both social and environmental value (Demastus, Landrum, 2023; Horne, Fichter, 2022; Bocken *et al.*, 2014; Stubbs, Cocklin, 2008).

Indeed, sustainability-related challenges span across multiple organizational boundaries (Ferraro *et al.*, 2015) and organizations need to shift their focus from solely evaluating their own sustainability performance, to assessing the environmental and sustainable practices of their key stakeholders (Sharma, Henriques, 2005).

By managing stakeholders' pressures or tensions, organizations can activate cyclical or iterative responses,

ultimately enabling them to embrace sustainability (Visnjic *et al.*, 2022; Smith, Lewis, 2011). Given the wide range of economic, social, and ecological factors involved, corporate sustainability solutions transcend organizational boundaries and require the firm to consider a wide range of external and internal stakeholders perspectives (Sharma, Henriques, 2005, p. 162).

Indeed, grand challenges can be considered “global problems that can be plausibly addressed through coordinated and collaborative efforts” (George *et al.*, 2016, p. 1880).

Camarinha-Matos *et al.* (2010) state that the challenge of sustainability asks for wide collaborations among multiple stakeholders, giving that to solve this challenge there is the need of an heterogenous set of knowledge and competencies exceeding the companies’ boundaries. Therefore, it is important to facilitate organizational learning through the engagement of multiple stakeholders in activities related to organizational sustainability (Ramezani, Camarinha-Matos, 2020).

Organization theories – and literature on contingencies in particular – highlighted that organizations are “pushed into cooperation” thanks to the need for resources and specialized skills (Aiken, Hage, 1968). Indeed, collaboration can expand the accessibility and utilization of relevant and complex knowledge, boosting organizational learning (Senge, 2006). Collaborative approaches also help to reduce risks and gain access to new technologies and markets (Fjeldstad *et al.*, 2012), and provide a safety net encouraging long-term investment and risk-taking (Shapiro, Varian, 1998). Stakeholder relations are crucial for enhancing an organization’s flexibility, adaptability, creativity, and problem-solving abilities (Ortiz-de-Mandojana, Bansal, 2016). Strong inter-firm ties foster

trust and relational capability (Lorenzoni, Lipparini, 1999) facilitating the development of new solutions (Ortiz-de-Mandojana, Bansal, 2016), of an innovation attitude, and readiness to change (Shevchenko *et al.*, 2016).

Given the pressing and critical nature of today's global challenges, organizations should cooperate to create a substantial positive impact in areas that are relevant for society and the planet (Shevchenko *et al.*, 2016; Dyllick, Muff, 2016). Effective sustainability solutions need to transcend the boundaries of individual organizations (Westley, Vredenburg, 1991), and require the firm to consider the different stakeholder perspectives (Sharma, Henriques, 2005, p. 162). Indeed, due to the plurality of economic, environmental, and social stakes involved, when it comes to sustainability transitions, organizations need to engage multiple set of stakeholders in their value creation process. To do so, organizations need to enlarge their scope to a multi-stakeholder level (Shevchenko *et al.*, 2016; Dyllick, Muff, 2016; Camarinha-Matos *et al.*, 2010) because external stakeholders' pressures have the power to drive the change to sustainability (Shevchenko *et al.*, 2016).

The fact that sustainability solutions must transcend organizational boundaries is not entirely novel in the academic literature. For instance, Arts (2002) provided an example of an integrative sustainability discourse involving collaborations between nonprofit organizations and firms aimed at pursuing ecological objectives. This suggests that achieving meaningful sustainability outcomes requires going beyond narrow, company-centric approaches (McGahan *et al.*, 2021).

More recently, Cillo *et al.* (2019) suggests that achieving sustainability requires open innovation approaches and

collaborative relationships involving diverse stakeholders. Also, Camarinha-Matos *et al.* (2010) emphasize that addressing the sustainability challenge requires extensive collaborations among diverse set of stakeholders, as solving this challenge necessitates a heterogeneous set of knowledge and competencies, exceeding the capabilities of individual companies.

Despite these considerations, the dynamics and effects of grand challenges at the inter-organizational stages remain largely unexplored. However, understanding how firms collaborate to organize their inter-organizational architectures to address sustainability concerns is crucial to comprehending the models, best practices or ideal forms to be followed in achieving these distant future scenarios.

3.2. Collaborative organizational architectures for sustainability

Organizational architecture is a broad concept that goes beyond the structural elements of an organization (Daft, 1986). Organizational architecture refers to the approaches to design and structuring organizations (Nadler *et al.*, 1992). It encompasses a more inclusive view of the design elements of the social and work systems that make up an organization.

The organizational architecture therefore includes “the formal structure, the design of work practices, the nature of the informal organization or operating style, and the processes for selection, socialization, and development of people” (Nadler *et al.*, 1992, p. 4). Organizational architectures enable individuals and companies to interact

more effectively with their stakeholders representing therefore a potential source of competitive advantage (MacCormack *et al.*, 2012; Chandler, 1990; Nadler *et al.*, 1992). Inter-organizational interactions are facilitated by the effective gathering and processing of information, which can help reduce uncertainty and be better enabled by organizational architectures (Arrow, 1974).

Among the most common causes of organizational architecture rethinking, we can find “increasing competition, massive social and technological change, increasing government participation in economic affairs, and the evolution of global markets and thus global competition” (Nadler *et al.*, 1992, p. 4).

As the environment becomes turbulent and challenging, companies search for new architectures able to serve them more effectively (Amit, Zott, 2015; MacCormack *et al.*, 2012; Hurst, 1995; Lawrence, Lorsch, 1967) also by implementing mimetic isomorphic behaviors thus adopting successful structures that have enabled their competitors to succeed (DiMaggio, Powell, 1983) in a certain setting, industry, or market.

Architectural design allows companies to quickly adapt to rapid changes, since architectures are also able to provide companies with more flexible relationships and alliances by “re-shaping the very fabric of the enterprise, both its technical processes and its social relationships” (Nadler, Tushman, 1997, pp. 10). By modifying their structural designs and increase or diminish the fuzziness of their boundaries, companies can adapt and better drive strategies (Baldwin, 2015; Carpenter, Brock, 2008; Nadler *et al.*, 1992). Indeed, organizational architectures are not rigid boundaries separating one division from another, or

one company from its suppliers and competitors (Chandler, 1990; Nadler, Tushman, 1997).

Through a modification in their design – that can occur both on the technical and on the social architectural component – companies can leverage architectures to drive organizational change¹. Indeed, successful organizations have the ability to create flexible architectures and designs that accommodate constant change (Nadler, Tushman, 1997).

In the context of sustainability transitions, literature highlights that the collaborative or multi-stakeholder dimension can be achieved by leveraging organizational architectures (e.g., Dyllick, Muff, 2016).

As Ferraro *et al.* (2015) suggest, companies' unilateral or individual approaches are insufficient to substantially address grand sustainability challenges, and collaborative forms of organizing are a necessary initial requisite towards achieving sustainability-oriented goals.

Indeed, collaborative organizational architectures or participatory architectures are defined as “as a structure and rules of engagement that allow diverse and heterogeneous actors to interact constructively over prolonged timespans” (Ferraro *et al.*, 2015, pp. 373). Organizational designs that foster cooperative approaches such as participatory architectures can boost learning from and with partners. Over time, such architectures can also facilitate learning about partners, including insights into their potential opportunism, that can create tensions or conflicts (Zaheer, Venkatraman, 1995; Ring, van de Ven, 1994; Anand, Khanna, 2000).

¹ According to DiMaggio and Powell (1983), organizational change refers to change in formal structure, organizational culture, and goals, program, or mission.

Within a group of companies addressing sustainability concerns, the factors fostering collaborative or participatory architectures can be the availability clear and effective procedures for changing network arrangements, the presence of clear and effective procedures for entering or exiting the network, the fact that people belonging to the group share common values and trust, the presence of an effective decision processes and communication within members (Ricciardi *et al.*, 2018).

The development of innovative modes of engagement and collaboration among a diverse array of stakeholders, including governments, corporations, citizens, scientists, and nonprofit organizations (Gehman *et al.*, 2022) becomes necessary when addressing major societal and environmental challenges. Indeed, the more multifaceted and interdisciplinary the challenge, the greater the array of relevant stakeholders involved in the collaboration (Callon, 1998; Freeman, 1984). As underlined by Ghisetti *et al.* (2015), companies able to achieve higher environmental performances are the ones engaged in a variety of external collaboration agreements.

Therefore, to navigate grand challenges, companies may establish collaborative forms of organizing to reach sustainability purposes (Feilhauer, Hahn, 2021; Gulati, 1995; Podolny, 1994), by balancing a constellation of logics (Gümüşay *et al.*, 2020; Addo, 2022). These organizational architectures can be formal (e.g., sustainability-oriented platform business models) or informal (e.g., sustainability-oriented alliances or collaborations) architectures (Amit, Zott, 2015).

