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Exploring Materiality and Stakeholder Engagement in European Water Utilities' Sustainability Strategies, Organizational Practices, and Reporting

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ABSTRACT

Materiality is a key principle enabling organizations to determine what information to disclose, serving as both a filtering mechanism and a strategic tool shaped by institutional dynamics. Institutional logics, which inform and legitimize organizational practices, significantly influence accountability and reporting processes, including the application of materiality. Effective water management is essential for sustainable development, making the water industry a key sector for exploring materiality and stakeholder engagement within sustainability strategies. This study explores the integration of the materiality principle, stakeholder engagement, and related organizational practices into the sustainability strategies and reporting of the European water industry between 2020 and 2022. Through content analysis of sustainability reports from 26 European water utilities, the study identifies three primary stakeholder engagement approaches: one-way communication, dialogic interaction, and multi-directional dialog. The prevailing trend is a dialogic approach that has evolved over time, though concerns about its relevance and effectiveness remain. Additionally, the study examines disclosed material topics, noting a dominant focus on environmental concerns and health and safety, with economic and governance issues receiving comparatively less attention. It emphasizes the need to improve the materiality process by integrating insights from accounting research into organizational practices and underscores the importance of effective stakeholder engagement for fostering trust and collaboration, particularly in vital sectors like water management. The findings offer valuable perspectives for policymakers, emphasizing the need to design robust mechanisms that promote stakeholder engagement. While progress in this area in recent years is evident, as demonstrated by this research, it must quickly evolve into a fundamental component of effective water management to avoid the risk of becoming merely an organizational façade.

1 | Introduction

UNICEF stated that “universal access to safe drinking water is a fundamental need and human right” (UNICEF 2023), but data on access to “safely managed” water indicated that, in 2022, “5.82 billion people used safely managed services and a further 1.5 billion people used basic services. However, 2.2 billion people still lacked access to safely managed water services” (UNICEF 2023). Water supply is hampered by scarcity,

pollution, extreme events, demographic growth, rapid urbanization, and inadequate access (Di Vaio et al. 2021; European Investment Bank 2023; Giacomini, Paredi, and Sancino 2022; Gleick 2003; OECD 2021). In the European Union context, regulatory updates have addressed these current and future sustainability challenges (Busch et al. 2022). Stakeholders' expectations require a new business model based on sustainable values (López-Cabarcos et al. 2023; Rocca, Giacomini, and Zola 2021) that must also be applied to the “water business.”

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Within sustainability, issues such as water management, climate change, and occupational health and safety are particularly important for companies (Sepúlveda-Alzate, García-Benau, and Gómez-Villegas 2022) and are relevant across all types of organizations—private, public, and hybrid (Maine, Florin Samuelsson, and Uman 2022).

The current research has examined water companies (or water utilities, WUs)¹—a relevant empirical arena in which sustainable business strategies are implemented. Thus, the outcomes of companies' conduct on the environment and society have increased the request for accountability concerning social and environmental actions in addition to economic outcomes (García-Sánchez, Frías-Aceituno, and Rodríguez-Domínguez 2013; Giacomini, Paredi, and Sancino 2022). Furthermore, WUs' sustainability strategies are particularly motivated by the pursuit of Sustainable Development Goal #6, namely, to ensure universal and equitable access to safe drinking water and sanitation and to enhance water quality globally (United Nations 2015). Collaboration, coordination, and stakeholder engagement (SE) are the crucial elements that WUs should embrace to address the global sustainability challenge proposed in the Agenda 2030 report (Di Vaio et al. 2021; United Nations 2015) and to become active actors for *water access as a human right*. WUs, more than other organizations, need to acknowledge the significance of the stakeholders' role. To maintain effectiveness, they should monitor the criteria by which stakeholders, including citizens, assess their business activities (Giacomini 2022; Giacomini, Paredi, and Sancino 2022; López-Ruiz et al. 2023; Wiewiora, Keast, and Brown 2016).

Empirical research on how organizations conduct materiality analysis, engage stakeholders, and report on their sustainability practices has been limited (Beske, Haustein, and Lorson 2020; Gagné, Berthelot, and Coulmont 2022; Gao and Zhang 2006; Hörisch, Freeman, and Schaltegger 2014; Sepúlveda-Alzate, García-Benau, and Gómez-Villegas 2022), although inconsistencies in the application of organizational values, SE, and sustainability strategies are not uncommon. While some organizations publicly commit to sustainability, they may simultaneously uphold practices that harm the environment and oppose the interests of many stakeholders—a phenomenon often referred to as organizational hypocrisy (Cho et al. 2015; Steiner 2015). For these reasons, the concept of materiality is a crucial element in the GRI process for sustainability reporting and in the new Corporate Social Reporting Directive (CSR) enforced in the European Union. Moreover, SE quality represents a key factor in the materiality process, but few academic papers have empirically studied it (Bonetti, Lai, and Stacchezzini 2023; Galeotti et al. 2023; Giacomini et al. 2020; Høvring, Andersen, and Nielsen 2018), especially with regard to WUs (Annesi, Battaglia, and Frey 2021; Ligorio, Caputo, and Venturelli 2022). Additionally, some scholars have advocated undertaking the path of examining sustainability actions and SE processes in different industrial sectors (Sepúlveda-Alzate, García-Benau, and Gómez-Villegas 2022) and in different countries and institutional contexts (Agovino et al. 2021; Galeotti et al. 2023).

Thus, this study empirically identifies how WUs provide the assessment of materiality at the European level; to do so, we consider a sample of 26 WUs operating in different European

countries: Belgium, France, Greece, Italy, the Netherlands, Portugal, Spain, and the United Kingdom. To our knowledge, no similar studies have been conducted so far. Moreover, as the linkages between the approaches of the materiality concept in sustainability disclosure and the SE process have been investigated (Bonetti, Lai, and Stacchezzini 2023; Torelli, Balluchi, and Furlotti 2020), their pivotal role in shaping sustainability strategies requires further study.

Hence, this study addresses the following exploratory research questions, which, in connection with the theoretical approaches briefly outlined, pertain to both the quality of SE and the potential similarity in organizational processes for materiality assessment and in the selected topics:

- RQ1: How are materiality assessments for sustainability reporting provided by WUs in the European context?
- RQ2: Are stakeholder engagement processes and the selection of material topics evolving over time?

More specifically: What are the material topics identified by European WUs? Do the stakeholder engagement process and identified material topics have any connections?

This research applies the stakeholder and legitimacy theories to understand the level of engagement of the different categories of stakeholders and the materiality process according to previous studies (Eccles and Krzus 2015; Galeotti et al. 2023; Garde-Sanchez, López-Pérez, and López-Hernández 2018; Giacomini et al. 2020; Giacomini, Paredi, and Sancino 2022; Gray et al. 1997; Royo, Yetano, and García-Lacalle 2019; Sepúlveda-Alzate, García-Benau, and Gómez-Villegas 2022; Unerman and Zappettini 2014). Galeotti et al. (2023) used stakeholder theory to explore the SE disclosures of food and beverage companies. Giacomini, Paredi, and Sancino (2022) used both the stakeholder and legitimacy theories as the theoretical framework to analyze stakeholders' sentiments concerning company policies in the WU sector, while Royo, Yetano, and García-Lacalle (2019) used those theories for identifying different accountability patterns among Spanish SOEs. Additionally, the current study elaborates on the Morsing and Schultz (2006) framework to evaluate the level of SE (Bonetti, Lai, and Stacchezzini 2023; Galeotti et al. 2023; Stocker et al. 2020). Our study's contribution is two-fold. First, it expands the existing academic body of knowledge by examining how materiality assessment and SE are implemented by WUs across various countries and from different perspectives. Second, it contributes to the ongoing discussion about standardizing sustainability reporting processes, which begin with materiality assessment. The empirical findings reveal that SE is still in its developmental stages, albeit with annual advancements. Moreover, materiality, while a cornerstone of sustainability reporting, remains subject to diverse interpretations. To reconcile the inherent subjectivity of materiality with the imperative for credible and trustworthy sustainability reporting, clear frameworks are necessary to balance these competing demands. This study provides a “starting point” for a pragmatic discussion on how regulations could improve the companies' attitudes toward their stakeholders and, therefore, the materiality issues they decide to disclose. Previous studies, even if limited to one country, have addressed a lower level of SE (Beske, Haustein, and Lorson 2020; Petruzzelli and Badia 2023), and

little information has been reported in the documents regarding SE processes (Galeotti et al. 2023; Moratis and Brandt 2017).

This paper is structured as follows: the literature review and theoretical framework are elucidated in Section 2, followed by an explanation of the methodology in Section 3. Section 4 presents the findings. Subsequently, Section 5 presents the principal conclusions, limitations, and avenues for future research.

2 | SE and Materiality: A Literature Review

Companies face increasing pressure to adopt sustainable initiatives that address both environmental and social and environmental issues (Camilleri 2017). Utilities are particularly pressed to create value for their stakeholders. In this field, businesses should develop a multi-stakeholder perspective that allows them to align organizational dimensions, sustainability themes, and the instances of all their stakeholders (Attanasio et al. 2022; Lozano 2018). SE requires effective communication through proper channels and a focus on substantial content and sustainability disclosure; thus, companies should understand their stakeholders' expectations. Accordingly, providing transparent and reliable information is crucial for maintaining organizational legitimacy (Torelli, Balluchi, and Furlotti 2020). Moreover, the pressures from new forms of accountability are driving changes in internal organizational practices, including the adoption of new processes, procedures, and structures (Lombardi et al. 2022).

