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Stakeholder Management: A Review of the Literature

Prepared for the U.S. Nuclear Regulatory Commission

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Background

The Nuclear Regulatory Commission (NRC) lists enhancing stakeholder confidence as one of three primary objectives outlined in the agency's 2022-2026 strategic plan (NUREG-1614). The NRC contracted with Pacific Research and Evaluation (PRE) to conduct a literature review on stakeholder management for the purpose of providing a knowledge base and framework upon which plans and strategies to meet this objective may be based. This document draws from academic, nuclear industry, regulatory, and government sources as the basis of the research, literature, and knowledge presented within this review.

Theoretical Framework

Stakeholder management practices and strategies stem from "*stakeholder theory*," which suggests that for moral, strategic, and sustainability motives, organizations should initiate ongoing relationships with various *stakeholders*, who are seen as any individual or group who can impact, or be impacted by an organization's functioning, and that organizational leaders should consider their perspectives in organizational decision making. *Stakeholder management* practices include a range of activities, including the identification and delineation of various stakeholders through *stakeholder analysis*, the fostering of relationships with these stakeholders through various communication and *stakeholder engagement* activities, and the measurement of organizational and stakeholder impacts and outcomes, like *stakeholder confidence* or trust. This document provides an in-depth review of these, and related, concepts and provides a review of relevant research.

Lessons Learned and Best Practices

The lessons learned on stakeholder engagement practices presented within this review are derived from three case studies: 1) The stakeholder engagement strategies and perspectives of a major corporate nuclear generator in France; 2) A decommissioning and siting process for radiological waste in Spain; and 3) The management of stakeholder interests in the aftermath of the Fukushima Daiichi Accident. This review also provides a brief overview and direct links to additional resources, guidance, and best practices on stakeholder management from Department of Energy (DOE), Environmental Protection Agency (EPA), and the US Fish and Wildlife Services (FWS), among others.

INTRODUCTION

BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) is mandated by the Government Performance and Results Act Modernization Act of 2010 to develop and submit a strategic plan every four years. This plan outlines the NRC's strategic goals, objectives, and strategies, forming the foundation for decisions related to performance goals, priorities, strategic human capital planning, and budgeting.

The NRC's Strategic Plan, documented in NUREG-1614, serves as a roadmap for the agency to organize, execute, and track the work required to fulfill its mission. It sets performance targets and forms the groundwork for the agency's yearly budget and performance plans. Additionally, the plan provides a comprehensive view of the agency's responsibilities and its approach to utilizing data and evidence in decision-making processes. The effectiveness of the Strategic Plan will be primarily evaluated using performance metrics included in the agency's annual Congressional Budget Justification.

For the fiscal years 2022-2026, the NRC Strategic Plan identifies three key strategic goals: 1) ensuring the safe and secure use of radioactive materials, 2) promoting a robust organizational health, and 3) enhancing stakeholder confidence in the NRC's operations. This literature review was written in service to the third strategic goal - enhancing stakeholder confidence in the NRC's operations. The NRC has provided a number of objectives and strategies related to this goal, presented in Table 1.

Table 1. NRC strategic objectives and strategies supporting the stakeholder confidence strategic goal for FY 2022-2026

Stakeholder Confidence Objective 3.1: Engage stakeholders in NRC activities in an effective and transparent manner.
Stakeholder Confidence Strategy 3.1.1: Foster proactive and meaningful interactions with States, Tribes, other governmental and nongovernmental organizations, the regulated industry, the international regulatory community, and other members of the public.
Stakeholder Confidence Strategy 3.1.2: Provide a fair and timely process to allow public involvement in NRC decision-making.
Stakeholder Confidence Objective 3.2: Uphold an NRC decision-making process that is data driven and evidence based while ensuring information is available and accessible to interested stakeholders.
Stakeholder Confidence Strategy 3.2.1: Engage stakeholders to ensure awareness and understanding of the NRC's regulatory requirements and decisions.
Stakeholder Confidence Strategy 3.2.2: Develop effective communication strategies to explain how risk and uncertainty are addressed and considered in the decision-making process.
Stakeholder Confidence Strategy 3.2.3: Make information about the NRC's regulatory activities available and accessible to interested stakeholders.
Stakeholder Confidence Strategy 3.2.4: Ensure that stakeholders, particularly members of the public who may be disproportionately impacted by the agency's decision, are aware of opportunities for public engagement in the NRC's decision-making processes.
Stakeholder Confidence Strategy 3.2.5: Ensure that the NRC maintains and publishes accessible and comprehensive information by transforming agency information and siloed databases.

Stakeholder Confidence Strategy 3.2.6: Leverage feedback received from a broad range of stakeholders in the agency's decision-making processes.
Stakeholder Confidence Strategy 3.2.7: Maintain a high standard of quality and clarity in NRC documents to promote confidence in the agency's work.

From: https://www.nrc.gov/about-nrc/plans-performance/strategic-planning/stakeholder-confidence-strategic-goal.html

The NRC has a long history of stakeholder engagement, public involvement, and other stakeholder communications (a historical timeline of stakeholder engagement at the NRC was produced by internal staff and is provided in Appendix A). Historically these efforts have included regular public meetings hosted by individual NRC offices, stakeholder focus groups, surveys, and internal meetings and research to better understand the methods and concepts surrounding stakeholder engagement and confidence. Efforts like these have primarily been siloed within specific offices, projects, or working groups.

Despite these activities and efforts, the NRC has yet to align on a single, agency-wide strategy for stakeholder management, including engagement and communication strategies, methods of measuring their performance, or the organizational and stakeholder impacts of these efforts. There has also been confusion around the core concepts and methods surrounding stakeholder engagement and confidence.

To begin the development of an agency-wide strategy and to support the strategic goal of enhancing stakeholder confidence, the NRC contracted with Pacific Research and Evaluation (PRE) to conduct a literature review on the concepts of stakeholder engagement and stakeholder confidence. This review, therefore, may serve as a bedrock of theoretical and conceptual understanding of stakeholder engagement and confidence, upon which agency-wide strategies, methods, and measurement activities can be based.

This review of the literature provides an overview of the theoretical framework for stakeholder management, including an overview of stakeholder theory, stakeholder engagement, stakeholder confidence, among others, and provides concept definitions, descriptions of core activities, methods, outcomes, and impacts. The review also provides references to best practices, case studies, and comprehensive guides produced by other federal agencies or regulatory bodies on stakeholder engagement and confidence.

METHODS OF LITERATURE REVIEW

To find appropriate sources of information and develop this literature review, searches were conducted on Google, Google Scholar, JSTOR, EBSCOhost, and ScienceDirect to provide a broad overview and specific supporting articles and other documents in the field of stakeholder engagement and stakeholder confidence, as relevant to NRC goals and needs. Several search phrases and key words were used including combinations of terms presented in Table 2. An example search phrase using Boolean search operators performed on Google Scholar was: ("case stud*" OR "lessons learned") AND (regulat* OR "federal agenc*" OR "department of energy" OR DOE OR NASA OR "environmental protection agency" OR EPA OR "federal aviation administration" OR FAA OR "food and drug administration" OR FDA OR "national science foundation" OR NSF OR "International Atomic Energy Agency" OR IAEA OR "European Nuclear Safety Regulators Group" OR ENSREG OR "Canadian Nuclear Safety Commission" OR CNSC OR Autorité de Sûreté Nucléaire OR ASN OR "Federal Authority for Nuclear Regulation" OR FANR OR "Office for Nuclear Regulation" OR ONR OR "Japan Nuclear Regulation Authority" OR NRA) AND (nuclear) AND (stakeholder OR

community OR public) AND (engagement OR participation OR involvement OR communication OR "risk communication" OR confidence OR trust).

These searches yielded several thousand articles and sources of information related to stakeholder engagement. Inclusion in this review was determined based on perceived relevance to the NRC's goals and collective professional or expert acceptance of sources (e.g., determined by impact factor, trustworthiness of source, number of citations, number of reviews, and positivity of reviews).

Table 2. A list of key words used in the literature search phase of this review.

"logic model"	"history"	"management"	"non-profit"
"inputs"	"review"	"involvement"	"government"
"antecedents"	"best practice"	"relationship management"	"federal" "state"
"activities"	"case study"	"consultation"	"permitting" "compliance"
"methods"	"improve"	"communication"	"regulation"
"strategy"	"enhance"	"risk communication"	"regulatory"
"outputs"	"build"	"public participation"	"international"
"outcomes"	"analysis"	"public outreach"	"organization"
"theory"	"mapping"	"community involvement"	"agency"
"model"	"satisfaction"	"partnership"	"nuclear"
"framework"	"trust" "trust building"		

THEORETICAL FRAMEWORK

STAKEHOLDER DEFINITIONS

Within the context of organizational strategy and decision-making, the term "stakeholder" is most often cited as being introduced in 1963, when the word appeared in an international memorandum at the Stanford Research Institute, defining stakeholders as "those groups without whose support the organization would cease to exist." The list of stakeholders originally listed within this memorandum included shareowners, employees, customers, suppliers, lenders, and society. Since then, the term "stakeholder" has been independently defined by several authors and has been broadened to include a wider range of interests and groups that hold a claim to a "stake" in organizations. The works of Bryson (2004), Buchholz and Rosenthal (2005), Pesqueux and Damak-Ayadi (2005), Friedman and Miles (2006) and Beach (2008) contain a total of 66 different concepts for the term "stakeholder."

The first systematically developed definitions of stakeholder were offered by Freeman and Reed (1983); the first identifies stakeholders as:

> *"Any identifiable group or individual on which the organization is dependent for its continued survival (employees, customer segments, certain suppliers, key government agencies, shareholders, certain financial institutions, as well as others are all stakeholders in the narrow sense of the term)." (Freeman & Reed, 1983; p. 91)*

And another definition encompassing a broader reach, identifies stakeholders as:

> *"Any identifiable group or individual who can affect the achievement of an organization's objectives or who is affected by the achievement of an organization's objectives (public interest groups, protest groups, government agencies, trade associations, competitors, unions, as well as employees, customer segments, shareholders, and other stakeholders, in this sense." (Freeman & Reed, 1983; p. 91)*

Most subsequent research streams are based on the early work by Freeman and Reed (1983) and adopt the broader definition of stakeholders as any entity affected by or able to affect an organization (Freeman, 1984). Additional definitions have reiterated the inclusion of consumers (Scruggs & Van Buren, 2016), employees (Girard & Sobczak, 2012; O'Riordan & Fairbrass, 2014), and the media and the nongovernmental organizations (NGOs; O'Riordan & Fairbrass, 2014) as stakeholders. Moreover, Derry (2012) recognized the importance of giving a voice to marginalized or less powerful stakeholders.

A number of authors further broaden the scope of stakeholders to include non-living entities (Hubecek & Mauerhofer, 2008), mental-emotional constructs such as respect for past generations or the well-being of future generations (Starik, 1995), and the natural environment, which is seen as the "primary and primordial" stakeholder (Driscoll & Starik, 2004; Heikkinen et al., 2019; Kujala et al., 2019) supporting the idea that we are all stakeholders of the Earth (Waddock, 2011).

These definitions make clear that the term "stakeholder," and subsequent activities stemming from a stakeholder theory perspective, does involve the consideration of internal stakeholders (i.e., NRC employees) as well as more broad views that apply to non-human entities, future generations, or any subject impacted by organizational decisions. In the realm of energy and radiological regulation, the impacts of NRC decisions may be seen as particularly broad. A subsequent section within this document reviews the methods of stakeholder analysis, a process that enables organizations to define and delineate their stakeholders more precisely. This section may prove useful to the NRC in defining its own stakeholders.