To face the sustainability transition and engage a diverse set of stakeholders, companies may rely on participatory

architectures, in the form of business networks or ecosystems² (e.g., Ricciardi et al., 2018; Ortiz-de-Mandojana, Bansal, 2016; Zoppelletto et al., 2020), sustainable value chains (Cowling, 2017; O'Rourke, 2014), sustainability-oriented platform business models (e.g., Addo, 2022), or even more informal sustainability-oriented alliances, partnerships or collaborations (Bonomi et al., 2019; Jämsä et al., 2011; Cantino et al., 2017). In this way, companies can more resiliently navigate grand societal challenges overtime and shape their sustainability strategy by leveraging cooperative behaviors (Anderies et al., 2013; Fjeldstad et al., 2012).

3.3. Resilience and long-term dynamics in sustainability transitions

Sustainability transitions include a temporal dimension since implies considering the short-term as well as the long-term repercussions of a specific decision or strategy (Markard et al., 2012; Sasse-Werhahn et al., 2020). According to the academic literature, a long-term perspective is necessary when examining transitions or shifts towards sustainability, as these processes inherently involve evolutionary and multifaceted dynamics (Markard et al., 2012; Bansal, 2005).

Despite this, both researchers and managers have dedicated relatively modest attention in companies' long-

² “Borrowed from biology, the term ecosystem generally refers to a group of interacting firms that depend on each other’s activities” (Jacobides et al., 2018, p. 2256).

term sustainability trajectories, actually contributing to the pursuit of short-term analysis or outcomes, rather than long-term goals (Ortiz-de-Mandojana, Bansal, 2016; Bansal, 2005).

Long term research of sustainability transitions highlights that these complex processes are not linear, incorporating multiple phases and needing to be appreciated with a multi-stakeholder perspective and an evolutionary thinking and modeling (Safarzynska *et al.*, 2012; Sasse-Werhahn *et al.*, 2020).

Likewise, organizations' sustainability strategies, like many other strategies – usually need to be appreciated with a longer-term perspective (Dyllick, Muff, 2016). And the design and re-design of organizational architectures is a management tool that may change over time to adapt to specific strategic objectives. The ultimate goal of organizational architectures design is to achieve a fundamentally new architecture that unleash the competitive strengths embedded in each organization (Nadler, Tushman, 1997).

While facing sustainability-oriented change, companies interact with their environment, co-evolving and following a process of mutual strategic adaptation (Tan, Tan, 2005).

Indeed, according to Carpenter and Brock, adaptive capacity as the ability of an entity or a system “to adjust to changing internal demands and external circumstances, is a central feature of resilience” (Carpenter, Brock, 2008, pp. 2).

According to the same authors “resilience has three characteristics: (1) the amount of change the system can undergo and still retain the same controls on function and structure, (2) the degree to which the system is capable of self-organization, and (3) the ability to build and increase the capacity for learning and adaptation” (ivi, p. 1).

Resilience configures as a system-level concept described by Folke (2006) as a “broad, multifaceted, and loosely organized cluster of concepts, each one related to some aspect of the interplay of transformation and persistence” (Carpenter, Brock, 2008, pp. 1).

Therefore, within the scientific domain, resilience allows to understand how complex systems self-organize and change over time (Anderies *et al.*, 2013).

To navigate complex sustainability challenges, companies may establish collaborative or participatory organizational architectures to achieve their sustainability goals (Feilhauer, Hahn, 2021; Gulati, 1995; Podolny, 1994). Virtuous inter-firm collaboration may boost spillovers across organizational architectures (Agarwal *et al.* 2012) increasing their resilience in the long run.

Even though more resilient, these architectures need to manage multiple stakeholders with potentially diverging values and beliefs and must find the way to align their visions (Gulati, Singh, 1998; Moore, 2006). Managing tensions is therefore central in analyzing how organizational architectures tackle sustainable transitions over time, considering the needs of diverse set of stakeholders for a mutually beneficial balance between environmental, social, and ecological concerns for the well-being (Gehman *et al.*, 2022; Sasse-Werhahn *et al.*, 2020; Smith *et al.*, 2013; Fjeldstad *et al.*, 2012).

Clashes of values and imbalances of power pose significant barriers to innovating sustainable organizational architectures. Over a longitudinal timespan the challenge for organizations is to manage the tension between consensus and dissensus between stakeholders by developing architectures that are robust enough to accommodate

potentially contradictory value systems (Gehman *et al.*, 2022). Recent approaches to participatory architecture design aim to move beyond the dichotomy consensus-dissensus, emphasizing the need to explicitly recognize and manage pluralism of values through modular governance architectures (*ibidem*).

SUSTAINABLE BUSINESS NETWORKS

Business networks are organizational architectures that allow firms to adopt collaborative forms of organizing in a formalized way, with varying degrees of rule strictness.

These organizational architectures are commonly diffused in sectors such as food, furniture, fashion, mechanical, construction. In some countries, this organizational architecture has gained an increasing popularity in the last years (Clegg *et al.*, 2016). For instance, in Italy, business networks introduced in 2014 under Law 116/2014 saw a 7.4% increase in business network contracts in 2023 compared to the previous year¹.

Among different business networks, some of them, particularly those related to agricultural or aquaculture sectors, rely on a common good² (Ostrom, 1990). This

¹ Source: Report on Italian Business networks, available here: www.infocamere.it/quinto-rapporto-reti-impresa.

² Common goods or commons are referred to as common pool resources, since these are a specific type of goods the world is dependent on such as environmental resources, air, water, atmosphere. Owing to their collective nature, these goods are vulnerable to free-riding,

common good is an environmental resource that cannot be regenerated and protected unless all network firms behave fairly (Fjeldstad *et al.*, 2012; Ricciardi *et al.*, 2018).

Some authors define these common goods as “business network commons”. These business network commons, have been conceptualized by Ricciardi *et al.* (2018, p. 328) as “resources that are available for the partnering firms’ collective use, but that also require the partnering firms’ collective engagement and collaboration to be acknowledged, protected, and/or (re)generated”.

Organizational architectures such as collaborative business networks, can play a crucial role in preserving commons and transforming those resources into generators of sustainable growth (Bonomi *et al.*, 2020; Bullini Orlandi *et al.*, 2019; Ricciardi *et al.*, 2018; Rossignoli *et al.*, 2018; Cantino *et al.*, 2017; Fjeldstad *et al.*, 2012; Jämsä *et al.*, 2011).

For instance, Bonomi *et al.* (2017) in their research highlight the strong positive externalities that arise from the competent management of common environmental resources conducted in a business network.

According to Ricciardi *et al.* (2018), participatory architecture is one of the three organizational variables that are the most effective in allowing network organizations to protect and develop their network’s key common resources together with specific mechanisms for opportunism prevention and resolution, and network-level organizational integration.

Network-level integration boosts coordination and is enhanced by inter-organizational sharing of important resources (e.g., data, software, tools).

opportunism, inaction, disorganization, ignorance, and over-exploitation (Ostrom, 1990).

Nowadays, to achieve integration of information and data, collaborative architectures increasingly rely on digital tools (Hein *et al.*, 2020) to impact on knowledge exchanges and innovation (Clegg *et al.*, 2016). Examples of these digital tools are software-based platforms that offer companies new alternatives to leverage network effects (Addo, 2022; Cowling, 2017).

Such architectures allow to transcend companies' organizational boundaries to acquire economies of scale and scope (Hein *et al.*, 2020) together with increased sustainability performances (Koufteros *et al.*, 2005).

4.1. Omega: a sustainability-oriented business network

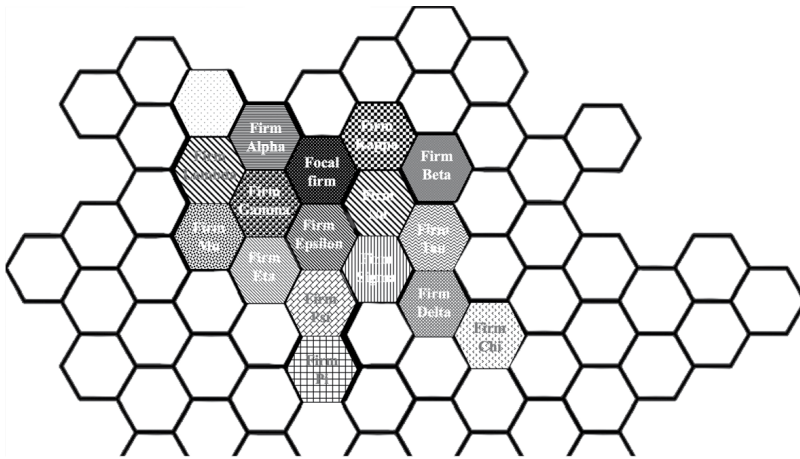
Omega is an agricultural business network founded in 2016 and based in the Valpolicella region of Verona, Italy, an area renowned for its wine production industry.

The business network was founded by a focal firm located in the same geographical region. The idea behind it is that of the “beehive”, where the network continuously expands as new companies join, collaborating and connecting while remaining independent, much like the way bees operate.

The business network centers around grape production, led by a focal company and comprising 27 micro and small-sized enterprises, the majority of which are located in the Valpolicella region (Zoppelletto *et al.*, 2020).

Omega network has consistently prioritized socially and environmentally conscious innovation in its business strategy (Bullini Orlandi *et al.*, 2019).