SE is “the process used by an organization to engage relevant stakeholders for a purpose to achieve agreed outcomes” (AccountAbility 2005, p. 34). Many authors have stressed the relevance of engaging all stakeholders in the sustainability disclosure process (Font, Guix, and Bonilla-Priego 2016; Freeman 1984; Harrison and Wicks 2013; Wood 1991; Torelli, Balluchi, and Furlotti 2020). The SE process is considered necessary for understanding stakeholders' expectations and needs to identify the firm's sustainability strategy and define the relevance of the disclosed information (Calabrese, Costa, and Rosati 2015; Global Sustainability Standards Board 2016; Manetti 2011). This topic is particularly compelling also from an organizational studies perspective, as it intersects with issues of organizational legitimacy and sheds light on the power dynamics and internal processes that shape organizations aiming to develop an integrated and holistic approach to sustainability.

Nevertheless, SE quality is not easily measurable (Bonetti, Lai, and Stacchezzini 2023), and several authors have striven to find measurement tools. According to the literature, the ways of measuring SE quality are various: (i) by addressing extension and quality of communication (Morsing and Schultz 2006; Stocker et al. 2020); (ii) through the number of stakeholders involved (Stocker et al. 2020), by addressing SE in decision-making processes (Manetti 2011); and (iii) by selecting items from the GRI standards applied to a sample of firms (Global Sustainability Standards Board 2016; Moratis and Brandt 2017; Venturelli, Cosma, and Leopizzi 2018).

As SE may be implemented in different ways, Morsing and Schultz (2006) identified three levels of SE. In the “informing”

approach, firms opt for one-sided communication without asking for feedback from their stakeholders. In the “responding” approach, companies seek two-way communication, but displacement occurs in the organization's favor. The third approach, called “involving,” considers the stakeholders' view as a fundamental resource and aims to encourage valuable exchange. In addition to these levels, a further level of SE form of collaboration exists among various stakeholder groups (Bellucci et al. 2019; Dillard and Roslender 2011). This approach may give effect to a multi-directional dialog, which may be implemented through initiatives such as multi-stakeholder forums (Giacomini, Paredi, and Sancino 2022). Despite the topic's relevance, few studies have empirically investigated it (Bonetti, Lai, and Stacchezzini 2023; Galeotti et al. 2023; Giacomini et al. 2020; Høvring, Andersen, and Nielsen 2018; Rocca, Giacomini, and Zola 2021), especially with regard to WUs (Annesi, Battaglia, and Frey 2021; Ligorio, Caputo, and Venturelli 2022). Additionally, some scholars have advocated undertaking the path of examining sustainability actions and SE processes in different industrial sectors (Sepúlveda-Alzate, García-Benau, and Gómez-Villegas 2022) and in different countries and institutional contexts (Agovino et al. 2021; Galeotti et al. 2023). Several studies on SE have been based on Morsing and Schultz's approach. Bonetti, Lai, and Stacchezzini (2023) found that the specific engagement activities implemented by the companies and their communication quality change across the three different SE approaches. Stocker et al. (2020) developed a matrix of engagement strategies with nine quadrants. Their findings indicate that, despite high-quality strategic engagement activities, firms tend to focus their engagement efforts on the less complex levels. Finally, the findings of Galeotti et al. (2023) show that SE disclosure in sustainability reports in Italian food companies is relatively low.

The principle of materiality, which is derived from financial reporting, is typically interpreted as a threshold that may influence the decisions of those who use a company's economic resources, such as investors (Edgley, Jones, and Atkins 2015; Messier, Martinov-Bennie, and Eilifsen 2005). Recently, the materiality principle has been extended to encompass nonfinancial reporting (Jones, Comfort, and Hillier 2016; Wu, Shao, and Chen 2018). By examining various frameworks addressing materiality, we present a brief description of materiality definitions. With the introduction of the GRI (2002) guidelines, a notable shift occurred in the understanding of materiality, which became closely associated with concepts such as transparency, completeness, and timeliness (Etzion and Ferraro 2010), serving as a crucial point for essential data (Edgley, Jones, and Atkins 2015). Materiality in financial auditing significantly differs from materiality in social and environmental disclosure. Indeed, a new stakeholder logic links materiality to sustainability concerns. According to the GRI Standard (2021), materiality refers to “topics that represent the organization's most significant impacts on the economy, environment, and people, including impacts on their human rights.” (GRI 3). Moreover, the Sustainability Accounting Standard Board defines materiality as the long-term focus on concerns that influence both the organization's outcomes and management objectives, as well as the necessary information for making well-informed decisions (Suarez Lopez and Vargas Alcaide 2021; Sustainability Accounting Standard Board 2013). More specifically, the IIRC and the IFAC outlined the following definition regarding the

materiality principle: “a matter is material if it could substantially affect the organization's ability to create value in the short, medium or long term” (IIRC and IFAC 2015, p. 8). In the case of sustainability reporting, a specific policy is essential for guiding organizations in determining the themes to report on and the level of detail to be adopted (Eccles et al. 2012; Torelli, Balluchi, and Furlotti 2020). Thus, conducting a materiality assessment is essential to identify substantial issues and prioritize those that require more in-depth analysis. This process helps ensure that the outcomes align with stakeholders' expectations and meet the core objective of the materiality principle (Calabrese, Costa, and Rosati 2015; Hsu, Lee, and Chao 2013). The concept of materiality is further enriched by the European CSRD, which mandates that “sustainability reporting shall be based on double materiality. A sustainability matter can be material from an impact perspective or from a financial perspective or from both” (EFRAG 2023). This concept mandates that companies disclose both the potential financial risks posed by sustainability issues (financial materiality) and the company's effects on people and the environment (impact materiality). In this framework, double materiality goes beyond merely overlapping social and environmental impacts with financial aspects; it entails a comprehensive evaluation of all these factors (Dragomir et al. 2024; European Commission 2023).

Materiality is a crucial principle in shaping the content of sustainability reports (Cooper and Michelon 2021; Wu, Shao, and Chen 2018), with the aspiration that mechanisms such as “information inductance” (Gray 2014) will drive organizational and strategic changes to align actions with reporting and ultimately reduce unsustainable corporate behaviors. The effectiveness of these actions in addressing the current sustainability crises is uncertain, but the recognition of materiality's role is gaining broader acceptance. Despite this acknowledgment, materiality remains characterized by ambiguity (Puroila and Mäkelä 2019; Reimsbach et al. 2020), drawing upon multiple logics (Edgley, Jones, and Atkins 2015). According to Puroila and Mäkelä (2019), the evaluation of materiality and subsequent portrayal of corporate sustainability often represent inherently value-laden and political judgments, shaping what is deemed relevant in the realm of corporate sustainability. This process often leans toward favoring corporate financial interests and tends to oversimplify the intricate challenges associated with sustainable development.

In recent decades, numerous studies have been conducted to analyze the materiality principle (Eccles and Krzus 2015; Hsu, Lee, and Chao 2013; Vance 2011). Several works have stressed its relevance (Murillo and Lozano 2006; Porter and Kramer 2006; Unerman and Zappettini 2014), while others have focused on its indicators and determinants (Brammer and Pavelin 2008; Calabrese, Costa, and Rosati 2015; Fasan and Mio 2017; Patten 2002). Torelli, Balluchi, and Furlotti (2020) found, through their research on materiality assessment, the following relevant findings: (i) companies of different sectors have different behaviors in sustainability disclosure processes; (ii) without an extensive SE process, organizations could not generally reach a substantial degree of application of the principle of materiality; (iii) a large SE process is a necessary—but not sufficient—condition to reach high levels of implementation of the materiality principle (Torelli, Balluchi, and Furlotti 2020).

Furthermore, various methods of assessing materiality in sustainability disclosure have resulted in a wide range of material topics, increasing the demands placed on organizations (Ruiz-Lozano et al. 2022). Materiality analysis remains a highly subjective process in which personal opinions and expectations may assess the significance of sustainability themes in different ways (Mio, Fasan, and Costantini 2020; Zhou 2011; Calabrese et al. 2019; Lakshan, Low, and de Villiers 2022). According to Eccles and Krzus (2015), the definitions of materiality may vary by target audience, degree of the organization's engagement with the audience, context (e.g., nation or sector), and organizational limit of the ESG information disclosed (Eccles and Krzus 2015; Sepúlveda-Alzate, García-Benau, and Gómez-Villegas 2022). With specific reference to utilities, one of the most impactful risks cited in materiality assessment is precisely the insufficient engagement with a diverse array of stakeholders, along with the inability to build consensus among senior executives and board members and the failure to integrate sustainability priorities into the company's reporting strategy, policies, and practices (KPMG 2023).