STAKEHOLDER THEORY

Stakeholder engagement or involvement, and related stakeholder activities and their impacts are rooted in stakeholder theory. Stakeholder theory was most notably formulated by Freeman (1984) in a seminal book presenting stakeholder theory as an approach to strategic management and organizational decision-making. The approach outlined by Freeman challenged previous notions that shareholders be the principal or sole drivers of strategic business decisions (Freeman & Reed, 1983; Freeman, 1984; Freeman et al., 2010). Freeman argued that the shareholder approach to strategic management was overly narrow, focusing solely on profit generation as the core motive underlying corporate decision-making and failing to consider the overall impact that corporations have on society or their environments. Stakeholder theory suggests that organizations, particularly for-profit businesses, also have a moral obligation to assess their impact on society and the overall

environment. This line of thinking was not isolated to stakeholder theory and represented a broader shift in thinking that began around the 1950's with the emergence of the concept of corporate social responsibility (CSR), a term widely attributed to Howard R. Bowen. Bowen introduced and popularized the concept in his seminal work "Social Responsibilities of the Businessman" (1953). In this book, Bowen explored the idea that business executives have obligations to society that extend beyond the pursuit of profit and the interests of their shareholders. Extending the ideas of Bowen, Harvard undertook a project on corporate social responsibility in the 1970's, producing a large body of work which was drawn on by Freeman when formulating his ideas on stakeholder theory (Ackerman, 1973; Ackerman & Bauer, 1976; Harvard University Press, 1975). While considering the broad range of stakeholder motives as potential drivers of business decisions had been argued by some as being at odds with overall organizational effectiveness and profit (Ansoff, 1965), Freeman and Reed (1983) argued that the consideration of a broader range of stakeholders was in the best interest and long-term sustainability of organizations. The core principles of stakeholder theory are presented in Table 3.

Table 3. Core principles of stakeholder theory

Broad definition of stakeholders Freeman defined stakeholders as any group or individual who can affect or is affected by the achievement of the organization's objectives. This definition goes beyond shareholders and includes employees, customers, suppliers, creditors, the community, and the environment.
Interests of all stakeholders The theory posits that companies should consider and balance the interests of all stakeholders in their decision-making processes, not just the interests of shareholders. This principle is a shift from the traditional shareholder-centric model of corporate governance.
Stakeholder interests as interconnected Freeman emphasized that stakeholders' interests are interconnected. The well-being of one stakeholder group is often linked to that of others, suggesting that managing stakeholder relationships is key to a company's success.
Long-term value creation The theory advocates for long-term value creation over short-term profit maximization. By considering the long-term impacts of corporate actions on all stakeholders, businesses can achieve sustainable success.
Stakeholder engagement and dialogue Active engagement with stakeholders through dialogue and understanding their needs and concerns is a core principle. This engagement is crucial for identifying and balancing the diverse interests of different stakeholder groups.
Strategic management approach The theory integrates stakeholders into the strategic management of a company. It proposes that understanding and addressing stakeholder concerns should be a part of the strategic management process.
Corporate responsibility and ethics Stakeholder theory extends the concept of corporate responsibility beyond mere profit-making. The philosophy underpinning stakeholder theory suggests that companies have ethical and moral obligations towards their stakeholders.

A number of criticisms have been levied against stakeholder theory. In a review synthesizing these criticisms, Mainardes et al. (2011) outlined 12 of the most prominent (See Table 4). An additional limitation of stakeholder theory deals with the system or context for which the theory is applied. Provided this review was written in service to the NRC's strategic goal to enhance stakeholder confidence and improve stakeholder engagement practices within the agency, it is worthwhile to call attention to the fact that the foundations of stakeholder theory, and subsequent practices, findings,

and streams of research, are rooted in capitalist, rather than regulatory or governmental, systems. In fact, stakeholder management and engagement research is noted by Kujula et al. (2022) as lacking from regulatory, governmental, or environmental policy perspectives. However, related concepts like public participation, public engagement, and community engagement are often used synonymously with stakeholder engagement and have been drawn on in this review where applicable. A more thorough review of research relevant to regulatory environments, federal agencies, and the nuclear industry are presented in a following section titled "Case Studies and Best Practices."

Table 4: Primary criticisms of stakeholder theory

Vagueness of the Stakeholder Concept The term "stakeholder" is considered relatively vague, with different interpretations and applications in various studies, leading to a lack of consistency in its usage.
Focus on Technical Rather Than Theoretical Aspects Critics argue that the theory, while providing a valuable strategic tool, lacks a robust theoretical foundation for explaining company or individual actor behaviors, both internally and externally.
Insufficient Explanation of Company Behavior The theory is said to inadequately explain the processes and interactions between internal and external variables, and fails to account for the broader system in which companies operate.
Dynamic and Latent Stakeholder Needs The theory does not adequately address the dynamic and sometimes latent needs or demands of stakeholders.
Lack of Developmental Logic or Causality There is an absence of a logical framework for connecting various variables within the theory, and a lack of means for testing or predicting behaviors.
Incomplete Connection between Actors and Interests The theory has been criticized for not fully identifying internal and external interest groups and their interconnections.
Static Approach to the Environment Stakeholder theory is viewed as treating the environment as static and overly focused on stakeholder groups, without adequately accounting for change over time.
Philosophical Criticisms Some view stakeholder theory as more ideological than scientific, emphasizing moral behavior in market organizations but lacking in scientific rigor.
Political Pluralism and Simplistic Power Conceptualization The theory has been labeled as political pluralism, with a simplistic view of power negotiation between the organization and stakeholder groups.
Challenges in Creating Value Equally for All Stakeholders The theory is critiqued for its impracticality in balancing benefits among all stakeholders and for not providing clear guidance on stakeholder group selection or definition.
Managerial Challenges and Practical Application Stakeholder theory is questioned for its lack of clear management objectives and guidance on handling conflicting stakeholder interests, leading to managerial confusion and inefficiencies.
Inadequate Research and Empirical Evidence There is a noted lack of sufficient empirical evidence to support the theory, with calls for more research to advance its development.

This section provided a review of operationalizations of the term "stakeholder" and outlined the core philosophical and theoretical principles underlying stakeholder activities (e.g., stakeholder engagement), and any outcomes or impacts that may be observed resulting from these activities (e.g., stakeholder confidence). The following section provides a review of research and literature that

aims to synthesize the activities and outcomes associated with stakeholder theory, as well as uncover any methods, tools, or limitations related to each.

STAKEHOLDER MANAGEMENT

At the broadest level, stakeholder management is often seen as an umbrella term that captures the range of activities, including stakeholder analysis, stakeholder engagement, communication strategies, and the measurement of the impact, among others, encompassing the consideration of stakeholders in organizational decision-making. In a recent and thorough review on the topic, Pedrini and Ferri (2019) define stakeholder management as:

> *"The continuous and systematic process through which a firm establishes positive and constructive relationships with its stakeholders to integrate their expectations into business strategy and activity."* (p. 46).

Pedrini and Ferri (2019) narrowed an initial list of 2,457 articles to 33 core articles based on their focus on stakeholder management. Descriptive and thematic analyses were performed on these 33 articles to provide a quantitative overview of the research agenda and provide a qualitative analysis of the findings of each. This effort revealed that stakeholder management is largely comprised of three core processes and has been applied to serve five different scopes or purposes. These three processes include 1) strategy development, 2) strategy execution, and 3) performance measurement. The five primary purposes of stakeholder management involve corporate or organizational communication, decision-making, innovation, relationship management, and risk management. The following section on stakeholder management provides an overview of these processes and purposes as well as synthesizes the work of Pedrini and Ferri (2019), citing select studies identified through their analysis.

Processes of Stakeholder Management

***Strategy development*:** Strategy development in stakeholder management refers to the initial phase where organizations identify and define their goals and objectives related to managing their stakeholders. This stage involves understanding who the stakeholders are, assessing their needs and expectations, and determining how these align with the organization's mission and objectives. It typically includes activities like stakeholder identification and analysis (which is discussed in more depth in a subsequent section), setting priorities among different stakeholder groups, and formulating policies or strategies to engage with stakeholders effectively. It also involves allocating resources needed to implement these strategies.

Findings from highlighted studies focused on the strategy development aspect of stakeholder management revealed that a number of factors can influence this process. Among those identified were local contexts (e.g., cultures, geographic areas, institutional contexts), internal perspectives (e.g., organizational culture, change management, ethical factors), and the appraisal of strategic resources.

For example, the studies by Foo (2007) and Shah and Bhaskar (2008) suggest that cultural norms and institutional frameworks shape how organizations approach stakeholder management. In Western contexts, stakeholder management might be more standardized, while in emerging economies, adapting to local cultures and institutional peculiarities is crucial. Findings from Bourne (2011) also revealed the need for change management mindset and robust relationships with important stakeholders, and rooted in ethical perspectives that outweigh economic motivators in overall strategy.

***Strategy execution*:** The strategy execution phase involves the practical application of the plans and policies developed during the strategy development stage. Key activities include communicating with stakeholders, initiating engagement activities, implementing programs or projects designed to meet stakeholder needs, and managing day-to-day interactions with different stakeholder groups. The focus of this process is on the operationalization of the strategies and ensuring that the actions taken align with the defined objectives. Studies on the implementation of stakeholder management strategy focused on three primary concepts- antecedents of stakeholder management, behavior or attributes of managers (i.e., leaders who act as the primary drivers of organizational decisions and stakeholder management strategies), and variations of stakeholder management models.

For antecedents of stakeholder management, Bartkus and Glassman's (2007) found that including stakeholders in mission statements doesn't necessarily influence the decision-making and actions in stakeholder management. Subsequently, Olander and Landin (2008) explored how the success of stakeholder management largely depends on managers effectively communicating the advantages of proposed actions or projects to stakeholders. Walley (2013) emphasized the importance of having a precise scope for initially engaging stakeholders, ensuring ongoing effective communication, and allocating time and managerial resources to address and mitigate resistance to change.

In the second stream of research, Pacagnella Junior et al. (2015) highlighted the pivotal role of managers in stakeholder management, emphasizing that a project's effectiveness is enhanced when the team prioritizes understanding stakeholders and leveraging their unique features and capabilities from the outset. Furthermore, Habisch et al. (2011) conducted a comparison of stakeholder dialogues across various countries, discovering that the institutional setting influences both the nature and success of corporate initiatives.

Another group of studies focused on the impact of diverse models of stakeholder management. De Colle (2005) introduced a ten-step model at the organizational level to help managers identify and address stakeholders' interests, enhancing organizational decision-making. Jack and Green (2004) examined individual firm activities, introducing the business support optimization concept, a tool for implementing stakeholder management through value mapping. Boerner and Jobst (2011) acknowledged stakeholder conflicts and developed various strategies to resolve these conflicts. In parallel, Smudde and Courtright (2011) explored both reactive and proactive stakeholder management approaches and emphasized the importance of tools like stakeholder identification, the hexad[1], and the Iron Law of History[2]. Helin and colleagues (2013) analyzed a case study from a

[1] A hexad is a conceptual framework developed by Burke (1968). It's used to analyze and interpret the motivations behind actions, especially in communication and rhetoric. The hexad consists of six elements: 1) *scene*, which refers to the context or setting in which an action occurs, including the physical location, cultural background, historical period, and other environmental factors; 2) *act*, the specific action or behavior that takes place; 3) *agent*, the person or entity performing the act, which could be an individual, group, organization, or concept; 4) *agency*, the means or tools used by the agent to perform the act, encompassing methods, strategies, instruments, or techniques; 5) *purpose*, the goal or reason behind the act, focusing on motivations, intentions, or desired outcomes; and 6) *attitude*, the manner or tone in which the act is performed, reflecting the emotional, psychological, or ideological stance of the agent towards the act.

[2] The "Iron Law of History" is a concept relating to the cyclical nature of events and societal change, suggesting history follows a pattern of order, disturbance, and re-establishing new order, repeating over time. In stakeholder relationships and organizational communication, this concept involves 1) *initial order,* where things are stable and functioning well within an organization and its stakeholder relationships, lasting for varying lengths; 2) *disturbance*, where a catalyst for change disrupts the existing order, either internally within the organization, like a strategic shift, or externally, like a market or societal change; 3) *identification of responsibility*, where the entity or event

state-owned Swedish company and identified two rhetorical models for stakeholder interaction: information-oriented and communication-oriented. They noted that the information model is predominantly used by companies for its effectiveness in boosting firm legitimacy and reputation, thus ensuring corporate operation rights. Another aspect explored was capability development for stakeholder management. Watson et al. (2018) determined that effective stakeholder engagement requires firms to possess three layers of capabilities: specific operational capabilities, first-order dynamic capabilities for managing engagement, and second-order dynamic capabilities. These include using diverse perspectives to reframe problems, combining competencies innovatively, co-creating solutions (value framing), and learning systematically from stakeholder engagement activities (systematized learning).