Figure 3. The Omega sustainable business network



Source: Author's elaboration

The network is based on a shared set of values. The companies belonging to the business network share a common set of values reflected in various aspects, for instance in the choice of soil treatments, avoiding the use of herbicides and the abolition of insecticides by replacing them with proper tools and manual work. The firms in the network have agreed to replace chemical-based products and processes with more environmentally friendly natural alternatives, which is expected to have a positive impact on the surrounding environment.

Another example relies in the choice of materials (for example the use of natural materials such as wooden and not concrete vineyard poles) respecting the environment from a point of view of sustainability and visual harmony. Moreover, the business network aims to build trust, encourage cooperation, and facilitate the sharing of know-how, allowing the professionals of the participating companies to work side

by side. For this reason, training courses for participants are held within the network, such as pruning courses or coaching for the design of new vineyards. The pruning courses for example are very important because they educate the network firms on how to correctly carry out this practice that, if well performed, can preserve the plant in terms of longevity, and productive capacity to avoid pesticide treatments.

Thanks to this attention to environmentally-friendly practices, the business network was able to obtain the rigorous “Equalitas” certification, which validates that the entire value chain upholds high economic, social, and environmental sustainability standards, as well as robust transparency practices. Consequently, the case study seeks to demonstrate how the examined business network can be “considered both an elective tool in the protection and sustainable use of common goods and a tool that allows the development of the commons” (Bullini Orlandi *et al.*, 2019, p. 1).

4.2. Method

This case study stemmed from a larger research project on the digital transformation of Italian SMEs, supported by the National Plan for Industry 4.0³ and the linked Ministerial Decree of May 22nd, 2017. This large project named “Enterprise 4.0” was drawn up by the Chamber of Commerce

³ The National Plan “Industry 4.0” refers to the government decree of May 22, 2017, published in the Official Gazette and is available here: www.gazzettaufficiale.it/eli/id/2017/06/28/17A04352/sg.

of Verona (Italy)⁴ and the University of Verona (involving the Department of Management⁵ and the Department of Computer Science⁶). This project progressed between 2018 and 2020 and aimed to facilitate the digital transformation of a hundred of SMEs of the province of Verona. It was financed for €1 million (funds from Ministry of Economic Development, today titled Ministry of Enterprises and Made in Italy⁷).

The Omega business network participated to the “Enterprise 4.0” technological transfer project of digital acceleration. The aim of Omega was to create a network digital platform, to promote efficient management of its business network common (Ricciardi *et al.*, 2018).

This qualitative explorative case study (Eisenhardt, 1989; Yin 1984) therefore aims to analyze the creation of the sustainability-driven organizational architecture. Two researchers had privileged access to relevant data since actively involved in the implementation of Omega’s project from 2018 to 2020. The collaboration between academics and practitioners involved close interactions with key company figures. Data were gathered at multiple time points over the course of the entire process. Data consisted of internal documents and written material originated by interviews and focus groups with the business network

⁴ Verona’s Chamber of commerce website available here: www.vr.camcom.it/it.

⁵ The website of Verona’s Department of Management is available here: www.dima.univr.it/?lang=en.

⁶ The website of Verona’s Department of Computer Science is available here: www.di.univr.it/?lang=en.

⁷ The website of the Italian Ministry of Enterprises and Made in Italy is available here: www.mimit.gov.it/en/.

firms and published official documents (both online and offline) articles, brochures and company strategic plans and data.

The blueprint of the project is depicted in *Figure 4* involved three phases:

1. the creation of the transformation project;
2. the business process reengineering for implementing a digital platform;
3. the digital culture alignment in the business network (Zoppelletto *et al.*, 2020).

Figure 4. Blueprint of the business network organizational architecture creation



Source: Adapted from Zoppelletto et al., 2020

4.3. Omega’s sustainability-oriented architecture

The business network is led by the entrepreneur of the focal firm and a dedicated manager facilitating the horizontal coordination among the business network firms. It is characterized by a high degree of cooperation and the leading company (or focal firm) calls for participants to be involved in the introduction of innovations, and shares its know-how

resulting from 40 years of testing, experimentation, and innovation.

The initial three years of the network's existence were focused on establishing and strengthening the working group, laying the foundation for the cohesion and business network growth. This foundational stage involved bringing together the network entrepreneurs, aligning the network values, and building the collaborative mechanisms that would enable the network to function effectively (Business network manager).

In 2018 the business network obtained the certification, "Equalitas"⁸ which has the peculiarity of certifying the sustainability of the entire wine supply chain. Consequently, all network firms had to satisfy the quality indicators.

To improve its sustainability performance, the business network decided to modify its organizational architecture by building a digital platform to track and monitor its sustainability efforts in a more efficient way. The digital platform was created before the end of 2018 and allowed the network to reach the purpose of integrating data related to all aspects of grapes cultivation, wine production, winemaking, logistics, administrative compliance, and costs control. Moreover, data are shared also within the network platform and this allows an effective collaboration between suppliers, consultants, and purchasing group for products.

⁸ Equalitas is a certification for organizations, products, and territories. It relies on "a stakeholders' movement that "aims to aggregate companies in the wine sector for a homogeneous and shared vision of sustainability" (Bullini Orlandi *et al.*, 2019, p. 10).

The next three years will focus on improving the quality and the sustainability performance of the business network. After the initial period [i.e., 2016-2018], only the members who endure to align with the network's values and sustainability-driven mission will remain part of the network. Conversely, we will give companies the freedom to choose to withdraw from the network. This flexible approach aims to maintain a value-homogeneous, high-quality and collaborative network, while respecting the autonomy of the member companies (Business network manager, in 2019).

The business network oversees the recruitment process for new network members. Firms wishing to join the network must go through a rigorous procedure that evaluates their compliance with certain quality standards. Indeed, the selection process considers whether the firms agree with the network's ethics and shared values regarding the sustainable use of common resources. Once selected, the company officially takes part of the network by signing a medium-term, renewable contract (Zoppelletto *et al.*, 2020).

From a technological perspective, Omega's business network has made considerable financial investments to support the needs of coordination, cooperation, and knowledge sharing among its members. These investments have been directed towards adopting a digital platform for network governance, implementing a cloud-based solution to facilitate business process integration, and deploying an integrated IT security solution to protect the network's data (Zoppelletto *et al.*, 2020). The platform allows to share the company know-how between the different key units of the business network such as the expert of the vineyard and winery technician, the network companies and

entrepreneurs, the agronomist, oenologists, and external consultants.

By the end of 2018, Omega developed a specific IT strategy, which included implementing a digital platform and establishing a task force⁹ to drive digital transformation across the network.

Over time, this digital platform became a critical tool for Omega, enabling the company to shape its strategy by leveraging its organizational architecture (Zoppelletto *et al.*, 2020). The platform became the central tool for managing the business network's activities and shared resources in a systematic way. Gradually, all processes were redesigned and digitalized, allowing Omega to handle business process management and data across the entire production cycle, from vineyard planting to grape harvesting and product commercialization (*ibidem*). Many activities that were conducted “with an analog approach” to ensure the regeneration of environmental resources were digitalized and this practice spread throughout the network, ensuring a more effective approach to commons regeneration (*ibidem*). For example, the digital platform makes it possible for Omega to check at any time the state of health of all the vineyards and to monitor whether periodical medical examinations or pruning activities have been completed, which allows Omega to perform a systemic management of the natural resources of the network. For instance, by installing weather stations with cameras over the hectares of vineyards and by defining only the specific areas in which it rained, Omega limited the irrigation and the treatments on the common good.

⁹ Academic members of the “Enterprise 4.0” project were included in this task force.

The responsible business strategy driving the business network choices is therefore based on a transparent employment of shared data (Bullini Orlandi *et al.*, 2019).

Moreover, the business network's digital platform enables member firms to share relevant documents and equipments, coordinate vineyard treatments, and collaborate on logistics (Zoppelletto *et al.*, 2020). By engaging with the platform, micro and small companies can enhance their digital literacy and access high-quality information. Additionally, the platform facilitates remote digital advisory services.

Additionally, the platform allows the network to prevent tensions among members during critical periods. Particularly during the stressful grape harvesting season, it enables monitoring the grapes' readiness and scheduling optimized logistic for all the network producers. Proper management of the logistic process is crucial to ensure that no firms lose part of their harvest. By collecting data over time, the platform allows the network to forecast its production capacity for different wine categories, which are subject to complex regulations in Italy.

With respect to the organizational architecture resilience in the long run, the maximization of the harvest for each member enables the network to optimize the overall wine production, protecting its members from potential atmospheric events that are critical in agriculture, such as hail, frost, or reduced yields in certain years due to other contingencies. The business network provides also its members with an increased market strength and greater economic sustainability.

Moreover, research and development activities (R&D) can enhance the resilience of firms, but smaller firms often lack such resources. To address this issue, the leading

business network firm conducts field research and dedicates some hectares to experimental tests on new, more sustainable treatments that can protect vineyards and replace older-generation products.

SUSTAINABLE SUPPLY CHAINS

Supply chains are constituted by a set of economic and non-economic actors facing with the general problem of coordinating tasks in interorganizational settings (Argyres, 1995).

