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Creating shared value through open innovation: Insights from the case of Enel industrial plants

Gianluca Gionfriddo | **Andrea Mario Cuore Piccaluga**

Institute of Management and Department EMbeDS, Scuola Superiore Sant'Anna, Pisa, Italy

Correspondence
Gianluca Gionfriddo, Institute of Management and Department EMbeDS, Scuola Superiore Sant'Anna—Piazza Martiri della Libertà, 24, Pisa, PI 56127, Italy.
Email: gianluca.gionfriddo@santannapisa.it

Abstract

Despite the significant attention gained by the concept of creating shared value (CSV) over the past decade, there is a lack of empirical research on corporate practices that achieve social and environmental benefits through CSV dynamics. Through an in-depth single case study, this research explores open innovation (OI) practices contributing to the grand challenge of climate change and their role as microfoundations in the three CSV dynamics proposed by Porter and Kramer: (1) reconceiving products and markets; (2) redefining productivity in the value chain; and (3) enabling local cluster development. Building on a 3-year (October 2019–October 2022) interaction with Enel—a very large company in the renewable energy sector—we collected qualitative data on the OI practices implemented in the construction, operating, and repurposing phases of three of its industrial sites. Employing a three-step data analysis process, the study identified 29 OI practices across the sites, which have been grouped into 11 CSV microfoundations. Our findings contribute to understanding the organizational factors in sustainable value creation by bridging the gap between CSV and OI literature and confirm the effectiveness of OI models for addressing societal challenges like climate change.

KEYWORDS
climate change, grand challenges, open innovation, shared value, sustainability

1 | INTRODUCTION

Increasingly, humanity is besieged by a number of grand challenges that require immediate and joint intervention from private and public organizations (George et al., 2016; Howard-Grenville, 2021; Jamali et al., 2021; Seelos et al., 2022). Poverty reduction, inclusive growth, and climate justice are some of the most compelling challenges of our time. Although the call for action is growing louder in the corporate world, the inherent complexity, uncertainty, and multidisciplinary nature of grand challenges may hinder businesses from taking robust actions and achieving effective results (Fernhaber & Zou, 2022; Ferraro et al., 2015; Howard-Grenville, 2021).

Within this framework, businesses are demanded to accelerate the transition toward the sustainable development paradigm, unleashing their potential to generate innovative solutions for global societal problems (Mio et al., 2020; Pizzi et al., 2020, 2021; van der Waal et al., 2021).

For example, climate change is one of the most controversial grand challenges facing modern society, both in terms of its public debate (Jamali et al., 2021; Porter et al., 2018) and business contribution (Henderson & Serafeim, 2020; Howard-Grenville et al., 2014). Although the World Commission on Environment already recognized climate change as a grand challenge in 1987, stating that "there are also environmental trends that threaten to radically alter the planet,

that threaten the lives of many species upon it, including the human species" (Bruntland Report, 1987, p. 12), after 35 years, insufficient climate action by businesses has led many scholars to argue that the climate change challenge has evolved into a climate crisis (Wright & Nyberg, 2017).

In particular, management scholars emphasize that businesses struggle to contribute to the climate challenge with non-conventional approaches (Howard-Grenville, 2021; Seelos et al., 2022; Wright & Nyberg, 2017), including transformational business models (Martí, 2018) and impact-oriented practices (Ferraro et al., 2015). Tackling climate change requires businesses to implement robust actions that simultaneously create social, environmental, and economic value (Ferraro et al., 2015).

Among the proposals about how businesses can tackle grand challenges, the creating shared value (CSV) theory introduced by Porter and Kramer (2011) has been widely echoed by scholars and managers for its conceptual attempt to combine corporate profitability and corporate commitment to societal needs (Florin & Schmidt, 2011). More specifically, CSV theory argues that businesses can contribute to reinvent capitalism through three dynamics of shared value creation: namely (1) reconceiving products and markets; (2) redefining productivity in the value chain; and (3) enabling local cluster development (Porter & Kramer, 2011). These dynamics may help businesses to move beyond the existing socioeconomic tradeoffs and contribute to the environmental and social prosperity of our planet without sacrificing corporate competitiveness and economic returns (Dembek et al., 2016).

Yet, despite the initial successes of the CSV theory, subsequent studies have found difficulties in taking the theory to the field and empirically verifying how companies were able to operationally align profits and societal value (Alberti & Varon Garrido, 2017; Dembek et al., 2016). While shared value has been defined as "policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the community in which it operates," various scholars recently denounced the absence of specific micro-level empirical studies about the implementation of practices and policies associated with CSV (Chaurasia et al., 2020; Menghwar & Daood, 2021).

Our research challenge has therefore been to gain a better understanding about the organizational practices that create shared value (Camilleri et al., 2023; Menghwar & Daood, 2021). While some scholars claimed that specific types of value creation dynamics are crucial to improve organizational performance (Lu & Chesbrough, 2022; Singh et al., 2021; Zott et al., 2011) and achieve greater social impact (Kroeger & Weber, 2014; Martí, 2018), empirical studies on operating practices that foster the creation of shared value are still scarce (Beschorner, 2014; Dembek et al., 2016).

The present study aims to address this gap. In particular, we draw on the open innovation (OI) paradigm to empirically investigate how the implementation of specific OI practices may contribute to foster CSV dynamics. Recent literature increasingly considers the OI paradigm as a viable form of innovation to answer societal challenges (Bertello et al., 2022; George et al., 2016; West et al., 2014), especially in the context of the climate change challenge (Köhler et al., 2022; McGahan et al., 2021). Through OI approaches—including collaborative actions with stakeholders aimed at social value co-creation (De Silva & Wright, 2019), knowledge sharing (Spithoven et al., 2013), and open knowledge flows (McGahan et al., 2021)—businesses can pursue win-win strategies, thus providing CSV answers to the climate change challenge (Behnam et al., 2018; Bogers et al., 2020; Holmes & Smart, 2009; West et al., 2014). Most recently, these findings have prompted scholars to conceptualize the link between the OI paradigm and the CSV theory (Camilleri et al., 2023; Chaurasia et al., 2020; Roszkowska-Menkes, 2018) based on the assumption that "knowledge dissemination and stakeholder collaboration would lead to win-win outcomes" (Camilleri et al., 2023, p. 1).

Although these are valuable conceptualizations, empirical studies that consider CSV theory as a theoretical framework for studying OI are limited (McGahan et al., 2021). In this study, we focus on the organizational microfoundations of the three CSV dynamics—(1) reconceiving products and markets; (2) redefining productivity in the value chain; and (3) enabling local cluster development (Porter & Kramer, 2011)—that are grounded in the implementation of unique and specific OI practices involving individuals or local stakeholders. In strategic management, microfoundations are often referred to as human activities, behaviors, and practices that constitute the dynamics of macro-management theories (Foss & Lindenberg, 2013; Khan et al., 2020). More specifically, practice-based studies often "conceptualize micro-foundations in reference to the practices—individual and collective behaviours, activities and processes—that actors undertake to create economic, social and environmental value" (Vallaster et al., 2021, p. 915).

For instance, within the context of the climate change challenge, extant literature investigated the organizational microfoundations of dynamic capabilities that help hybrid organizations to address tensions (Vallaster et al., 2021) or companies to foster circular economy adaptation (Khan et al., 2020) with a practice-based approach.

The present study contributes to unveil how companies can answer the climate change challenge by investigating what are the microfoundations of CSV dynamics that are grounded in the implementation of distinct OI practices. Thus, by bridging the OI literature and the CSV literature, our research aims to answer the following research question: "*What are the microfoundations of CSV enabled by OI practices that contribute to the grand challenge of climate change?*"

For such a research question, a relevant empirical context is indeed the energy sector, which is characterized by evident connections between climate change and businesses operating in the energy production, distribution, and sales supply chain (de Abreu et al., 2017; Schaeffer et al., 2012). Using a multiple case study approach, we qualitatively examined how Enel—an energy business that embraced the OI paradigm for innovation and sustainability (Chesbrough, 2016; Fuller et al., 2020; Lippolis et al., 2023)—created shared value in three industrial sites: namely, (1) the Bungala solar plant in Australia; (2) the Aurora solar plant in Minnesota (U.S.); and (3) the Pego solar and wind plant in

Portugal. First, by utilizing a thematic analysis method, we coded the microfoundations of CSV dynamics enabled by OI practices implemented in each analyzed case, reporting empirical evidence through interview extracts and archival documents. Second, we collected evidence on the contribution of OI practices to the grand challenge of climate change by reporting data on the environmental and social performance of each practice.