2.1 | Theoretical Framework: Legitimacy and Stakeholder Theory

According to the previous literature (Eccles and Krzus 2015; Galeotti et al. 2023; Garde-Sanchez, López-Pérez, and López-Hernández 2018; Giacomini, Paredi, and Sancino 2022; Gray et al. 1997; Sepúlveda-Alzate, García-Benau, and Gómez-Villegas 2022; Unerman and Zappettini 2014), legitimacy theory (Deegan 2002), stakeholder theory (Freeman 1984), and institutionalization (Bebbington, Unerman, and O'Dwyer 2014) are among the most relevant theoretical approaches for demonstrating companies' emphasis on sustainability disclosure and SE.

Sustainability disclosure is often considered a legitimation instrument used to engage with citizens, customers, and suppliers (Imperiale, Pizzi, and Lippolis 2023; Pizzi et al. 2022). Sustainability reporting may be perceived by firms as an opportunistic tool to affect stakeholders' perceptions (Acuti, Bellucci, and Manetti 2023; Invernizzi et al. 2022) and increase their legitimacy (Ahn and Park 2018). Yet, it may not consistently yield advantages in ensuring alignment between declared principles and tangible business choices (Busco et al. 2018; Cho et al. 2015; Higgins, Tang, and Stubbs 2020). Thus, organizations must identify their accountability tools to truly communicate their sustainability strategy (Adams 2008). Relying solely on financial records and quantitative data is insufficient, and providing an overview of the activities conducted during the SE phase is essential. Sustainability disclosure is the process utilized to assess and convey an organization's performance in sustainable development, enhancing the company's accountability to both internal and external stakeholders. More specifically, accountability extends to all outcomes of the organization (Tommasetti et al. 2020). Hence, exploring how and where sustainability integrates into the broader business structure and organizational culture can unveil critical insights into a company's trajectory and priorities. Nevertheless, organizations seldom implement integrated processes for crafting sustainability reports, despite both the literature and business context advocating for their adoption to facilitate comprehensive reporting on the economic,

environmental, and/or social impacts of organizational activities (Paolone et al. 2021).

With regard to the utilities industry within the European Union, regulatory efforts to address sustainable challenges have been strengthened (Busch et al. 2022). SE in a company's decision-making process is associated with enhanced internal processes, increased competitiveness, and improved outcomes (Buisse and Verbeke 2003; Enticott and Walker 2008; Gilardoni 2020; Greening 1991). Hence, implementing a strategic program involving SE and networking may yield improved performance outcomes within various public sectors (Enticott and Walker 2008). Tarquinio and Posadas (2018) found that the utilities industry is recognized for its commitment to sustainability disclosure. Another work regarding the same industry reported that sustainability outlines may encourage organizational change within companies (Lombardi et al. 2022) even in the water industry (Ligorio, Caputo, and Venturelli 2022). However, numerous utility sector companies predominantly offer biased and opportunistic information (Caputo et al. 2021). Finally, companies may adopt sustainability disclosure for two reasons (Branco and Rodrigues 2008): to improve relations with stakeholders in a profitable way and to be aligned with society's expectations in terms of legitimacy. Thus, we focus on legitimacy and stakeholder theories, which were chosen because a materiality analysis in the sustainability reporting process should encourage organizations to engage in dialog with various societal groups. This reflects the idea that a company's long-lastingness is contingent upon its interactions with all segments of society (Cormier, Magnan, and Van Velthoven 2005). Finally, the significance of implementing a multi-theoretical framework to analyze organizations' behavior and conduct has been acknowledged in the aforementioned fields (Cormier, Magnan, and Van Velthoven 2005; Gray et al. 1997; Tagesson, Klugman, and Ekström 2013; Giacomini, Paredi, and Sancino 2022; Romero, Ruiz, and Fernandez-Feijoo 2019; Soobaroyen and Mahadeo 2016; Amran et al. 2015).

Legitimacy theory posits that an organization will engage in activities addressing social and environmental issues to legitimize its actions within society (Dowling and Pfeffer 1975; Pellegrino and Lodhia 2012). It sustains the concept that each organization has a social contract with society, and respecting this agreement legitimizes the company to continue its operations (Cormier and Gordon 2001; Hoque 2006; Suchman 1995). Phillips (2003), in his research concerning legitimacy and stakeholders, strived to better analyze the concept of legitimacy in stakeholder theory, and consistent with the previous literature (Mitchell, Agle, and Wood 1997; Thompson, Zald, and Scott 2017), he affirms that stakeholder legitimacy is sensitive to the dynamic nature of stakeholder relations (Phillips 2003). Furthermore, organizations engage in specific activities to establish legitimacy (Dowling and Pfeffer 1975). These actions may pertain to the adaptation of its goals and the utilization of symbols or values that are ingrained in social legitimacy. To undertake these actions, the organization should utilize effective communication through its channels—for example, by using sustainability reporting to legitimize its position within society (Romero, Ruiz, and Fernandez-Feijoo 2019). Additionally, implementing sustainability actions may generate a positive impact on intangible assets such as corporate reputation and

legitimacy (Del-Castillo-Feito, Blanco-González, and González-Vázquez 2019; Del-Castillo-Feito, Blanco-González, and Hernández-Perlines 2022). In the water industry, social legitimacy is crucial owing to the impact that firm operations have on both the environment and society as a whole (Giacomini, Paredi, and Sancino 2022; Greiling, Traxler, and Stötzer 2015). Finally, WUs should address multiple and diverse interests to legitimize their actions (Giacomini et al. 2020). Daly, Chapman, and Pegan (2023), in their work regarding LGOs' management and legitimization within public entities, state that legitimization should be considered an “empirical process through which the authority of an entity is discursively constructed and conferred.”

Institutional theory is a highly influential framework in organizational analysis (Lounsbury 2008) and is increasingly utilized in accounting research (Bebbington, Higgins, and Frame 2009; de Villiers and Alexander 2014; Lakshan, Low, and de Villiers 2022). It posits that organizations are situated within a broad network of political, financial, educational, cultural, and economic institutions exerting pressure on them (Jackson and Apostolou 2010). As a result, organizations often adopt structures and procedures that are deemed socially acceptable and considered appropriate within their institutional context. In the context of the need for legitimacy, the concept of “institutional” approaches underscores the importance of “institutional rules” in shaping how companies are organized (Marcuccio and Steccolini 2005). Within society, these shared rules and norms may be considered guiding principles to which companies may adhere in exchange for legitimacy, regardless of considerations on efficiency (Meyer and Rowan 1991). Powell and Di Maggio (1991) explored why companies adopt certain initiatives. They argued that structural changes are often implemented to make organizations more similar, frequently without a clear objective of improving efficiency. They distinguished competitive isomorphism from three types of institutional isomorphism: (i) coercive isomorphism, guided by legal or governmental requirements; (ii) mimetic isomorphism, which engages the use of successful organizations' practices, usually in not defined contexts; and (iii) normative isomorphism, which comes from shared values and thoughts, often distributed through professional networks and education. Finally, Nahapiet (1988) argued that the significance of legitimacy is higher in organizations that face high ambiguity and visibility daily, such as WUs. Nevertheless, according to some scholars, legitimacy theory alone cannot fully explain the influence of stakeholders (Manes-Rossi et al. 2021). This is an additional reason for incorporating stakeholder theory into the theoretical framework.

Stakeholder theory emphasizes the importance of organizations considering the interests of their stakeholders when making decisions regarding their conduct. Stakeholders are commonly defined as “any group or individual who can affect or may be affected by the achievement of the organisation's objectives” (Freeman 1984). According to the literature, stakeholders' role has become central to company strategies (Husted and Allen 2011), and stakeholders represent vital agents in activating firms' engagement processes (Annesi, Battaglia, and Frey 2021; Bebbington et al. 2007). Stakeholder theory is grounded on the relevance of generating long-term value thanks to the relationships between the organization and its stakeholders (Parmar et al. 2010). In the context of sustainable

development, stakeholders and firms should cooperate concerning mutual values and instances. Additionally, this theory aims to strengthen how companies recognize and try to engage with their stakeholders' instances and expectations (Freeman 1984). According to Cooper and Owen (2007), the first question from a stakeholder-accountability standpoint is whether engagement processes effectively impact aspects of organizational decision-making. Thus, stakeholder theory leads us to define and engage all the different players with which the firm should deal concerning sustainable development actions.

To summarize the above theories, we construct our conceptual framework in Figure 1. This will inform the analysis of the WUs' sustainability reports.

2.2 | The Water Sector

Water is a critical resource for national development, and governments must adapt their management models to fit their socio-economic contexts. Over the past 20 years, European countries have shifted from predominantly public water-management systems to increasingly diverse models, including private-sector involvement. European water management now includes three main models:

- Public model: The public entity directly manages or delegates water services to a publicly owned entity.
- Mixed model: A public entity collaborates with a private company to manage water resources.
- Private model: A private company manages all aspects of water services under lease or concession agreements, with or without public ownership of infrastructure.

The Water Framework Directive (European Parliament and Council 2000) plays a crucial role in ensuring the protection and sustainability of European water resources by setting quality and quantity standards and encouraging cost recovery for water services. Despite these guidelines, historical and cultural factors lead to varied management practices across the EU. The Water Framework Directive, while supported by additional European legislation such as the Drinking Water Directive and Urban Waste Water Directive, does not mandate a specific model for Member States to adopt to meet its requirements.