In the context of sustainability transitions, competition progressively shifted to the level of supply chains, since an organization is no more sustainable than its supply base (Luzzini *et al.*, 2015; Krause *et al.*, 2009). For organizations, it is increasingly strategic to have a supply chain approach to sustainability since companies are progressively held responsible for the environmental and social actions of their suppliers (Bacallan, 2000; Seuring *et al.*, 2008).

Consequently, sustainable supply chain management has bloomed emerging as a distinct area of research, but its advancements in achieving sustainability have been somewhat limited (Gold, Schleper, 2017; Seuring *et al.*, 2008; Matos, Hall, 2007).

Sustainable supply chains require intra as well as inter-firm collaborative capabilities (Shardul, 2024; Luzzini *et al.*, 2015) and the development of collaborative organization

architectures to reach such a purpose. Indeed, collaboration reduce risks and provide access to complex knowledge, new technologies, and markets (Fjeldstad *et al.*, 2012; Zhou, Benton, 2007), enabling also the adoption of new behaviors (Lyytinen, *et al.*, 2016) and more sustainable practices (Schmidt *et al.*, 2017; Ghisetti *et al.*, 2015).

Sustainability commitment requires supply chain orchestration (Shardul, 2024) since environmental and social considerations need “to be pushed back down into the line operations and integrated into both process and product decisions” (Hoffman, 2001, p. 3).

This suggests that that intra-firm collaborative capabilities are likely to be critical in supporting the implementation of sustainability-oriented changes and translating sustainability commitment into organizational practices (Luzzini, 2015; Bowen *et al.*, 2001).

Therefore, companies need to collaboratively integrate sustainability into their operations across the supply chain (Gold, Schleper, 2017). To this extent, companies need to collect shared data and information for sustainability performance monitoring and improvement (Zhou, Benton, 2007), changing inter-firm purchasing and supplying processes across the whole supply chain (Luzzini, 2015; Bowen *et al.*, 2001).

However, to drive the whole supply chain towards sustainability also intra-firm collaborative capabilities matter.

This means leveraging cross-functional teams to support the implementation of sustainability. For instance, strategic purchasing activities can be re-designed by incorporating people with different backgrounds, perspectives, knowledge, and from different business units (Luzzini, 2015; DeBoer *et al.*, 2001). This can boost adaptation of

processes increasing organizational learning, knowledge, expertise, and innovation practices (Luzzini, 2015).

To acquire relevant information and knowledge (including sustainability-related data) companies leverage specific digital technologies such as digital supply chain platforms, facilitating system integration, and intra and inter organization exchange of information (Hein *et al.*, 2022; Rossi *et al.*, 2022; Koufteros *et al.*, 2005).

These sustainability-driven platforms require a considerable amount of information from the supply chain and necessitate companies to share a large volume of data with their partners, to facilitate the sustainability driven conversion of the value chain practices. This requires organizational architectures able to cross companies' organizational boundaries and influencing the behaviors of organizations within the same value chain (Lyytinen *et al.*, 2016; Zhou, Benton, 2007).

Collecting and leveraging sustainability-related data through dedicated information systems can generate more effective decision-support tools (De Camargo, Chiappetta Jabbour, 2017). Accurate and reliable data can help predict and prevent unsustainable practices across the supply chain (O'Rourke, 2014), facilitating the development of more sustainable processes, products, and services (Pozzebon *et al.*, 2011).

5.1. The case study of Brun Gelmino

Brun Gelmino S.r.l. is a company specialized in the processing and distribution of vegetables. Established in 1983, the company's headquarters are located in Verona,

Italy. Brun Gelmino operates across all the major agri-food hubs in Northern Italy and supplies some national retail chains with its brands: “Brun Gelmino”, “La Regina”, “Gli Orti del Re”, “El Duca” and “Piccolo Lord”.

Brun Gelmino has strong sustainability-oriented values and, together with its value chain, is certified under the “Global Gap Chain of Custody”, undergoing rigorous controls on labels, products, and food to ensure regulatory compliance. The company’s passion, care, quality, and professionalism distinguish it as a leading player in the Italian fruit and vegetable sector (Brun Gelmino, 2023).

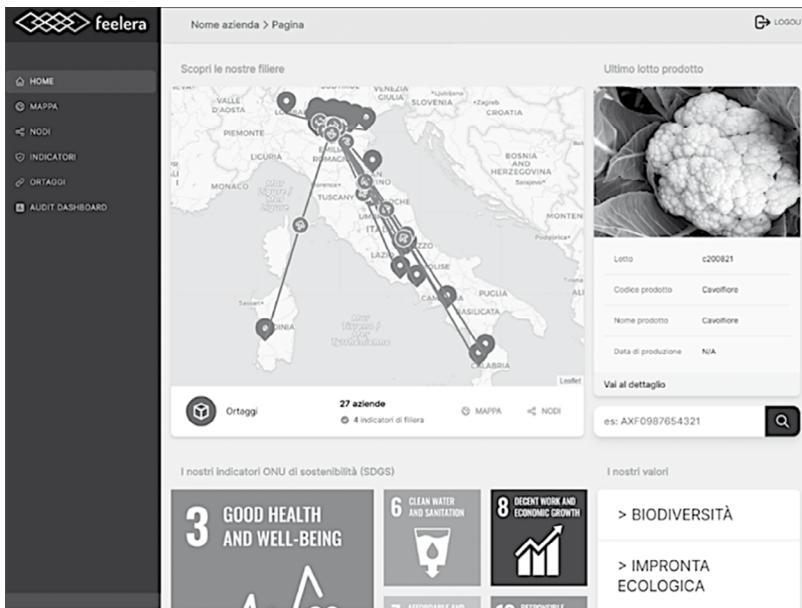
The companies in Brun Gelmino’s value chain are characterized by the following: more than half have between 10 and 49 employees, over two-thirds are fruit and vegetable producers, and 70% of the network companies have additional sub-suppliers for the products sold to Brun Gelmino’s company.

Due to its sustainability commitment, Brun Gelmino undertook a project with Felera S.r.l. S.B.¹, in order to calculate an aggregate sustainability score for the whole

¹ Felera is an organization focused on the creation of digital information systems for transparency and traceability of the supply chain. Felera operates a cloud platform that tracks the sustainability data across the entire supply chain of companies’ products. Felera allows a visibility “end to end” of the production chain and generates the digital passport of a product, demonstrating its authenticity and conformity with the specifications and regulations (Zoppelletto *et al.*, 2024). The companies using Felera’s services can collect, organize, and share data and documents throughout the supply chain, and they may decide to integrate them with multimedia contents and to use them for B2B and B2C marketing purposes (Rossignoli *et al.*, 2023). Felera S.r.l. S.B. website available here: felera.eu/.

supply chain (Figure 5), starting from each individual company's score (Zoppelletto *et al.*, 2024).

Figure 5. The representation of the Brun Gelmino supply chain in the Feelera's platform



Source: Zoppelletto *et al.*, 2024

5.2. Method

This longitudinal case study (Eisenhardt, 1989; Yin, 1984) derives from a larger project financed by Fondazione Cariverona². The project was initially conceived in 2019,

² Fondazione Cariverona's website available here: www.fondazionecariverona.org/.

financed in 2020, and then it developed between 2020 and 2023 with the active participation of the Department of Management of the University of Verona and Feelera S.r.l. S.B.

The aim of the project was to identify an effective methodology, able to measure the systemic impact generated on the territory and within the communities by the adoption of a digital traceability system by a cluster of selected companies belonging to the Brun Gelmino's supply chain. Moreover, the specific sub-objectives of the project were:

1. identifying and measuring environmental and social sustainability indicators for a for a group of organizations belonging to the Brun Gelmino value chain, through an integrated system of mapping and digital monitoring of farms;
2. analyzing the degree of connection and interrelation of the organizational architecture of the identified companies, production, and distribution chains;
3. measuring the impact generated for the territory and the communities through the Civil Economy methodology;
4. generating evidence for local policymakers on the sustainable development of the area;
5. creating a model that can be replicated to other geographic areas or sectors.

The data collection phase lasted 3 years (starting in 2020, until 2023), gathering different sources of data. From online and offline written material, to participation, participant observation, workshops, seminars, and personal interviews to the supply chain's organizations (see *Table 1*).

Table 1. Longitudinal data collection on the Brun Gelmino case study.

<i>Period</i>	<i>Collected Data</i>	<i>Note</i>
November 2019	Idea development	A first draft of the project with Feelera's founder
April 2020	First Draft of the Project	Final draft of the project with Feelera's founder and the other stakeholders
August-September 2020 Project Submission		
December 2020	Approval of the financing of the Project	Fondazione Cariverona financed the Project
March 2021	Interview	Interview with the Feelera's founder
March 2021	Interview	Interview with the Brun Gelmino's founder
May 2021	A first draft of the questionnaire	
July 2021	The final version of the questionnaire	
December 2021	Survey data	Data from each SME of the Brun Gelmino's network has been collected
January-May 2022	Code development for the Platform	
June-September 2022	Beta testing of the platform & Participant observation	
September 2022-January 2023	The final release of the platform Interviews & Participant observation	

February 2023	Final meeting with all the Project's Stakeholders	Seminar on the developed Project. All the Project's stakeholders were invited by the University of Verona to discuss the developed project.
May 2023	Internal summary document	Report on the developed Project
April 2023	Interview with the Feelera's Founder	Interview to better understand the structure of the market and Feelera's main competitors (other players/intermediaries).
June 2023	Public document	Book on the developed Project

Source: Zoppelletto et al., 2024.