Our results contribute to avoid oversimplification about the CSV concept by empirically unpacking its organizational microfoundations (de los Reyes et al., 2017; Dembek et al., 2016; Voltan et al., 2017). Drawing on the OI paradigm, we show how companies can address climate change challenges by leveraging OI tools such as open knowledge flows and processes of value co-creation (Camilleri et al., 2023; Chaurasia et al., 2020; Lippolis et al., 2023; Roszkowska-Menkes, 2018). The research also emphasizes the ethical roots shared by OI and CSV in the context of business ethics literature (Ferraro et al., 2015; Howard-Grenville et al., 2014) and improves understanding of the organizational determinants of sustainability performance and contributions to societal challenges (Bogers et al., 2020; Fernhaber & Zou, 2022; Lu & Chesbrough, 2022).

After the introduction, the paper is structured as follows: Section 1 briefly reviews the extant literature on OI and shared value creation. Section 2 provides details on the methods we used, including case selection, data collection, and data analysis. We describe the thematic analysis that allowed us to uncover the microfoundations of CSV that relate OI practices with grand challenge contribution. In Section 3, we show the results of the coding process. Section 4 discusses the results, the theoretical contributions, and provides implications for energy business managers and policymakers. Finally, Section 5 includes conclusions, limitations of the study, and opportunities for further research.

2 | THEORETICAL BACKGROUND

The concept of CSV has been introduced by Porter and Kramer (2011, p. 6) as "policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates." According to CSV, businesses are conceived as capable of simultaneously increasing their profitability and solving social problems by recognizing the intrinsic connection between competitive advantage and social issues (Porter & Kramer, 2006).

From a business ethics perspective, the CSV theory can be considered as an attempt by Porter and Kramer (2011) to make a symbiosis between business economic action of profit maximization and business contribution to societal welfare within the libertarian understanding of capitalism and freedom (Rendtorff, 2017). Friedman's conception about the social responsibility of businesses (Friedman, 1962) has been widely cited in the literature on business ethics because of its limited capacity to integrate moral and social objectives other than the maximization of shareholder value (Battilana et al., 2022).

The CSV theory aims to repurpose "the definition of corporate social responsibility in a way that expands the company's obligation to shareholders to involve a broader number of stakeholders extends the obligation of business corporation" (Rendtorff, 2017, p. 121). In particular, it institutionalizes the ethical responsibilities of business within a system of open and free competition by taking into account the needs of a wide range of societal stakeholders and their influence on corporate legitimacy (George et al., 2023). Therefore, in an attempt to closely integrate ethics into corporate social responsibility, the CSV theory contributes to conceptualize business as a societal force of good (Wieland, 2017) and theorize private companies as a good corporate citizens in society (Rendtorff, 2017).

More specifically, Porter and Kramer (2011) speculate that shared value can be created through three different corporate dynamics: (1) by reconceiving products and markets, which implies serving the increasing social needs of customers, such as environmentally friendly products or healthier food; (2) by redefining productivity in the value chain in a way that negative externalities and internal costs on firms originated by inefficient value chains are minimized; and (3) by enabling local cluster development so that companies productivity is boosted and also greater local development is achieved.

From a corporate strategic perspective, the CSV theory provides a framework to move beyond the conflicts arising from the simultaneous pursuit of the social value creation logics and the profit maximization logics (Battilana & Dorado, 2010; Besharov & Smith, 2014; Smith et al., 2013). To implement both logics, businesses should recognize and seize win-win opportunities that mutually increase their profitability and create value for their stakeholders, thus implementing transformative solutions for shared value creation (Voltan et al., 2017).

Nonetheless, despite relevant positive attention among scholars (Chaurasia et al., 2020; de los Reyes et al., 2017; Spitzeck & Chapman, 2012; Strand et al., 2015), the CSV concept has also attracted a number of critiques regarding its epistemological foundations, originality, and generalizability (Beschorner, 2014; Crane et al., 2014; Dembek et al., 2016).

For instance, Crane et al. (2014) claimed that CSV narrowly focuses on win-win opportunities, failing to "provide guidance for the many situations where social and economic outcomes will not be aligned for all stakeholders" (p. 136). Such failure to recognize conflicting stakeholder demands derives from an oversimplification of the institutional complexity navigated by businesses (Ramus et al., 2017), which may lead to mission drift (Ramus & Vaccaro, 2017) or selective coupling solutions (Pache & Santos, 2013). Scholars also pointed out that an exclusive corporate commitment to a limited number of win-win opportunities may be insufficient to address the increasingly complex grand challenges we are facing (Beschorner, 2014; de los Reyes et al., 2017).

Moreover, from a corporate communication perspective, the success of CSV among many executives and managers may also be interpreted as an attempt to legitimize decoupled communication strategies that often do not reflect overall corporate

social responsibility efforts but focus only on CSV initiatives (Crane et al., 2014; Wickert et al., 2016).

As a matter of fact, on an ethical basis, Porter and Kramer (2011) certainly did not portray CSV as the panacea for capitalism dysfunctionalities, stating that "not all societal problems can be solved through shared value solutions" (p. 17). In most business situations and contexts, companies do not face win-win opportunities (Dembek et al., 2016), but rather cope with divergent stakeholder interests and competing logics that must be addressed with differentiation strategies (Smith et al., 2013; Smith & Besharov, 2019).

In their effort to move beyond the stand-off between Porter and Kramer (2011) and Crane et al. (2014), de los Reyes et al. (2017) introduced the norm-taking and norm-making ethical frameworks to help managers address both the win-lose cases—where businesses make profit but society suffers—and the lose-win cases—where society gains but at significant costs for businesses. The two ethical frameworks serve as a means through which CSV theory can establish a connection with ethics, facilitating the incorporation of normative considerations and overcoming stand-off situations with win-win solutions. In particular, when organizations employ the norm-taking approach, they adhere to existing norms and standards to guide their business actions. This means that they recognize and follow established ethical principles and industry practices in their operations, such as in the case of adhering to voluntary certification schemes (Bowler et al., 2017).

On the other hand, the norm-making perspective involves a proactive role where organizations actively participate in shaping new norms, fostering the creation of ethical standards that align with both economic objectives and social responsibilities (de los Reyes et al., 2017).

The scholarly effort to introduce these frameworks aimed to enrich the CSV theory by integrating ethics and shedding light on appropriate approaches for managing diverse configurations of social and economic value creations (de los Reyes et al., 2017). Nevertheless, the antecedents leading to the different situations (win-lose, lose-win, or win-win) remain rather unclear in the literature. While the win-win case and the three dynamics of CSV mentioned above were originally described by Porter and Kramer (2011), there is still a need to better understand how specific operating practices may facilitate the occurrence of these dynamics (Camilleri et al., 2023; Dembek et al., 2016; Menghwar & Daood, 2021). Indeed, as conceptualized by the theory, the foundation of CSV dynamics is rooted in specific "policies and operational practices" (Porter & Kramer, 2011, p. 6). However, the literature still needs to clarify their nature and theoretical foundations.

In particular, Menghwar and Daood (2021) conducted a systematic literature review on the CSV concept by analyzing 49 articles covering 10 years of academic debate (2010–2020). In addition to providing a definition that attempts to synthesize the fragmented research on the topic—that is, CSV as "a strategic process through which firms can solve a social problem aligned to their value chain while pursuing economic profits" (Menghwar & Daood, 2021, p. 473)—they also grouped academic contributions around three dominant research streams, inviting researchers "to direct their attention toward critical issues to deepen the role of organizational factors in the development of CSV in order to find compelling evidence that could help corporations in this direction" (Menghwar & Daood, 2021, p. 481).

For instance, a few scholars speculated that the societal challenge of climate change necessitates corporate endeavors to reshape value chains (Howard-Grenville et al., 2014; Wright & Nyberg, 2017) in order to mitigate the adverse environmental impacts of companies' operations and contribute to the global effort of carbon emissions reduction. This important finding perfectly aligns with the CSV dynamic of redefining productivity in the value chain in a way that negative externalities deriving from inefficiencies within the value chain are minimized, as put forth by Porter and Kramer (2011). However, the scientific literature has not yet specified how companies can effectively implement this dynamic. To gain a better understanding of the CSV approach, it is essential to investigate the organizational practices that enable the greening of value chains as well as the other CSV dynamics, offering practical guidance on how to effectively address climate change.

In this regard, scholars increasingly tend to associate the OI paradigm and CSV theory to understand the strategic orientation of companies toward open value creation, which seeks to satisfy the needs of society as a whole (Camilleri et al., 2023; Chaurasia et al., 2020; Roszkowska-Menkes, 2018). In order to create shared value for all the stakeholders, businesses need to open their boundaries (Chaurasia et al., 2020), transform stakeholders' needs into business opportunities (Camilleri et al., 2023), and be open to external financing opportunities (Cillo et al., 2023). Recent evidence confirms that CSV dynamics may be rooted in distinct OI practices that include private-public collaborations (Mergel & Desouza, 2013), inbound and outbound knowledge flows (Cassiman & Valentini, 2016; Crupi et al., 2020), and key resource sharing (Enkel et al., 2009; Marullo et al., 2020). These OI characteristics are crucial to answer complex societal needs through CSV solutions (McGahan et al., 2021; West et al., 2014), as in the case of the climate change challenge (Köhler et al., 2022).