According to the 2018 EurEau report, England and Wales have fully privatized water services, while other European countries predominantly use public management models. Direct public management is prevalent in Cyprus, Croatia, Hungary, Luxembourg, and Norway, while Greece, Ireland, and Malta often delegate to publicly owned companies. Mixed models are seen in Serbia, Sweden, and the Netherlands, and various public, mixed and private combinations are present in Austria, Belgium, Germany, Bulgaria, Italy, Denmark, France, Romania, Slovakia, Estonia, Finland, Poland, Portugal, Spain, and Switzerland. In Italy, approximately half of the population is served under a delegated public management model, whereas the remaining half is covered by a mixed model.

Regarding water sustainability, recent World Water Forums have highlighted the critical importance of multi-actor partnerships, participatory approaches, networks, and dialogs, as well as the need for multi-stakeholder platforms (Akhmouch and Clavreul 2016). WUs have been privatized in many countries, which has led to an ongoing debate between public and private ownership (G. Romano, Guerrini, and Vernizzi 2013; Warner 2021). Previous works on water management have tried to address policy issues such as the effects of regulation (Guerrini and Romano 2013) and privatizations (Casarin, Delfino, and Delfino 2007) and the role of size, ownership, and strategies of diversification (Abbott and Cohen 2009; Guerrini, Romano, and Campedelli 2013). Nevertheless, little attention has been given to SE and water sustainability (Agovino et al. 2021; Littig and Griessler 2005). As far as sustainability disclosure, some authors have focused on WUs (Antunes and Martins 2020; Ligorio, Caputo, and Venturelli 2022; Valenza and Damiano 2023) using specific research instruments and case studies (Annesi, Battaglia, and Frey 2021). The quality and level of sustainability disclosure of WUs are crucial because WUs need to acquire legitimacy from political and public institutions (Larrinaga-González and Pérez-Chamorro 2008) owing to their management of a public resource (Guerrini, Romano, and Campedelli 2013). Indeed, water is not only a strategic resource that impacts financial outcomes but also, more importantly, a biologically essential commodity that underpins the fundamental conditions for human life (Agovino et al. 2021). WU sustainability strategies are especially driven by the achievement of SDG #6, namely, to obtain universal and equitable access to drinking water and sanitation and improve water quality globally (United Nations 2015). Di Vaio et al. (2021) highlighted that collaboration, coordination, and SE are the crucial elements WUs should embrace to address the global sustainability challenge proposed in the Agenda 2030 report (United Nations 2015) and become an active actor for *water access as a human right*. Moreover, the European Union Drinking Water Directive was revised in 2020, with a focus on Article 17, requiring member states to ensure that information about drinking water is accessible to the public. This amendment was driven by citizen-led initiatives advocating for greater transparency from WUs and increased involvement of consumers in water-service decisions (Bayona-Valderrama et al. 2024).

Hence, WUs, more than other organizations, must acknowledge the significance of the stakeholders' role. To maintain effectiveness, they should monitor the criteria by which stakeholders, including citizens, assess their business activities. Public sector

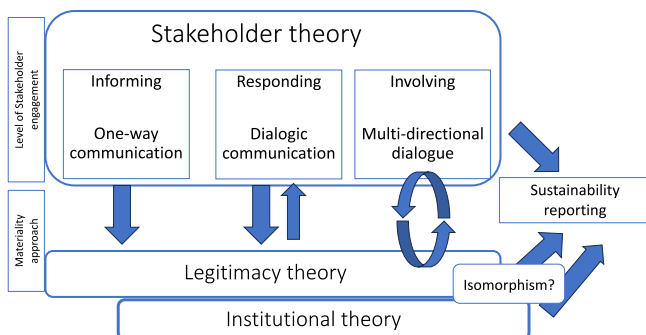


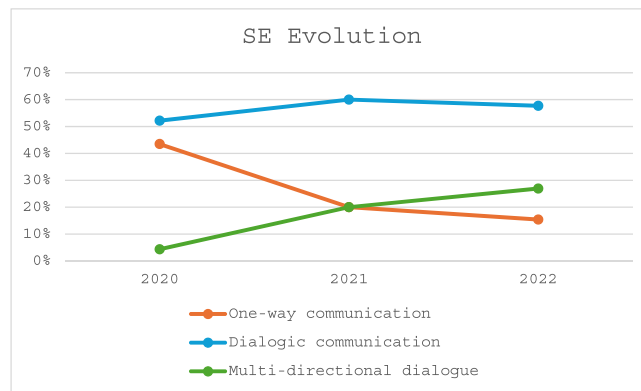
FIGURE 1 | Conceptual framework adopted for this paper (authors' elaboration).

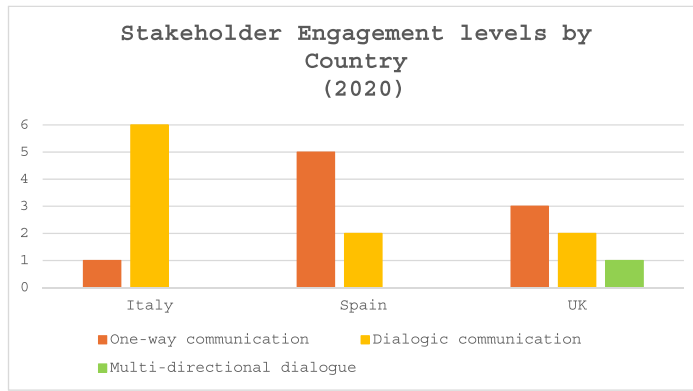
TABLE 1 | Water companies of the sample with SE level over 3 years (2020, 2021, and 2022). Total number of reports analyzed: no. 74.

#	Company	Country	Turnover (mln USD)	SE level (2020)	SE level (2021)	SE level (2022)
1	A	Italy	500.000–1.000.000	2	2	3
2	B	Italy	< 500.000	2	2	2
3	C	Italy	< 500.000	2	3	3
4	D	Italy	< 500.000	2	3	3
5	E	Italy	< 500.000	1	2	2
6	F	Italy	< 500.000	2	2	2
7	G	Italy	< 500.000	2	3	3
8	H	UK	> 1.500.000	1	2	2
9	I	UK	> 1.500.000	3	3	3
10	J	UK	1.000.000–1.500.000	2	2	2
11	K	UK	500.000–1.000.000	1	1	1
12	L	UK	500.000–1.000.000	1	2	2
13	M	UK	500.000–1.000.000	2	2	2
14	X	France	> 1.500.000	2	2	2
15	N	Spain	1.000.000–1.500.000	2	2	2
16	O	Spain	1.000.000–1.500.000	2	2	2
17	P	Spain	< 500.000	1	2	3
18	Q	Spain	< 500.000	1	1	2
19	R	Spain	< 500.000	1	1	1
20	S	Spain	< 500.000	1	2	2
21	T	Spain	< 500.000	1	1	2
22	U	Netherlands	< 500.000	N/A	2	2
23	V	Netherlands	< 500.000	N/A	3	3
24	W	Belgium	< 500.000	N/A	N/A	1
25	Y	Greece	< 500.000	2	2	2
26	Z	Portugal	< 500.000	1	1	1

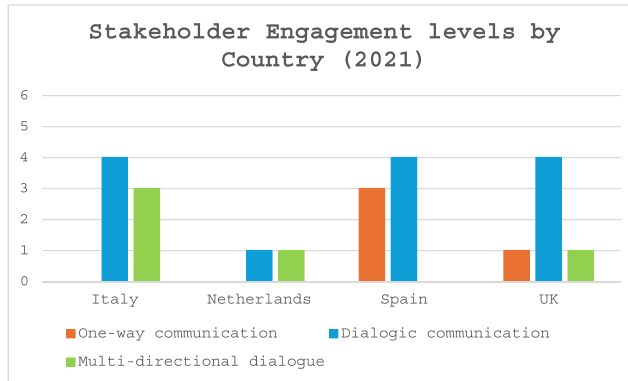
organizations that keep the infrastructure for a public service, as in the WU case, should give even closer attention to citizens (Giacomini, Paredi, and Sancino 2022; López-Ruiz et al. 2023; Wiewiora, Keast, and Brown 2016). Paolone et al. (2021) found that the WU sector is characterized by a high level of complexity of accounting practices. Water companies should usually implement multiple accounting practices, including multiple informative documents relating to the need for legitimacy and consideration of stakeholders' issues. Finally, the main mechanisms to produce positive results within WU management are (i) SE (Horne 2019); (ii) stakeholder participation (Benson, Gain, and Giupponi 2020; Herrera 2019); and (iii) multi-stakeholder dialog (Barraque, Isnard, and Souriau 2017; Di Vaio et al. 2021; O. Romano and Akhmouch 2019).

In this regard, no existing studies have examined the SE process and materiality assessment in WUs across various countries.