Performance measurement: Performance measurement refers to the process of evaluating the effectiveness of stakeholder management activities. It's about assessing how well the organization is meeting its stakeholder-related goals and objectives. This phase includes collecting and analyzing data related to stakeholder engagement and satisfaction, measuring the impact of stakeholder management activities on organizational performance, and reporting on these outcomes. It often involves using indicators or metrics to gauge success and identify areas for improvement. Regarding stakeholder engagement activities and indicators, a more thorough discussion is provided in a subsequent section of this review specific to this construct. Research in the performance measurement of stakeholder management focused on two primary areas, one assessing and reporting the efforts of stakeholder management activities, and the other investigated the impacts created by stakeholder management activities.

Two studies focused on the assessment or reporting of stakeholder management efforts. Malvey et al. (2002) tested the use of a balanced scorecard called a “stakeholder report card” in a healthcare setting. Perrini and Tencati (2006) presented a qualitative and quantitative method of monitoring the overall performance of stakeholder management.

For studies focusing on the impacts of stakeholder management activities, Bendheim et al. (1998) evaluated best practices towards five stakeholder groups at the industry level[3], discovering that these relationships significantly influence corporate social performance. Hillman and Keim (2001) found that while stakeholder management efforts enhance shareholder value, social participation or philanthropy tends to have a negative association on corporate social performance. In a different vein, Coombs and Gilley (2005) examined the link between stakeholder management and CEO salaries, observing a notable negative impact. They proposed that stakeholder management diminishes the rewards CEOs receive for higher financial performance levels. Additionally, Fong's 2010 study on stakeholder management and CEO salaries found that the fairness of CEO compensation influences future stakeholder management practices, with underpayment of CEOs

causing the change is identified, attributing the cause of the disturbance and establishing guilt or responsibility for disrupting the status quo; 4) *efforts to regain order,* where the organization and stakeholders work to re-establish order, using symbols and rhetoric to communicate about the situation, responsible parties, the desired future state, and actions needed; 5) *purification and establishment of new order,* where a new understanding and framework are established, involving a process of purification—redefining and reinterpreting the situation to align with the new order, redeeming the responsible parties, and stakeholders adapting to new circumstances; and 6) *continuation of the cycle,* where over time, the new order may become outdated and subject to change, leading to the cycle repeating. This concept emphasizes the importance of communication in navigating changes and disturbances within organizations, highlighting how stakeholders and organizations interact and adapt to maintain relationships and establish new orders, a fundamental aspect of organizational dynamics and stakeholder management (Burke, 1970).

[3] These five stakeholder groups included community relations, employee relations, environment, customer (product category), and stockholders (financial performance).

leading to reduced stakeholder management and vice versa. Longo and Mura (2008) shifted the focus by developing a system to assess factors influencing the resource system in companies with a stakeholder management policy, particularly those resources created by employees. On the topic of risk management, Madsen and Ulhøi (2001) investigated the connection between stakeholder management and environmental commitment, concluding that accurately identifying stakeholder pressures is crucial in shaping corporate environmental strategies. Lastly, Alpaslan et al.(2009) debated the shift from shareholder-based to stakeholder-based risk management, suggesting that this transition could enhance crisis management effectiveness due to the varied nature of available corporate governance systems.

Scopes of Stakeholder Management

Through their systematic analysis and review of the literature Pedrini and Ferri (2019) revealed that stakeholder management practices tend to serve five primary applications or scopes. These five scopes were identified as corporate communication, decision-making, innovation, relationship management, and risk management. A brief overview of key studies is presented in the following paragraphs. For a full review of the 33 studies and their assigned process foci and scopes, a table from Pedrini and Ferri (2019) has been reproduced and presented in Appendix B of this review for reader convenience (Table 5).

Communication: In the area of communication, studies have concentrated on the choice of channels, tools, and techniques for effective stakeholder information sharing. For instance, Ferdinand et al. (2015) analyzed online stakeholder discussions in a UK public mega project, noting a tendency for opinions to converge towards a unified stance on the project. Helin et al. (2013) emphasized the importance of genuine dialogues in managing relationship crises, advocating for a communication style that involves rather than merely informs stakeholders. Guo and Saxton (2014) further explored the effectiveness of online communication tools, suggesting a strategic focus on targeting specific stakeholder groups.

Decision-Making: In the area of decision-making, early research by Harrison and Qureshi (2000) addressed strategic management as a process for supporting informed decisions at the firm level. This was expanded by de Colle (2005), who developed a method to manage stakeholder relationships and better meet their expectations. Chen et al. (2009) contributed a tool for managers to identify and categorize stakeholders using web data. Boerner and Jobst (2011) examined how ethical values influence stakeholder management during project planning, while Minoja (2012) linked stakeholder management with stakeholder cooperation, ethical commitment, and firm strategy.

Innovation: The innovation aspect of stakeholder management was explored by Dentoni and Veldhuizen (2012), who studied Unilever's stakeholder involvement in fostering radical innovation. Watson et al. (2018) discussed the mediating role of firm capabilities in the relationship between stakeholder management and innovation, highlighting the importance of dynamic capabilities in harnessing diverse stakeholder perspectives.

Relationship Management: Regarding relationship management, Bendheim et al. (1998) observed varying stakeholder treatments across industries. Malvey et al. (2002) proposed a stakeholder report card to evaluate stakeholder management practices in different organizational units. Studies on specific projects, like those by Olander and Landin (2008), Walley (2013), and Pacagnella Junior et al. (2015), emphasized the importance of managing relationships with local communities and other key stakeholders for project success.

Risk Management: Lastly, in risk management, Madsen and Ulhoi (2001) stressed the necessity for companies to understand stakeholder expectations to mitigate risks. Alpaslan et al. (2009) discussed the role of stakeholder management in fostering proactive behaviors during crises. Eskerod and Vaagaasar (2014) provided detailed strategies on how project management teams can utilize stakeholder relationships to manage risks effectively.

STAKEHOLDER ANALYSIS

Provided stakeholder analysis forms such a critical component of stakeholder management practices, the following section provides a greater level of detail on the core methods and purposes of stakeholder analysis. Reed et al. (2009) define stakeholder analysis as:

> *"A process that: i) defines aspects of a social and natural phenomenon affected by a decision or action; ii) identifies individuals, groups and organizations who are affected by or can affect those parts of the phenomenon (this may include nonhuman and non-living entities and future generations); and iii) prioritizes these individuals and groups for involvement in the decision-making process."* (p. 1933).

Stakeholder analysis has become increasingly popular among a diverse range of organizations and fields, being performed by policymakers, regulators, government and non-governmental organizations, businesses, and the media (Friedman & Miles, 2006). Partially due to this popularity, along with the evolution of tools, the methods have been equally diverse, leading to widespread confusion over what is really meant by stakeholder analysis. In a highly regarded and widely cited (Kujala et al., 2022) resource on stakeholder analysis, Reed et al. (2009) provide a typology of stakeholder analysis to resolve this confusion. The following section draws heavily from their work.

Prior to conducting a stakeholder analysis, it is necessary to identify the motivations and purposes of this analysis. According to Reed and colleagues, there are three main approaches that drive the methods of stakeholder analysis, descriptive, normative, and instrumental, as well as some combination of the latter two. Reed et al. (2009) noted that descriptive stakeholder analysis is rarely conducted for its own sake, since it has no purpose beyond describing the relationship between a particular phenomenon and its stakeholders (Donaldson and Preston, 1995). However, since normative and instrumental analyses require an understanding of the current state of affairs, descriptive analyses are a necessary precursor to normative and instrumental analyses.

Normative approach to stakeholder analysis

Normative stakeholder analysis is rooted in the ethical and moral considerations of involving stakeholders in decision-making processes. This approach is increasingly advocated within policy development and natural resource management sectors, focusing on the legitimacy and empowerment of stakeholders. Drawing from deliberative democracy concepts, it suggests that stakeholders have an inherent right to participate in managing their environment and resources. Influences from Habermas' theory of communicative action (Habermas, 1984) underpin this approach, emphasizing mutual understanding and cooperative problem-solving over strategic or control-oriented interactions. The normative approach often involves a constructivist perspective, acknowledging the diversity of truths and the social construction of reality. It aims to create a collaborative space for stakeholders to negotiate and reconcile conflicting goals and perspectives, fostering a collective agreement on action.

Instrumental approach to stakeholder analysis

Instrumental stakeholder analysis is more pragmatic and outcome-oriented. It focuses on understanding and strategically managing stakeholder behaviors to achieve specific organizational or project goals. Common in business management, this approach is used to improve strategic planning and enhance organizational performance. In development and natural resource management contexts, it serves to facilitate technology adoption, adapt solutions to specific user groups, and manage the distribution of information and resources. Instrumental analysis aims to identify and address conflicts between stakeholders, ensuring that such conflicts are not exacerbated by ongoing or future initiatives. It also seeks to gather information from a wide range of sources, creating a robust knowledge base for development or management initiatives. This approach may be crucial in achieving consensually agreed targets, especially in situations where relevant information is unevenly distributed among stakeholder groups.

Integrative approach to stakeholder analysis

Although normative and instrumental approaches are distinct, they often intersect in practical applications. Normative justifications for stakeholder involvement, emphasizing ethical and moral considerations, can lead to instrumental benefits. By involving stakeholders in decision-making processes, organizations can foster a sense of ownership and trust among them. This can transform relationships, enhancing mutual understanding and cooperation. Such involvement can also help stakeholders appreciate each other's viewpoints and work together more effectively. In this way, the normative basis of stakeholder analysis not only fulfills ethical imperatives but also serves instrumental ends, potentially leading to more effective and harmonious stakeholder engagement (Forester, 1999; Mathews, 1994).

Stakeholder analysis methods

Stakeholder analysis methods fall into three main types:

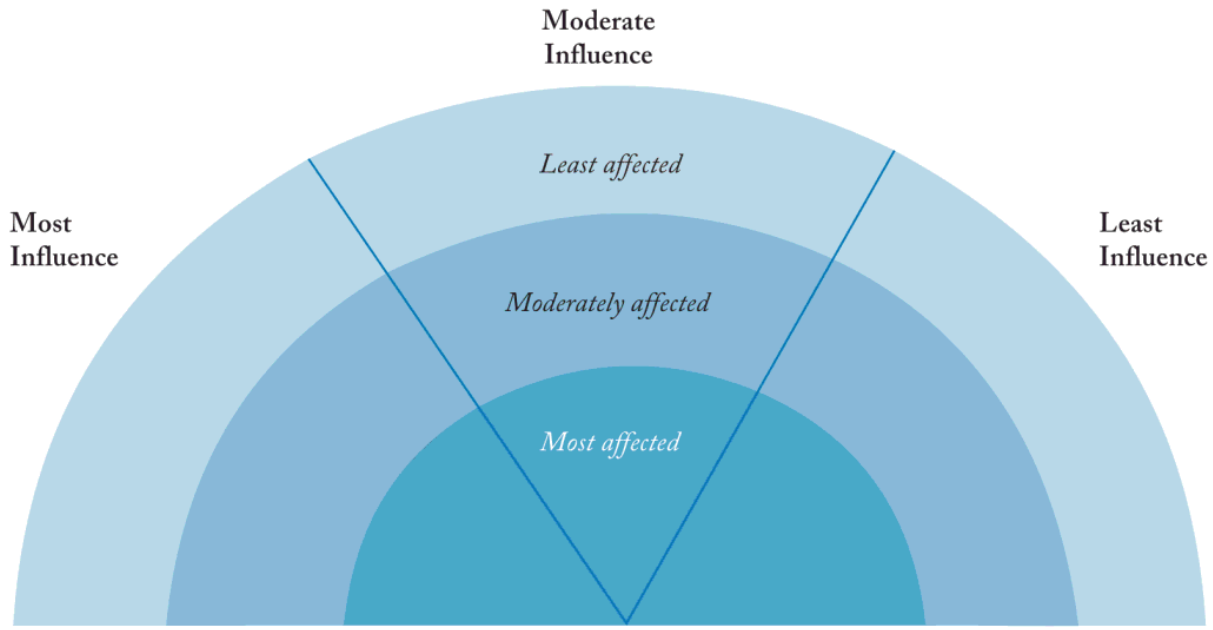
1. ***Identifying Stakeholders:*** This includes determining who holds a stake in a given phenomenon. Methods like expert opinion, focus groups, semi-structured interviews, and snowball sampling are used. The challenge lies in accurately identifying relevant stakeholders without omitting key groups.
2. ***Differentiating and Categorizing Stakeholders*:** This involves characterizing and classifying stakeholders into categories. It is done through either top-down analytical categorizations or bottom-up reconstructive methods. Techniques include using matrices, Venn diagrams, card sorting, and Q methodology.
3. ***Investigating Relationships Between Stakeholders*:** This involves examining the interactions and relationships among stakeholders. Methods include actor-linkage matrices, Social Network Analysis (SNA), and Knowledge Mapping.