5.3. Sustainability-driven supply chain information system and platform integration

To measure the positive impact of its business, the supply chain led by Brun Gelmino, adopted a digital information system. This system allows a set of selected environmental and social sustainability indicators to be measured across the value chain.

To this extent, each individual company score was calculated through a survey diffused among the companies belonging to the supply chain. In 2020, to develop the sustainability survey, Feelera and Brun Gelmino, together with the academic researchers, employed established methodologies, primarily the GRI standards and the

principles of Civil Economy (Bruni, Zamagni, 2004). This work originated a matrix that has on the horizontal axis six domains of value taken from the keywords of Civil Economy (participatory democracy, community and circular subsidiarity, common goods, relational goods and happiness, meritocracy and rewarding, inclusion and fraternity). On the vertical axis, the matrix has five corporate areas (Governance, Strategy, Human Resources, Supply Chain, and Marketing) (Zoppelletto *et al.*, 2024). In the cells of the grid of the resulting Matrix, we identified 40 socio-environmental indicators, which can be used as a “company dashboard” because they evaluate economic, social, and environmental sustainability. For each indicator, the scores are developed and normalized (range from 0 to 100) to aggregate and compare indicators that measure different types of impacts. Ultimately, the company’s performance indicators have been aligned with the Sustainable Development Goals, enabling the quantification of each organization’s contribution towards these widely recognized macroeconomic and international objectives (Rossignoli *et al.*, 2023).

The process of measuring each individual organization’s impact through the survey raised the general supply chain awareness on sustainability-related topics. Indeed, despite the sustainable practices implemented, in 2020 there was scarce availability of sustainability-related data, poor information system integration and data exchange across companies. The sustainability-oriented information systems were implemented and integrated by building an effective and structured architecture. In 2023, this system allowed the observation of the aggregate sustainability performance of the whole value chain.

Traditional traceability systems have static approaches as they are typically assessed by dedicated “certification authorities” during predetermined timespans. Conversely, the sustainability-driven supply chain platform has the peculiarity of being able to dynamically monitoring the sustainability performance at different point in time. Consequently, the supply chain architecture has recognized this potential, and is trying to extend its boundaries by sharing data with external partners (e.g., authorities) to increase the efficiency of controls and transparency. The idea behind this is that control bodies and regulators may benefit from the availability of these dynamic data structures to enhance transparency. Moreover, consumers can increase their trust in the supply chain products, contributing to the creation of higher benchmarks for the overall economic system.

Through the new information systems, there is greater control over legality and transparency. For example, regarding accident and risk prevention, we immediately see if some supply chain companies are not compliant. This reduces opportunistic behaviors by moving towards greater worker safety and suppressing worker exploitation and the issue of illegal work (CEO of Brun Gelmino).

While progressively building the data architecture to assess supply chain performance through the Feclera’s platform, also the general digital literacy raised across the supply chain firms as a collateral effect. At the end of the platform implementation, the sustainable strategy was collectively and collaboratively managed through digital tools:

Now, most of the companies share sustainability decisions supported by information with upstream and downstream actors in the supply chain, as well as performance targets (CEO of Brun Gelmino).

The experience of implementing sustainability-oriented information systems also generated side effects. In particular, some tensions arose between the leading company (Brun Gelmino) and some supply chain firms. By implementing sustainability-oriented information systems, some network firms perceived a growing risk due to the increased transparency brought by the sustainability-oriented information systems:

For some firms, sharing knowledge across of the value chain is a risk more than a beneficial move (Feclera's Business Analyst).

Some companies perceive the growing transparency as a risk for their competitiveness on the market and the potential increase in their products' prices (Purchasing Manager of Brun Gelmino).

Unfortunately, not all the firms were able to quickly adapt to such a path since to build a strong sustainability commitment across the supply chain, a sustainability-oriented mindset and culture need to be developed.

Eventually, the sustainable supply chain will potentially uncover future latent tensions among firms, particularly regarding the management of the organizational architecture in relation to each firm's sustainability score. Indeed, the information system enables the exploration of different

scenarios corresponding to changes in the composition of the supply chain. Therefore, the architecture can simulate scenarios leading to an increase in the overall score. A graphical and user-friendly interface has been developed to this extent, allowing to make changes to the supply chain graph and observe how these changes affect the overall sustainability score. Additionally, the platform can run also automatic simulations. These simulations start from some initial parameters and, after final adjustments, produce possible solutions that bring the overall score closer to a desired target. The platform produce an organic vision of the considered value chain, allowing to make strategic decisions in order to improve the impact, and ultimately the supply chain image in the eyes of consumers.

The platform leader can then use the sustainability scores to determine which companies can remain part of the sustainable network or have to be removed from it. The platform becomes not only a tool oriented towards sustainability, but also a validator that enables companies to remain part of the network based on their sustainability performance (Feelera CEO).

Eventually, Brun Gelmino recognized the importance of sensitizing also its own clients. Indeed, the supply chain was pressured by the concern of no longer being able to supply their main retailer due to the divergence on the sustainability strategies of the two parties. On the one hand, the sustainable supply chain led by Brun Gelmino was building a strong sustainability-oriented strategy, while on the other hand, the retailer's buyers seemed to adhere to traditional economic-driven logics.

This issue highlights the urgency of building resilient architectures going beyond their immediate boundaries, and address sustainability challenges with a system-level approach, in collaboration with a broader network of stakeholders including customers, regulators, and local communities, developing a system-level change.

MULTI-STAKEHOLDER PARTNERSHIPS FOR SUSTAINABILITY

Beside formalized collaborative, multi-stakeholder organizational architectures, also informal participatory architectures such as alliances, collaborations or partnerships enable socio-technical systems to face grand societal challenges with a more resilient architecture in the long run (Addo, 2022; Cowling, 2017).

Indeed, near traditional economic-related motivations (e.g., the attempt to reach market success), also sustainability can be a motivation for firms to engage in strategic partnerships¹ (Valbuena-Hernandez, Ortiz-de-Mandojana, 2022).

Through cross-sector collaboration (e.g., business-nonprofit collaboration) it is possible to build ad-hoc informal

¹ Strategic partnerships are defined by Valbuena-Hernandez and Ortiz-de-Mandojana, (2022, p. 125) as “the voluntary collaboration between two or more organizations with a clear agenda of common interest, focused on achieving discrete and measurable objectives”. This definition derives from Ashman (2001) and Long and Arnold (1995) works.

participatory architectures address social challenges (Ferraro *et al.*, 2015; Selsky, Parker, 2005). Organizations such as nonprofit organizations, government organizations, public care services (e.g., education, hospitals, social services, etc.) or voluntary-civil groups may collaborate with companies to increase inter-organizational learning and reach a mutual, sustainability-oriented goal (Baranova, 2022; Feilhauer, Hahn, 2021; Jämsä *et al.*, 2011; Gulati, 1995). These partnerships employ specific mechanisms or “tools to reach out beyond the partnership boundaries and facilitate social or environmental change from a cognitive, behavioral, and technical perspective” (Stadtler, Lin, 2019, p. 872).

For instance, Arts (2002) presented an example of a collaborative and environmentally oriented partnership among nonprofit organizations and firms. Another example is the case presented by Stafford *et al.*, (2000) analyzing the alliance between Greenpeace and Foron Household Appliances in Germany. This case studied environmental nonprofit organizations providing partnerships also called “strategic bridges” (i.e., environmental, legal, scientific expertise) to support companies’ initiatives. Other authors such as Dzhengiz *et al.*, (2023) studied 444 sustainability-oriented partnerships where companies leverage cross-sectoral partners’ resources and expertise in social issues (e.g., education, labor conditions, and poverty).

There is a growing recognition that these business-nonprofit-public partnerships can be helpful in addressing the complexity of social and environmental concerns (Wójcik *et al.*, 2022). These collaborations can be mutually beneficial as the involved parties can complement each other’s resources such as the acquisition of a specialized knowledge. Moreover, these ties can address their respective limitations,

such as nonprofits' lack of capital or management skills, or companies' need for reputation and legitimacy (Wójcik *et al.* 2022; Arts, 2002).

Not all partnerships could be equally effective in addressing sustainability transitions. Among the characteristics of strategic partnerships that can help to achieve sustainability improvements, there is for instance, aligned leadership, shared interests, coincidence of values, the type or duration of the interaction, clarity and confidence regarding the partners' roles, balanced power and authority, rules and effective communication (Valbuena-Hernandez, Ortiz-de-Mandojana, 2022).

In terms of management of these typologies of sustainability-oriented architectures, often the parties have different and unbalanced power (Arts, 2002). At a first sight, in these partnerships, companies seem to have a higher degree of power, potentially exerting a greater pressure on determining programs, strategies, and outputs (*ibidem*). However, nonprofits have proven to be able to balance the pressure from companies, as they hold notable authority and power in communicating their values to the broader public and possess greater knowledge of environmental issues compared to most companies (Stafford *et al.*, 2000; Levy, Egan, 1998).

