Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.

Chiara Vassillo*, Nora Annesi†, Massimo Battaglia‡, Marco Frey§

Abstract

Environmental regional agencies (ARPA) in Italy are public bodies responsible for monitoring, processing, and disseminating environmental data. In recent years, the significance of environmental and climate protection has markedly increased in public consciousness. A growing awareness of environmental impact and aspects is evident among stakeholders. These agencies play a pivotal role in disseminating environmental information, enhancing environmental awareness, and improving communication about environmental issues among citizens.

This study delves into the case of an ARPA, adopting a mixed-method approach that combines quantitative survey analysis and qualitative content analysis to assess stakeholder perceptions. The agency considers it imperative to consistently monitor the expectations, needs, and assessments expressed by its stakeholders regarding the agency's services. The results of such monitoring serve as a foundation for activity planning and the identification of

---

* **Chiara Vassillo**, collaboratrice di ricerca, Istituto di Management, Scuola Superiore Sant'Anna di Pisa; e-mail: chiara.vassillo@santannapisa.it.

† **Nora Annesi**, ricercatrice a tempo determinato di Economia e gestione delle imprese, Dipartimento di Business, Diritto, Economia e Consumi, Università IULM; e-mail: nora.annesi@iulm.it.

‡ **Massimo Battaglia**, professore associato di Economia e gestione delle imprese, Dipartimento di Management, Università di Roma "Sapienza"; e-mail: massimo.battaglia@uniroma1.it.

§ **Marco Frey**, professore ordinario di Economia e gestione delle imprese, Istituto di Management, Scuola Universitaria Superiore Sant'Anna di Pisa, e-mail: marco.frey@santannapisa.it.

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

organizational and management solutions, aiming to enhance the overall communication
system.
The originality of this study lies in its integrated evaluation framework, which not only
examines stakeholder satisfaction but also identifies potential gaps in environmental
communication strategies. By offering an in-depth analysis of the interaction between public
institutions and stakeholders, this research contributes to the broader discourse on public
engagement in environmental governance, providing practical insights for improving
institutional transparency and communication effectiveness.

1. Introduction

The need for greater public involvement in environmental decision-making has
been highlighted in recent high-profile research reports (Fung, 2006; Reed, 2008) and
emphasized by leaders at all levels of government (Newig & Fritsch, 2009). In some
cases, environmental agencies have opened the door to greater participation in their
programs (Beierle & Cayford, 2002; Dietz & Stern, 2008). However, there is relatively
little information on what can be gained from greater public involvement and what
makes some programs work while others fail (Rowe & Frewer, 2000; Irvin &
Stansbury, 2004). Focusing on how effectively these efforts introduced public values
into government decision-making, resolved conflict among stakeholders, and built
trust in environmental agencies (Lemos & Agrawal, 2006; Webler & Tuler, 2006). The
research findings support an optimistic view of public participation—although not
without important caveats—and emphasize the importance of communication and
commitment in the participatory process (Araos, 2023; Wynne, 1992).

Despite these contributions, significant research gaps remain. While previous
studies have examined public participation in environmental decision-making, there
is still a lack of empirical evidence on the long-term effectiveness of such initiatives
and their ability to shape institutional practices sustainably. Moreover, the specific
mechanisms through which public participation enhances trust and reduces
stakeholder conflicts are not yet fully understood. Another critical gap concerns the
role of digital and emerging communication technologies in fostering meaningful
stakeholder engagement, an aspect that remains underexplored in the literature.

Given these gaps, this study seeks to address the following research question: How
can public participation mechanisms be structured to maximize stakeholder
engagement, enhance trust in environmental agencies, and contribute to more
effective decision-making processes? By answering this question, the research aims
to bridge existing knowledge gaps and provide actionable insights for improving
participatory environmental governance.

Environmental issues, and the application of science and technology to those
issues, are receiving unprecedented levels of attention in public and policy discourses

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

(Jasanoff, 2017; Nisbet & Markowitz, 2015). As this has been happening, differences over responses to climate change have broadened to much wider philosophical and cultural divergences over the authority accorded to science and the assessment and interpretation of scientific evidence (Hulme, 2009; Sarewitz, 2004). Many different views may be taken on the proposition that these developments mean we are moving into or already are in a post-truth world (Lewandowsky, Ecker, & Cook, 2017). Yet, it is evident that in authoritarian societies or once liberal societies trending in that direction, it has become more difficult to advocate for evidence-based positions and policies on a wide range of topics, notably those related to environment and climate (Oreskes & Conway, 2010). In these conditions, environmental communication (EC) and science communication (SC) need to intensify their critical examination of their respective responsibilities and potentials (Davies & Horst, 2016). Relations between EC and SC are an important aspect of that critical self-examination. This Commentary offers a view of EC and SC and their relations that draw on the experiences of the authors, all with a foot in both camps. The Commentary has its origins in a paper and panel the authors—all members of the scientific committee of the PCST, the global network for SC—presented at the International Environmental Communication Association conference, COCE 2017. Guided by the maxim that "good fences make good neighbors," the panel sought to clarify differences as well as similarities between EC and SC (Lloyd et al., 2018).

A search in Public Understanding of Science, 2014–2017, on "environmental communication" produces mainly passing mentions or bibliographical or biographical references (journal title, publication title or author's declared research interest). Just one use of the phrase is found in a substantive treatment of EC (Sakellari, 2014), referring to Brulle (2010) on "environmental melodrama." A search in Environmental Communication, 2014–2017, on "science communication" produces many passing references, but also several (e.g., Burke et al., 2016; Lee, VanDyke, & Glenn Cummins, 2018; Suldovsky, McGreavy, & Lindenfeld, 2017) that deal with SC in terms of formal study and theoretical reflection.

2. The state of art: environmental communication in environmental agency

Environmental communication stands as a pivotal player in navigating the public's heightened awareness and concerns surrounding environmental risks. The escalating recognition of the need to involve the public in environmental assessments has led to increased opportunities for engagement. However, the landscape of environmental communication among key stakeholders remains dynamic and continually evolving. The urgency of addressing environmental risks cannot be overstated, and effective communication is central to this endeavor. The public's awareness of environmental issues has grown significantly, driven by a complex interplay of factors such as scientific advancements, media coverage, and community-driven initiatives. In response to this increased awareness, there has been a commendable push to involve the public in the assessment and management of environmental risks.

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

Nevertheless, there remains a lack of systematic research on the effectiveness of environmental communication strategies in enhancing public engagement and informing policy decisions. While theoretical frameworks have been widely discussed, there is limited empirical evidence regarding the long-term impacts of public involvement on environmental governance. Additionally, existing studies often fail to examine the institutional barriers that hinder effective communication between environmental agencies and stakeholders.

Despite the progress made in opening avenues for public participation, the process of environmental communication is not without its challenges. The evolving nature of this communication highlights the necessity for a nuanced and adaptive approach. Key stakeholders, including governmental bodies, environmental agencies, scientists, and the general public, must engage in ongoing dialogue to bridge gaps in understanding, address concerns, and collectively work towards sustainable solutions. Furthermore, the evolving nature of environmental communication underscores the importance of continuous research and exploration into what constitutes effective communication strategies. Understanding the dynamics of how information is disseminated, received, and interpreted by different segments of the population is crucial. This knowledge can inform the development of communication frameworks that resonate with diverse audiences and foster a more inclusive and informed public discourse on environmental issue.