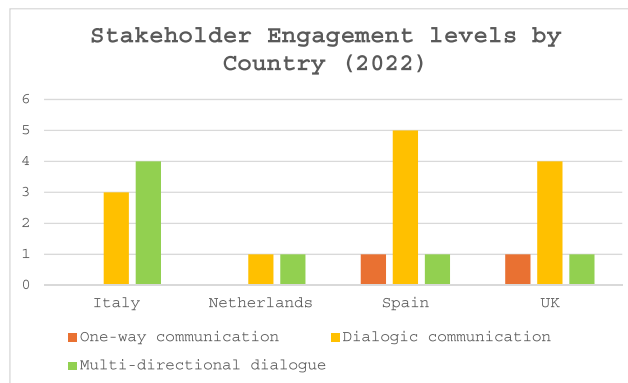
**FIGURE 2** | Stakeholder engagement process: data on the three approaches over 3 years.



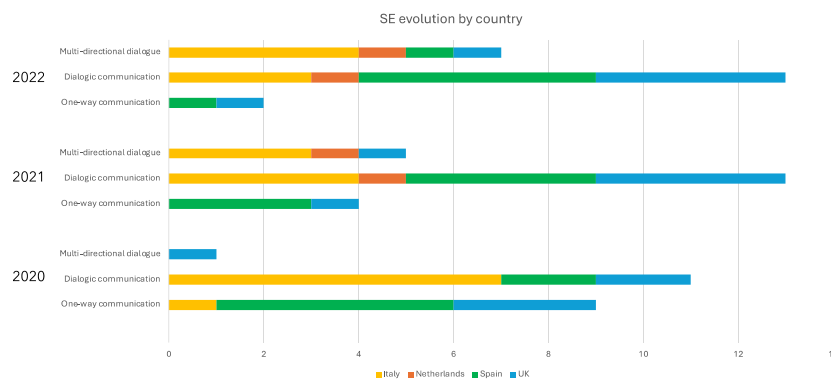
a: Stakeholder Engagement levels by country (2020). Only countries with more than one company in the SE analysis have been considered.



b: Stakeholder Engagement levels by country (2021). Only countries with more than one company in the SE analysis have been considered.



c: Stakeholder Engagement levels by country (2022). Only countries with more than one company in the SE analysis have been considered.



d: Stakeholder Engagement evolution by country (2020–2022). Only countries with more than one company in the SE analysis have been considered.

FIGURE 3 | Legend on next page.

FIGURE 3 | (a) Stakeholder engagement levels by country (2020). Only countries with more than one company in the SE analysis have been considered. (b) Stakeholder engagement levels by country (2021). Only countries with more than one company in the SE analysis have been considered. (c) Stakeholder engagement levels by country (2022). Only countries with more than one company in the SE analysis have been considered. (d) Stakeholder engagement evolution by country (2020–2022). Only countries with more than one company in the SE analysis have been considered.

KPMG conducted an insightful study on the utilities sector (though not specifically focusing on the water industry or SE in materiality) by examining 19 recent utility disclosures aligned with SASB and TCFD standards to identify trends and challenges (KPMG 2023). The report highlights that strategy is the weakest area in ESG reporting for utilities. Few companies integrated their selected scenarios into the planning process or quantified the outcomes of these scenarios. Among the 19 TCFD-aligned disclosures reviewed, only six included quantitative results from scenario analyses, and only nine addressed both transition and physical risks.

3 | Research Design and Methodology

We conducted a qualitative analysis by gathering data via a content analysis of sustainability reports. In particular, we analyzed the sustainability and integrated reports of 26 WUs within the European context in Belgium, France, Greece, Italy, the Netherlands, Portugal, Spain, and the United Kingdom. Content analysis is a widely adopted methodology in sustainability disclosure research as it allows a regular and objective assessment of public data; it has been used in different sectors (Guthrie et al. 2004; Karagiannis et al. 2022; Manetti and Toccafondi 2014; Weber 1990). Because WUs operate with a *common good* (United Nations 2023), analyzing their publicly available information is crucial to evaluate their responsibility and accountability (Bonetti, Lai, and Stacchezzini 2023). Furthermore, when it comes to the SE process and materiality principle, no universally standardized methods exist for unequivocally testing or evaluating materiality and SE within sustainability disclosure (Machado, Dias, and Fonseca 2021). Organizations' approaches to addressing the materiality concept and SE are heterogeneous.

As far as case selection, we chose the water sector for three reasons. First, WUs are usually aware of their public role and strive to stimulate a dialog with their stakeholders (Annesi, Battaglia, and Frey 2021). Second, WUs are often perceived as responsible actors regarding the main instances that affect the environment (Gasbarro, Rizzi, and Frey 2016). Third, their sustainability disclosure strategies and practices are usually truly embedded within their organizational framework (Vinnari and Laine 2013). The choice of the 26 companies was based on the turnover of the WUs using the Orbis database at the European level (annual turnover exceeding USD 100 million); then, only “water” utilities were selected. We decided to exclude all multiutilities to focus specifically on the water sector. Consequently, we only selected WUs with sustainability reports for 2020, 2021, and 2022, with the availability of these reports considered based on public access. The choice to analyze 3 years of data allowed us to evaluate changes and evolution over time. To our knowledge, no other studies have utilized 3 years of materiality assessment data within the water sector. In the end, we analyzed 74 reports from 26 WUs, as detailed in Table 1.

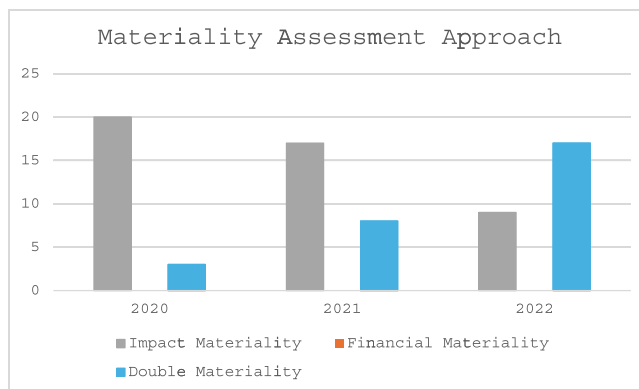
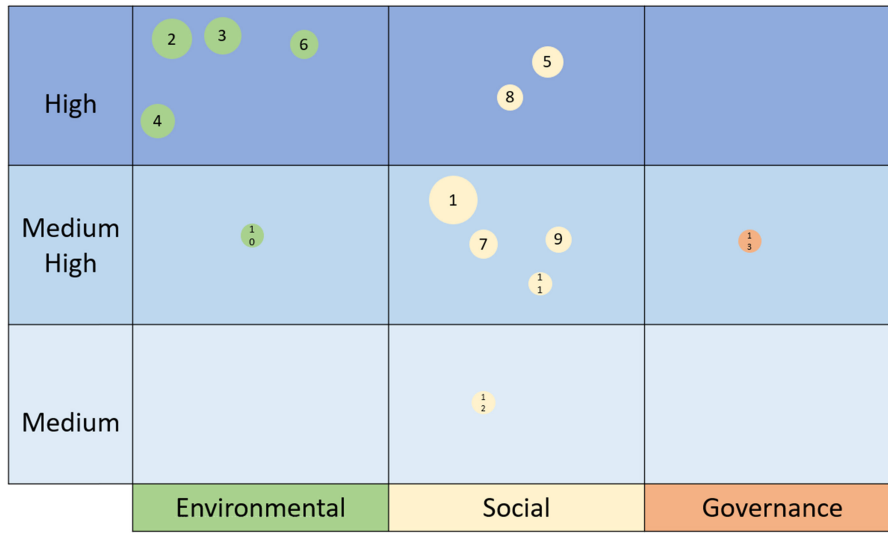
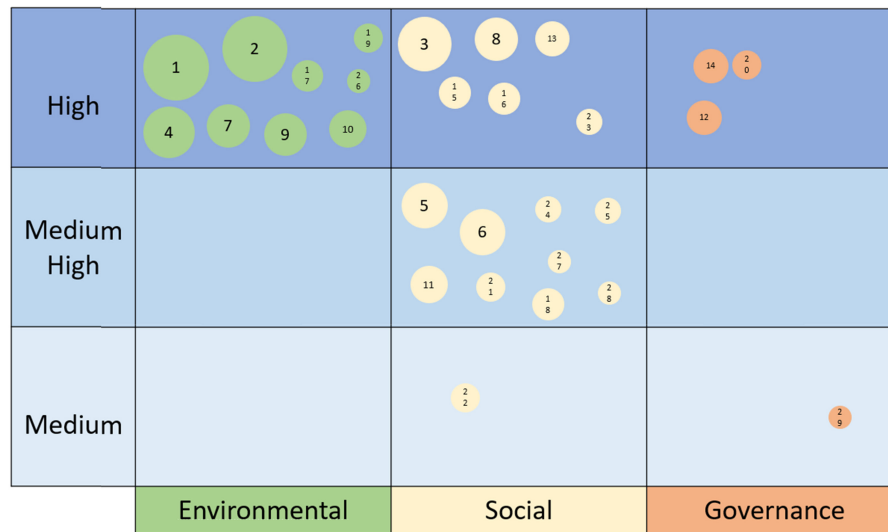


FIGURE 4 | Materiality assessment approach adopted by WUs.