The connection between OI and CSV stands in the common ethical roots of the two frameworks. Since the CSV theory expanded the moral obligation of business from a shareholder to a stakeholder perspective, it requires corporate openness to stakeholders—such as customers, employees, and suppliers—in terms of opportunities for shared value co-creation (De Silva & Wright, 2019). The extension of the social responsibilities of business to all stakeholders is the ethical junction between the CSV and OI, rooted in a different conception of corporate social responsibility that includes commitment for the common good of the broader society (Rendtorff, 2017). Indeed, as confirmed by previous literature (Rauter et al., 2019), OI practices "can have a significant effect on the companies' triple bottom line in terms of their economic performance as well as on their social and environmental credentials" (Camilleri et al., 2023, p. 2).

In line with this perspective, Bogers et al. (2020) introduced the concept of sustainable OI to describe how Carlsberg approached sustainability as a grand challenge by leveraging OI. They defined

sustainable OI as "a distributed innovation process which is based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model, thereby contributing to development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Bogers et al., 2020, p. 1506). The concept of sustainable OI represents a significant evolution of the consolidated concept of OI, which is centered around addressing sustainability challenges and proactively contributing to development that caters to the needs of the present while safeguarding the ability of future generations to meet their own needs. In particular, sustainable OI emphasizes the purposeful management of knowledge flows across organizational boundaries, specifically aimed at achieving sustainability objectives. This implies a more deliberate and directed approach to the exchange of information, ideas, and knowledge, ensuring that sustainability considerations are deeply integrated into the innovation processes and the organization's business models. The intersection between sustainability and the OI paradigm further highlights the interconnections between OI and CSV, shedding light on the potential of the OI distributed process to reorganize business models toward a greater contribution to the sustainability issues for future generations. These theoretical developments point toward overcoming some of the criticisms leveled at CSV theory, particularly those relating to its operationalization and novelty (Crane et al., 2014). As suggested by the concept of sustainable OI, the organizational factors that promote CSV dynamics can be observed and researched in the implementation of specific OI practices.

Despite these recent findings, scholars increasingly call for a better understanding of the linkage between grand challenges and OI (Bogers et al., 2020). More precisely, to date, empirical evidence on the positive associations between the implementation of OI practices and CSV dynamics is scarce. The challenge—and the research gap—is to size the CSV theory at an organizational level, unveiling the corporate practices that foster shared value creation (Menghwar & Daood, 2021). As a matter of fact, to reduce the complexity for businesses to tackle the climate change challenge with CSV approaches, more knowledge about the microfoundations of the CSV theory is required. In particular, a useful approach to studying microfoundations in strategic management is the practice-based approach (Jarzabkowski & Whittington, 2008), which associates operating practices implemented by individual or collective actors to macro-theory dynamics (Vallaster et al., 2021). This gap is especially relevant in the context of grand challenges, given how businesses today struggle to find effective ways to contribute to them without renouncing competitiveness or profit maximization (Ferraro et al., 2015; Smith et al., 2013). Shedding light on the OI practices that open up win-win opportunities for businesses through CSV dynamics could certainly enhance their efforts for the grand challenges resolution.

Our study aims exactly at covering this gap by exploring the practice-based microfoundations of CSV dynamics rooted in the implementation of distinct OI practices that face one of the most compelling and complex grand challenges, that is, climate change.

3 | RESEARCH METHODOLOGY

Eisenhardt et al. (2016) claimed that "inductive methods are especially helpful for making progress on grand challenges" (p. 1113). Building on that, we aim to answer the above-mentioned research question through a qualitative study, relying on the inductive theory building of case studies (Eisenhardt, 1989). In particular, our study is based on research methods that provide unique, in-depth, micro-level analysis of single cases (Eisenhardt & Graebner, 2007). Similarly to some recent studies in business ethics (Ramus & Vaccaro, 2017; Vaccaro, & Palazzo, 2015), we carried out an in-depth case analysis to inductively draw theoretical understanding from disaggregated data (Yin, 2009). Specifically, we collected empirical data and we recursively analyzed it through a three-step methodology in order to build theoretical considerations (Gioia et al., 2013). The triangulation of different data sources granted the robustness and validity of the methodological structure adopted (Yin, 2009).

3.1 | Case selection

For our single case study, we selected Enel, which is a multinational energy company that—as of June 2022—operates globally in 30 countries and five continents with a net installed capacity of 92.3 GW. We started the collaboration with Enel for this research project in October 2019. We selected Enel as a single case study for several reasons.

First, Enel has successfully embraced OI (Chesbrough, 2016). In particular, Enel invented and adopted the so-called *Open Innovability* approach to foster collaboration and knowledge sharing combining innovation and sustainability with start-ups, small, medium, and large companies, universities, experts, and investors (Chesbrough, 2016). By leveraging a global ecosystem of OI, Enel crowdsources ideas and technologies from external and internal actors to foster the sustainable transition of its business. For instance, Enel has created more than 20 innovation hubs around the world and manages the *Open Innovability* platform to launch online challenges that can be solved by individuals or organizations located anywhere.

Second, Enel positively contributes to the grand challenge of climate change. By placing the SDG 13 "Climate Action" at the core of its 2021–2023 sustainability plan, Enel is striving to lead the energy transition through the increasing development of renewable energy. As of June 2022, 55.4 GW of net installed capacity originated from renewable energy, with more than 5 GW of renewable capacity built in 2021. For instance, in 2020, Enel's carbon footprint was 97.9 million tCO2eq—26% lower than in 2019—mainly due to lower electricity production from fossil fuels. Enel contributed to addressing the climate change problem by heavily investing in renewable power, moving from 119.51 millions of equivalent tons of direct GHG emissions in 2015 to 69.8 millions of equivalent tons of direct GHG emissions in 2019.

Third, Enel openly announced the adoption of the CSV approach and adhered to the *Shared Value Initiative*, which is a platform for

companies seeking to solve societal challenges through market solutions. Specifically, with regard to the business line of electricity distribution, Enel strategically segmented the management of the life cycle of its industrial plants into three phases: (1) the construction phase; (2) the operation phase; and (3) the repurposing phase. For each phase, Enel designed a CSV plan, which consists of six activities aimed at managing the positive and negative impacts on its stakeholders, ranging from the context analysis activity to the monitoring, evaluation, and reporting activity (Figure 1).

3.2 | Data collection

In order to build theory in an inductive way on the basis of empirical data covering all three phases of the plant life cycle, we collected data about the OI practices implemented by Enel on three different industrial plants it operates. In particular, we collected data on the environmental and social value created by OI practices implemented in (1) the Bungala solar plant in Australia (construction site); (2) the Aurora solar plant in Minnesota (operating site); and (3) the Pego solar and wind plant in Portugal (repurposing site). For the Bungala solar plant, we collected data on OI practices implemented in its construction phase prior to November 2020, when the plant went into operation. For the operating phase, we collected data about the Aurora solar plant, which went into operation in 2017. For the repurposing phase, we collected data on the Pego solar and wind power plant in Portugal, which is scheduled to start operation in 2024.

The data collected is described in Table 1.

In particular, we had six interviews with plant managers of the sites, which lasted a total of 6 hr, 3 hr of interviews with a global sustainability manager, and 1 hr of interview with Enel's CIO. We also had a two-day meeting with seven employees of Enel's CSV department in Rome, and we had access to Enel's internal documents concerning CSV plan applications in the period between January 2020 and January 2022. These documents included (1) the catalogs of the OI practices implemented at the industrial plants (one for the construction phase and one for the operational phase); (2) the feasibility maps of the OI practices for the three analyzed plants; and (3) the KPIs concerning the environmental and social performance of the OI practices.

3.3 | Data analysis

Based on the inductive methodology that can be used in case studies, we triangulated the data collected in our analysis to guarantee the robustness and validity of the findings (Yin, 2009). In particular, we recursively carried out three steps of data analysis (Gioia et al., 2013) until we reached a crystallization of the findings (Janesick, 2000).

First, we systematically performed an inductive, open coding of the interviews' transcripts and archival documents into first-order concepts (Strauss & Corbin, 1990, p. 61). We coded the OI practices implemented at each industrial site, labeling the name of the OI practice, and reporting its social and environmental performance.