It has been observed that significant disparities in organizational size or resource endowment between the parties are not conducive to the establishment of these organizational architectures (Keohane, Nye, 1989). More equilibrated partnerships often formulate clear-cut rules of the game such as including dispute settlement mechanisms (Arts, 2002).

To prevent opportunistic behaviors, such informal cross-sector partnerships for sustainability are often repeated

collaborations with previous trusted partners to avoid resource-consuming partner search and to reduce the collaboration risks (Gulati, 1995; Podolny, 1994).

Additionally, in these collaborative architectures, technologies are crucial, particularly for coordination mechanisms and process modifications within the system. Indeed, these horizontal collaborative architectures may leverage tailored digital architectures to integrate data and information more effectively.

For instance, Rossignoli *et al.* (2018) studied a group of ethically engaged volunteers who acted as a social entrepreneur group and adopted a web-based digital solution to foster transparency, accountability, and interaction among the participants.

These liquid collaborative architectures aiming to address societal change require robust and widespread engagement to overcome socio-technical system sustainability issues. Indeed, if only some of the focal (public, private, nonprofit, or civil) organizations in a specific sector do not participate in the partnership, these initiatives are unable to extend beyond the industry level and target system change (Dzhengiz *et al.*, 2023).

6.1. The organizations included in the sustainability cross-sector collaboration

This chapter aims to present a multi-stakeholder approach towards sustainability where organizations stemming from different sectors build a collaborative architecture to manage social issues in a more holistic way. The following sections will describe these organizations in detail.

D-Hub² is a nonprofit organization and was founded at the end of 2013. The organization's aim is building pathways for job integration and training for women in disadvantaged situations. Located in Verona, D-Hub is a craft workshop where various training activities are carried out: tailoring, paper making, cosmetics, creation of jewelry with recovered materials. The social inclusion model proposed by this organization, aims to realize an integrated and holistic management of the disadvantaged person which is not limited to the work sphere. It includes personal training, housing integration with the allocation of private accommodations, and activities promoting social inclusion.

Common Ground³ is a nonprofit organization aiming to build a network of urban laboratories to apply the philosophy of the second chance, giving new opportunities to people in difficulty. It focuses especially on women victims of violence and offers educational projects and a concrete path of reconciliation with the world of work. The organization operates also as a tailoring workshop.

Progetto Quid⁴ social cooperative (type B) was founded in 2013 and aims to give “new life to people and fabrics”. The cooperative primary focuses on job placement for disadvantage people. The cooperative creates products from surplus fabrics through a process of recovery, design and production ethically Made in Italy. Progetto Quid aims to have high social impact, offering new employment opportunities, training and career for those who are most

² The D-Hub website is available here: www.dhubatelier.com/.

³ The Common Ground website is available here: common-ground.it/.

⁴ The Progetto Quid website is available here: www.progettoquid.com/.

at risk of occupational exclusion. The cooperative strongly believes in sustainability-oriented partnerships, acting as an ethical partner of more than 100 organizations in its production operations. Additionally, it coordinates with various nonprofit organizations to realize social inclusion projects.

The Biennale of Venice⁵ is an internationally renowned art exhibition held annually in Venice (Italy) by the Biennale Foundation. Established in 1895, the Venice Biennale is the oldest exhibition of its kind. It showcases contemporary art, along with events spanning the realms of architecture, cinema, theatre, and dance. The Biennale features two principal components: the Art Biennale and the Architecture Biennale. Together with cultural experiences and artistic and creative projects, it organizes or contributes to educational initiatives directed to individuals, associations, and institutions.

The OTB Foundation⁶ is a nonprofit organization established in 2006 within the OTB Group, an international fashion group founded by entrepreneur Renzo Rosso, with a portfolio of brands including Diesel, Maison Margiela, Marni, Viktor & Rolf, Jil Sander, and companies like Staff International and Brave Kid. The Foundation has executed hundreds of social development projects globally. It regularly issues calls for proposals to support new social inclusion initiatives and finances those addressing pressing societal issues.

⁵ The Biennale of Venice website is available here: www.labiennale.org/it.

⁶ The OTB Foundation website is available here: www.otbfoundation.org/.

The Calzedonia Group⁷ (today known as Oniverse Group) was founded in 1986 in Verona, by Sandro Veronesi. The group is active in several sectors (such as fashion, food and wine, and yacting sector) with the following brands: Intimissimi, Tezenis, Calzedonia, Atelier Emé, Falconeri, Signorvino, Antonio Marras among others. Regarding the social sustainability sphere, the group invested more than 4 million euros in the last year (2023) to support community projects and donated 4,9 million euros to the San Zeno Foundation⁸ through which several social projects are implemented. Moreover, the group closely collaborates with social-driven organizations such as Progetto Quid.

In the case study are included also public organizations such as the Social Services of the Municipality of Verona, the Veneto's Regional work integration service, the Creative Reuse Center of the Municipality of Verona, and the Penitentiary of Montorio.

6.2. Method

The proposed longitudinal case study (Eisenhardt, 1989; Yin, 1984) stems from a larger project undertaken by Mag Verona⁹ named “Cooperiamo per l’Economia del Buon Vivere Comune”¹⁰ translatable in English as “Cooperations

⁷ The Calzedonia Group website is available here: www.calzedonia.com/.

⁸ Source: Sustainability Report (2023) available here: www.oniverse.it/world-in-progress/report-sostenibilita.

⁹ MAG Verona's website available here: magverona.it/

¹⁰ The project “Cooperiamo per l’Economia del Buon Vivere

for the Common Good Living Economy” (public funds: POR FSE, Veneto Region).

This project was integrated and coordinated within the framework of the DGR “ResponsabilMente”¹¹ (Veneto Region). This regional funding framework financed research projects at the University of Verona, at the University of Padova and Ca’ Foscari University in Venice.

This project has been developed between 2016 and 2018 with the participation of the Department of Economics¹² and the Department of Cultures and Civilizations¹³ of the University of Verona.

The aim of the project was the development and the analysis of socially responsible organizational practices and partnerships, especially in the context of the nonprofit sector. The analysis focused on the partnerships that nonprofits put in place with other private, public, and societal entities, to create shared and sustainable well-being.

Comune” is available here: magverona.it/cooperiamo/. And the Territorial Cooperation Agreement is available at the following link: magverona.it/ACT2018/.

¹¹ The Veneto Region’s call “Responsabilmente – Promuovere l’innovazione sociale e trasmettere l’etica – percorsi di RSI” is available at the following link: www.cliclavoroveneto.it/bandi-fse/-/asset_publisher/GWwN9lEMfg5g/content/responsabilmente. This call for proposals (under the POR FSE VENETO) was to finance two-year initiatives, with the aim of disseminating the principles of CSR as a competitive lever for Veneto’s organizations, to overcome the challenges of globalisation of markets and competition.

¹² The website of Verona’s Department of Economics is available here: www.dse.univr.it/?lang=en.

¹³ The website of Verona’s Department of Cultures and Civilizations is available here: www.dcuci.univr.it/?lang=en.

The project financed for twelve months three research fellows on specific topics. The three research projects analyzed:

1. cross-sectoral partnerships for the employment of disadvantaged workers (see Zoppelletto, 2019);
2. cross-sectoral partnerships aimed at preserving common goods;
3. participatory and multi-actor practices to develop an inclusive and sustainable territories.

To this extent, more than 70 organizations located in the Verona region were interviewed, using a snowball sampling approach (Yin, 1984) to ensure that the sample included the most relevant organizations for the research project.

The researchers collected data from a variety of sources, including internal documents provided by the organizations, online public reports, and their own written material. They conducted several meetings among themselves (with the participation of the scientific coordinators) to analyze the data at different points in time. Researchers also participated in relevant public meetings on the topics, which were organized by policymakers and key stakeholders. Additionally, the researchers prepared and conducted focus groups with organizational leaders, opinion leaders, and policymakers, along with approximately 100 interviews.

6.3. Profit-nonprofit-public collaborations for sustainability

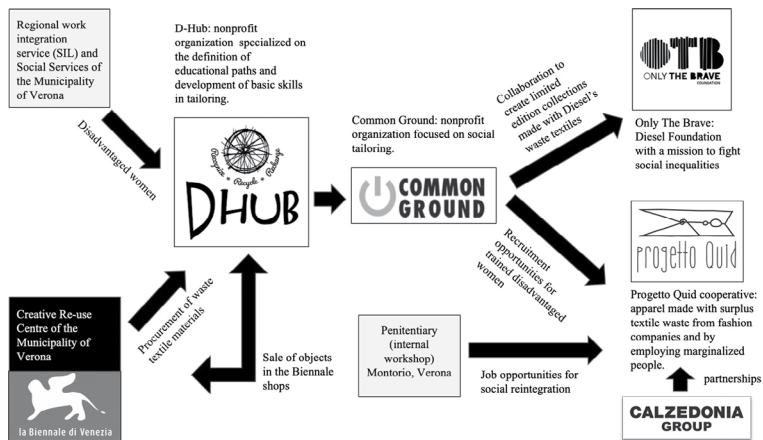
The proposed case study describes the architecture of collaborative cross-sector partnerships aimed at supporting, empowering, and creating jobs for disadvantaged people, mostly women. The target of these partnerships are people with disabilities, individuals after incarceration, victims of human trafficking, migrants, etc.