Methods for identifying stakeholders and their stakes

Stakeholder analysis involves identifying stakeholders and understanding their interests in the context of a specific issue. Traditionally, stakeholder identification focused on categorizing pre-identified groups, but a deeper understanding of the issue is crucial for accurately determining stakeholders. This process is iterative and may include methods like expert opinion, focus groups, interviews, and snowball sampling. Stakeholders can be more easily identified with clear boundaries of the issue, but there's a risk of omitting some. Research analysts often use criteria like geographical or demographic factors to draw lines on who to include. The challenge lies in deciding whether the phenomenon dictates stakeholder involvement or vice versa. Stakeholder interests and biases can influence this decision, leading to a top-down identification approach. To counter this, iterative processes involving scoping interviews and focus groups have been proposed. Stakeholder analysis methods vary, including expert identification, self-selection, and using demographic data. The choice of method and the purpose of analysis significantly impact who is included, affecting the outcome and fairness of the process. An inclusive approach is often recommended for social justice and practical reasons, ensuring that all relevant stakeholders are considered, especially in project planning and management. Chevalier and Buckles (2008) identified various other methods for stakeholder identification including: the recommendation of experts or by self-selection (in response to advertisements or announcements); through written records or census data to classify stakeholders based on attributes like age, gender, religion, and residence; by reviewing oral or written descriptions of significant events to determine participant involvement; or by utilizing pre-defined lists of potential stakeholder categories. After grouping stakeholders, Chevalier and Buckles (2008) suggest using a “rainbow diagram” to categorize them based on how significantly they are impacted by or can influence a specific issue or action (Figure 1).[4]

[4] Chevalier and Buckles (2008) describe in greater depth a range of methods for identifying stakeholders. Once these stakeholders have been identified, Chevalier and Buckles (2008) recommend 1) writing or drawing the name of each stakeholder on its own card; 2), create a rainbow diagram by drawing a horizontal line with half a circle around it. Draw two semicircles inside the chart using the middle point of the horizontal line as their center. Also divide the rainbow into three equal parts: one part to the left, one in the middle, and one to the right; 3), insert cards that represent stakeholders that are the most affected by the problem or action in the small semicircle. In the middle semicircle, insert cards of stakeholders moderately affected by the problem or action. In the large semicircle, insert cards of stakeholders who are the least affected by the problem or action; and 4), on the left side of your diagram, place the cards that represent stakeholders who influence your core problem or action the most. In the middle, place those who moderately influence the problem or action. On the right side, place those who influence the least.

Figure 1. Rainbow diagram for classifying stakeholders according to the degree they can affect or be affected by a problem or action.



From: Chevalier and Buckles (2008; p. 167)

Methods for differentiating between and categorizing stakeholders

Reed et al. (2009) also differentiated and classified stakeholder methods into two main types: top-down analytical categorizations and bottom-up reconstructive methods.

1. ***Analytical categorizations***: These methods, embedded in theoretical perspectives, classify stakeholders based on observed characteristics related to the issue. Common categorizations consider factors like interest and influence, cooperation, competition, threat, urgency, legitimacy, and influence. Tools like matrices and Venn diagrams aid in this classification. For example, stakeholders might be grouped into 'Key players', 'Context setters', 'Subjects', and 'Crowd' based on interest and influence. This approach helps in strategizing stakeholder engagement but can overlook marginalized groups, reflecting potential researcher bias rather than stakeholder perceptions. Consequently, such methods might miss key insights from less dominant stakeholders.
2. ***Reconstructive categorizations:*** To address the limitations of top-down approaches, bottom-up methods let stakeholders themselves define categories and parameters. This includes techniques like card-sorting and Q methodology, which is a bottom-up, reconstructive approach that empowers stakeholders to define their own categories and parameters regarding a particular issue. It is an empirical method that relies on stakeholders' subjective criteria and perceptions, thereby capturing a diverse range of views and concerns. This technique involves stakeholders sorting statements or items (such as opinions, beliefs, or attitudes) into a distribution based on their level of agreement or importance. The resulting sorted data are then analyzed to identify patterns or factors that represent shared viewpoints among stakeholders. However, they may not involve all identified stakeholders due to

engagement challenges, necessitating a selection of representative views. These methods offer a more flexible approach, potentially shifting research focus and leading to novel outputs but may also divert from original research objectives (Cuppen et al., 2010; Cuppen et al., 2016; Forrester et al., 2015)

In summary, while top-down analytical categorizations are structured and theory-driven, they risk marginalizing the less dominant stakeholders and may reflect researchers' biases. Bottom-up reconstructive methods, conversely, are more inclusive and stakeholder-driven, provide a nuanced understanding of stakeholder perspectives but can be challenging in terms of comprehensive stakeholder engagement.

Methods for investigating stakeholder relationships

Reed et al. (2009) also outlined several methods for investigating stakeholder relationships, and for focusing on understanding interactions among stakeholders within a specific context. Some of these methods include:

1. ***Actor-linkage matrices***: This approach uses matrices to detail stakeholder interrelations, listing stakeholders in rows and columns to map out their relationships. Relationships are characterized by keywords indicating conflict, complementarity, or cooperation. Its simplicity and lack of requirement for technology make it particularly useful in resource-limited settings like development projects.

2. ***Social network analysis (SNA):*** SNA employs matrices to record the presence, absence, and strength of various relational ties among stakeholders, such as communication, friendship, advice, conflict, and trust. These matrices are typically compiled through interviews, questionnaires, or observations. SNA is valuable in uncovering the network's structure, pinpointing central and marginal stakeholders, and identifying how stakeholders cluster. It's instrumental in natural resources management for identifying key influential individuals, understanding the strength of ties (strong vs. weak) among stakeholders, and their implications for managing resources. Strong ties facilitate mutual influence and resource sharing, while weak ties offer access to diverse information pools but are more fragile. SNA can also identify trust issues and potential conflicts within the stakeholder network.

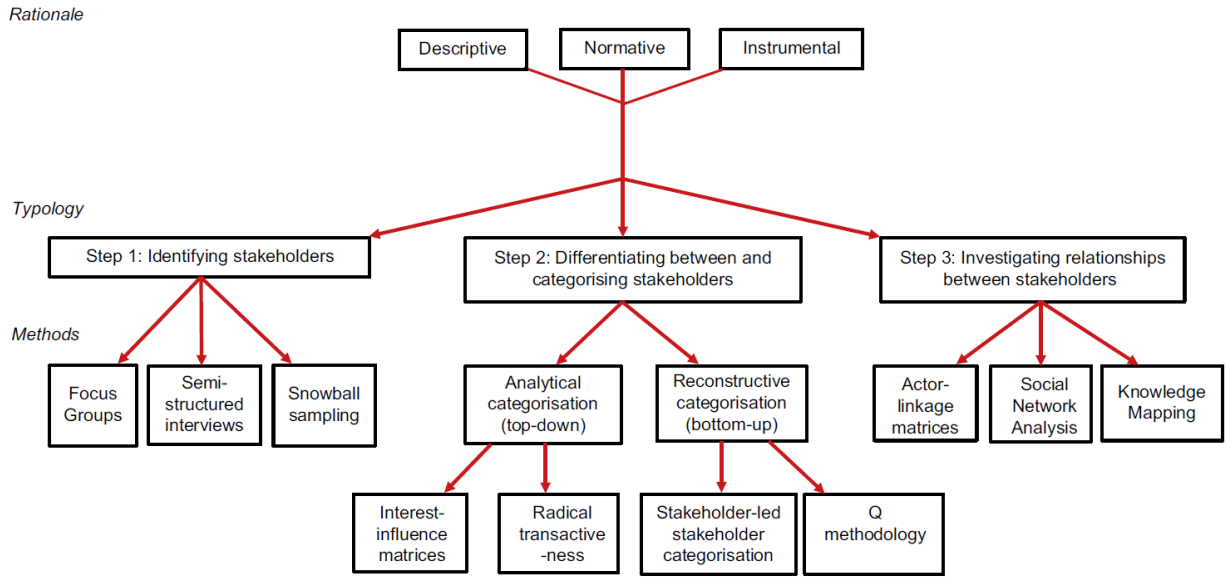
3. ***Knowledge mapping***: This method is increasingly used in business and organizational contexts for fostering innovation and competitive advantage. When combined with SNA, knowledge mapping extends the understanding of who knows what, identifying knowledge flows, bottlenecks, and areas of latent knowledge. It can reveal knowledge migration or loss and helps stakeholders understand different knowledge types within the system. Knowledge mapping can be used to assess whose interests are being met and to foster effective collaboration, social learning, and innovation by releasing latent knowledge within the appropriate social network (Reed & Curzon, 2015). For example, in the context of nuclear regulation, knowledge mapping can be an effective tool for managing and disseminating regulatory knowledge, technical expertise, and safety practices. This could involve a number of steps that “map out” knowledge including 1) *expertise mapping*- this step identifies experts in various areas of nuclear safety (e.g., reactor design, radiation protection, emergency response, and waste management), including external experts from academia, industry, and international regulatory bodies; 2) *identifying key documents and resources*- this step involves cataloging critical regulatory documents, safety guidelines, research

reports, and case studies of past nuclear incidents (this includes both internal NRC documents and important international references); 3) *analyzing knowledge flow*- this step visualizes how knowledge is currently shared within the NRC and with external stakeholders, such as nuclear plant operators, government agencies, and the public (including channels like regulatory guidance documents, training programs, public meetings, and informal channels like internal discussions and collaboration with other regulatory bodies); 4) *identifying gaps and bottlenecks*- this step identifies areas where knowledge is lacking or not effectively disseminated (e.g., it may reveal that certain regional offices have less access to the latest research in reactor safety or that there are gaps in knowledge transfer between senior and junior staff); 5) *planning interventions*- based on insights from the knowledge map, this step involves implementing strategies to address knowledge gaps (e.g., developing new training modules, enhancing inter-departmental collaboration, updating regulatory guidelines, or establishing new partnerships with international regulatory agencies); and 6) *monitor and update*- the step involves regularly updating the knowledge map to reflect changes in technology, regulatory practices, and organizational structure.

In summary, these methods offer diverse insights into stakeholder relationships, from the simple actor-linkage matrices focusing on basic interaction types to the more complex and data-rich approaches of SNA and knowledge mapping, which provide deeper insights into network dynamics, knowledge distribution, and stakeholder influence.

The above sections reviewed the rationale, typology, and methods of stakeholder analysis, largely drawing from the work of Reed et al. (2009). For reader convenience and to further synthesize this content, Figure 2, and Table 6 (Appendix B), are reproduced from Reed et al. (2009) and presented within this review.