Second, we performed an abductive, axial coding of the identified OI practices to group them into conceptual categories (Strauss & Corbin, 1990, p. 96). Specifically, we grouped them into possible CSV microfoundations, focusing on the value dynamics enabled by the OI practices.

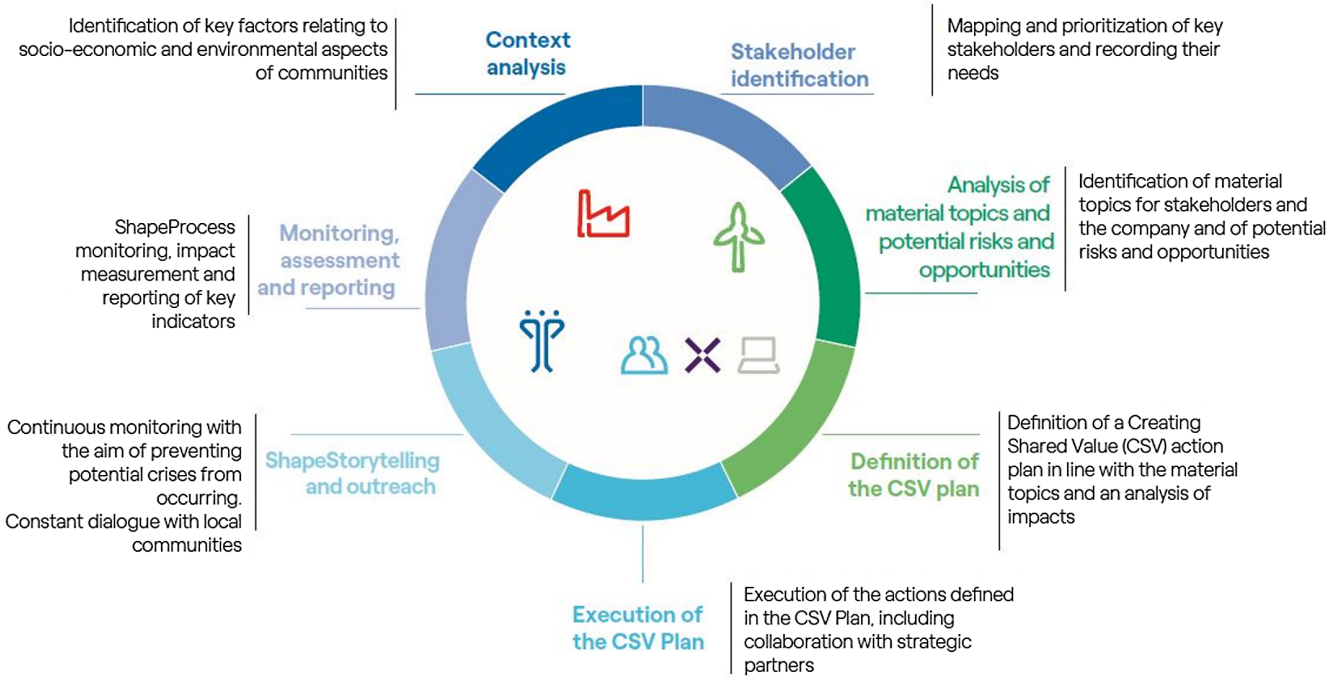

FIGURE 1 CSV plan description and activities. Enel Sustainability Report 2019, p. 109. CSV, creating shared value.

TABLE 1 Info on data collection.

Enel plant	Open-ended interviews	Archival documents	Transversal data
Bungala construction site	Two interviews to the construction site managers • 1 hr of interview on February 5, 2021 • 1 hr of interview on February 10, 2021	• OI practices catalog for the construction phase • Bungala OI practices feasibility map • Social and environmental KPIs of implemented OI practices	Observational data of the 2-day meeting in Rome (December 19 and 20, 2019) 3 hr of interview with the Head of Sustainability Projects and Partnerships on the February 10, 2020
Aurora operating site	Two interviews to the sustainable plant managers • 1 hr of interview on March 9, 2022 • 0.5 hr of interview on July 27, 2022	• OI practices catalog for the operating phase • Aurora OI practices feasibility map • Social and environmental KPIs of implemented OI practices	1 hr of interview with the Chief Innovability Officer on September 8, 2020
Pego repurposing site	Two interviews with the repurposing plant managers • 1 hr of interview on June 22, 2022 • 1.5 hr of interview on July 21, 2022	• Pego OI practices feasibility map • Social and environmental KPIs of implemented OI practices	

Finally, we performed a deliberate grounded theorizing approach (Gioia et al., 2013) to aggregate the CSV microfoundations into CSV dynamics. In particular, we aggregated the CSV microfoundations in the three CSV dynamics proposed by Porter and Kramer (2011), reducing the data analyzed into a noted framework.

4 | RESULTS

4.1 | The *Open Innovability* approach of Enel to tackle the climate change challenge

In its 2023–2025 strategic plan, Enel has recognized that its contribution to the climate challenge represents both its biggest challenge and opportunity (Lippolis et al., 2023). To tackle the climate change challenge, Enel integrated SDG 13 (climate action) into its core strategy by committing to reducing its direct emissions of greenhouse gases per kWh by 80% by 2030, compared to 2017 levels, and reaching full decarbonization by 2040. As an energy company, Enel's approach to the climate change challenge has been to implement a sustainable transition in the different phases of the energy life cycle, that is, production, storage, distribution, and sale (Chesbrough, 2016). Enel plans to reach a total renewable capacity of about 77 GW in 2024, an increase of approximately 43% with respect to 2021. By taking these ambitious and practical steps, Enel is playing a key role in addressing climate change while also paving the way for a sustainable energy future (Lippolis et al., 2023).

To reach these SDG-driven objectives, Enel adopted the OI paradigm to accelerate the adoption of new technologies and innovative solutions to the climate change challenge (Chesbrough, 2016). In particular, Enel adopted the *Open Innovability* model to promote the adoption of OI practices (*Open*) that combine innovation and sustainability (*Innovability*). Enel's effort is to adopt business models that simultaneously create value for the whole society and economic value for the company (Battilana & Dorado, 2010; Besharov & Smith, 2014). More specifically, Enel's purpose is to create shared value to enhance corporate competitiveness while answering the climate change challenge (Porter & Kramer, 2011), thus approaching the CSV paradigm with OI leverages (Camilleri et al., 2023). The OI practices implemented by Enel to create shared value include collaborations with start-ups around the world, partnerships with local universities, and challenges for individual inventors (Chesbrough, 2016).

The following paragraphs provide evidence of Enel's activities in the field of shared value creation through OI practices implemented at three different industrial sites. First, we highlight how the implementation of OI practices at different life cycle phases of the industrial sites enabled the creation of social and environmental benefits in response to the climate change challenge. Second, we aggregate data on implemented OI practices to define the microfoundations of the three CSV dynamics described by Porter and Kramer (2011).

4.2 | OI practices for climate action

First of all, we noted that Enel monitored the social and environmental benefits generated by the OI practices implemented in its industrial plants. Focusing on the business line of global power generation, the contribution to SDG #13 is embodied through various OI practices that generate benefits for local and global communities (society) and for the planet (environment). These are monitored and measured along the entire life cycle of industrial sites, as underlined by the following interview quote:

> A quantitative, numerical practice-by-practice monitoring is also done. So, for each practice of a given plant, always according to the three phases, we write down how much that practice actually costs, how

> many beneficiaries it had, or how much water was saved. This is because, in addition to the numerical calculation of KPIs, an important focus is on the actual benefits.
>
> (Head of CSV and Sustainability Projects)

In the construction phase, Enel applies the sustainable construction site model to measure, manage, and offset its environmental and social impact during the construction of new industrial plants. The sustainable construction site model corresponds to the CSV plan described in Figure 1, but it is customized for the construction phase. In particular, it aims to systemically integrate sustainability into the construction phase by responding, from the very beginning, to both the needs of construction and the needs of the local community. It begins in the business development phase, when contextual analysis leads to a plan to mitigate the construction site's impacts in order to maximize positive effects for society and the environment, according to the CSV logic.

Specifically, a number of OI practices are selected from the sustainable construction site catalog and implemented, then improved and shared among other Enel construction site managers, as explained by the following excerpt:

> As part of the CSV Plan, we usually activate the Sustainable Construction Site model. We develop it at the beginning of the construction phase together with the contractor and, based on CSV context analysis and our catalogue [Sustainable Construction Site Catalogue], we define what are the best practices to be adopted.
>
> (Bungala Construction Site Manager)

In 2021, the catalog included 93 OI practices, categorized according to five areas of application: 16 OI practices in energy & emissions, 24 OI practices in materials, 10 OI practices in water, 16 OI practices in biodiversity, and 27 OI practices in people & territory.