However, one of the major gaps in the literature is the lack of studies analyzing the relationship between environmental communication and public trust in institutions. While several studies have investigated citizen satisfaction with public services (van Ryzin, 2004; Vigoda-Gadot, 2006), there is scant attention to how communication practices influence this satisfaction. Moreover, although the "satisfaction mirror" hypothesis has been studied in the private sector (Head et al., 2015), its relevance to public environmental agencies remains largely unexplored. This leads to an important research question: how can environmental communication strategies be structured to improve public trust and stakeholder satisfaction?

One of the significant challenges in environmental communication is striking a balance between scientific rigor and accessibility. Translating complex scientific findings into language that is understandable and relatable to the general public requires a thoughtful and strategic approach. It involves not only conveying information accurately but also considering the socio-cultural context, values, and perspectives of diverse communities. (Caron et al., 2012).

Over the preceding decades, a paradigm shift has occurred among elected officials and public managers who increasingly perceive citizens as customers. This shift has manifested in heightened attention to citizens' satisfaction with public services. Scholars in public administration have established a research agenda aimed at elucidating citizen satisfaction (Van Ryzin 2004; Vigoda-Gadot 2006).

In the context of environmental communication, it is crucial to understand whether citizens perceive communication efforts as transparent, engaging, and responsive to their needs. Failure to do so may lead to distrust in environmental agencies, reducing public support for environmental policies.

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025

_____

Scant attention has been given to exploring potential links between the satisfaction of frontline public employees and the satisfaction of the citizens they serve. This prompts the question: Does the satisfaction of an employee correlate with the satisfaction of a citizen interacting with them? The "satisfaction mirror" hypothesis, derived from private sector research, posits that such a correlation exists. Although intuitively appealing, this hypothesis, primarily explored in the context of private firms, has garnered some empirical support. (Head et al. 2015).

While prior research has explored citizen satisfaction, few studies have assessed whether stakeholder engagement in environmental decision-making leads to a tangible improvement in public service delivery. This gap calls for a more holistic framework that incorporates the perspective of both environmental agencies and their stakeholders, measuring not only communication effectiveness but also the outcomes it produces.

We contend that the satisfaction mirror hypothesis is likely applicable to the public sector. Analogous to customers interacting with firms, citizens often engage with frontline public employees. While existing research has separately scrutinized job satisfaction of public employees and citizen satisfaction, the satisfaction mirror hypothesis offers a framework for integrating these realms. This integration may contribute to a deeper understanding of the ramifications of job satisfaction and the determinants of citizen satisfaction.

Furthermore, public administration scholars have long focused on citizen interactions with street-level bureaucrats (Bartels 2013; Jensen & Pedersen, 2017; Keulemans & Groeneveld, 2020; Keulemans & Van de Walle, 2020; Lipsky 1971, 1980; Serra, 1995). The "satisfaction mirror" hypothesis introduces a novel perspective to comprehend the overlooked satisfaction dimension in bureaucratic encounters.

To bridge these gaps, this study investigates how environmental agencies can leverage communication strategies to improve stakeholder satisfaction and trust. It aims to provide a more comprehensive understanding of the relationship between environmental communication, public perception, and governance outcomes.

Shifting to the realm of Environmental Communication (EC) and Science Communication (SC), an anticipated convergence around public engagement and participation on shared concerns, such as climate change, exists. However, differing approaches persist. EC, often characterized as a "crisis" discipline, frames environmental issues and associated public engagement activities as crises. Conversely, public engagement and participation activities in science communication center on citizens' interaction with scientific information. Scholars like Nisbet (2017) advocate for science communicators engaged in SC to adopt more "issues-focused" approaches akin to EC. (Owen, 2019).

Communicators navigating the intersection of science and the environment acknowledge that scientific information, while necessary, is insufficient to foster public engagement and participation. Some EC researchers (Carvalho et al., 2017) argue that "scientization" of issues like climate change can depoliticize and demobilize citizen participation. Ottinger (2015) suggests that science communicators can best assist scientists by engaging the public in ways that transcend the notion of a homogenous and value-free science.

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

As we grapple with communicating sustainability in the domains of SC and EC, common challenges arise, including issues of complexity, consumption, ambivalence, mobility, uncertainty, risk, and conflict (Godeman & Michelsen, 2011). The burgeoning field of sustainability science, addressing problems at the nexus of society, ecology, and the economy, emphasizes the importance of communication (McGreavy & Hart, 2017).

Communication about sustainability is often treated as a sub-field of EC, with a specific emphasis on knowledge co-production (McGreavy & Hart, 2017). This entails researchers and practitioners finding ways to communicate effectively in addressing fundamental relationships between nature and society, incorporating diverse ways of knowing and learning, even in scenarios with uncertain and limited information (Kates et al., 2001). The concept of public engagement in science has expanded to encompass science-in-society activities (Bucchi & Trench, 2014), embracing a range of non-institutionalized knowledge-making and sharing activities and conversations about emerging scientific and technological developments and their impacts.

Incorporating relevant stakeholders in defining and legitimizing new technologies and practices, considering their motives and strategies, is crucial for assessing risks associated with climate action and achieving feasible, robust, and sustainable transitions (Polk, 2015; Turnheim et al., 2015; Lieu et al., 2019). Stakeholders encompass the private sector, national governments, the research community, NGOs, labor and trade unions, associations, and civil society. Prior research underscores that stakeholder participation, particularly in environmental issues, influences decision-making, adding ideas, information, and resources.

Examining 239 environmental decisions, Beierle (2002) found that stakeholder participation increased net total benefits in 69% of cases and decreased net benefits in only 6%. Johnson et al. (2004) discovered that 62% of participatory R&D projects in natural resource management adjusted their research priorities based on stakeholder input. However, challenges arise, including difficulties in demonstrating that including stakeholders improves decisions, potential marginalization of certain groups, and inconclusive evidence on the overall effectiveness of participation. Social learning, essential for diversity of perspectives, remains a critical factor in successful participatory processes (Cuppen, 2012; Polk, 2015).

In the context of climate change decision-making, involving stakeholders' gains increasing attention, yet few studies highlight the value stakeholders contribute in identifying risks in low-carbon transitions (Nikas et al., 2017). Our case studies, applying principles of transdisciplinary research, explicitly include stakeholders throughout the research process. This includes problem definition, analysis of problems, and exploring the impact of the research. The incorporation of stakeholder knowledge goes beyond verifying model results, extending to addressing local issues identified by stakeholders. This approach enables decision-makers to consider both model outputs addressing national economic and social issues and qualitative outputs addressing local concerns identified by stakeholders.

In recent decades, the significance of public participation has garnered considerable attention in the realm of urban planning, acting as a response to the inadequacies observed in prevalent top-down models and expert-driven approaches

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025

_____

(Tandon, 2008). This concept encapsulates a spectrum of activities signifying the involvement of individuals in the planning and administrative processes to influence policies and actions (Cornwall, 2008). Widely regarded as a prerequisite for successful decentralization, democracy, and good governance (Fung, 2015; Tandon, 2008), numerous studies have delved into its goals, benefits (Arnstein, 1969; Innes & Booher, 1999), approaches (Chambers, 1981, 1994; Healey, 1998), and factors influencing its success (Beierle & Konisky, 2000; Irvin & Stansbury, 2004). Nevertheless, the realm of participation evaluation has received scant attention, prompting the need for explicit definitions, criteria, and methodologies (Laurian and Shaw, 2008). This gap in the literature complicates the identification of appropriate evaluation methods tailored to specific contexts. The concept of public participation gained prominence through the United Nations' Sustainable Development Goals (SDGs) in 2015 (Ludwig, 2017), with indicators 11.3.2 and 16.7.2 focusing on direct participation structures and population involvement in decision-making processes, respectively. The operationalization of these indicators is imperative for achieving SDGs by 2030, necessitating the conceptualization of a reliable and operational evaluation framework. Such a framework would furnish guidelines for nations to attain robust public participation and evaluate their practices in alignment with SDGs.