This collaborative architecture is multi-stakeholder since it includes for profit firms such as the Calzedonia Group, nonprofit firms such as D-Hub and Common Ground associations, the Progetto Quid social cooperative, and foundations such as the OTB Foundation or the Biennale of Venice. Moreover, it incorporates public organizations such as the Social Services of the Municipality of Verona, the Veneto's Regional work integration service, the Penitentiary of Montorio (Verona) and the Creative Reuse Center of the Municipality of Verona (see *Figure 6*).

The collaborative model in which we participate has fostered the creation of a territorial network in Verona, with a specific focus on addressing social needs in all their various manifestations. This has enabled the establishment of positive relations and cross-pollination, not only between us and other stakeholders, but also among the stakeholders within the network itself (Founder of Progetto Quid).

In the proposed collaboration scheme, Progetto Quid social cooperative, realizes its mission of job placement for disadvantaged people, often in partnership with local associations like Common Ground or D-Hub. These

Figure 6. The collaborative partnerships scheme



Source: original elaboration of the author

associations provide the disadvantaged person with the necessary essential services together with specific educational paths for job training.

Indeed, Progetto Quid focuses on job creation (being a type B cooperative) and has a limited capacity to support disadvantaged people with necessary essential services such as finding a home, asking for psychological support, applying for residence visa, etc.:

Our priority is to provide jobs for disadvantaged people. In the future, we would also like to expand the well-being services available to our workers. Currently, the managers and I personally assist our workers with various issues, such as obtaining visa permits, addressing bureaucratic matters, helping them find a house and secure rental guarantors. We do not have a dedicated role for these activities, and they are informally managed by us during the workday. We hope to

enroll a welfare officer by the end of 2018 to manage these very important issues (Founder of Progetto Quid).

The cooperative is not able to manage all the relevant issues related to workers' essential needs, therefore partners with D-Hub which is able to identify housing solutions for disadvantaged people. The nonprofit organization tries to offer social housing solutions combining the domain of housing with specific social integration activities.

Indeed, nonprofit organizations are able to activate training and social empowerment programs for vulnerable groups, as well as initiatives aimed at preventing their marginalization. These organizations complement traditional public welfare approaches, which most of the times lack of innovations. Therefore, these organizations offer alternatives to traditional public services, by offering less standardized and more high-quality services. Nonprofits have a higher level of innovation with respect to the public and are able to design experimental services to implement effective pathways of social inclusion by integrating three fundamental and interconnected domains: social needs, housing, and work integration (Zoppelletto, 2019).

Given the decline in resource allocation from national and local welfare systems, nonprofit organizations have learned to combine forces with other stakeholders, creating extended informal network architectures to provide innovative responses to the needs of disadvantaged people. Indeed, nonprofit organizations have an extended network that enable them to maximize the scarce resources:

Setting up valid social projects requires more than just a tailoring workshop. It demands the right know-how, solid

relationships with partners, and the involvement of the appropriate people with the right network. For instance, one of our directors had the right contact person in the Biennale of Venice. If Common Ground had not had the expertise and connections with the Biennale of Venice, we probably would not have received the possibility to carry out projects with the OTB Foundation. Similarly, if Common Ground had not had the structure that D-Hub had established in terms of relationships with the local Municipality, the SIL¹⁴, the social services and the local women's associations, we would not have succeeded in the co-construction of such innovative and complex educational models (Founder of Common Ground and D-Hub).

D-Hub has strong ties with public organizations such as the Social Services of the Municipality of Verona, the Veneto's Regional work integration service, which connect the nonprofit organization with disadvantage people. To provide support and empowerment to these disadvantaged individuals, the D-Hub craft workshop conducts several training activities for disadvantaged women (e.g., tailoring, paper recycling laboratories, creation of jewelry with recovered materials) in close connection with other profit and nonprofit organizations. These collaborations include the Venice Biennale – for the recovery of waste materials which then become products to be sold in the Biennale's shop – and the collaboration with the OTB Foundation for the craft of Diesel's limited collections. Moreover, the tailoring workshop Common Ground, allows for the training

¹⁴ This acronym refers to services for job inclusion promoted by the Veneto Region. The website is available here: www.regione.veneto.it/web/sociale/sil.

of these disadvantaged women and provide them with the necessary social support by social educators.

After having created the base skills in tailoring, Progetto Quid offers concrete job opportunities. Moreover, the social cooperative aims to increase the workers' skills by implementing specific internal and external training paths. For those who need to build or advance their tailoring skills, Progetto Quid proposes an education path (the length of the stage depends on the capabilities of the individual) followed by a period of coaching with professional seamstresses¹⁵.

Regarding the external tailoring workshops, Progetto Quid created a relationship with the Montorio Prison. Progetto Quid has established a training workshop within the Penitentiary, where the prisoners learn how to produce simple accessories. This allows these people to develop their skills with simple and repetitive actions, thus refining their skills and prepare for potential employment opportunities at the cooperative, even before their release from prison.

The intricate set of partnerships existent in this organizational architecture is complemented also by the relation with the Oniverse Group (former Calzedonia Group) which is one of the for-profit players with whom Progetto Quid collaborates to ensure its economic sustainability.

In the recent years the nonprofit sector has increased its collaborations with the business sector, moving from

¹⁵ These professionals were hired by the cooperative after the failure of the previous large factory where they were employed as seamstresses, leaving them without a job. In the cooperative, these women became valuable resources to implement workers' up-skilling due to their great experience.

a relationship mainly anchored to the public actor to a contamination with the profit sector (Klitsie *et al.*, 2018). Likewise, for-profit companies also understood the value and importance of dealing with nonprofit organizations and the community by actively investing in social responsibility actions and progressively abandoning the widespread practice of direct philanthropic donations.

The Oniverse Group purchases from Progetto Quid large quantities of small gadgets for its brands “Intimissimi”, “Calzedonia” and “Tezenis”. Some of these commercialized gadgets are the one made by women in the Montorio prison (if validated by the quality control).

These collaborations are valued by our clients, and we realize “co-branded” products, meaning that the product has both our label and the one of our clients (Founder of Progetto Quid).

Furthermore, Progetto Quid established a collaboration with the Opes Impact Fund¹⁶, a social impact investment fund, providing financing resources and linking them to Quid’s social performance indicators (KPIs). As a result, the interest rate on the financing is reduced based on Progetto Quid’s social impact over the years.

This is a great achievement for us and probably, thanks to these resources we will be able to enroll a welfare officer for improving the management our workers’ needs (Founder of Progetto Quid).

¹⁶ The Opes Impact Fund website is available here: www.opesfund.eu/.

The described collaborative architecture enables widespread leadership, but it also needs to manage tensions. For instance, due to the limited resources available to nonprofits, tensions often arise among them as they strive to optimize resource utilization over time. Additionally, the high turnover of employees and of key decision-makers in these organizations makes it challenging to replace them and retain institutional knowledge and relational networks, which are not as formalized or distributed as in traditional organizational architectures. Thus, in this context, an effective widespread leadership realized through shared values and objectives is crucial to align different stakeholders, facilitate knowledge sharing, manage power dynamics, and optimize resource dotation.

SUSTAINABLE FUTURES: ARCHITECTURES AND ARCHITECTS

In today's world, we are confronted with fundamental grand challenges spanning across various domains and necessitating immediate and transformative action.

Sustainability transition literature emphasizes the importance of systemic change, recognizing that long-term, multi-dimensional transformations are essential for moving established socio-technical systems toward more sustainable future. Indeed, there is an urgent need to envision alternative “desirable futures” which are expressed in different ways, such as visions, pathways, action plans (Miedzinski *et al.*, 2019).

To reach those envisioned scenarios, socio-technical systems require changes that exceed the capacity of individual entities (Montresor, Vezzani, 2023).

The prevailing focus on individual companies, while valuable, is insufficient to confront the complex and intertwined path-dependencies inherent in established business sectors. Incremental changes alone cannot address the scale and urgency of the sustainability challenges we face today.

Therefore, the collaborative dimension arose as an important piece of the puzzle. By adopting an inter-organizational perspective, collaboration dynamics may enable the development of resilient organizational architectures capable of fostering sustainable outcomes that go beyond the individual firm's boundaries, thereby increasing the efficiency of sustainable transitions.

Collaborative participatory architectures such as business networks or ecosystems, value chains, digital platform business models or even more informal sustainable partnerships, alliances or collaborations are proven to be more resilient in tackling sustainability challenges in the long run (e.g., Addo, 2022; Ortiz-de-Mandojana, Bansal, 2016; Cowling, 2017; Jämsä *et al.*, 2011). By leveraging collective capabilities, these organizational architectures are better equipped to address complex social and environmental challenges over time, positioning them as powerful engines of sustainable growth and societal impact.

However, effective participatory architecture alone does not ensure positive results in tackling societal issues. The main concern lies in how diverse stakeholders can collaborate effectively (Addo, 2022). The governance of organizational architectures over time requires addressing dissensus between stakeholders, tensions and conflicts in the management of the architecture, opportunistic behaviors, and contradictory value systems.