In the case of the construction phase of the Bungala plant, the CSV plan was designed after the site was tendered to an existing contractor, so Enel was not able to adopt OI practices from the sustainable construction site catalog, which were nonetheless designed according to the operational plan already in place, as highlighted below:

> It was not a standard Sustainable Construction Site Model activation. For this plant [Bungala plant], the project had already been purchased by a local developer who already started contracts, and so we intervened on existing contracts. The construction site and its operational plan was not overturned, but still allowed for the implementation of a number of practices.
>
> (Chief Innovability Officer)

Table 2 summarizes the results concerning the social and environmental benefits generated by the implementation of eight OI practices during the construction phase of the Bungala industrial plant, which contributed to the climate change grand challenge.

In the operation phase, Enel applies the sustainable plant model to improve the sustainability of its worldwide energy generation fleet by leveraging three pillars: that is, operational efficiency, reduction of environmental impacts, and social positive impacts. To monitor the social and environmental benefits, Enel internally developed a sustainable plant scorecard that includes a long list of KPIs categorized according to seven areas: energy, emissions, water, materials, waste, biodiversity for the environment, and people for society. The *Open Innovability* approach is applied by globally sharing OI practices designed for the operational phase, which are yearly updated and gathered in the sustainable plant catalog. In 2021, the 74 OI practices of the operation phase were also digitalized in an online catalog shared among different countries, as highlighted below:

> Basically, we have digitized the catalogues that used to be on [Name of the provider] files. Now all the practices that are part of the Sustainable Plant Model are available in the [Name of the provider] platform with a specific section called Sustainable Plant Catalogue. Plus, this year [2021], we have increased quite a lot, almost by 20%, if I am not mistaken, the social part of the catalogue, enriching it with practices coming from plants in various countries.
>
> (Sustainable Plants Manager)

With regard to the sustainable plant model of the Aurora plant, Enel centered the CSV plan around a dual use of the solar application, both for solar power production and for plant cultivation through collaborations with local partners, as stated in a publicly available online document:

> Enel Green Power is committed in Aurora to apply a sustainable site model. When we build projects, we monitor performance for energy, waste and water management, and the social and economic impact on the local community. Aurora solar plants integrates dual-use solar applications and pollinator friendly habitats into its model through a partnership with the [Name of the collaborator]. Its focus is on regenerative agriculture, providing ecosystem services and improving operational efficiencies.

Table 3 summarizes the social and environmental benefits generated by the implementation of 20 OI practices during the operational phase of the Aurora industrial plant.

In the repurposing phase, Enel's decarbonization strategy is achieved by converting dismissed or operating industrial sites of

TABLE 2 Results on OI practices contribution to climate action in Bungala plant (construction phase).

	Contribution for climate change grand challenge	
OI practice	**Social benefits**	**Environmental benefits**
OI1) Employment of skilled Aborigines in the construction phase	1500 Aborigines hired (30% of total jobs)	
OI2) Employment of nonskilled Aborigines in the construction phase with training and mentoring service	70 Aborigines trained, mentored and hired	
OI3) Heritage training of site workers on the Aboriginal culture by member of Nukunu community	1400 workers received training (two times per week in 1 month)	
OI4) Visits of students at Porto Augusta schools to the plant and training on renewable energy	500 students visited the site	
OI5) Stem program (for free) for Aboriginal students (with Polly farmer foundation)	15 students received training and skills on solar plants (total value equal to $50 k)	
OI6) Reactivation of the railway to transport equipment		190 t di greenhouses emissions (CO_2) saved 68,000 L diesel saved 40% of water saved
OI7) Waste recycle program		40% of non-hazardous waste recycled 30% of soil reused
OI8) Sustainable tourism through a partnership with local tourist operator	50 visits	

TABLE 3 Results on OI practices contribution to climate action in Aurora plant (operating phase).

	Contribution for climate change grand challenge	
OI practice	**Social benefits**	**Environmental benefits**
OI1) Reuse or recycling of materials and waste		20% of non-hazardous waste recycled.
OI2) PCB free oil		100% of PCB Oil refilled, disposed, and recycling as hazardous waste
OI3) Energy saving in lighting		100% light pollution saved at night 5k €/year saved of energy consumption
OI4) Smart glasses	100% of risk reduction for workers through no exposure	
OI5) Natural habitat preservation		100% supportive habitat for bumblebees
OI6) Drones for plant inspections		95% increased inspection efficiency (energy savings)
OI7) Sheep Grass Management		40% improvement of vegetation practices (transport of seeds by sheep)
OI8) Sustainable tourism	30 visits	
OI9) Recycle of PV panels		95% of PV panels materials recovering 0 plastic wastes
OI10) Plastic free plant		
OI11) Support for the adoption of new	Three collaborations with local technology and innovation in universities university and technical training one technical training course	

thermal power generation into industrial sites of renewable power generation. Enel's CSV model is applied by maximizing the reuse and recycling of materials and resources and minimizing waste. In particular, to monitor the benefits generated, Enel defined a set of KPIs categorized according to social, environmental, technical, and financial aspects of the repurposing activities.

The Open Innovability approach is realized by defining OI practices belonging to each of the above-mentioned areas, which are not included in a specific catalog for the repurposing phase but are shared among Enel plant managers to accelerate decarbonization, as highlighted below:

> Enel's strategy toward a full decarbonization is based on the so called "repurposing" of the thermal power plants meaning reconversion of existing sites with new renewable capacity or various hybrid sources

> (combination of more than one source on the same site) with gas power plants where there is a need of ensuring stability of the system during the transition toward a fully decarbonized economy. (Energy Transition. Enel's Solutions, 2019)

In the case of the Pego repurposing phase, the CSV plan allowed the local government to win a public tender according to five areas of intervention: primary sector, tertiary sector, biodiversity, sustainable municipalities, and training. Specifically, the planned OI practices aim at generating social benefits, as requested by the public tender:

> We were awarded the tender a couple of months ago [interview conducted on 15th of July 2021], so the whole CSV plan starts now. We are currently designing it. The government is launching several tenders to close power plants and open renewable ones. Our whole CSV plan is very important because the government is incorporating the social aspect as key for assigning tenders and prompting the fair ecological transition.
>
> (Head of CSV and Sustainability Projects Iberia)

Table 4 illustrates the expected social and environmental benefits of 10 OI practices that will be implemented during the repurposing phase of the Pego industrial plant.

4.3 | CSV microfoundations

4.3.1 | Redesigned products and markets

The first CSV dynamic is to reconceive products and markets in a way that they respond to societal needs that are unserved in traditional markets, such as healthier products, greener services, or financial services customers at the bottom up of the pyramid (Porter & Kramer, 2011). Our results indicate that Enel OI practices enable three CSV microfoundations of this dynamic, that is, circular economy products, circular economy services, and ecosystem services (Figure 2).

We noted that OI practices of reusing and recycling material, waste, and solar panels implemented in the Aurora plant enabled the production of circular economy products, while OI practices of sustainable tourism with local tourist operators and the practice of grazing the grass under the solar panels by sheep tended by local farmers allowed for the provision of circular economy services.

Concerning the ecosystem services that underpin the CSV dynamic of redesigned products and markets, we noted that both natural habitat preservation in the Aurora plant through protective fences and the restoration of a forest to offset the environmental footprint of new solar panels facilitated the generation of ecosystem services. Enel's commitment to the circularity of products and services, as well as the offering of ecosystem services, which constitute the microfoundations of the "redesigned products and markets" CSV dynamic, also emerged from the triangulation with Enel's archival data:

> According to Enel's vision, the circular economy doesn't begin with the material recycling phase but with the asset's design. For this reason, right from the very outset Enel has focused on the entire value chain of products, redesigning every single phase starting from the design, supply and production, ensuring the full involvement of suppliers through structured programs.
>
> (Circular Economy Enel Position Paper, 2020)

4.3.2 | Redefining the productivity in the value chain

Porter and Kramer (2011) identified six factors facilitating the second CSV dynamic—that is, the redefinition of productivity in the value chain—that are energy use and logistics, resource use, procurement, distribution, employee productivity, and location. Within the context of the climate change grand challenge, we noted that four out of six CSV microfoundations are enabled by OI practices implemented in Enel industrial plants (Figure 3).

In particular, the OI practice of saving energy in lighting in the Aurora plant through intelligent lighting systems and the OI practice of reactivating the railway from Port Augusta to the Bungala construction site to transport equipment enabled greater efficiency in energy use and logistics.

In the operating phase of the Aurora plant, the four OI practices related to resource use as a CSV microfoundation, which are using environmentally friendly consumables, such as biodegradable oils and paints, using innovative methods for lubricant storage, transfer, and application, adopting a plastic-free policy in the operation and maintenance of the plant, and using polychlorinated biphenyls (PCB) free oils for fleet transformers, allowed the plant to contribute with positive environmental and social benefits to the grand challenge of climate change.