The state of environmental communication within environmental agencies mirrors a dynamic landscape molded by evolving societal expectations, technological advancements, and an increasing awareness of environmental issues. Environmental agencies assume a pivotal role in disseminating vital information, engaging the public, and cultivating a profound understanding of environmental challenges. An overarching exploration of the critical facets shaping the state of environmental communication within these agencies reveals several noteworthy dimensions.

In this context, the accessibility of environmental information by the society through environmental and science communication has been explored thanks to the consultation with a large group of stakeholders of an Italian environmental agency. Improvement strategies have been outlined thanks to the consultation process and are presented as an opportunity for improvement for the agency itself and, more generally, for the development environmental communication. Such strategies are part of the added value of this paper. Indeed, the presented evidence can be tested or implemented by other environmental agencies to improve the customer/stakeholder satisfaction (Davies & Miles, 1998).

3. Material and Methods

The study is based on the analysis of qualitative answers given by the stakeholders of an Italian regional environmental agency to the annual customer satisfaction survey. Since 2004, the Agency has developed a monitoring system aimed at evaluating the satisfaction level of its stakeholders regarding the main services offered by the Agency.

The study employed the Gioia method (Gioia et al., 2013) for the qualitative analysis, a well-established and systematic approach that allows researchers to move

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025

_____

from raw qualitative data to theoretically meaningful concepts. This method was particularly suited to capture the perceptions, experiences, and suggestions expressed by participants in a structured and rigorous manner.

The Gioia methodology follows a three-step coding process:

Identification of first-order concepts: These are direct quotations or paraphrased statements drawn from the respondents' feedback. They retain the language and voice of the participants and represent the most granular level of the coding structure.

Development of second-order themes: At this stage, related first-order concepts are grouped into broader interpretive categories based on recurring patterns. This step marks the transition from informant-centric terms to researcher-centric interpretation.

Aggregation into overarching dimensions: The second-order themes are further synthesized into more abstract dimensions. These aggregate dimensions enable a higher-level understanding of stakeholder concerns, expectations, and suggested improvements.

The resulting data structure — which visually represents the three-tiered process from first-order concepts to aggregate dimensions — was developed to support the analytical narrative and guide the discussion of findings.

The findings presented in this section are the outcome of a systematic coding process conducted according to the Gioia methodology.

This three-tiered model helps translate stakeholder narratives into structured, theory-informed insights, bridging the gap between empirical evidence and conceptual understanding.

Figure 3 does not simply visualize the coding structure; it represents the full methodological process adopted in the study — from the design of the questionnaire to the implementation of recommendations — ensuring clarity, transparency, and traceability.

As illustrated in Figure 3, the data structure maps the progression from first-order concepts — directly derived from participants' feedback — to second-order themes and aggregate dimensions. This framework offers a structured interpretation of stakeholder perspectives, capturing the complexity of their concerns, expectations, and proposed improvements.

Figure 3 – Methodology Flowchart

This flowchart visually represents the step-by-step methodology used in the case study, outlining the structured process from survey design to stakeholder feedback integration. By following this sequence, the study ensures that data collection, analysis, and interpretation are conducted in a systematic and transparent manner, ultimately leading to actionable insights and recommendations.

The process begins with Survey Design, which follows a structured approach to ensure methodological rigor. The questionnaire was developed using both closed-ended questions (quantitative) and open-ended questions (qualitative) to allow for a comprehensive assessment of stakeholder perceptions. The design process incorporated a review of best practices in environmental communication research and stakeholder engagement methodologies to ensure reliability and validity.

Once the survey was structured, it moved to Questionnaire Distribution, where a mixed-mode approach was used to maximize participation. The survey was disseminated via email to approximately 70,000 recipients, including individuals who had previously engaged with the Agency's services, submitted information requests, or subscribed to the Agency's newsletter. Additionally, the survey was made publicly available on the Agency's website to ensure broad accessibility.

Following distribution, the Data Collection phase involved gathering responses from participants and ensuring that feedback was recorded accurately. Responses were collected over a fixed period to maintain consistency in data reporting. The

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025

_____

participation rate and demographic characteristics of respondents were carefully analyzed to assess potential biases and ensure the representativeness of the sample.

Once collected, the data underwent a comprehensive Data Analysis process involving both qualitative and quantitative techniques. Quantitative responses were analyzed using statistical methods to identify patterns and trends in satisfaction levels. In parallel, qualitative responses were examined through thematic analysis, applying a systematic coding framework based on the Gioia methodology. To enhance the reliability of this analysis, two researchers independently coded the responses and subsequently reconciled any discrepancies through discussion, thereby reducing subjectivity and ensuring consistency.

The next phase, Categorization of Responses, focused on organizing the feedback into key themes that reflected stakeholder concerns, strengths, and suggestions for improvement. These categories served as the foundation for the subsequent interpretive phase.

The Findings Interpretation stage involved synthesizing the analyzed data to extract meaningful insights about stakeholder perceptions. This synthesis enabled the formulation of Recommendations & Policy Implications, offering targeted suggestions to improve the Agency's communication strategies and environmental governance practices.

The final phase, Stakeholder Feedback & Implementation, emphasized the practical application of the findings. In this stage, the results were shared with stakeholders, whose feedback was integrated into revised strategies aimed at enhancing public communication, institutional transparency, and overall engagement.

This case study was selected for several reasons. First, the Agency represents a significant example of a public institution actively working to enhance its reputation and service quality through structured stakeholder engagement. Unlike other regional agencies that may conduct sporadic or sector-specific assessments, this Agency has implemented a continuous monitoring system that generates a robust dataset for longitudinal analysis. Furthermore, the Agency's central role in environmental governance underscores the importance of public trust and perception, particularly in a context where effective communication is essential.

Moreover, the integration of qualitative methods within a structured monitoring framework distinguishes this study from earlier research that relied predominantly on quantitative survey data. By incorporating qualitative elements, such as open-ended survey responses, the study captures the complexity and nuance of stakeholder perspectives, revealing deeper insights into their concerns and expectations.

The inclusion of qualitative questions in the survey provided a more detailed understanding of stakeholder feedback, especially concerning areas for potential improvement. These open-ended questions addressed various aspects of communication, including social media presence, newsletter services, public relations, and editorial content. Specific questions were designed to elicit suggestions for improvement in these key communication areas, which are among the primary channels used by the Agency to engage with its stakeholders.

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

The survey was distributed to all individuals who had interacted with the Agency—either by requesting services, submitting inquiries, or subscribing to the newsletter—totaling approximately 70,000 contacts. The survey was also published on the Agency's website to extend accessibility.

Following an inductive approach (Thomas, 2003), the collected responses were grouped according to the primary criticisms or expectations expressed by participants. Thematic analysis was carried out using a structured coding framework to ensure that themes emerged directly from the data, rather than being imposed by pre-existing theoretical models.

In particular, the Gioia methodology (Gioia et al., 2013) was employed to guide the qualitative analysis. This involved identifying first-order concepts and second-order themes, which were then aggregated into higher-level dimensions. The coding process was independently conducted by two researchers who later met to align their interpretations, thereby enhancing analytical robustness and minimizing individual bias.