Figure 2. Schematic representation of rationale typology and methods for stakeholder analysis



From: Reed et al. (2009; p. 1936)

With respect to the NRC and its strategic goal to enhance stakeholder engagement and confidence, it is imperative that the agency utilize the methods of stakeholder analysis to systematically define and classify its stakeholders. While some activities to define and classify the agency's stakeholders have taken place, a review of background documentation provided by the NRC for the purpose of the development of this review did not include comprehensive or agency-wide stakeholder analysis, suggesting that such effort may be lacking. Regarding stakeholder analysis methods, the NRC could employ a variety of techniques described within this section, such as expert opinion from internal and external stakeholders, focus groups, semi-structured interviews, and snowball sampling for identifying stakeholders. Differentiating and categorizing stakeholders could involve analytical categorizations using matrices and Venn diagrams, as well as reconstructive methods like card sorting and Q methodology to capture stakeholders' perspectives. Investigating relationships between stakeholders could utilize actor-linkage matrices, social network analysis, and knowledge mapping. Regarding the topic of knowledge mapping, PRE is aware of separate efforts by the NRC to evaluate and improve its knowledge management practices. As such, the agency may be able to draw from this work to supplement a stakeholder analysis.

STAKEHOLDER ENGAGEMENT

Among stakeholder management activities described in the previous section, stakeholder engagement is another activity that has received considerable attention within the literature. For this reason, and the fact that "stakeholder engagement" was identified as a principal construct of interest by the NRC, the following section is dedicated to reviewing this research and providing a framework for understanding the construct. Several definitions have been proposed to describe stakeholder engagement, and there is noted overlap and confusion between this construct and related constructs. This section aims to delineate between constructs where possible, noting that within the literature, there is considerable overlap between them, and the distinctions are not always clear.

Other related constructs include stakeholder collaboration, stakeholder inclusion, community or public involvement, and stakeholder democracy, among others. Stakeholder collaboration typically refers to joint activities with external stakeholders, and it can be depicted as a means for organizations "to pursue goals that would otherwise be difficult to achieve internally" (Desai, 2018, p. 220). Stakeholder collaboration can also embrace how stakeholders come together to identify and develop solutions to wicked issues (Savage et al., 2010; Schneider & Sachs, 2017). Stakeholder inclusion often refers to the presence of stakeholders in organizational activities, such as decision-making, to include stakeholders' perspectives and knowledge in improving value creation (R. K. Mitchell et al., 2015). Finally, stakeholder democracy refers to the idea that "stakeholders participate in processes of organizing, decision making, and governance in corporations" (Matten & Crane, 2005, p. 6).

These constructs cover specific aspects and contents of the stakeholder engagement construct. In general, stakeholder engagement can be thought of as a broader term that encapsulates more narrowly focused constructs and activities. This section seeks to clarify and provide a definition of stakeholder engagement, provide an overview of stakeholder engagement methods, and review core measures and outcomes of stakeholder engagement.

Definitions of stakeholder engagement

The most cited definition of stakeholder engagement within the business and society literature is offered by Greenwood (2007), and defines stakeholder engagement as:

> *"The practices that the organization undertakes to involve stakeholders in a positive manner in organizational activities."* (pp. 317-318).

Other definitions that have been presented include:

> *"a process that creates a dynamic context of interaction, mutual respect, dialog, and change, not a unilateral management of stakeholders."* (Manetti & Toccafondi, 2012; p. 365).

> *"Stakeholder engagement is the systematic identification, analysis, planning and implementation of actions designed to influence stakeholders."* (Association for Project Management, n.d.).

A recent review of stakeholder engagement research, and one from which much of the information from this section is drawn, defines stakeholder engagement as:

> *"Stakeholder engagement refers to the aims, activities, and impacts of stakeholder relations in a moral, strategic, and/or pragmatic manner."* (Kujala et al. 2022; p.1139).

This final definition emphasizes three primary components of stakeholder engagement, specifically that the activity involves moral, strategic, and pragmatic elements. The moral dimension is seen in the organization's good intentions, reciprocal and voluntary relationships, respect and recognition of stakeholders, empowering stakeholders, and addressing their desires, needs, and abilities. The use of stakeholder engagement itself often implies a moral perspective in business. The strategic element of the definition is linked to the willingness of stakeholders to contribute resources for business value creation, aiming to enhance firm performance, reputation, or competitive advantage. This strategic facet aligns with theories focusing on gaining a competitive edge through resources. The pragmatic aspect is grounded in practical action and problem-solving, focusing on the real-world impacts of actions on stakeholders' lives. It considers the relevance of stakeholder engagement in varying contexts and its adaptability to changing conditions. This component also acknowledges the temporal nature of stakeholder engagement, recognizing both its temporary and ongoing aspects. Using this definition of stakeholder engagement as a foundation, Kujala et al. (2022) organized the aims, activities, and outcomes of stakeholder engagement within relevant research along these three operational dimensions. Appendix B, Table 6 provides a review of these aims, activities, and impacts.

Aims and objectives of stakeholder engagement

In the sample of studies reviewed by Kujala et al. (2022), stakeholder engagement aims were predominantly moral in nature. Authors highlighted the importance of legitimacy (Castelló et al., 2016), trust (Eger et al., 2019), and fairness (Davila et al., 2018) as key moral aims. Themes such as corporate social responsibility (Kumar et al., 2019), environmental sustainability (Jolibert & Wesselink, 2012), and inclusive engagement were also emphasized (Mease et al., 2018). Communal sharing models are suggested to foster high-quality relationships, with recent emphasis

on incorporating stakeholders' core values into these relationships. These aims necessitate stakeholders negotiating their perspectives to find collective solutions.

Strategically, half of the articles focused on aims like enhanced financial and operational performance (Boakye et al., 2020) or managing environmental and social risks (Cundy et al., 2013). Interestingly, moral and strategic aims are frequently combined, intertwining knowledge creation with trust or linking effectiveness with responsibility. This strategic perspective tends to focus on the economic benefits for companies.

Pragmatically, one-third of the articles address aims like strengthening stakeholder relationships, fostering collaboration relationships (Garard & Kowarsch, 2017), co-generating knowledge (Reed et al., 2013), solving problems, and facilitating societal change. Reducing conflicts of interest and engaging in informed, consultative decision-making with stakeholders are also highlighted as pragmatic aims (Laude, 2020).

Activities of stakeholder engagement

The review by Kujala et al. (2022) also revealed that stakeholder engagement encompasses a variety of activities, with moral activities often focusing on bottom-up approaches (Davila et al., 2018; Harclerode et al., 2016), empowering silent stakeholders (Davila et al., 2018), and positive firm involvement in communities (Kumar et al., 2019; Reynolds & Yuthas, 2008). These activities typically aim to create social infrastructure and long-term partnerships. Strategic activities include one-way information flows like presentations and newsletters (Jolibert & Wesselink, 2012; O'Riordan & Fairbrass, 2014), and two-way communications such as roundtable meetings and workshops (Provasnek et al., 2018). This strategy also involves internal structures to support engagement (Cundy et al., 2013; Dawkins, 2014) and top management commitment (Holzer, 2008; Reynolds & Yuthas, 2008).

Pragmatic activities focus on improving the quality of engagement, such as dialogue and collaboration (Manetti & Toccafondi, 2012; Viglia et al., 2018), and mutual learning and knowledge exchange (Papagiannakis et al., 2019; Shackleton et al., 2019). However, it has been noted that engagement with stakeholders who are seen as critical to the organization, or who's relationships with the organization are seen as troublesome, receives less attention (Harrison & Wicks, 2021; Weibel et al., 2020). For example, Weibel et al. (2020) argue that the analysis of such relationships can be enriched by introducing a concept of distrust among outcomes of interest. Companies view stakeholder engagement as an ongoing learning process (Payne & Calton, 2004; Sachs & Rühli, 2011) and use criticism for value creation (Lee et al., 2015; Mena & Chabowski, 2015). Cooperative initiatives and consensus-building also enhance activity quality (Ghodsvali et al., 2019; Legacy, 2010).

Co-creation and co-production activities, representing high-quality collaborative relationships (Bridoux & Stoelhorst, 2016), involve joint diagnosis, knowledge production, and solution design (Papagiannakis et al., 2019; Shackleton et al., 2019). These activities focus on jointly owned decisions and solution implementation (Baltazar Herrera, 2016), effectively building relationships and strategies for stakeholder engagement (O'Toole et al., 2013; Pantano et al., 2020).

Measurement of stakeholder engagement

Bowen et al. (2017) systematically reviewed 68 different studies (from an initial list of 3,576 studies) that included quantitative measures of stakeholder engagement. The stakeholder populations targeted in the studies reviewed by Bowen et al. (2017) varied widely, from members of a defined general public to participants in community groups and members of advisory boards. These authors also noted within this review that while the utility of stakeholder engagement has been well established in the literature, the measurement and impact of stakeholder engagement remains a significant gap. Moreover, these types of evaluations have been limited in scope, and largely focused on qualitative approaches. Among the studies reviewed, Bowen et al. (2017) found that none of the articles used the same measure of engagement and only a small number reported psychometric data about the measure. For example, only five of the studies had reliability calculations in the form of alpha coefficients, and none of the scales presented any information on content, criterion, or construct validity. This suggests that measurement of stakeholder engagement and related constructs is lacking in comprehensive development or integration.

Speaking of the specific measures of engagement reviewed by Bowen et al. (2017), many were simple counts of event attendance, while few others were theoretically based and developed with sound psychometric principles and analyses. Some measures reviewed included utilization of some platform or tool, numbers of referrals, number of group memberships, types of communication, health information-seeking behaviors, number of each type of outreach or engagement activity, among several others. Among these studies, 25 tested the relationship between participant-reported engagement and some outcome. Of those that assessed a relationship of measure to outcome, 100% indicated a significant relationship between the engagement measure and at least one of the outcomes. Some outcomes included increased abstinence of tobacco use, firm innovation, greater policy and systems changes, recruitment outcomes, physical health of stakeholders, among others.

Impacts and outcomes of stakeholder engagement

In the sample of 33 articles reviewed by Kujala et al. (2022) impacts of stakeholder engagement were discussed and were also organized according to moral, strategic, and pragmatic dimensions. Moral impacts included enhancing legitimacy (Beelitz & Merkl-Davies, 2012), credibility (Manetti & Toccafondi, 2012; O'Riordan & Fairbrass, 2014), trust (Davila et al., 2018; Winkler et al., 2019), societal well-being (Lindgreen & Swaen, 2010), and shared responsibility (Schmitt, 2010). Kujala et al. (2022) further notes that these impacts foster goodwill, fairness, and a sense of a good life within communities.

Strategic outcomes of stakeholder engagement included efficiency and reduced transaction costs (Herremans et al., 2016), improved firm performance (Ayuso et al., 2014), resource utilization (Chen & Liu, 2020; Harclerode et al., 2016), and competitive advantage (Scruggs & Van Buren, 2016). Stakeholder engagement was also shown to contribute to reducing uncertainty, gaining control (Passetti et al., 2019; Winkler et al., 2019), maintaining corporate autonomy (Dawkins, 2014), enhancing profitability, and fostering innovation (Bendell & Huvaj, 2020; Pucci et al., 2020). Other strategic benefits included improved reputation, endorsing corporate messages (Boiral et al., 2019), eco-efficiency (Watson et al., 2020), and enhanced knowledge generation (Baltazar Herrera, 2016; Luís et al., 2018).

The pragmatic impact uncovered in the review by Kujala et al. (2022) involved ethical decision-making (Noland & Phillips, 2010), activation of common visions (Viglia et al., 2018), endorsing

corporate norms and values (Girard & Sobczak, 2012), and building partnerships and consensus (Beelitz & Merkl-Davies, 2012; Novoa et al., 2018), and an improved realization of shared interests among stakeholders (J. R. Mitchell et al., 2022; Strand & Freeman, 2015). A full summary of the aims, activities, and impacts of research reviewed by Kujala et al. (2022) is presented in Appendix B (Table 7).