During the CSV plan for the repurposing phase of Pego and its reconversion into a renewable power plant, the OI practices related to suppliers' requirements, concerning compulsory and optional KPIs to gain the order with Enel, prompted the procurement microfoundation that contributed to the redefinition of productivity in the value chain as a CSV dynamic.

In addition, employees' productivity was increased in the operating phase thanks to the use of smart glasses for site workers that allowed for greater safety and time savings in operations and maintenance and the use of drones for inspections of damage or dust accumulated on solar panel surfaces.

The effort to redefine productivity in the value chain through improvements in energy and resource use, efficient procurement,

TABLE 4 Results on OI practices contribution to climate action in Pego plant (repurposing phase).

	Contribution for climate change grand challenge	
OI practice	**Social benefits**	**Environmental benefits**
OI1) Long-term professional training for primary sector	1000 people trained (4000 hr): 400 people in primary sector; 600 people in renewable energy	
OI2) Medium-term training with professional certificate and employment in the industrial site	500 people trained (440 hr): 200 people in hazards prevention; 200 people in office automation; 100 people in general administration	
OI3) Short-term period training and employment in O&M	660 people trained (370 hr): 60 people in O & M of renewables; 400 people in solar power mounters; 100 people in energy distribution; 90 people in primary sector	
OI4) Compulsory KPIs for suppliers in the construction phase	5 Kits of PV of 10KWp 10 defibrillators 20 rainwater collection tanks 5 EV Charging point	
OI5) Optional KPIs for suppliers in the construction phase	Compulsory local jobs: min 30% Gender Diversity: 10%–20% Disability integration: 1/5 people	
OI6) Alliances with cooperatives for job creation	31 potential jobs created in the sectors of tourism, apiculture, agriculture and farming	
OI7) Collaboration with Apadrina un Olivo to help olives growers with better technology	17 permanent jobs 10 temporary jobs	10,000 olive trees saved
OI8) Endesa forest to offsetting of solar panels		25 Ha of forestal area
OI9) Consultancies services for sustainable municipalities		Energy Communities: solar panel on public buildings (around 500 meters). Renewable energy grants of 3% yearly Pego production to the municipality
OI10) Public transports with renewable energy		Electric bus and more than two electric vehicle charging points

and employees' productivity was confirmed from the interviews on the CSV plan application:

> Before we open a new construction site, we carry out a social, economic and environmental context analysis (SEECA) that allows us to assess our impact on our stakeholders. SEECA's objective is to combine different types of projects that create shared value without forgetting about doing business. The evolution of the CSV approach is to redefine the whole value chain in order to be sustainable in our emissions, waste, water consumption, energy use, relationship with suppliers and employees.
>
> (Head of Sustainability Projects and Partnerships)

4.3.3 | Enabling local cluster development

The third CSV dynamic concerns the support of companies, infrastructures, suppliers, service providers, and local institutions that are located in a cluster close to where the business operates (Porter & Kramer, 2011). To enable the development of a local cluster, we noted that Enel implemented various OI practices that can be grouped into four CSV microfoundations: local workforce development, local skills development, local alliance development, and public policy development (Figure 4).

Concerning local workforce development, during the construction phase of the Bungala power plant, Enel employed both skilled and nonskilled Aborigines, providing them with training and mentoring services when needed. These two OI practices, together with the OI practices of medium-term and short-term training and employment of site workers in the Pego power plant, allowed for the creation of social benefits for local people that contributed to the climate change challenge.

Similarly, OI practices that fostered the microfoundation of local skills development were implemented to contribute to climate action. More specifically, the OI practices implemented were indigenous and local training in the Aurora plant for site workers in the renewable energy sector, heritage training in the Bungala power plant about the history and culture of Aborigines provided by a member of the Nukunu community, a stem program provided for free for

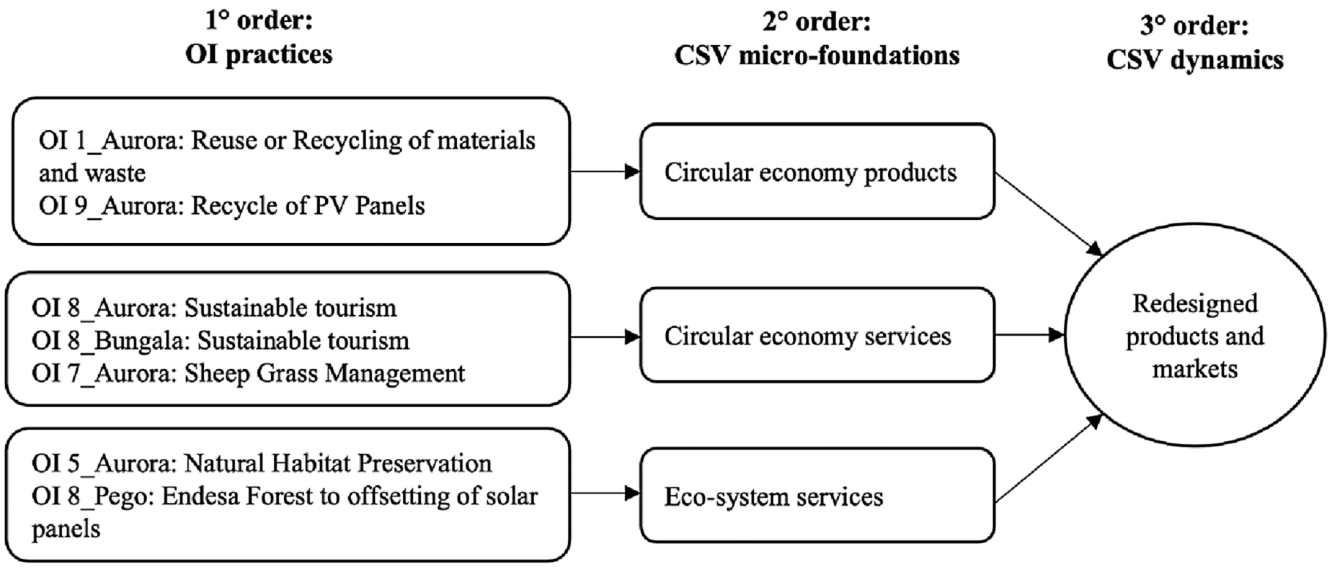

FIGURE 2 CSV microfoundations of the "redesigned product and markets" dynamic. CSV, creating shared value.

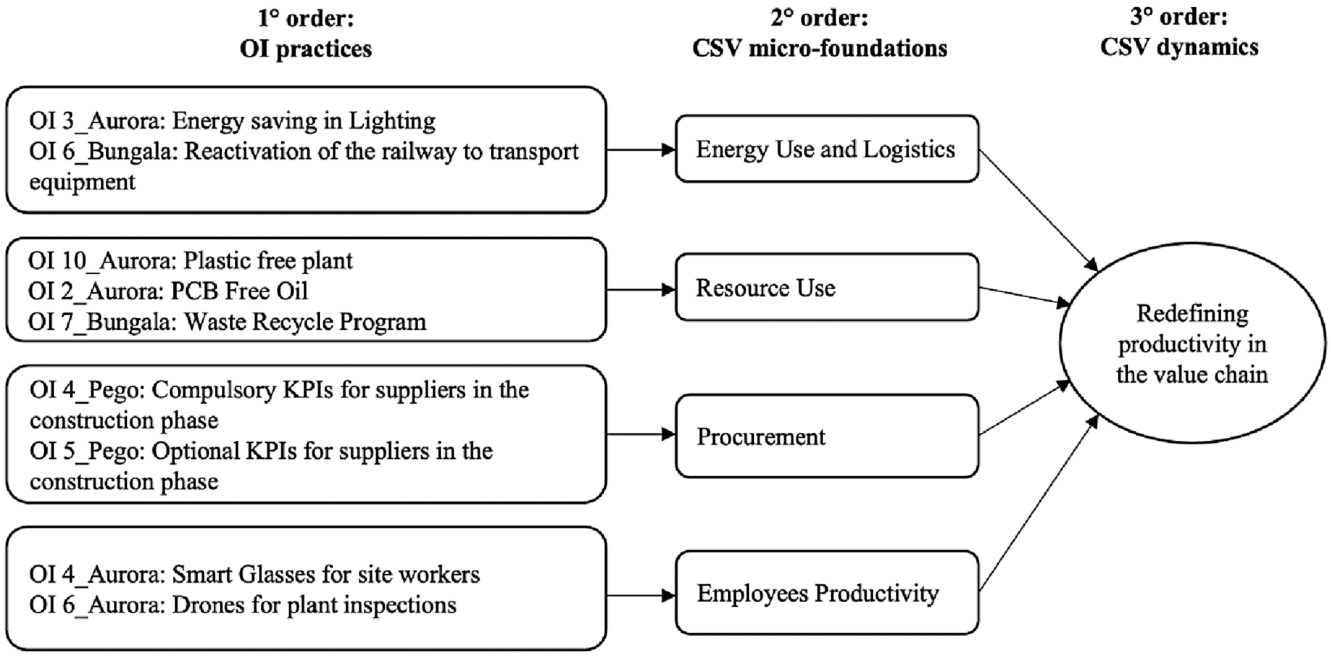

FIGURE 3 CSV microfoundations of the "redefining productivity in the value chain" dynamic. CSV, creating shared value.