Finally, the analyzed responses were shared with the Agency and used to develop practical guidelines aimed at improving institutional reputation. These guidelines were informed by a nuanced understanding of stakeholder expectations and were intended to support the Agency in enhancing its communication effectiveness and reinforcing stakeholder trust.

4. Results and Discussion

Overall, the questionnaire in 2020 was filled in by 880 people.

The sample that was formed appears to be objectively qualified, well suited to the requirement indicated by ISTAT itself in terms of "representation of all possible situations" and "Articulation proportional to reality" (Gravetter and Forzano, 2018; Creswell and Creswell, 2017).

Indeed, the level of diversity and representativeness in the sample ensures a comprehensive reflection of stakeholder perspectives, in line with statistical sampling criteria.

Specifically, the sample is characterized by:
− a high level of education (64% have a university degree or postgraduate degree);
− a high level of qualification in the world of work: managers, professionals and university professors (32%); officials and technicians (31%).

The sample that was formed appears to be objectively well-qualified and aligns with the criteria set by ISTAT for the "representation of all possible situations" and "proportional articulation of reality" (Gravetter & Forzano, 2018; Creswell & Creswell, 2017). Indeed, the level of diversity and representativeness in the sample ensures a comprehensive reflection of stakeholder perspectives, in line with statistical sampling criteria.

The gender distribution is fairly balanced, with 39.7% of respondents identifying as women and 57.8% as men, while 2.5% preferred not to answer. The age

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025

_____

distribution indicates a predominance of middle-aged and older respondents, with 39.5% between 51 and 60 years old and 29.2% aged 61 and above. This suggests that the majority of participants belong to age groups that are more likely to have significant professional experience and long-term engagement with the Agency's activities.

Table 1 - Respondents' characteristics

Gender	no.	%
Women	349	39,7%
Men	509	57,8%
I prefer not to answer	22	2,5%
Tot.	**880**	100%
Age	**No.**	**%**
0 a 30 anni	12	1,4%
31-40 years	55	6,3%
41-50 years	208	23,6%
51-60 years	348	39,5%
61 years and above	257	29,2%
Tot.	**880**	100%

A significant 64% of respondents hold a university degree or postgraduate qualification, highlighting a highly educated sample. This suggests that the surveyed population is particularly familiar with environmental and administrative issues, which may shape their expectations and evaluations of the Agency's performance.

From a professional standpoint, 32% of respondents are employed as managers, professionals, or university professors, while 31% are officials and technicians. These figures indicate that a substantial proportion of respondents have direct or indirect involvement in the regulatory, scientific, or operational activities related to the Agency's functions. Given the complexity of environmental governance, their feedback is particularly relevant in assessing the effectiveness and reputation of the Agency's services.

The composition of the sample suggests that the evaluation of the Agency's services is likely influenced by the respondents' professional roles and level of expertise. Given that a large share of respondents are professionals with direct exposure to environmental policies and regulations, their expectations regarding communication, transparency, and efficiency may be higher compared to the general public.

Additionally, the predominance of older respondents may reflect a greater institutional familiarity with the Agency's services, as well as a stronger inclination to participate in public consultations and surveys. Younger age groups appear to be underrepresented, which could suggest the need for the Agency to explore new

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

engagement strategies, particularly through digital communication channels such as social media.

The overall evaluation about satisfaction related to the services offered recorded 78% of positive judgments ("excellent" and "good") of which 30% very positive ("excellent" grade), - even sensitive - among the three main processes carried out by the Agency:

- Control and monitoring (e.g. control request or exposed presentation): 46% positive,
- Technical-scientific support (e.g. expression of opinions or participation in conferences of services): 80% positive,
- Dissemination of knowledge (e.g. contacts with URP via toll-free number and / or mailbox, website consultation, publications, database access): 90% positive.

Figure 2 - Customer satisfaction general results
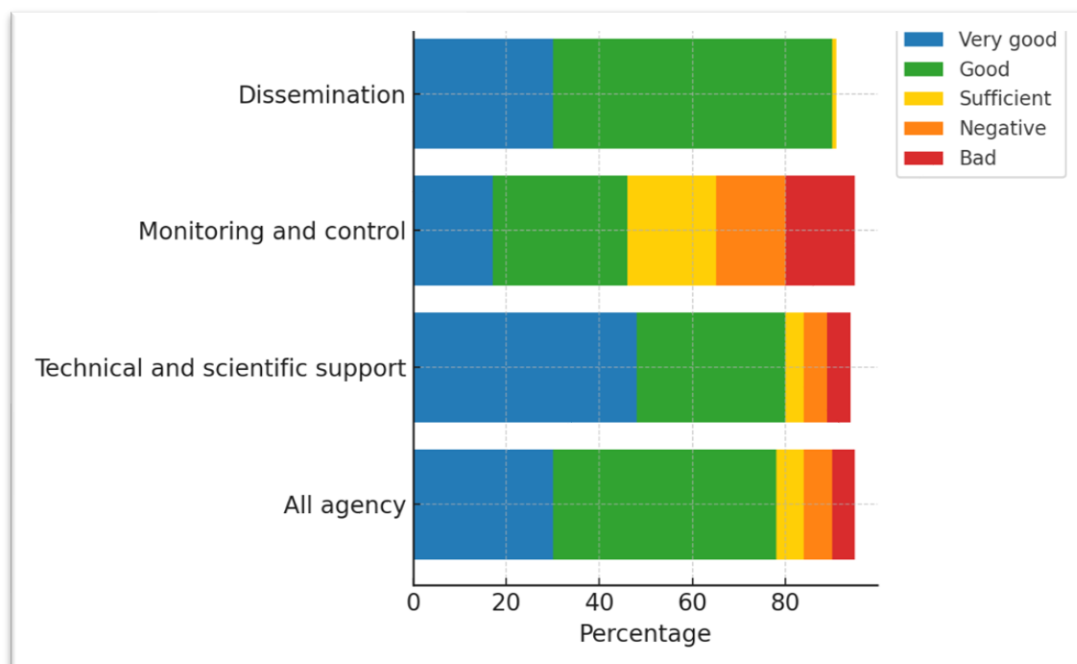
Analyzing the outcomes of surveys conducted over the past five years (2015-2019) reveals a noteworthy increase in the overall average rating for the Agency. Delving into the specifics of various processes, a nuanced reality emerges. In terms of technical-scientific support and knowledge dissemination, the average score consistently hovers around 8.00. However, for control and monitoring, the evaluation fluctuates slightly above and below a threshold of satisfactory performance throughout the years.

Beyond the realm of quantitative metrics, particular emphasis has been placed on qualitative data derived from responses to questions pertaining to the communication system implemented by the Agency. A total of 292 responses have

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

been meticulously analyzed to elucidate expectations regarding the communication services. The gathered evidence has been coded and categorized into four emerging thematic groups based on their distinctive content, namely: (1) timing, (2) clarity and accountability, (3) partnership, public communication, and social channels, and (4) risk assessment.

Additionally, it is crucial to note that when evaluating the communication services provided by the Agency, a comprehensive approach encompasses various channels. In this context, the agency's performance in communication services is also measured through its engagement on social media platforms, distribution of newsletters, and dissemination of news. These channels contribute to the multifaceted communication strategy implemented by the Agency, ensuring a comprehensive and effective interaction with its stakeholders.

4.1 Timing

The ability to give fast information is the main addressed topic both from customers who asked for a service to the Agency (generally entrepreneurs or producers) and stakeholders from the civil community who consult the Agency communication channels to receive information on the state of the environment.