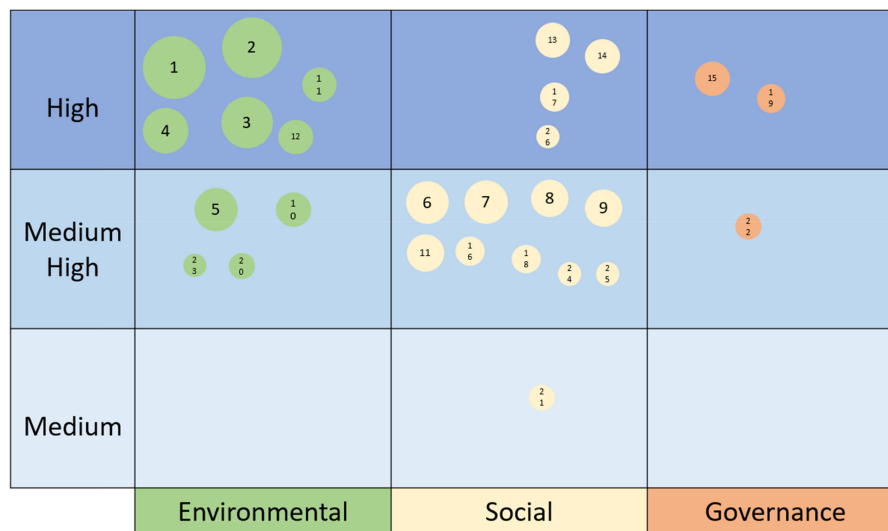
We performed data analysis by investigating the content of the sustainability reports regarding the SE process and materiality assessment declared by firms in their documents. The analysis method is similar to qualitative content analysis or close reading, akin to the approach outlined by Hsieh and Shannon (2005). In this method, materiality disclosures undergo multiple rounds of scrutiny, with a focus on dissecting individual elements of materiality. Conclusions are drawn regarding current practices based on a detailed examination of the disclosed content about the level of SE in the materiality process. The method involves a thorough and iterative examination akin to the principles found in qualitative content analysis and close-reading techniques. As this study was explorative, we did not apply a definition of materiality a priori, but we identified the company's perspective: if the company explicitly defined its materiality as financial, impact, or double, we categorized that; if not, we classified the company's perspective according to its materiality assessment provided in the sustainability report with an iterative discussion between different authors until we obtained the common perspective. Concerning the SE process, we developed an analysis building on Morsing and Schultz (2006) and according to Stocker et al.'s (2020) analysis, as described in Section 2 (see also Bonetti, Lai, and Stacchezzini 2023). The work followed two different phases: The first one aimed to classify materiality and material topics (Michelon et al. 2024), and the second aimed to categorize the SE process (Stocker et al. 2020; Bonetti, Lai, and Stacchezzini 2023). For the first phase, we applied a manual content analysis independently performed by two authors. The first step involved reading all the sustainability reports aimed at identifying the main relevant material topics by each WU using the materiality matrix, lists of material issues, and tables on materiality provided in the sustainability reports. From the collection of materials themes, the two authors created a file (spreadsheet) with the classification of all those themes in ESG areas (according to GRI and ESRS main themes), and each one tried to merge the similar/same one (in a substantial way). Then, the file created



a: Matrix of material themes considering priority, ESG area, and number of firms that selected that theme (balls' numbers are referred to in Table 2a)



b: Matrix of material themes considering priority, ESG area, and number of firms that selected that theme (balls' numbers are referred to in Table 2b)



c: Matrix of material themes considering priority, ESG area and number of firms that selected that theme (balls' numbers are referred to in Table 2c)

FIGURE 5 | Legend on next page.

FIGURE 5 | (a) Matrix of material themes considering priority, ESG area, and number of firms that selected that theme (balls' numbers are referred to in Table 2a). (b) Matrix of material themes considering priority, ESG area, and number of firms that selected that theme (balls' numbers are referred to in Table 2b). (c) Matrix of material themes considering priority, ESG area, and number of firms that selected that theme (balls' numbers are referred to in Table 2c).

by each author was discussed in several meetings with all the authors to obtain a final agreed file to map the material topics for each WU, which allowed us to evaluate the comparability of those material issues. That analysis was conducted for each year (2020, 2021, and 2022). Afterward, the second phase began. Each researcher independently mapped the presence and characteristics of the SE disclosure process for each year, using manual content analysis (as done by Bonetti, Lai, and Stacchezzini 2023). To categorize the firms according to the three approaches, the model elaborated by Stocker et al. (2020) was taken as a milestone. In analyzing the sustainability reports, the quality and quantity of SE actions were examined in depth in light of the aforementioned model. More specifically, SE activities such as monitoring, developing actions, reporting, intranet and social media utilization, training and development, exhibitions, and plant visits are part of the “one-way communication” approach. SE activities such as opinion polls, forums, surveys, and face-to-face or telephone meetings are included in the “dialogic communication” approach. Finally, SE activities such as cooperation, working groups, agreements, and joint projects (formal/informal) are part of the third level of SE defined as “multi-directional dialog.” To conduct the analysis, each researcher created a file containing the classification and notes on the evaluation of the three levels. Given the exploratory nature of the analysis, each of the three authors attributed the SE level based on the characteristics monitored and mapped in previous work (Stocker et al. 2020; Bonetti, Lai, and Stacchezzini 2023) but also by examining the content of the companies' websites to confirm the evaluation. Finally, several meetings were held to discuss the differences in the spreadsheets and notes, in an iterative approach (Srivastava and Hopwood 2009), to reach a consensus on the final classification of SE levels by company and year.

The next section presents the findings.

4 | Results

We analyzed SE activities and materiality assessment over 3 years (2020, 2021, and 2022) to examine whether these processes were ongoing, as well as the changes within WUs' business strategy for materiality assessments over time.

The findings are summarized in Figure 2 and Table 1. Figure 2 shows how the SE approach changed over the 3 years. In 2020, 10 WUs adopted a unilateral communication approach or had not disclosed information concerning their SE activities, while only one WU implemented a complete SE process using a participatory approach to reach all its stakeholders. Most companies followed the second approach, where the SE is implemented partially and in a limited manner; in this case, the process is unbalanced toward the organization. A remarkable change in the

SE approach occurred in 2021 and 2022. The number of WUs adopting a “one-way communication” strategy decreased, and that of WUs following a more structured approach increased. More specifically, in 2021 and 2022, the WUs that implemented a “dialogical communication” were 15, while those that implemented the “multi-directional dialog” were 5 and 7, respectively. This shows a trend of the WUs' SE approach toward a more complete and participatory behavior.

Figure 3a–c presents the findings by country. The WUs of Italy and the United Kingdom present the highest level of SE, and most of them followed the second approach over the 3 years. Figure 3d analyzes the evolution over 3 years by country. Italy, Spain, and the United Kingdom all show a move away from one-way communication; Italy and Spain both transitioned toward more dialogic communication, with Spain showing a stronger shift by 2022. The Netherlands had a balanced split between dialogic and multi-directional dialog once engagement began (only two companies). While Italy had no one-way communication SE in 2022, revealing a complete shift to a more engaged process, in the United Kingdom, a company still adopted one-way communication over the years.

The trend is not entirely similar between countries, with each country demonstrating a distinct path in its SE evolution; however, all companies are moving toward a strong SE process.

Through the analysis of the sustainability reports, we analyzed the materiality assessment approach. Additionally, we explored the way in which WUs define and implement sustainability and SE actions. More specifically, with reference to CSRD and Section 2, we analyzed whether the WUs followed the impact, financial, or double materiality approach. As shown in Figure 4, in 2020 and 2021, most WUs adopted an impact materiality approach with a focus on their effect on society, people, and the environment. A remarkable change is evident in 2022, when most WUs adopted the comprehensive approach of double materiality, integrating the potential financial risks that social and environmental issues pose to the WUs.

Furthermore, we identified all the topics defined as “material/relevant” by companies and their stakeholders with a medium, medium-high, and high level of priority assigned (according to their disclosures). Analyzing the materiality matrixes and disclosures of the 26 firms over 3 years, we identified and unformed 80 material themes (reported in Appendix 1). This identification was conducted through the work and comparisons among researchers in the first phase described in the methodology section. After identification, we counted the frequency with which a material topic was covered by the companies according to its level of priority over the 3 years. Considering each year, we built a matrix, reported in Figure 5a–c and in Tables 2a, 2b, and 2c, with all the material themes selected by firms with a minimum threshold of 8 (for representative illustration). The

TABLE 2A | Material themes with the highest priority for Year 2020 (threshold of 8).

#	Material theme	Area	High priority	Medium-high priority	Medium priority	Total	Priority level—average
1	Health and safety	Social	6	8	3	17	Medium-high
2	Water quality	Environmental	12	2	0	14	High
3	Emissions and climate change	Environmental	11	2	0	13	High
4	Circular economy	Environmental	9	3	0	12	High
5	Customer-centric approach and customer satisfaction	Social	8	2	1	11	High
6	Territory and biodiversity protection	Environmental	3	4	3	10	High
7	Use of technology	Social	4	4	2	10	Medium-high
8	Sustainability in the supply chain	Social	5	3	1	9	High
9	Economy of the region	Social	1	4	4	9	Medium-high
10	Energy saving	Environmental	2	4	2	8	Medium-high
11	Staff training	Social	1	6	1	8	Medium-high
12	Flexibility	Social	1	3	4	8	Medium
13	Governance oriented to sustainability	Governance	3	4	1	8	Medium-high

TABLE 2B | Material themes with the highest priority for Year 2021 (threshold of 8).