Aborigines students of local high schools, local students visiting the Bungala power plant and training on renewable energy, support to local universities for the adoption of new technology with technical training for students, and long-professional training of people on the primary sector skills in the repurposing phase.

In order to build local alliances that enabled local cluster development, Enel implemented OI practices of local food systems enhancement through open collaborations with local cooperatives providing services in the agri-food sector, of collaborations with local cooperatives in the tourism, apiculture, agriculture and farming sectors, of direct commitment for a project of olives protection and support of local olives growers through a collaboration with the "Apadrina un Olivo" association.

Finally, the microfoundation of public policy development was prompted by the two OI practices of Pego repurposing plant concerning the consultancies services and projects implemented by Enel for local municipalities, such as the design of energy communities or green urban services, and by providing a green public transport fleet for local municipalities.

The dynamic of caring for local needs and development is at the heart of the implementation of Enel's CSV plan, and its foundations are rooted in various OI practices that allow for multiple collaborations with local stakeholders, as confirmed below:

> As in the case of the Aboriginal communities of the Australian desert where we built the solar plant, we

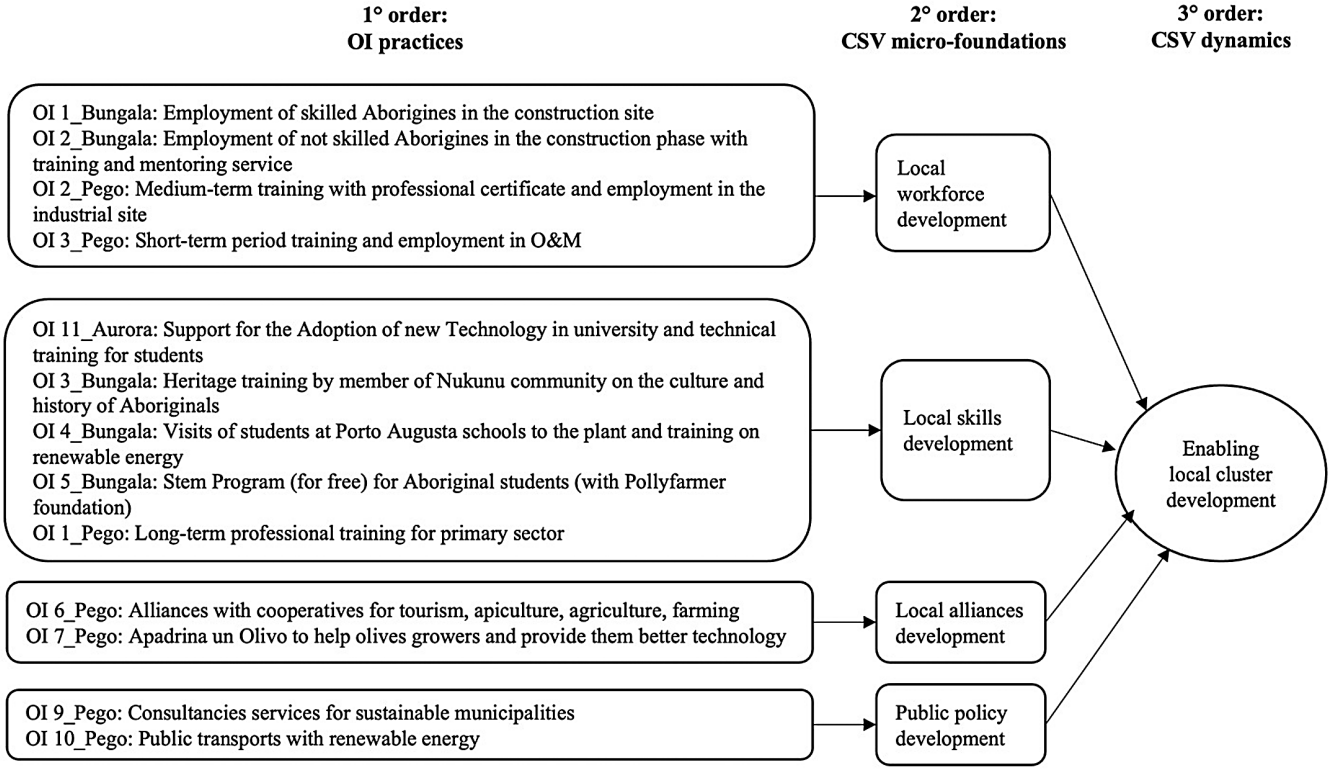

FIGURE 4 CSV microfoundations of the "enabling local cluster development" dynamic.

always recognize the moral belonging of the territory to those who came before us, their history, and therefore their rights to live it. We therefore aim to foster CSV projects that support local development that is co-designed through shared practices with local actors, whether private or institutional.

(Bungala Construction Site Manager)

5 | DISCUSSION

We discuss our results in light of the recent literature on CSV, OI, and grand challenges. First, we discuss how CSV can serve for businesses contribute to grand challenges, both through innovating value creation dynamics and improving sustainability performance. Second, we discuss how OI can be harnessed to address the complex and multi-stakeholder nature of modern grand challenges, theoretically underling the shift from a traditional conceptualization of OI to a sustainability-related one.

5.1 | Sizing CSV to the business contribution to grand challenges

In outlining the future research area of the first stream, concerning the conceptualization, criticism, and response to the CSV concept, they emphasized the importance of refocusing the debate on "how the CSV will be shaped, and on which premises it will be based" (p. 474), seeking to explore "for which part of society does a firm's shared value initiative actually create value" (p. 474).

First, our study attempts to take such a perspective on the actual contribution of CSV to societal problems by focusing on the grand challenge of climate change. In particular, we explored the microfoundations of the CSV dynamics that are rooted in operating practices generating social and environmental benefits for a wide range of company stakeholders. By associating CSV dynamics microfoundations with operating practices, we attempted to size the very complex grand challenges to the business level (Ferraro et al., 2015; George et al., 2016), aiming to pragmatically reduce the complexity of this challenge through empirical insights on good corporate practices (Ferraro et al., 2015; Menghwar & Daood, 2021). From a business ethics perspective, our study contributes to expanding the conception of corporate social responsibility (Rendtorff, 2017) by integrating moral and social objectives with profit maximization. In particular, our empirical findings help to contextualize CSV theory within the ongoing business ethics debate on corporate purpose (Battilana et al., 2022; George et al., 2023; Hollensbe et al., 2014). By shedding light on the successful implementation of OI practices that enable companies to meet the challenge of climate change, we also highlight the importance of corporate openness, collaboration, engagement with external partners, and co-creation of value to create shared value (Markovic et al., 2023). In contrast to the shareholder's primacy perspective on corporate purpose, which emphasizes maximizing profit as the sole corporate social responsibility (Suddaby et al., 2023), our empirical approach linking OI and CSV expands

the scope of corporate responsibilities by encompassing a wider range of stakeholders. This extension of obligations maintains the objective of profit maximization that characterizes the CSV theory. More specifically, we show how companies can engage in OI practices that not only benefit their own interests but also contribute positively to society as a whole. We thus contribute to rethinking corporate purpose in contemporary capitalism as a social force for good (Wieland, 2017).

Second, various scholars called for a business effort to reshape value chains in order to respond to the climate change grand challenge (Howard-Grenville et al., 2014; Wright & Nyberg, 2017), and the CSV theory claims that redefining productivity in the value chain is an essential requirement to answer societal problems (Menghwar & Daood, 2021; Porter & Kramer, 2011). In our study, we contributed to shed light on how companies can redefine their business value chains for societal benefits through four CSV microfoundations, that is, energy use and logistics, resource use, procurement, and employee productivity, which are associated to specific OI practices. More specifically, we discuss the implementation of distinct OI practices that contribute to redefine productivity in Enel's value chain, providing evidence of the social and environmental benefits generated by each practice.