In this perspective, the customers would like to receive information about occurring normative changes in ranges of times that are compatible with their ability to react to the change. The Agency is an institutional body that has an advantage over other non-institutional communication channels regarding all environmental regulatory information. This advantage should be translated, according to the respondents, into a faster form of dissemination of the information to the companies that should implement to adapt their businesses. However often, as highlighted, this type of information is first disseminated by unofficial and non-institutional channels which generate alarm or concerns relating to a non-compliance of productive activities. This kind of expectation is also related to the European-level regulatory information:

"(I would like to have) *Faster updates on national and EU legislation for the environment and health. The publication of "case histories" would be very useful*"
(Man, <61 years, retired)

Other stakeholders have focused on the importance of having faster information about the status of the environment. These answers have been mainly provided by those respondents coming from territories characterized by the massive presence of productive or industrial areas. Indeed, these citizens would be soon informed about the quality of the air, the soil or of the water in correspondence of specific events (i.e. exceptional odor emissions, or suspected soil contamination, or color change of surface water bodies). The occurrence of similar events is often followed by reports from citizens. Sampling procedures are therefore connected to these events which require technical time for the dissemination of the results. This timeframe has been described as too long and stakeholders expect to be informed also about the

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

intermediate steps in order to be sure that the institutional apparatus is working for
the health protection of the local community:

*"I expect it to be established a prompt communication service on emission reports.
The results deriving from the analyses conducted following the multiple reports of bad
smell and environmental pollution caused by the biomass plants in my area are not
communicated either to the person who initiated the report or on public channels for
the purpose of informing the community"*

(Woman, 41-50 years, employee)

4.2 Clarity and accountability

Clarity in responses and willingness to resolve issues are critical aspects
highlighted by the stakeholders. The official communication should be more
transparent and supported by detailed account of implemented controls and of
monitoring activities. Indeed, the Agency provides cyclic information about collected
data, however public information is provided in aggregate form and the full report
has to be formally requested to be consulted. In this sense, stakeholders have
identified the expectation to see day by day data. This information could clarify the
environmental status in specific areas and make citizens able to take informed
decision about their daily activities. Moreover, the high attention on specific
industrial areas is the reason of an interest in checking data about not-planned audit.

*"I would like to read any reports of random checks on productive activities for each
municipal areas"*

(Man, 51-60, government officer)

The clarity should be reinforced also through ah higher attention to the Frequent
Asked Question (FAQ) section. This topic has been addressed by several stakeholders.
Indeed, the website provide several FAQ sections that are each for each thematic
website section. Stakeholders ask to provide information without the direct remand
to specific normative codes. This solution, according to the respondents, is a way to
reduce the overall clarity of the shared information. The Agency should explain the
meaning of certain procedures or requests in simpler words in order to make the
information available to everyone.

*"I would make the FAQ on your site even clearer in order to better clarify the
procedures to follow and the technical cases, simply referring to the reference
legislation is sometimes not sufficient because it is unclear"*

(Man, 31-40, freelance)

4.3 Partnership, public communication, and social channels

Partnership and public communication have been cited by the stakeholders as tool
to reinforce the overall engagement and to improve the quality of shared information.
In general, stakeholders are calling for greater sharing and partnership with other

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

public institutions, with research centers and universities, with private businesses, with trade associations and, finally with citizens.

In particular, a higher presence as speaker in environmental conferences for specific scientific insights could represent the tool to enlarge the partnership with other institutions and research centers for building opportunities of data sharing and collaborative projects. The communication with business could be reinforced through the organization of workshop with local businesses to address specific topics. Citizens, according to the respondents should be engaged through local conferences addressing specific environmental issues of each area.

The Agency should cover, in this sense, also the role of coordinator among public institutions for the communication of all the environmental issues:

"The Agency should act by opening to other parties, acting as an "umbrella" agency. A greater connection/cohesion between the various regional environmental agencies would be useful, less reference, less regionalism, more territories: obviously environmental and educational-social problems do not stop in front of an administrative border"
(Man, 51-60, Public manager)

Finally, a higher engagement of citizens is expected through a better communication via social media. Stakeholder expectations in this sense are focused on a better presence of the Agency in the social media through a defined communication plan. Indeed, the respondents seem to perceive the communication through the social media still not planned, formalized and institutionalized. However, the respondents identified the social media as the tool to enlarge the awareness of citizens and, specially, of young people that should be engaged to make them more sensitive and more responsible of their potential role. The agency should act:

"promoting opportunities for collaborations with other bodies, for example with schools and universities throughout Italy, producing communications with films, advertising courses for the environmental topics, making all the materials produced accessible by links. Using more assertive, more empathetic, and less prescriptive language. if you take the suggestions offered in the wrong way, you will understand that something is not right in the relational communicative approach you are adopting"
(Woman, 51-60, freelance in the healthcare sector)

And about the way to communicate on social media:

"90% of the recipients of those messages do not have the tools to understand your communication. Please strengthen the dissemination activity through press officers and experts in communication"
(Man, 41-50, freelance in the communication sector)

4.4 Risk assessment

The risk assessment cluster has two main dimensions, first it refers to environmental risk and how they can be reduced or better monitored through an

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025

_____

open communication with citizens, while the second is more linked to the communication risks.

Stakeholders have identified themselves as a useful source of information and sentinels of environmental risks if well informed and trained about critical environmental issues in specific areas or about what to observe in relation to the surrounding environment. Near this aspect, stakeholders ask to be more informed about the proper channel of communication to inform about potential risks:

"Citizens can significantly contribute to identifying risks related to low-carbon transitions. Diversity of perspectives and stakeholder participation are key to a comprehensive risk assessment"

(Ma, <61, retired)

The second type of risk identified by the stakeholders is the strong connection with the regional body which has decision-making power with respect to investments in the territory and which acts after having acquired the opinion of the Agency in relation to the environmental risks potentially linked to such investments. Indeed, the respondents have identified the risk to do politics through their communication channels. Data should support the provided information and communication channels.

"I would like to read a greater balance in communication. We often have the impression that the reports are biased and not neutral. ARPAT should report environmental data without judgmental comments. Thus it risks losing credibility"

(Man, 51-60, environmental technician)

The high percentage of well-educated professionals among respondents suggests that stakeholder expectations are shaped by professional expertise. This may explain why the technical-scientific support and knowledge dissemination services received the highest satisfaction scores—these services are most directly aligned with the needs of specialized stakeholders.

Conversely, control and monitoring services received lower scores, which may reflect challenges in procedural efficiency and responsiveness. The qualitative data further supports this interpretation, as stakeholders frequently cited delays and unclear processes as key concerns.

Another notable trend is the low participation of younger demographics. Given that effective environmental governance relies on long-term public engagement, the Agency may need to expand its outreach efforts by leveraging social media, interactive platforms, and targeted communication strategies to increase participation among younger stakeholders.

The results suggest several key policy recommendations:

Enhancing Communication Strategies – The high satisfaction with knowledge dissemination highlights the effectiveness of the Agency's communication efforts. However, the concerns regarding clarity and responsiveness suggest the need for more structured and proactive communication strategies, particularly in control and monitoring services.

Digital Engagement and Accessibility – Given the underrepresentation of younger stakeholders, the Agency should develop targeted initiatives to increase participation in environmental governance processes.

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025

_____

Streamlining Administrative Procedures – The qualitative data underscores stakeholder frustrations with slow response times. Implementing process optimization strategies could enhance satisfaction levels in this area.

This study provides valuable insights into stakeholder engagement in environmental governance. Unlike previous research that primarily focuses on quantitative assessments of service satisfaction, this study integrates both quantitative and qualitative approaches, offering a more comprehensive understanding of stakeholder perceptions.