The dark side of stakeholder engagement

The review by Kujala et al. (2022) on stakeholder engagement also highlighted the need for research to recognize and focus on the "dark side" of stakeholder engagement. The dark side of stakeholder engagement is characterized by conflicting views and aims within relationships. As noted by Abosag et al. (2016), conflicts often arise from differing goals, expectations, or cultural norms, challenging the common assumption of shared interests and values (Harrison et al., 2019). Research on stakeholder activism highlights how ideological differences, particularly on social issues, lead to actions like boycotts or other voluntary activities aimed at influencing organizational behavior (den Hond & de Bakker, 2007). This activism can introduce new players who destabilize existing power dynamics (Holzer, 2008) and can result in skepticism and opposition towards highly engaged stakeholders from others within or outside the organization (Wickert & de Bakker, 2018).

Additionally, local communities and multinational corporations often face issues like power imbalances, cultural clashes, and perception gaps, leading to misaligned interests and values in stakeholder engagement (Calvano, 2008; Lehtimäki & Kujala, 2017). This misalignment can create a mismatch between stakeholder and firm objectives (Bundy et al., 2018), with blurred responsibilities further hindering alignment (Milio, 2014) and risking moral legitimacy when firms are not open to stakeholder engagement (Scholz et al., 2019).

On the intentional side of the dark spectrum, Kujala et al. (2022) noted that aims driven by malicious intent and false claims are frequently overlooked in stakeholder engagement research (Bijlsma-Frankema et al., 2015; Linstead et al., 2014). Harrison and Wicks (2021) challenge the assumptions of joint interests by exploring firms' strategies perceived as harmful by stakeholders, and the spectrum of unethical behavior. Evidence also points to CEOs exhibiting hyper-self-interest, leading to individualistic cultures and weakened stakeholder relations (Sajko et al., 2021). Thus, malintent in stakeholder engagement aims is an area that requires further research attention.

Kujala et al. (2022) noted that stakeholder engagement activities exist on a spectrum between positive and negative impacts, and it's not yet clear if this range is a single continuum or involves multiple dimensions. Authors cited within the review noted that unintended negative outcomes, like misconduct or mistakes, necessitate corrective measures such as conflict resolution and learning between the firm and stakeholders to address the harm (Abosag et al., 2016; Lee et al., 2015; Vaughan, 1999). Conversely, when stakeholder engagement activities are intentionally harmful, actions may include pressuring, delaying payments, or coercion, aiming to negatively impact the other party (Harrison & Wicks, 2021).

The stakeholder engagement literature often assumes that stakeholder bonds are based on either commitment or a calculative approach (Bosse & Coughlan, 2016). Yet, there are other psychological bonds, like acquiescence, that can lead to involuntary stakeholder participation (Clarkson, 1995; Klein et al., 2012; Post et al., 2002). Additionally, much of the research in this area is predicated on the assumption of low trust levels (Bundy et al., 2018; Harrison & Wicks, 2021), suggesting that

exploring the concept of stakeholder distrust might provide deeper insights into the negative aspects of stakeholder relationships (Bijlsma-Frankema et al., 2015; Weibel et al., 2020).

Some studies have addressed issues such as conflicts in stakeholder engagement (Thaler & Levin-Keitel, 2016), poor decision-making processes, exclusion of stakeholder voices (Mease et al., 2018), and the stereotyping and marginalization of stakeholders (Schmitt, 2010). Additionally, organizations often face the challenge of balancing trade-offs and avoiding value destruction for stakeholders (R. K. Mitchell et al., 2015). Attribution theory has been used to explore corporate responsibility for negative impacts on stakeholders (Lange & Washburn, 2012), examining how firms might intentionally cause undesirable effects.

Moreover, stakeholder engagement can lead to deadlocked relationships due to unsolvable conflicts (Abosag et al., 2016; Weibel et al., 2020) and significant disagreements when values are rigid and non-negotiable (Schormair & Gilbert, 2021). Understanding how to manage and prevent the termination of these critical relationships is crucial, but measuring these diverse and value-laden impacts remains a complex task (Harrison & Wicks, 2021).

The relationship between corporate social responsibility (CSR) and stakeholder engagement suggests a strong link between ethical conduct and financial performance. However, even in the face of major scandals, some firms like Shell and Nike continue to succeed without significant changes (Banerjee, 2008), highlighting the need for reliable indicators of legitimacy and performance.

In summary, there is a significant gap in research regarding the negative aspects of stakeholder engagement. This includes the dynamics of unintentional versus intentional negative impacts, the role of misalignment or malintent, and how stakeholder engagement's aims can relate to moral, strategic, or pragmatic issues. More research is needed to understand both unintentional and intentional stakeholder engagement activities, such as conflict resolution and learning strategies. Differentiating between intended and unintended negative impacts will help in developing a more comprehensive understanding of their effects on the development and well-being of both firms and stakeholders, as well as how to effectively measure these impacts (Kujala et al., 2022).

STAKEHOLDER CONFIDENCE

Because this review was conducted and produced in service of the NRC's strategic goal to enhance "stakeholder confidence," additional search and review activities focused on this precise construct. However, a review of the literature failed to turn up any authoritative sources that offer a precise definition of the construct of "stakeholder confidence," or singularly identify it as an outcome of empirical research. Nevertheless, the Forum of Stakeholder Confidence (FSC) by the Organization for Economic Cooperation and Development (OECD) and the Nuclear Energy Agency (NEA) note that stakeholder confidence and trust are often used interchangeably and sometimes referenced by the same word in various languages (OECD & NEA, 2022). The FSC adopts the definition of "stakeholder" as "any actor – institution, group or individual – with an interest or a role to play in the radioactive waste management process" (OECD & NEA, 2022; p. 49). In an updated and annotated glossary of key terms related to stakeholder confidence in radioactive waste management, the FSC also identify confidence and trust as key concepts in decision-making processes, especially in complex, multi-decade sociotechnical endeavors like radioactive waste management and not that establishing and maintaining trust and confidence among institutional actors and stakeholders is crucial.

The initial 2000 workshop by the FSC delved into the definitions of confidence and trust, stating that confidence is linked to the reliability of processes, evidenced through transparency, whereas trust is

associated with the conduct of individuals and organizations, encompassing feelings of comfort and preference. Trust also implies a willingness to be vulnerable to achieve outcomes that would otherwise be unattainable, involving relinquishing a degree of control to another entity.

The FSC (OECD & NEA, 2022) highlights several societal factors crucial for building and sustaining confidence in decision-making around radioactive waste management. These factors include national program processes, actual behavior, and local system features. A more detailed description of these factors is provided in Table 8. Additionally, it's important for stakeholders to be involved and for institutions to develop characteristics that foster confidence and public trust. These characteristics fall into organizational, mission, and behavioral aspects.

- ***Organizational features*** include independence, clarity of role and ownership, dedicated and sufficient funding, a non-profit status, commitment to retaining a highly devoted and motivated staff, structural learning capacity, an internal culture of "skepticism" allowing practices and beliefs to be reviewed, high levels of skill and competence in relevant areas, including stakeholder engagement, strong internal relations and cohesion and an ethical charter or code of conduct.

- ***Mission features*** include a clear mandate and well-defined goals, a specific management plan, a well-founded and articulated identity, and a good operating record. Good integration of the entire back-end of the nuclear fuel cycle may also be seen as instilling additional confidence in the stakeholders.

- ***Behavioral features*** include openness, transparency, honesty, consistency, willingness to be tested, recognition of limits, coherence with organizational goals, an active search for dialogue, an alert listening stance and caring attitude, proactive practices, emphasis on stakeholder involvement, a policy of continuous improvement, use of third-party spokespersons, and a level of commitment to the organization's mandate that is as profound as that displayed by civil society organizations.

Since its inception, the FSC has focused on defining the attributes of an organization that can maintain stakeholder confidence over time, based on structure, process, and behavior. This includes a focus on implementers and regulators, with key pillars for local confidence being safety, participation, and socio-economic development. Recent discussions have centered on communicating scientific findings and uncertainties, and building public confidence through training, interdisciplinary dialogue, and increased transparency.

The symbolic aspect of confidence and trust is also significant. Building and maintaining confidence is partly based on ensuring safety. Public mistrust in nuclear safety or the players in radioactive waste management (RWM) can affect overall confidence. Involving the public in relevant discussions and clarifying the policy link between waste management and the future of nuclear energy are vital.

Building relationships and mutual understanding is a time-intensive process with symbolic value that can enhance confidence. The FSC's current work focuses on developing tools and processes to foster stakeholder confidence, understanding how technical research contributes to this confidence, and defining the roles and responsibilities of organizations in enhancing stakeholder confidence. Confidence and trust are not just end goals but are integral to improving RWM systems and decision-making processes, addressing challenges in collaboration and partnership approaches.

Table 8. Factors for confidence in decision-making

National process	National program structure	Actual stakeholder behavior	Local system features
• Stepwise approach. • Stakeholder involvement and empowerment. • Significant public participation in analysis and deliberation alongside experts. • Regional development. • Rebuild trust when communication is broken down.	• Clear framework defining roles and rights of players. • Clear financial responsibility placed primarily on those who own/produce waste. • Local liaison groups facilitating public information, • Consultation and education. • Empowered local communities.	• All stakeholders assuming their mandated responsibilities. • Commitment to continued learning. • Embracing ethical concerns for future generations. • Local players engaged to improve community well-being. • National regulatory bodies that elicit trust.	• Dialogue across communities through federated associations. • Dialogue between local decision makers and national managers. • Higher standard of living in the host community. • Technical training to local stakeholders to participate in environmental monitoring and memory keeping.

From: OECD and NEA (2022)

REGULATORY LEGITIMACY

An additional outcome of stakeholder engagement or related activities that don't appear as frequently within traditional stakeholder theory literature streams deal with the perception of regulatory activities and authority, specifically the concept of regulatory legitimacy. Provided this literature review serves to support the NRC, some attention to this construct specifically is provided in this section.

A special issue by Braun and Busuioc (2020) shed light on the complexities of stakeholder engagement in regulatory governance, highlighting its multifaceted nature and the need for diverse theoretical perspectives and research methods. The core rationale behind establishing (supra)national regulatory bodies has traditionally been their insulation from politics, ensuring legitimacy. However, this has raised concerns about the rise of technocratic elites and democratic deficits, prompting many regulators to involve external stakeholders, thereby adding a political dimension to their authority.

Braun and Busuioc (2020) note that research on stakeholder engagement reveals the activity as a double-edged sword. While it can legitimize and address democratic deficits, it can also introduce bias, potentially leading to de-legitimation or regulatory capture (Dal Bo, 2006). This paradoxical nature of engagement is compared to 'Schrödinger's cat', simultaneously legitimizing and delegitimizing regulatory governance. Studies show variations in engagement practices across EU agencies, with some favoring narrow interest representation and others adopting more inclusive approaches, each with potential pitfalls (Busuioc & Jevnaker, 2020; Arras & Braun, 2018; Borrás et al., 2007; Perez Duran, 2018).

The special issue by Bruan and Busuioc aimed to explore the conditions under which stakeholder engagement enhances or undermines regulatory legitimacy and identified three sets of factors influencing engagement outcomes: contextual determinants, institutional design, and organizational rationales. These factors include policy and policy-related influences, the specific design of engagement arrangements, and varying organizational motivations for engagement, such as reputational management.

Bruan and Busuioc (2020) conclude that the contributions highlight a shift in regulatory governance towards more responsive modes, moving away from the traditional model of de-politicized, expert-

driven regulation. This transition underscores the importance of balancing stakeholder engagement with the foundational principles of insulation and expertise that traditionally underpin regulatory legitimacy. And while stakeholder engagement can be a vital tool for independent regulators navigating the political landscape, it requires careful balancing to retain its legitimacy.

In conclusion, the theoretical framework of stakeholder engagement, as detailed in the above section, illustrates the evolution and multifaceted nature of stakeholder theory and its applications. Beginning with Freeman's broad definition of stakeholders and the expansion of this concept to include various groups and interests, stakeholder theory has significantly influenced organizational strategies and decision-making processes. The integration of moral, strategic, and pragmatic dimensions in stakeholder engagement practices reflects a nuanced approach to managing complex relationships between organizations and their stakeholders. This section also provided a framework for stakeholder management practices, stakeholder analysis methods, and provided a description of core activities, and impacts of stakeholder engagement, including stakeholder confidence and trust. Furthermore, this section discussed the exploration of the 'dark side' of stakeholder engagement, and how stakeholder engagement may influence perceptions of regulatory legitimacy.