To address the overarching research question, the different case studies' architectures are examined both in term of their "hard" and "soft" components, to borrow an analogy from the information system field (Nadler, Tushman, 1997).

The technical aspects of the organizational architectures analyzed include elements such as structural units, span

of control, hierarchy, and the implemented technologies. Additionally, social aspects were examined, such as leadership dynamics, information flows among people, established learning paths, and knowledge management systems. Furthermore, a longitudinal analysis was conducted on the system-level equilibrium or stability, spillovers across the architecture, the emergence of tensions, and resilience over time.

The results from the various case studies need to be considered from a comprehensive perspective. Indeed, *the ultimate goal of architectural design is to creatively adapt its “technical” and “social” components over time, in order to enhance the competitive strengths inherent within each organization.* This comprehensive approach to the proposed research question “*how are companies adapting their (formalized or informal) organizational architectures to embark in the sustainable transition?*”, allows for a deeper understanding of the complexities and nuances of sustainability transitions over time.

The commonalities emerged in the case studies’ results underline the ability of aggregations of organizations to move beyond their traditional boundaries and develop participatory architectures with a shared governance, resource allocation, and knowledge dissemination across the architecture. For instance, informal architectures may involve sustainability-oriented collaborations between companies and nonprofits, governmental bodies, or civil society groups, complementing the strengths of each member by offering horizontal and modular solutions integrating diverse efforts and perspectives. These cross-sectoral relations provide “strategic bridges”, enabling organizations to integrate specialized expertise, share resources, and foster innovation,

thereby tackling issues that no single entity could resolve alone. Moreover, collaborative architectures may develop mechanisms to navigate beyond their liable organizational boundaries and improve organizations' ability to engage positively with their environment, for instance by extending their networks and exchanging data with unconventional partners like institutions or authorities.

Indeed, to quickly adapt to rapid changes in the business environment, collective capabilities can be boosted by specific digital architectures. It emerged in two of the proposed case studies that, in order to perform effectively, new architecture designs required complementary technologies (Nadler, Tushman, 1997). Indeed, digital integration is able to drive sustainability outcomes facilitating transparency, data exchange, and integration of sustainable practices. To this extent, digital platforms may play a transformative role by enabling system integration, making timely information available simultaneously to each member of the architecture, thus improving sustainability-related management.

By recognizing that the digital tools can help achieve sustainability goals these organizational architectures effectively participate to the so-called twin (digital and sustainable) transition.

Additionally, the integration of digital tools and collaborative mechanisms within business networks and supply chains not only boosts sustainable practices but also positions these networks as powerful vehicles for generating long-term value. For instance, by tracking the aggregate sustainability performance at the architectural level, these tools enhance decision-making, enable adaptability over time, and ultimately contribute to sustainability-driven competitiveness.

By leveraging collective capabilities and adopting participatory frameworks, organizations can transform shared resources into engines of sustainable development, benefiting both the firms and the broader society they serve. Indeed, companies are motivated to establish these architectures by the desire to contribute to broader social and environmental challenges. Such strategic collaborations facilitate mutual learning, foster a shared understanding of sustainability challenges, and allow firms to access knowledge, skills, and networks that can enhance both their strategic positioning and societal contributions.

To conclude, the involvement of cross-sectoral members is able to bring unique value to these architectures by enhancing public legitimacy and trust and bringing extensive knowledge of environmental and social issues.

7.1. Sustainable leaders crafting resilient organizational designs

Organizational leaders and key decision-makers play a central role in shaping organizations' architectural design (Gulati, 1998). Indeed, to foster the development of collaborative organizational architectures and strategic partnerships, leadership is one of the main enablers (Valbuena-Hernandez, Ortiz-de-Mandojana, 2022; Gulati, 1998).

In complex architectures (e.g., network, ecosystems) this key role is played by entities (private or public sector actors) nurturing the creation and developing the expansion of a given socio-technical system as a whole (Daymond *et al.*, 2023).

Literature refers to this role under different labels such as orchestrators or ecosystem architects (e.g., Snihur *et al.*, 2018), leaders (e.g., Calic *et al.*, 2020; Hein *et al.*, 2020), hubs (e.g., Jacobides *et al.*, 2018), focal firms or focal actors (e.g., Adner, 2017), and engineers (e.g., Sun *et al.*, 2019).

Architects' purposive action is to create, nurture, develop, and manage such collaborative organizational architectures. In the initial stages of the establishment of these collaborative frameworks, architects must foster sufficient alignment of the member organizations' needs (Daymond *et al.*, 2023; Khurana *et al.*, 2022). Then, to further develop the aggregate-level value proposition, the so-called architects need to manage inter-organizational dynamics, govern mutual adjustments, balance different influences between the co-evolving actors, and create conditions for cooperation (Dahmann, Grosvold, 2017).

These leaders have the capacity and willingness to make changes to the organizations' resources and capabilities, also by re-allocating them between participants. In order to contribute to the transition toward a more sustainable industry (Wójcik *et al.*, 2022). As organizations are the basic building block of the new architecture design, leaders have to enhance each organizations' sustainability-related knowledge and culture, in order to develop a greater capacity for collective learning (Distelhorst, McGahan, 2022).

Moreover, sustainability-oriented architects need also to “bridge the inherent tensions between profit maximization and responsible business practices through different forms of institutional work” (Dahmann, Grosvold, 2017, pp. 267). Indeed, the managerial approach adopted by the architecture

leader is able to foster or hinder sustainability outcomes, by balancing the economic, social and environmental component (Schaltegger *et al.*, 2016).

In the presented case studies the effective management of these collaborative architectures required addressing tensions, ensuring role clarity, and power disparities between partners, while maintaining value homogeneity over time. These key figures were also able to anticipate and navigate emerging tensions, spread common values among the stakeholders, select the right managers for critical positions, and retain within the architecture key figures with deep expertise and extensive relational networks. Moreover, their ability of cultivating sustainability-related spillovers or positive externalities among organizations make these organizational architectures capable of coping with change and envision future challenges, thereby more resilient.

7.2. Implications, limitations, and further directions

This work goes in depth in the analysis of sustainability transitions, by bringing longitudinal and multistakeholder perspectives into the analysis. Moreover, global phenomena such as sustainability transitions may be better understood if they are observed over time. Therefore, this contribution employed qualitative longitudinal case studies.

From a practical point of view, the study has several important implications since it sheds light on the potential of collaborative organizational architectures to sustainability transitions by encouraging organizations, aggregations of organizations (e.g., networks, ecosystems, supply chains),

policymakers and institutions to embrace the challenge of co-creating sustainable futures.

The greater limitation of this work is that it represents just a frame, a picture, attempting to analyze larger, long-lasting sustainability transitions. Grand challenges are going to impact our societies in a way that is impossible to understand in short time spans. However, this work tries to address this limitation by using a multi-level and longitudinal analysis and by employing a qualitative methodology, hopefully catching different traits, nuances, features, and phases of such a multi-faced transition.

The study suggests to further investigate the role of multi-stakeholder architectures in tackling sustainable transitions. Future research adopting a longitudinal approach is needed to observe the complexities of these transitions on the medium to long run. Moreover, this study exhorts to analyze different contexts (regional, national, and international), different industries, and organizational architectures' dimensions to increase the generalizability of the results.

To conclude, this book encourages to think about the process of building – not just designing – resilient architectures in sustainability-oriented socio-technical systems. Organizations may cope with sustainability transitions by adapting their existent organizational designs or by creating new ones (e.g., new sustainability-oriented business models). However, this is only one part of a more complex transition involving also social components such as culture, values, social norms, that need to be managed over time.

This publication aims to inspire researchers to delve deeper in the long-term investigation of collaborative

sustainability-oriented dynamics and resilient organizational architectures. I hope that this book can resonate with company apical roles such as managers, leaders, CEOs and inspire them to nurture the creation of a variety of resilient and collaborative organizational architectures in order to build more sustainable futures.

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La passione per le conoscenze

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Today's world faces grand challenges, such as climate change, social inequality, and environmental degradation, that require transformative and cross-sectoral responses. Addressing these complex issues calls for collaborative approaches among diverse stakeholders. Traditional, incremental company-level changes are inadequate. Systemic approaches and new organizational solutions are needed.

Sustainability-driven inter-organizational collaborations transcending traditional organizational boundaries may leverage organizational architectures orchestrating a constellation of logics. Organizational architectures, such as business networks or integrated supply chains, allow to tackle sustainability challenges more effectively. Understanding how firms evolve their organizational architectures – whether through formalized networks or informal partnerships – is essential to develop successful sustainability models.

This book explores how companies adapt their organizational architectures to embark on sustainable transitions, analyzing three longitudinal case studies to identify best practices for achieving sustainable future scenarios. While it does not comprehensively examine all the typologies of organizational architectures, the book offers insights into architectural strategies for tackling current societal challenges.

However, effective participatory architecture alone does not ensure positive results in navigating societal issues. Leadership plays a key role in shaping these architectures by guiding collaboration, cultivating shared values, and managing stakeholder relationships or tensions. Sustainability leaders need to develop these organizational architectures by enhancing the competitive strengths inherent within each organization, making these organizational designs more resilient over time.

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