Additionally, the findings underscore the importance of transparency, accessibility, and responsiveness in public environmental institutions. Addressing the identified challenges can enhance institutional trust, improve public engagement, and contribute to more effective environmental decision-making.

5. Limitations of the Study

While this study provides valuable insights into stakeholder perceptions of environmental communication within a public agency, several limitations should be acknowledged to ensure a balanced interpretation of the findings.

The research focuses on a single regional environmental agency in Italy, which limits the generalizability of the findings to other contexts. Although the study offers a detailed and context-specific analysis, its conclusions may not be directly applicable to other public institutions, regions, or countries where environmental communication practices and stakeholder engagement may differ due to varying regulatory frameworks, political climates, and public expectations.

The study is based on a survey methodology, which relies on stakeholders' self-reported perceptions. While this approach provides direct insights into respondents' views, it is also subject to potential biases, such as social desirability bias, recall bias, or personal expectations influencing responses. Additionally, respondents may interpret survey questions differently, affecting the consistency of the collected data.

The research primarily relies on a single source of data—the questionnaire. Although the survey includes both quantitative and qualitative elements, triangulating data with additional sources (such as interviews, focus groups, or document analysis) could have provided a more comprehensive and nuanced understanding of the issue. Future studies should incorporate multiple research methods to validate findings and capture a broader range of perspectives.

Although the survey reached 880 respondents, the sample may not fully represent the entire spectrum of stakeholders interacting with the agency. Certain groups—such as younger demographics, small businesses, or marginalized communities—may be underrepresented in the dataset, potentially skewing the results. Future research should implement stratified sampling techniques to ensure a more balanced and inclusive representation of stakeholder voices.

The study provides a snapshot of stakeholder perceptions at a specific point in time (2020). However, environmental communication practices and stakeholder expectations evolve over time, particularly in response to policy changes,

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

technological advancements, and societal shifts. A longitudinal study tracking stakeholder perceptions over multiple years would offer a more dynamic and evolutionary perspective, allowing for an analysis of trends, improvements, or emerging challenges in environmental communication.

The study highlights concerns regarding the perceived neutrality and credibility of environmental reports. However, the extent to which these perceptions are influenced by broader socio-political factors, media narratives, or institutional trust levels remains unclear. Future research could explore external influences on stakeholder perceptions, examining the role of political discourse, misinformation, and public trust in institutions in shaping attitudes toward environmental communication.

Addressing these limitations opens new research opportunities. Future studies could expand the geographical scope by comparing multiple environmental agencies, allowing for a broader understanding of diverse institutional approaches. Additionally, employing mixed method approaches that integrate interviews, case studies, or ethnographic research would provide a more comprehensive and in-depth perspective on stakeholder perceptions. Implementing longitudinal tracking would be valuable in examining how these perceptions evolve over time, capturing shifts influenced by policy changes or societal developments. Furthermore, exploring the impact of digital communication strategies—such as social media engagement, interactive platforms, or participatory tools—could enhance environmental transparency and strengthen public trust. By acknowledging these limitations and outlining directions for future inquiry, this study contributes to a more critical and constructive understanding of public engagement in environmental governance.

6. Conclusion

The paper has presented the case of a public environmental regional agency in Italy. The purpose of the paper was to understand the opinion of stakeholders about the accessibility of environmental information to improve it and to enhance the public perception (and satisfaction) of the communication service implemented by the agency. The consultation was the opportunity to outline solutions and strategies to reconcile environmental communication and science communication with stakeholders (Llorente, 2022).

The consultation provided an opportunity to delineate solutions and strategies for harmonizing environmental communication and science communication with stakeholders. As an illustration, the public consultation model stands out as a global initiative aligned with the United Nations Sustainable Development Goals.

According to Fox and Stoett (2016), citizen participation should be viewed as complementary to governmental representation rather than a substitute for it. In most instances, policies are more likely to yield superior outcomes when citizen perspectives are considered as part of a comprehensive process of democratic deliberation that involves the full spectrum of relevant actors (Fox & Stoett, 2016).

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025

_____

Overall, the paper has confirmed that greater public involvement (Kroh & Schultz 2023) can expand knowledge about stakeholder perceptions, providing valuable insights for institutional decision-making processes. Moreover, the consultation practice has emerged as a strategic tool to bridge the gap between stakeholder expectations and the organization's development strategies, which often result from autonomous decision-making processes. From this perspective, civil society engagement is instrumental in reducing tensions among interested parties and fostering a more collaborative governance model (Kroh & Schultz 2023). This finding underscores the need for public institutions to institutionalize participatory processes, not merely as a formality but as an integral part of their strategic planning.

From a broader perspective, the study demonstrates that public environmental agencies can leverage stakeholder engagement not only to enhance transparency and accountability but also to strengthen institutional credibility. When citizens feel that their concerns and expectations are acknowledged, public trust in environmental governance structures is likely to improve. This, in turn, has significant policy implications, as it suggests that inclusive and responsive communication mechanisms should be embedded within governmental frameworks to ensure that environmental policies are both scientifically robust and socially legitimate.

In general, it is noteworthy that the majority of collected responses include positive comments. Overall, stakeholders harbor a positive perception of the information provided. Nevertheless, there remains an expectation for a more balanced communication approach, as stakeholders perceive the reports to be biased and lacking neutrality, posing a risk to credibility. Addressing this issue requires a reassessment of how environmental information is framed and disseminated, ensuring that the communication strategy is transparent, evidence-based, and free from institutional biases.

The study's findings suggest that integrating structured public consultations into environmental policy development and implementation can yield tangible benefits for both stakeholders and institutions. In particular, by incorporating participatory mechanisms into decision-making, public agencies can improve policy legitimacy, foster greater compliance with environmental regulations, and enhance public support for sustainability initiatives.

This is especially relevant in the context of environmental governance, where policies often require collective action and behavioural changes. Ensuring that environmental communication is not merely a top-down dissemination of information but rather an interactive, two-way process can facilitate stronger civic engagement and promote social learning. Institutions should therefore embrace innovative communication strategies, including the use of digital platforms, deliberative forums, and community-based participatory approaches, to ensure that policies resonate with diverse societal groups.

In terms of theoretical implications, the results show that consultation practices can reinforce the mobilization of citizen participation, with stakeholders positioning themselves as "sentinels" who support the agency in carrying out its functions at the local level (Carvalho et al., 2017). This highlights the transformative potential of

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025

_____

participatory environmental governance, where citizens shift from being passive recipients of information to active contributors in decision-making processes.

Focusing on the three principal dimensions of reputation outlined by Davies and Miles (1998)—image, identity, and desired identity—the study has also identified areas for improvement that could enhance satisfaction levels and, in the long term, strengthen the agency's institutional reputation.

From a managerial perspective, public agencies should rethink their communication models, ensuring that environmental information is accessible and actionable for a broader audience. While maintaining their formal and institutional role in environmental communication, agencies should explore strategies to simplify and contextualize scientific content, making it more relevant to different societal actors. In this regard, social media and digital tools could serve as key platforms to disseminate less technical but highly relevant environmental information, fostering greater public engagement and awareness.

Beyond these general findings, the study also highlights specific equity concerns. Small businesses expressed a sense of exclusion from participatory decision-making processes, arguing that institutional support and attention tend to focus on larger entities. Addressing this issue is critical, as ensuring the inclusivity of all stakeholders in environmental governance contributes to a more democratic and efficient policy-making process. Developing tailored communication strategies for underrepresented groups can mitigate systemic disparities and create a more level playing field in environmental decision-making.