Third, we also provided knowledge on how to scale CSV theory at the business level, moving from a pure strategic approach to the operational level of corporate practices, which allowed us to explore the business determinants of sustainability performance (Morioka & de Carvalho, 2016; Searcy, 2016; Stephan et al., 2019). To do so, we provided quantitative data on the social and environmental benefits generated by the OI practices implemented by the company analyzed, highlighting the centrality of extra-financial indicators and dimensions when accounting for social and environmental issues. Although our results cannot be generalized to all types of businesses, our exercise provides useful insights for energy businesses specifically dedicated to reducing their environmental impact and contributing to climate action. We thus contribute to the strategic management literature on practice-based microfoundations (Foss & Lindenberg, 2013; Jarzabkowski & Whittington, 2008), which investigates how operating practices constitute the basis of macro-theory dynamics.

Specifically, we provided new knowledge on how the value creation dynamics of CSV are rooted in day-to-day business practices and how CSV-based business models can be objects of innovation aimed at improving the sustainability performance of companies (Florin & Schmidt, 2011; Mehera & Ordonez-Ponce, 2021).

5.2 | Sustainable OI for climate action

The transition from linear to circular production is fundamental to answering the grand challenge of climate change, and this often requires a collaborative effort between different actors in the value chain (Köhler et al., 2022). In particular, Ferraro et al. (2015) claimed that building a participatory architecture, defined as "a structure and rules of engagement that allow diverse and heterogeneous actors to interact constructively over prolonged timespans" (p. 374), is one of the most robust strategies to tackle the climate change challenge. The participation of different stakeholders is thus crucial to being successful in promoting effective actions that target the complex, uncertain, and evaluative nature of societal challenges.

In line with this thinking, we identified various OI practices implemented by the company analyzed in our study that contributed to generate social and environmental benefits. We thus confirm recent literature that associated OI with sustainability outcomes (Chaurasia et al., 2020), stressing the importance of an inclusive stakeholder management approach to reach effective results. From a theoretical perspective, we contributed to the new conceptualizations of OI serving sustainability, such as the one of sustainable OI made by Bogers et al. (2020), to confirm that systemic change and progress toward sustainable development require collaborative and joint efforts between businesses and other organizations (Bertello et al., 2022; McGahan et al., 2021). In particular, we empirically validate the recent conceptualization of sustainable OI by verifying how "a coordinated and collaborative effort that draws on the competencies of multiple organizations [is able] to increase the likelihood of successfully addressing the problem" (Bogers et al., 2020, p. 1506). Our study sheds light on corporate planning and implementation of OI practices, stressing the importance of a multi-stakeholder perspective when evaluating the business contribution to grand challenges.

5.3 | Managerial implications

Our study provides an invitation for managers and entrepreneurs interested in undertaking strategic approaches oriented toward a multiplicity of stakeholders. In particular, managers should consider how to implement sustainable OI practices within their organizations in order to improve their sustainability performance. This includes adopting a multi-stakeholder perspective and engaging with different actors in the value chain to enable effective actions that target complex, uncertain, and evaluative societal challenges, such as the climate change challenge. Our study provides managers with practical evidence on the importance of a participatory architecture that allows diverse and heterogeneous actors to interact constructively over prolonged timespans as a robust strategy to tackle the challenge of climate change.

Directing such collaborations to the co-design and implementation of OI practices that look toward the creation of shared value might increase the ability of businesses to address today's grand challenges, thus contributing to the well-being of people and the planet.

Furthermore, managers and entrepreneurs should always assess which OI practices enable specific microfoundations of CSV dynamics, distinguishing between product dynamics and process dynamics. In particular, business resources must also be directed toward the implementation of OI practices that meet specific sustainability performance objectives. For this purpose, managers should

consider the centrality of extra-financial indicators and dimensions when accounting for social and environmental issues within their organizations.

5.4 | Limitations of the study

Our study indeed contains some limitations. First, we focused on the internal determinants for businesses of CSV dynamics without considering external factors such as industry-level or national-level factors. Future studies on the intersection between OI and CSV could also consider how government regulations or industry characteristics enable companies to more easily implement OI practices aimed at generating shared value creation dynamics.

Second, we qualitatively analyzed with a single case study how an energy company implemented a number of OI practices that generated benefits for the local communities and the natural environment. However, robust measurement of the value contributing to the climate change grand challenge is missing. Future quantitative research can fill this gap, contributing to provide a more exact understanding of how businesses can manage CSV through OI models.

Third, we did not provide evidence on the temporal evolution of Enel's business strategy in our qualitative and cross-sectional analyses. Longitudinal studies can better depict how the nature of certain business practices evolves and how they increasingly influence sustainability performance over time.

5.5 | Directions for future research

While our research provides valuable insights into the positive contributions of OI practices to addressing the grand challenge of climate change through the dynamics of CSV, our findings, along with certain limitations in our study, present opportunities for exploring future research directions.

First, researchers can delve into longitudinal studies that track the implementation of OI practices in different industries and sectors to analyze their long-term impacts on sustainability and shared value creation. This could shed light on the evolution of CSV dynamics and help identify best practices that lead to sustained positive outcomes (Bogers et al., 2020).

Second, further research could explore the role of technology and digital platforms in fostering OI practices and facilitating collaboration between organizations and stakeholders (Wu et al., 2022). Investigating how advancements in technology can enhance knowledge sharing, co-creation, and open knowledge flows could unlock new opportunities for generating social and environmental value (Chesbrough & Di Minin, 2014).

Furthermore, it would be beneficial to explore the micro-level challenges and barriers faced by organizations in implementing OI practices for CSV. Identifying challenges and developing strategies to overcome them can help organizations navigate the complexities of sustainability efforts more effectively (Pedersen et al., 2022).

Additionally, research could investigate the role of government policies and regulations in promoting OI and CSV adoption. Understanding how supportive policy environments can influence the engagement of businesses in addressing grand challenges like climate change may encourage policymakers to design effective incentives and frameworks (Mu & Wang, 2022).

Our study should also open up some avenues for future research, presenting opportunities to refine and expand our knowledge of OI practices and their role in CSV to address climate change and other societal challenges. Through continued investigation, we can pave the way for organizations to make meaningful contributions to building a better and more sustainable society.

6 | CONCLUSIONS

In this paper, we explored how OI practices positively contribute to the climate change grand challenge by enabling the dynamics of CSV. We performed a qualitative analysis by coding internal documents and conducting interviews with managers of a multinational company operating in the energy sector. In particular, we analyzed data on OI practices implemented in the management of three industrial sites at different life cycle phases.

We found the presence of 11 organizational microfoundations of CSV dynamics that are rooted in 29 OI practices. By investigating the organizational microfoundations from an OI perspective, we contributed to the growing literature on business contributions to grand challenges (Ferraro et al., 2015; George et al., 2016; Martí, 2018).

In particular, we unpacked the concept of CSV, thus contributing to prevent it from becoming a buzzword (Dembek et al., 2016), from being reduced in its understanding and applications (de los Reyes et al., 2017), while increasing the novelty of its constructs (Crane et al., 2014), and its applicability in different contexts (Voltan et al., 2017). By drawing upon the OI paradigm, we highlighted how businesses can pursue win-win strategies through knowledge sharing, social and environmental value co-creation, and open knowledge flows with stakeholders. Moreover, we also provided knowledge on CSV answers to societal challenges such as climate change, thus contributing to the growing literature that conceptualizes the link between the OI paradigm and the CSV theory (Camilleri et al., 2023; Chaurasia et al., 2020; Lippolis et al., 2023; Roszkowska-Menkes, 2018).

Our empirical insights also provided practical guidance for companies interested in responding to the urgent challenges of our century through OI approaches, thus outlining a path for creating sustainable and lasting value. Companies and organizations are increasingly being demanded to work for the common good through a collective and collaborative effort with other organizations (Asselle & Piccaluga, 2019; Markovic et al., 2023), and our paper exactly addresses this issue by showing how to implement shared value dynamics aimed at building a better society. In particular, we facilitated the understanding of the organizational determinants of business sustainability performance (Morioka & de Carvalho, 2016;

Searcy, 2012, 2016) and business contribution to societal challenges (Bogers et al., 2020; Fernhaber & Zou, 2022; Lu & Chesbrough, 2022). By using a practice-based approach to uncover the microfoundations of CSV dynamics rooted in the OI paradigm, we made an effort to scale grand challenges to the organizational level. Future research should aim to reduce the handling complexity for managers facing grand challenges by providing them with empirical knowledge on the types of corporate practices that enable them to contribute to a better future.

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DATA AVAILABILITY STATEMENT

The data that support the findings include confidential information from internal documents and confidential interviews with company executives.

ORCID

Gianluca Gionfriddo https://orcid.org/0000-0001-8403-0757
Andrea Mario Cuore Piccaluga https://orcid.org/0000-0002-1483-9152

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