#	Material theme	Area	High priority	Medium-high priority	Medium priority	Total	Priority level—average
1	Emissions and climate change	Environmental	18	3	2	23	High
2	Territory and biodiversity protection	Environmental	12	6	5	23	High
3	Health and safety	Social	10	8	1	19	High
4	Water quality	Environmental	17	1	0	18	High
5	Diversity and equal opportunities	Social	2	12	2	16	Medium-high
6	Sustainability in the supply chain	Social	1	11	4	16	Medium-high
7	Circular economy	Environmental	9	6	0	15	High
8	Customer satisfaction	Social	9	5	1	15	High
9	Energy efficiency and renewable sources	Environmental	9	4	2	15	High
10	Water resources	Environmental	10	3	0	13	High
11	Quality of the working relationship	Social	4	7	2	13	Medium-high
12	Transparency	Governance	7	5	0	12	High
13	Affordability/right of access	Social	7	3	2	12	High
14	Ethics and conduct	Governance	6	5	1	12	High
15	Digitalization	Social	8	2	1	11	High
16	Continuity of service	Social	7	3	1	11	High
17	Purification processes	Environmental	6	5	0	11	High
18	Infrastructures	Social	4	6	1	11	Medium-high
19	Waste	Environmental	5	4	1	10	High
20	Organization/good governance	Governance	5	4	1	10	High
21	Stakeholder involvement	Social	4	6	0	10	Medium-high
22	Community support	Social	2	3	5	10	Medium
23	Cybersecurity	Social	4	3	2	9	High
24	Education of the population	Social	3	4	2	9	Medium-high
25	Staff training	Social	2	7	0	9	Medium-high
26	Impact of the organization	Environmental	4	2	2	8	High
27	Capture and enhance talent	Social	1	7	0	8	Medium-high
28	Data security	Social	1	7	0	8	Medium-high
29	Alliances and collaborations	Governance	1	3	4	8	Medium

vmatrix reports the following information: material theme number linked to its name (Tables 2a, 2b, and 2c, respectively, for each year), level of priority on average assigned by the company, ESG area, and frequency of topic selection. Each bubble's

dimension is proportioned with its frequency of selection. As observed in Tables 2a, 2b, and 2c, the highest number of material topics is embedded in the social area for each year of the analysis. Nevertheless, environmental topics are mainly in the

TABLE 2C | Material themes with the highest priority for Year 2022 (threshold of 8).

#	Material theme	Area	High priority	Medium-high priority	Medium priority	Total	Priority level—average
1	Territory and biodiversity protection	Environmental	11	6	5	22	High
2	Emissions and climate change	Environmental	19	1	1	21	High
3	Water quality	Environmental	17	1	0	18	High
4	Shortage of raw material	Environmental	8	7	1	16	High
5	Circular economy	Environmental	7	8	0	15	Medium-high
6	Health and safety	Social	4	9	2	15	Medium-high
7	Flexibility	Social	1	9	5	15	Medium-high
8	Staff training	Social	3	7	3	13	Medium-high
9	Sustainability in the supply chain	Social	6	6	1	13	Medium-high
10	Purification processes	Environmental	6	6	0	12	Medium-high
11	Energy efficiency and renewable sources	Environmental	8	2	2	12	High
12	Water resources	Environmental	9	3	0	12	High
13	Continuity of service	Social	7	3	2	12	High
14	Cybersecurity	Social	9	2	1	12	High
15	Organization/good governance	Governance	7	4	1	12	High
16	Diversity and equal opportunities	Social	2	8	0	10	Medium-high
17	Consumer protection	Social	6	3	1	10	High
18	Data security	Social	4	4	2	10	Medium-high
19	Internal communication	Governance	6	4	0	10	High
20	Waste	Environmental	4	3	2	9	Medium-high
21	Economy of the region	Social	2	3	4	9	Medium
22	Alliances and collaboration	Governance	4	3	2	9	Medium-high
23	Impact of the organization	Environmental	4	2	2	8	Medium-high
24	Clarity	Social	2	4	2	8	Medium-high
25	Education of the population	Social	3	5	0	8	Medium-high
26	Use of technology	Social	6	1	1	8	High

high-priority zone, and their frequency is usually higher than that of topics of other ESG areas. As far as the governance area, the sample firms usually considered it less important, and this area has the lowest number of material themes identified by the companies with low levels of priority. Considering the choice of material themes, we observe that, over the 3 years, the selected topics are recurrent. More specifically, the themes “health and safety,” “water quality,” and “emissions and climate change” are always in the top six positions. In the materiality assessment as well, considering the different guidelines regarding materiality

assessment, making a clear comparison of the sample firms is hard as they used different methods; thus, we identified a large range of topics and strived to identify the most relevant ones in the water sector within the European context.

5 | Discussion and Conclusion

Our research findings uncover a range of strategies employed by companies to influence the materiality process and engage

with their identified stakeholders. Previous studies have noted the scarcity of empirical investigations into the methods that companies utilize for performing materiality analyses in the context of sustainability practices (Adams et al. 2021; Beske, Hausteine, and Lorson 2020; Gagné, Berthelot, and Coulmont 2022). This is noteworthy given the pivotal role of the materiality concept in reporting processes and the significance of stakeholders' engagement quality as a critical dimension in developing effective sustainability strategies (Cooper and Michelon 2021). This gap becomes even more substantial in the water industry, given the paramount importance of issues such as water management, climate change, and occupational health and safety. These concerns hold value for companies operating in this sector and, above all, their stakeholders, especially citizens (Bayona-Valderrama et al. 2024; Giacomini, Esposto, and Tonoli 2022).

Consequently, we explored and answered two research questions. The first one (RQ1) pertains to how materiality assessments for sustainability reporting are provided by WUs in the European context. In this regard, the findings suggest that a considerable minority of organizations in the sample are in the early stages, which indicates potential for further improvements. In 2022, they adopted the “one-way communication” approach of “telling, not listening” (Grunig and Hunt 1984), where the communication strategy aims to disseminate information only to inform the public about the organization (Morsing and Schultz 2006). A substantial majority of the sampled firms—15 out of 26—adopted the second approach of “dialogic communication,” which is based on a two-way asymmetric communication model. Therefore, fewer than one in four companies adopted a “multi-directional dialog” approach, where stakeholders are treated as equals and can offer considerable insights into business strategies. This observation confirms a prevailing trend, even within the water sector, where sustainability reporting and the materiality process are primarily viewed as tools for gaining legitimacy rather than as valuable sources of input for shaping sustainable business strategies (Puroila and Mäkelä 2019; Sepúlveda-Alzate, García-Benau, and Gómez-Villegas 2022; Beske, Hausteine, and Lorson 2020; Branco and Rodrigues 2008). This corresponds to findings in related domains pertaining to corporate communication, where organizations might prioritize communication efforts to boost their legitimacy and shape stakeholders' perceptions rather than fostering genuine dialogs that promote collaborative processes and cooperation (Bellucci and Manetti 2017; Deegan 2019). In managing a *common good* such as water, this approach to materiality should be overcome, recognizing that in a “multi-voiced” society, positions may be heterogeneous. Hence, considering that sustainability reporting will persistently be marked by single-sided value-laden is necessary. This tendency frequently prioritizes corporate financial interests and simplifies the complex challenges tied to sustainable development (Puroila and Mäkelä 2019). Instead, a materiality process that begins with understanding how materiality determinations are shaped by complex social and political dynamics is needed. This approach would enrich discussions on the challenges and nuances associated with corporate sustainability reporting and stakeholder pluralism. The materiality process should address areas of contention by viewing them as opportunities for shared sustainability strategies (Brown and Dillard 2015; Sciarelli et al. 2024; Tregidga and Milne 2022).

Despite the emphasis placed by standard setters and recent regulations, such as the CSRD, on the importance of the materiality process, empirical analysis within the water sector indicates that progress still needs to be made. Companies have not yet achieved a substantial level of application of the materiality principle without undergoing an extensive SE process (Torelli, Balluchi, and Furlotti 2020). Therefore, continuing to emphasize the integration between SE practices and materiality analysis by taking into account the virtuous role that a rigorous assurance process could play becomes essential (Machado, Dias, and Fonseca 2021; Sepúlveda-Alzate, García-Benau, and Gómez-Villegas 2022; Torelli, Balluchi, and Furlotti 2020). While the analysis reveals a still predominant focus on legitimacy, the evolution of materiality analysis over the 2020–2022 period highlights a growing trend of increased SE. This suggests that, in line with the previous literature, legitimacy and stakeholder theories and institutional approaches are all valid frameworks for understanding the underlying logic driving organizations in their sustainability reporting processes, with none being predominant. To determine whether this trend is more attributable to tendencies toward isomorphism or to a genuine desire to better involve stakeholders, more in-depth analyses of single organizations or multiple case studies are necessary. However, the aggregated results at least allow us to appreciate this emerging trend.