Additionally, the consultation results indicate that stakeholders frequently contact the agency for minor inquiries that could be easily addressed through a more effective communication system. This suggests that streamlining information channels and improving direct communication mechanisms could reduce administrative burdens while enhancing service efficiency.

Despite its contributions, the study has limitations that should be acknowledged. The paper presents a single case study based on a single source of information—the questionnaire. As such, data triangulation is lacking, and alternative findings may emerge when examining other environmental agencies. Future studies should incorporate mixed-method approaches, combining quantitative assessments with qualitative insights from focus groups, expert interviews, or ethnographic observations.

Furthermore, to capture the evolution of stakeholder perceptions over time, future research could implement a longitudinal analysis, correlating the collected evidence with socio-technical and institutional changes. Such an approach would provide a more dynamic understanding of how environmental communication strategies evolve in response to policy shifts, public expectations, and emerging environmental challenges.

In conclusion, while there have been commendable strides in expanding opportunities for public participation in environmental health assessments, the journey of environmental communication is ongoing. It necessitates a commitment to adaptability, inclusivity, and the continual refinement of communication strategies.

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

As public awareness and concerns about environmental health risks continue to grow, effective communication remains a cornerstone of successful governance, fostering collaboration among key stakeholders and advancing sustainable solutions. By strengthening participatory frameworks, refining communication strategies, and prioritizing inclusivity, public agencies can play a pivotal role in shaping a more transparent, responsive, and effective environmental governance system.

Ultimately, a well-structured and stakeholder-centered approach to environmental communication can contribute not only to improving institutional reputation and public trust but also to enhancing environmental policy effectiveness and societal resilience in the face of global environmental challenges.

References

Araos M., (2023). Democracy underwater: public participation, technical expertise, and climate infrastructure planning in New York City. *Theory and Society*, 52(1):1-34. doi: 10.1007/s11186-021-09459-9.

Addams, H., & Propps, J. (2000). *Social discourse and environmental policy: An application of Q-methodology*. Northhampton: Edward Elgar.

Asah, S. T., Bengston, D. N., Wendt, K., & Nelson, K. C. (2012). Diagnostic reframing of intractable environmental problems: Case of a contested multiparty public land-use conflict. *Journal of Environmental Management*, 108,108–119.

Baran, S. J., & Davis, D. K. (1995). *Mass communication theory: Foundations, ferment, and future*. Belmont, CA: Wadsworth.

Barry, J., Ellis, G., & Robinson, C. (2008). Cool rationalities and hot air: A rhetorical approach to understanding debates on renewable energy. *Global Environmental Politics*, 8, 67–98. doi: 10.1162/glep.2008.8.2.67

Barry, J., & Propps, J. (1999). Seeking sustainability discourses with Q methodology. *Ecological Economics*, 28(3), 337– 345. doi: 10.1016/S0921-8009(98)00124-3

Botetzagias, I., Malesios, C., Kolokotroni, A., & Moysiadis, Y. (2015). The role of NIMBY in opposing the siting of wind farms: Evidence from Greece. *Journal Of Environmental Planning And Management*, 58(2), 229–251. doi: 10.1080/09640568.2013.851596

Brown, S. R. (1980). *Political subjectivity*. New Haven, CT: Yale University.

Brown, S. R. (1993). A primer on Q methodology. *Operant Subjectivity*, 16(3/4), 91–138.

Brown, S. R. (2008). *Q methodology in assessment and research*. Kent, OH: Kent State University.

Burningham, K., Barnett, J., & Thrush, D. (2006). *The limitations of the NIMBY concept for understanding public engagement with renewable energy technologies: a literature review* (Working paper 1.3). Guildford: University of Surrey.

Caron RM, Rezaee ME. (2012). Evaluating the communication of environmental permitting decisions in diverse communities. *Journal Of Environmental Health*. 75(1):20-5. PMID: 22866399.

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

Cools, M., Brijs, K., Tormans, H., De Laender, J., & Wets, G. (2012). Optimizing the implementation of policy measures through social acceptance segmentation. *Transport Policy*, 22, 80–87. doi: 10.1016/j.tranpol.2012.05.013

Creswell, J. W., & Creswell, J. D. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* Sage Publications.

Cuppen, E., Breukers, S., Hisschemöller, M., & Bergsma, E. (2010). Q methodology to select participants for a stakeholder dialogue on energy options from biomass in the Netherlands. *Ecological Economics,* 69(3), 579–591. doi: 10.1016/j.ecolecon.2009.09.005

Danielson, S. (2009). Q method and surveys: Three ways to combine Q and R. *Field Methods*, 21(3), 219–237. doi: 10.1177/1525822X09332082

Davies, B., & Hodge, I. (2007). Exploring environmental perspectives in lowland agriculture: A Q methodology study in East Anglia, UK. *Ecological Economics*, 61(2–3), 323–333. doi:10.1016/j.ecolecon.2006.03.002

Davies, B., & Hodge, I. (2012). Shifting environmental perspectives in agriculture: Repeated Q analysis and the stability of preference structures. *Ecological Economics*, 83, 51–57. doi: 10.1016/j.ecolecon.2012.08.013

Delvin, E. (2005). Factors affecting public acceptance of wind turbines in Sweden. *Wind Engineering*, 29(6), 503–511. doi: 10.1260/030952405776234580

Devine-Wright, P. (2005). Beyond NIMBYism: Towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy*, 8(2), 125–139. doi: 10.1002/we.124

Di Francesco, A. D., & Young, N. (2011). Seeing climate change: The visual construction of global warming in Canadian national print media. *Cultural Geographies*, 18(4), 517–536. doi: 10.1177/1474474010382072

Dimitropoulos, A., & Kontoleon, A. (2009). Assessing the determinants of local acceptability of wind-farm investment: A choice experiment in the Greek Aegean islands. *Energy Policy*, 37(5), 1842–1854. doi: 10.1016/j.enpol.2009.01.002

Domke, D., Fan, D., Fibison, M., Shah, D., Smith, S., & Watts, M. (1997). News media, candidates and issues, and public opinion in the 1996 presidential campaign. *Journalism & Mass Communication Quarterly*, 74(3), 718–737. doi: 10.1177/107769909707400405

Du Plessis, C. (2005). *A theoretical framework of corporate online communication: A marketing public relations (MPR) perspective*. Pretoria: University of South Africa.

Duenckmann, F. (2010). The village in the mind: Applying Q-methodology to re-constructing constructions of rurality. *Journal Of Rural Studies*, 26(3), 284–295. doi: 10.1016/j.jrurstud.2010.01.003

Ellis, G. (2004). Discourses of objection: towards an understanding of third-party rights in planning. *Environment and Planning A*, 36(9), 1549–1570. doi: 10.1068/a36176

Ellis, G., Barry, J., & Robinson, C. (2007). Many ways to say "no", different ways to say "yes" applying Q-methodology to understand public acceptance of wind farm proposals. *Journal of Environmental Planning and Management*, 50 (4), 517–551. doi: 10.1080/09640560701402075

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public
stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

Fairweather, J. R., & Swaffield, S. R. (2000). Q method using photographs to study perceptions of the environment in New Zealand. In H. Addams & J. Propps (Eds.), *Social discourse and environmental policy: An application of Q methodology* (pp. 138–151). Northampton: Edward Elgar.