CASE STUDIES AND BEST PRACTICES

AVAILABLE GUIDES TO STAKEHOLDER ENGAGEMENT

Efforts were made throughout the course of developing this review to understand the efforts and lessons learned from other federal agencies or relevant organizations regarding stakeholder management. Specifically, research efforts began broadly, then focused on finding information relating to stakeholder management programs of the Department of Energy (DOE), the Environmental Protection Agency (EPA), the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), the Federal Aviation Administration (FAA), and the Food and Drug Administration (FDA). While many searches yielded a limited amount of information regarding stakeholder management programs and lessons learned across these agencies, DOE, EPA, and the U.S. Fish and Wildlife Services (FSW) had resources that may be of interest to the NRC. Further, it is worthwhile noting that while only limited information regarding the practices and management of stakeholders were found for NSF, it was discovered that like the NRC, NSF has a strategic goal to enhance stakeholder confidence within their agency over the next few years as outlined in their 2022-2026 strategic plan (NSF, 2022). And while not a US federal agency, the United Kingdom’s Office of Nuclear Regulation (ONR) also shares this strategic goal as outlined in their 2020-2025 strategic plan (NUREG-1614). This information may prove useful should the NRC seek to communicate and collaborate with NSF or ONR on their progress toward meeting this objective, as well as any active lessons they may be learning. From literature searches, it was also discovered that the Canadian Nuclear Safety Commission (CNSC) has published a brief slide deck, based on a presentation delivered in 2018 that outlines their approach and experiences related stakeholder engagement. A brief description of the resources by DOE, EPA, FWS, and CNSC is provided in this section, and interested readers are directed to the full resource for further information and guidance (See Table 9).

Table 9. Links to available guides to stakeholder management.

Source	Link to guide or resource
DOE	https://www.energy.gov/sites/default/files/2022-08/Creating%20a%20Community%20and%20Stakeholder%20Engagement%20Plan_8.2.22.pdf
EPA	https://www.epa.gov/international-cooperation/public-participation-guide-introduction-guide
FWS	https://www.fws.gov/stakeholder-engagement/what-and-why#:~:text=Stakeholder%20engagement%20is%20an%20organized,over%20the%20decisions%20being%20made
CSNC	https://nuclearsafety.gc.ca/eng/pdfs/Presentations/CNSC_Staff/2018/20180518-liane-sauer-stakeholder-engagement-eng.pdf

Department of Energy (DOE)

The Office of Fossil Energy and Carbon Management (FECM) of DOE published a guide for those charged with managing stakeholder relationships in August of 2022 on creating a community and stakeholder engagement plan. This guide offers information on the type of information that should be presented in an engagement development proposal, lists the process steps for creating an engagement plan, and offers expected deliverables from the engagement plan. The guide provides information on a social characterization analysis (SCA), including a description of methods and resources to conduct this process, and offers advice on identifying key stakeholders and community partners. There is information on stakeholder engagement methods, how to set effective engagement goals, and produce a timeline to track these engagement activities. The guide also provides key background and discussion questions for consideration when engaging with stakeholders, offers advice for establishing roles and responsibilities, and for crafting specific, measurable, achievable, relevant, and time-bound (SMART) milestones. Lastly, the guide offers helpful information for crafting project agreement statements and offers a list of principles for an effective consent-based project siting process (See Table 9).

Environmental Protection Agency (EPA)

Two resources relevant to stakeholder engagement from EPA were discovered throughout the development of this review. The first is a guide published in 2001, titled Stakeholder Involvement and Public Participation at the U.S. EPA. This guide offers a description of lessons learned, barriers to effective stakeholder involvement and public participation, and a brief review of some innovative approaches to stakeholder engagement outlined as EPA project specific case studies. A review of the full 23-page document is worthwhile, but a few example lessons learned are provided:

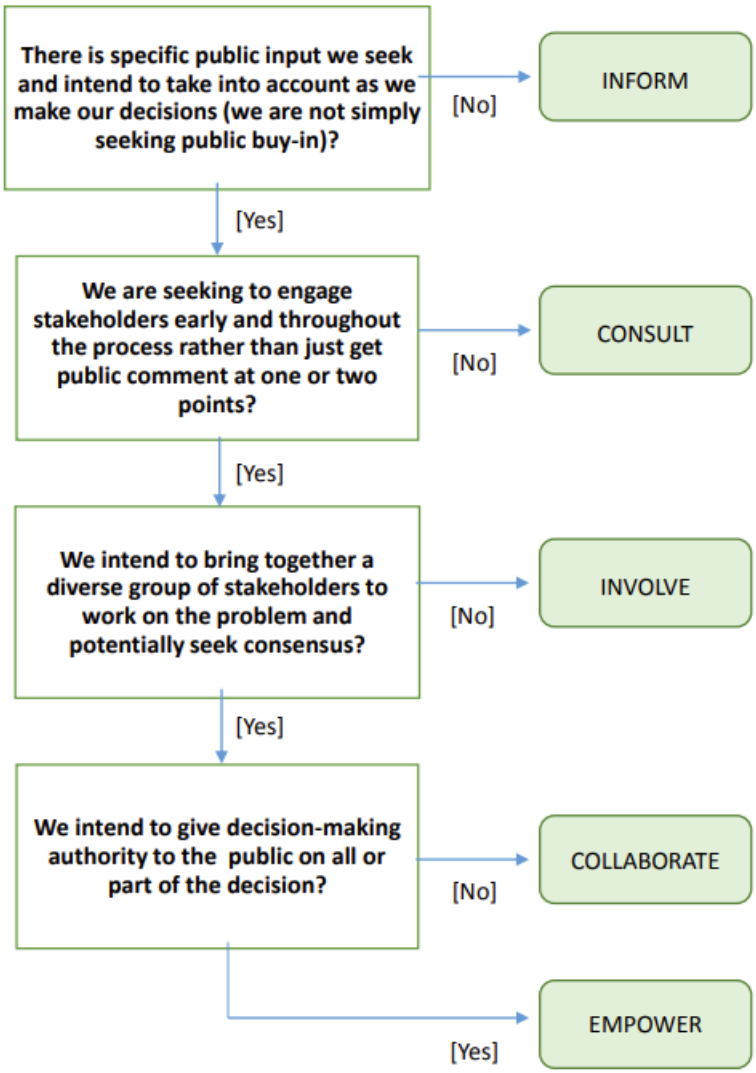
1. Establishing trust between the agency and stakeholders is integral to ensuring successful partnerships, and this trust takes time to develop.
2. Credible data and technical assistance can be critical; thus, data collection efforts should ensure reliable methods and accurate data.
3. It's important to recognize the links between environmental, economic, and social concerns.
4. Successful stakeholder involvement and public participation activities require that agency staff receive training and expert assistance on effective stakeholders engagement and management.

5. Several factors, including limits in stakeholder technical expertise, lack of time, conflict avoidance tendencies, or perceived inability to influence issues, can limit stakeholder participation and efforts should be made to address these issues and increase participation.

Other lessons learned center around multi-stakeholder negotiations, building better partnerships, enhancing community outreach, effectively involving the public in agency decisions, and building capacity. A link to the full guide and resource are available in Table 9.

An additional resource provided by EPA is a web-based guide that offers a rich well of helpful information related to public participation. From the introduction to the guide, it's stated that the resources and information are "designed with government agencies in mind, to help those who must manage processes where public input is important to decision-making." Some of the information and resources include a guide to performing situation assessments, including what a situation assessment is, when to use the process, and how to conduct one. The guide also offers advice for determining the right level of public participation depending on the project or decision being made (as depicted in Figure 3), an overview of five key steps in process planning, tools and tool kits related to techniques agencies can use to inform the public, tools and techniques to generate and obtain input, and tools for consensus building and agreement seeking. In addition, the guide offers information around the foundational skills, knowledge, and behaviors related to effective public participation, tips and information for conflict resolution, public participation workshops, self-study modules, and additional resources and case studies.

Figure 3. Flow chart to determine the right level of public participation.



From: EPA (2014)

U.S. Fish and Wildlife Service (FWS)

A similar website to the guide offered by EPA is a resource hosted by FWS that provides comprehensive insights into the concept and practice of engaging stakeholders in decision-making processes related to environmental conservation and management. This website defines stakeholder engagement, provides justification for engaging the public, offers common considerations for stakeholder engagement, and offers a list of common reasons stakeholder engagement processes fail. The resource also provides a spectrum of engagement approaches with tools, fact sheets, newsletters, and case studies related to informing the public, as well as consulting, involving, collaborating, and empowering various stakeholders. The website also provides links with helpful information related to several techniques used in stakeholder engagement initiatives, including world café, public opinion surveys or polls, focus groups, field trips, the Delphi method, citizen advisory boards, Charette, brainstorming sessions, using social media, and conducting workshops, among many others (See Table 9).

Canadian Nuclear Safety Commission (CNSC)

CNSC provides a publicly available PDF of slides from a presentation delivered at the second Nuclear Regulatory Information Conference in May of 2018 (Sauer, 2018). These slides offers some high level insights into stakeholder engagement at CNSC; and while the detail provided within the slides may not be enough to heavily inform the NRC's own stakeholder engagement practices, they offer a glimpse into the justification, process, and challenges CNSC has faced in engaging stakeholders and may provide the NRC with insights that could help establish a collaborative relationship with CNSC to better understand these activities, challenges, and lessons learned in a greater level of detail. Content within the slides relate to the justification for public engagement, data from the Canadian public on the level of trust in scientific information and the credibility of four institutions (NGOs, business, government, and media), the core activities of public engagement, and a brief overview of some challenges CNSC has faced engaging with stakeholders (See Table 9).

SELECT CASE STUDIES

This section aims to provide insights into the varied approaches taken by nuclear industry organizations and governmental regulatory agencies across three different nations in dealing with nuclear power and waste management, and how these approaches impact stakeholder engagement and confidence. Each case study is relevant to the Nuclear Regulatory Commission (NRC) as it offers lessons and strategies that can be applied or considered in the context of nuclear regulation and stakeholder involvement in the United States.

The first case study focuses on a major nuclear power generator in France and explores how a leading nuclear corporation integrates sustainable development into its strategy and engages with various stakeholders. The study, conducted over two years using interviews, document analysis, and observations, provides valuable insights into the company's commitment to sustainable development and corporate social responsibility. The findings highlight the roles of supportive, obstructive, and passive stakeholders in shaping the nuclear industry and the strategic responses of corporations. This case is relevant to the NRC as it underscores the importance of balancing economic, social, and environmental considerations in nuclear power, and the challenges of aligning corporate strategies with diverse stakeholder groups.

The second case study examines the Fukushima Daiichi nuclear disaster in Japan, caused by the Tōhoku earthquake and tsunami in 2011. This catastrophic event had significant implications for global nuclear safety and energy policies. The study outlines the impacts of the disaster, the approaches to stakeholder engagement during the recovery process by industry and government, and the lessons learned. This case provides crucial information for the NRC on the importance of disaster preparedness, effective communication, and involving stakeholders in post-accident recovery efforts.

Finally, the section discusses the experiences of nuclear industry organizations working in collaboration the Consejo de Seguridad Nuclear (CSN) in Spain, focusing on the failed attempt to site a high-level waste (HLW) disposal facility and the dismantling of the Vandellós-I nuclear power plant. The case study contrasts the technical-hierarchical approach initially used for the HLW facility, which led to public opposition, with the more participatory and transparent model adopted during the Vandellós-I dismantling. These experiences emphasize the importance of public participation, transparency, socio-economic considerations, and ethical responsibility in radioactive waste management. For the NRC, this case study highlights the need for a societal-technical approach in nuclear projects and the value of engaging local communities and stakeholders effectively.