Examining the most relevant themes identified by the analyzed companies, as articulated in the second research question (RQ2), yields intriguing insights. Our findings concerning the identification of material topics align with the previous literature. Specifically, environmental themes take precedence among the 26 analyzed firms, as depicted in Tables 2a, 2b, and 2c. Nevertheless, the chosen social themes outnumber the others. Consistent with this pattern, other researchers have asserted that investigations continue to be predominantly focused on environmental issues (Seuring and Müller 2008), with environmental topics maintaining the highest priority, followed by social themes primarily associated with health and safety (Ras and Vermeulen 2009; Whitehead 2017). Furthermore, economic and governance themes are not considered high priorities. These results may indicate a tendency toward isomorphism; however, as illustrated in the limitations of this study, more refined qualitative analyses are required. As is to be expected, coercive isomorphism influences a critically important issue in all sustainability reports: the quality of drinking water. Assessing the impact of fully enforcing Article 17 of the European Union Drinking Water Directive in WUs within the European Union will be particularly interesting. This includes examining the challenges associated with sharing water-quality information and the diverse implementation strategies of a drinking-water policy aimed at fostering trust between water providers and consumers.

While common trends may be observed regarding the improvement of SE quality across the various organizations analyzed, determining with certainty whether the ownership structure (public/private/hybrid) of WUs affects the process and selection of material topics and SE is not possible. The same applies to the different national contexts considered. Substantial contextual differences may influence best practices in SE, depending on the country in question. For instance, in the Anglo-Saxon context, water-management services are entrusted to entirely private

companies, whereas in most continental European countries, management is largely based on either direct public administration or through companies with full or partial public ownership. However, the picture of the evolution of SE strategies by country reveals a common trend despite ownership structures, which move toward a higher involvement of stakeholders over the years.

This research enriches the discussion on the connection between the materiality principle and SE as a prerequisite for developing dialogic interactions, addressing a significantly underexplored issue (Bellucci et al. 2019). The materiality process in sustainability disclosure and SE should serve to create opportunities for stakeholders to express their opinions. It should foster dialogic interactions concerning the content of sustainability reports and, through information inducement, influence corporate behaviors toward sustainability (Gray 2014). As aforementioned, several companies refrain from comprehensively explaining their materiality assessment in sustainability reports, presenting only the final outcomes or ultimate list of themes; many companies omit details about SE activities and the communication strategy employed. The limited transparency regarding stakeholders' actual involvement raises doubts about the true purpose of these reporting tools. This skepticism arises owing to the ongoing and substantial disparity between organizations' sustainability rhetoric and their actions (Busco et al. 2018; Cho et al. 2015; Higgins, Tang, and Stubbs 2020). Instead of genuinely reflecting their authentic contributions to advancing sustainability, organizational disclosures might be geared toward preserving legitimacy or reconstructing it in the face of erosion (Milne and Gray 2013; She and Michelon 2019). According to Higgins, Tang, and Stubbs (2020), stakeholders' perceptions of transparency rely on the timely and open sharing of information. Additionally, the topics and materials presented should remain consistent over time, enabling stakeholders to track stability or changes in performance and practices and assess progress toward strategic goals across different years or organizations. Addressing the needs of the target audience and ensuring that the shared information is proportional and relevant to the organization's strategy and business model is also important. Therefore, our findings demonstrate that, together with an evolution of SE strategies into multi-directional SE, the relevant material topics identified as having high and medium priority increased over time; this could be seen as a virtuous circle to meet multi-stakeholders' and WUs' expectations.

Our results provide important insights for practitioners and regulators: the definition and implementation of the materiality process should receive as much attention as the content of the materiality analysis, especially in terms of theme identification. This approach aligns with the new European principles of sustainability reporting recently approved by the European Commission in the CSRD. These principles require companies to disclose sustainability information by evaluating its relevance from both impact and financial perspectives, which are interconnected yet distinct. In the relevance assessment process, engaging in dialog with stakeholders—including employees,

suppliers, consumers, communities, and authorities—will be crucial, particularly concerning impact materiality. The principle of materiality involves narrowing down topics and prioritizing specific issues. Therefore, recognizing that excessive simplification of sustainability issues can be detrimental is important (Puroila and Mäkelä 2019). A rigorous and transparent methodology that can enhance multi-stakeholder involvement is necessary, especially in activities related to managing *common goods*.

Hence, this research aims to emphasize the importance that SE processes should have in formulating guidelines, in addition to the attention given to the content of sustainability reporting. Fostering SE can create a collaborative business environment, incentivizing and rewarding substantial changes within the organization. Consequently, the company's decisions and actions may contribute more positively to the environment and society. Moreover, the disclosure of the underpinned SE process must be written within sustainability reporting, and its importance for the entire process is underlined. As noted by Higgins, Tang, and Stubbs (2020), sustainability reports, in their current form, have not significantly evolved beyond serving primarily as legitimacy-seeking tools; nevertheless, they still hold potential, and SE is improving. For instance, they could facilitate dialog around conflicting expectations, which would help mitigate superficial compliance, buffering, and decoupling.

The study has three primary sets of limitations. First, the sample size is limited, and despite efforts to select prominent European players in the water industry, the small scale restricts the ability to make broad generalizations. This limitation means that conclusions are specific to the industry and do not allow for comparisons between different countries or between various organizational forms managing water services. Second, the analysis techniques employed show limitations, particularly with regard to the authors' subjective judgments in applying qualitative content analysis. Third, the study does not explore the reasons behind a company's choice of one SE approach over another. Therefore, empirical tests and a comprehensive evaluation are necessary to uncover the primary motivations influencing variations in SE processes. Addressing these limitations would allow a more robust and nuanced understanding of the study's findings.

Additional research may delve into the processes through which various approaches to materiality come into existence, develop, and are practically applied. This paper contributes to understanding how organizations within the water sector employ the materiality concept in sustainability reporting. However, as new frameworks and standards continue to emerge, further research is necessary to explore perceptions, tensions, and resolutions surrounding the evolving understanding and application of materiality in this context (Jørgensen, Mjøs, and Pedersen 2022). Investigating how different organizations adapt to and interpret materiality in response to changing sustainability reporting landscapes could provide valuable insights for both academia and practitioners.

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Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

¹In the current paper, they are used interchangeably.

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Appendix 1

#	Theme	Area
1	Territory and biodiversity protection	Environmental
2	Emissions and climate change	Environmental
3	Water quality	Environmental
4	Shortage of raw materials	Environmental
5	Circular economy	Environmental
6	Health and safety	Social
7	Flexibility	Social
8	Staff training	Social
9	Health and safety in the supply chain	Social
10	Purification	Environmental
11	Renewable energy and energy efficiency	Environmental
12	Water resources	Environmental
13	Continuity of service	Social
14	Cybersecurity	Social
15	Governance oriented to sustainability	Governance
16	Diversity and equal opportunities	Social
17	Consumer protection	Social
18	Data security/privacy	Social
19	Internal communication	Governance
20	Waste	Environmental
21	Economy of the region	Social
22	Alliances and collaborations	Governance
23	Organizational impact	Environmental
24	Clarity	Social
25	Education of the population	Social
26	Use of technology	Social
27	Welfare	Social
28	Digitalization	Social
29	Losses	Environmental
30	Energy saving	Environmental
31	Customer centrality and satisfaction	Social
32	Institutions	Social
33	Shortage	Environmental
34	Quality working relationship	Social
35	Affordability/right of access	Social
36	Stakeholder engagement	Social
37	Research and development	Social
38	Damages	Social
39	Environmental risks	Environmental
40	Land management	Environmental
41	Fun and contact with nature	Social

#	Theme	Area
42	Public-private collaboration	Governance
43	Ethics and conduct	Governance
44	Process control	Governance
45	Improving the urban environment/ smart cities	Environmental
46	Salary	Social
47	Community support	Social
48	Reputation	Governance
49	Sustainable finance	Governance
50	Contamination	Environmental
51	Reduction of use	Environmental
52	Sustainable use/management	Environmental
53	Capture and enhance talent	Social
54	Customer service	Social
55	Accessibility for customers with disabilities	Social
56	Public utility investments	Social
57	Financial solidity	Governance
58	Financial innovations	Governance
59	Fighting fraud and corruption	Governance
60	Transparency	Governance
61	Materials/other resources	Environmental
62	Parks	Environmental
63	Occupation	Social
64	Transparency selection	Social
65	Sustainability of supply	Social
66	Assistance to vulnerable customers	Social
67	Effective communication	Social
68	Human rights	Social
69	Infrastructures	Social
70	Optimization of public resources	Governance
71	Organization/good governance	Governance
72	New regulations	Governance
73	Sustainable investments	Governance
74	Financial risk management	Governance
75	Risk management	Governance
76	Culture of responsibility	Governance
77	Sustainable mobility	Environmental
78	Covid-19	Social
79	Integrity	Governance
80	Resilience	Governance

Note: All the material themes identified in the sustainability reports of the water utilities over 3 years (2020, 2021, and 2022).