Fairweather, J. R., & Swaffield, S. R. (2001). Visitor experiences of Kaikoura, New Zealand: An interpretative study using photographs of landscapes and Q method. *Tourism Management*, 22(3), 219–228. doi: 10.1016/s0261-5177(00)00061-3

Frantzi, S., Carter, N. T., & Lovett, J. C. (2009). Exploring discourses on international environmental regime effectiveness with Q methodology: A case study of the Mediterranean action plan. *Journal of Environmental Management*, 90(1), 177–186. doi: 10.1016/j.jenvman.2007.08.009

Fox, O., Stoett, P. (2016). Citizen participation in the UN sustainable development goals consultation process: toward global democratic governance? *Global Governance: A Review of Multilateralism and International Organizations*, 22 (4), 555–574. doi: 10.1163/19426720-02204007

Gamson, W. A., & Modigliani, A. (1989). Media discourse and public opinion on nuclear power: A constructionist approach. *American Journal of Sociology*, 95(1), 1–37. doi: 10.1086/229213

Giannoulis, C., Botetzagias, I., & Skanavis, C. (2010). Newspaper reporters' priorities and beliefs about environmental journalism: An application of Q-methodology. *Science Communication*, 32(4), 425–466. doi: 10.1177/1075547010364927

Gravetter, F. J., & Forzano, L. B. (2018). *Research Methods for the Behavioral Sciences*. Cengage Learning.

Gioia D.A., Corley K.G. Hamilton A., (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*,16(1), 1531. doi: 10.1177/1094428112452151

Head, B. W., Alford, J. (2015). Wicked Problems: Implications for Public Policy and Management. *Administration & Society*, 47(6), 711-739. doi: 10.1177/0095399713481601

Lloyd D., Birte Fähnrich B., Nepote A.C., Riedlinger M.,Trench B. (2018). Environmental communication and science communication – Conversations, connections and collaborations. *Environmental Communication*, 12:4, 431-437, doi: 10.1080/17524032.2018.1436082

Llorente, C., Revuelta, G., Dziminska, M., Warwas, I., Krzewińska, A. and Moreno, C. (2022). A standard for public consultation on science communication: the CONCISE project experience. *Journal of Science Communication*, 21(03), N02. doi: 10.22323/2.21030802

Joffe, H. (2008). The power of visual material: Persuasion, emotion and identification. *Diogenes*, 55(1), 84–93. doi: 10.1177/0392192107087919

Johansson, M., & Laike, T. (2007). Intention to respond to local wind turbines: The role of attitudes and visual perception. wind energy, 10(5), 435–451. doi: 10.1002/we.232

Jones, C. R., & Eiser, J. R. (2009). Identifying predictors of attitudes towards local onshore wind development with reference to an English case study. *Energy Policy*, 37(11), 4604–4614. doi: 10.1016/j.enpol.2009.06.015

Chiara Vassillo, Nora Annesi, Massimo Battaglia, Marco Frey
Communicate the environment and improve satisfaction and awareness in public stakeholders, the case study of a public environmental regional agency in Italy.
Impresa Progetto - Electronic Journal of Management, n. 1, 2025
_____

Kousis, M. (2007). Local environmental protest in Greece, 1974–94: Exploring the political dimension. *Environmental Politics*, 16(5), 785–804. doi: 10.1080/09644010701634102

Kroh J., Schultz C. (2007). The more the better? The role of stakeholder information processing in complex urban innovation projects for green transformation. *International Journal of Project Management*, 41(3), 102466. doi: 10.1016/j.ijproman.2023.102466

McKeown, B., & Thomas, D. (1988). Q methodology. Newbury Park, CA: Sage.

McKeown, M., Hinks, M., Stowell-Smith, M., Mercer, D., & Forster, J. (1999). Q methodology, risk training and quality management. *International Journal of Health Care Quality Assurance*, 12(6), 254–266. doi: 10.1108/09526869910294805

Messaris, P., & Abraham, L. (2001). The role of images in framing news stories. In Stephen D. Reese, Oscar H. Gandy, J,& August E. Grant (Eds.), *Framing public life: Perspectives on media and our understanding of the social world* (pp. 215–226). Mahwah, NJ: Lawrence Erlbaum.

O'Neill, S., Boykoff, M., Neimeyer, S., & Day, S. A. (2013). On the use of imagery for climate change engagement. *Global Environmental Change*, 23(2), 413–421. doi: 10.1016/j.gloenvcha.2012.11.006

O'Neill, S. J. (2013). Image matters: Climate change imagery in US, UK and Australian newspapers. *Geoforum*, 49, 10–19. doi: 10.1016/j.geoforum.2013.04.013

O'Neill, S., & Nicholson-Cole, S. (2009). "Fear won't do it": Promoting positive engagement with climate change through visual and iconic representations. *Science Communication*, 30(3), 355–379. doi: 10.1177/1075547008329201

Owen B.J., (2019), *Evaluating Effectiveness in Climate Change Adaptation and Socially-Engaged Climate Research*, The University of Arizona.

Peterson, T. R., Stephens, J. C., & Wilson, E. J. (2015). Public perception of and engagement with emerging low-carbon energy technologies: A literature review. *MRS Energy & Sustainability*, 2(e11), 1-14. doi: 10.1557/mre.2015.13

Sleenhoff, S., Cuppen, E., & Osseweijer, P. (2015). Unravelling emotional viewpoints on a bio-based economy using Q methodology. *Public Understanding of Science*, 24 (7), 858–877. doi: 10.1177/0963662513513279

Smith, N. W., & Joffe, H. (2009). Climate change in the British press: The role of the visual. *Journal of Risk Research*, 12 (5), 647–663. doi: 10.1080/13669870903057004

Stephens, J. C., Rand, G. M., & Melnick, L. L. (2009). Wind energy in the U.S. Media: A comparative state-level analysis of a critical climate change mitigation technology. *Environmental Communication*, 3(2), 168–190. doi: 10.1080/17524030902916640

Thomas, David R. (2006). A general inductive approach for qualitative data analysis. *American Journal of Evaluation*, 27(2), 237–246 doi: 10.1177/1098214005283748

Van Exel, J., Baker, R., Mason, H., Donaldson, C., & Brouwer, W. (2015). Public views on principles for health care priority setting: Findings of a European cross-country study using Q methodology. *Social Science & Medicine*, 126, 128-137. environmental communication 721 doi: 10.1557/mre.2015.13

_____

Van der Horst, D. (2007). NIMBY or not? Exploring the relevance of location and the politics of voiced opinions in renewable energy siting controversies. *Energy Policy*, 35(5), 2705–2714. doi: 10.1016/j.enpol.2006.12.012

Watts, S., & Stener, P. (2012). *Doing Q methodological research: Theory, method & interpretation*. London: Sage.

Wolsink, M. (2000). Wind power and the NIMBY-myth: Institutional capacity and the limited significance of public support. *Renewable Energy*, 21(1), 49–64. doi: 10.1016/s0960-1481(99)00130-5

Wolsink, M. (2013). Wind power: Basic challenge concerning social acceptance. In M. Kaltschmitt, N. J. Themelis, L. Y., Bronicki, L. Söder, & L. A. Vega (Eds.) *Renewable Energy Systems* (pp. 1785-1821). New York: Springer. doi: 10.1007/978-1-4614-5820-3_88

Wolsink, M. (2007). Wind power implementation: The nature of public attitudes: Equity and fairness instead of "backyard motives". *Renewable and Sustainable Energy Reviews*, 11(6), 1188–1207. doi: 10.1016/j.rser.2005.10.005

Wolsink, M., & Breukers, S. (2010). Contrasting the core beliefs regarding the effective implementation of wind power. An international study of stakeholder perspectives. *Journal of Environmental Planning and Management,* 53(5), 535–558. doi: 10.1080/09640561003633581