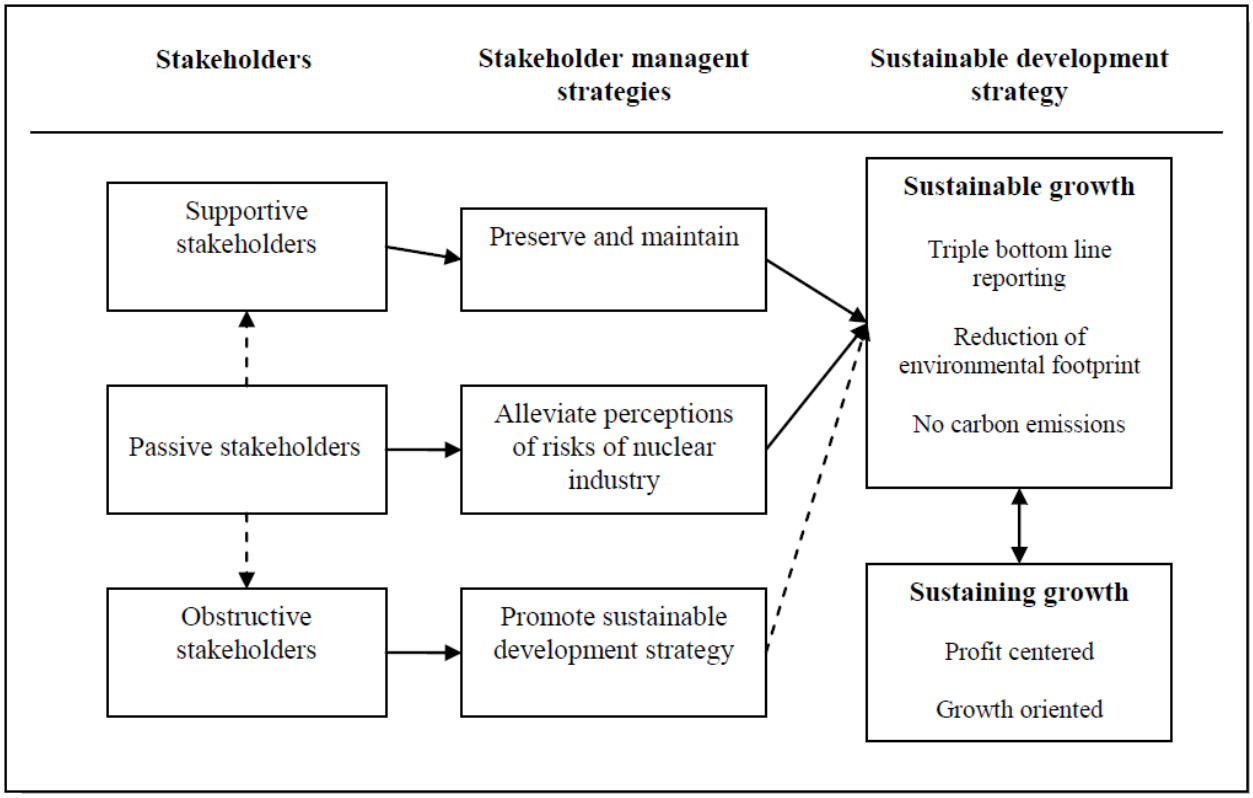
France

To understand how a major nuclear power generator in France integrates sustainable development into its strategy and engages with various stakeholders, Banerjee and Bonefous (2011) used a mixed methods approach involving interviews, document analysis, and observations over a two-year period. A total of 120 interviews were conducted, yielding over 2000 pages of transcribed text and numerous internal and external documents. The respondents included a diverse spectrum of employees and were asked about their understanding of sustainable development and corporate social responsibility, the company's commitment to these concepts, and their perspective on the nuclear industry's context and stakeholders. They were also asked to describe actions related to sustainable development undertaken by the company. Data were analyzed using Straus and Corbin's (1990) grounded theory approach, involving thematic coding and constant comparison procedures to generate coherent categories of meaning. The study explored a range of organizational responses to stakeholder demands, broadly described as a 'sustainable growth' strategy. This approach attempts to balance economic, social, and environmental considerations in the nuclear industry.

Findings from the study showed that respondents identified three primary stakeholder groups influencing the nuclear power industry: supportive, obstructive, and passive stakeholders, noting that these groups play distinct roles in shaping the industry's direction and the strategic responses of nuclear power corporations (see Figure 4).

- *Supportive Stakeholders*: These are mainly governments and international institutions like the IMF, World Bank, UNSD, and OECD through the NEA. They are influential in setting the global energy agenda and have historically been key in the development of nuclear energy, particularly post-World War II and during the Cold War. The renewed interest from these stakeholders is largely driven by concerns about climate change and greenhouse gas emissions. The nuclear industry, especially in France, has enjoyed strong government support, though there is an acknowledgment that political shifts could change this scenario.
- *Obstructive Stakeholders*: This group, including environmental activist organizations like Greenpeace and Sortir du nucléaire in France, is vehemently opposed to nuclear energy. They raise concerns about environmental risks, radioactive waste management, and the high costs and scarcity of uranium. The influence of these groups varies by country; in some, they have significantly shaped public opinion and government policy.
- *Passive Stakeholders:* Comprising the largest group, this includes the general public who are largely neutral or indifferent about nuclear power. However, this passivity could shift dramatically in the event of a nuclear accident, as seen in the aftermath of incidents like Chernobyl.

Figure 4. Stakeholders and corporate strategy



From: Banafee and Bonnefous (2011; p. 27)

The study also found that nuclear corporations tend to align their strategies with supportive stakeholders while addressing environmental responsibilities to appease obstructive stakeholders and avoid negative perceptions among passive stakeholders. The strategy is described as a 'sustainable growth' approach, aiming to balance economic growth with environmental and social considerations. Despite public commitments to sustainable development, the actual implementation within these corporations often prioritizes economic efficiency over environmental sustainability. Examples provided include the limited adoption of recycling processes for toxic acids and the challenges in reducing SF6 emissions in manufacturing due to cost considerations. The study highlights that while companies may adopt sustainable practices, these are often constrained by economic feasibility and market demands.

Japan

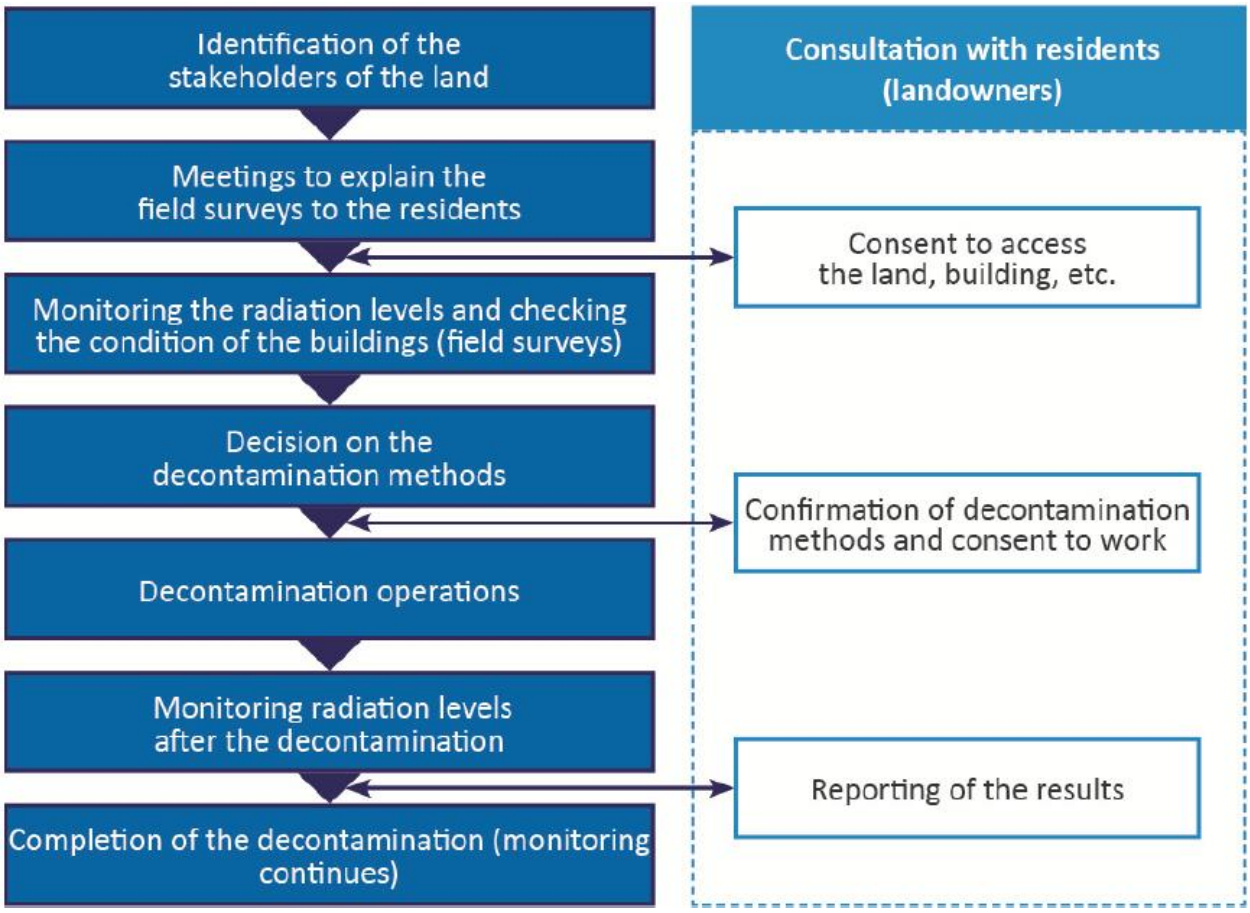
On March 11, 2011, a massive undersea earthquake, known as the Tōhoku earthquake, triggered a powerful tsunami. The tsunami waves reached heights of up to 40.5 meters and inundated the Fukushima Daiichi nuclear facility in Ōkuma, Fukushima Prefecture, Japan, leading to the worst nuclear accident since the Chernobyl disaster in 1986. The Fukushima Daiichi Nuclear Power Plant, operated by the Tokyo Electric Power Company (TEPCO), consisted of six separate boiling water reactors. Before the disaster, it was among the 15 largest nuclear power stations in the world. Japan, a country prone to earthquakes, had a long history of nuclear energy use, with a strong emphasis on safety measures and disaster preparedness. However, the magnitude of the Tōhoku earthquake and the resulting tsunami was beyond what the plant's design had anticipated. The plant's sea walls, designed to protect against tsunamis, were overwhelmed by the waves. The tsunami disabled the

power supply and cooling of three reactors, causing a nuclear meltdown, hydrogen-air explosions, and the release of radioactive material.

The outcomes and impacts of the Fukushima nuclear disaster were profound and far-reaching and detailed in a 2015 report by the International Atomic Energy Agency (IAEA). The following section provides a summary of the impacts of the disaster, the approaches to engage stakeholders, and lessons learned. The loss of power due to the tsunami led to a failure in the cooling systems of three reactors, resulting in their meltdown. This triggered significant releases of radioactive material into the environment, contaminating the surrounding area and leading to the evacuation of about 154,000 residents, many of whom couldn't return to their homes for years. The disaster necessitated the shutdown and long-term decommissioning plan for the damaged plant. In terms of health, while immediate impacts were relatively contained, there were ongoing concerns about the effects of radiation exposure. The environmental contamination extended to the Pacific Ocean, with radioactive water leaks causing widespread concern. The disaster had a profound impact on global nuclear safety and energy policies, prompting many countries to reevaluate their nuclear programs. Some, like Germany, even decided to phase out nuclear power entirely. Economically, the disaster incurred enormous costs, encompassing cleanup efforts, compensation for those displaced, and the loss of electricity production. On a social level, the disaster took a toll on the lives of thousands, leading to significant psychological and social stresses among evacuees and residents in areas affected by radiation. The Fukushima disaster thus stands as a stark reminder of the risks associated with nuclear power, especially in regions vulnerable to natural disasters.

In the wake of these impacts, engaging stakeholders became a key priority. While not a lot of detail on the methods of stakeholder engagement were provided in the IAEA (2015) report, it was noted that stakeholder engagement and consultation strategies improved throughout the remediation and recovery process following the Fukushima accident. Involving affected populations in recovery activities, ranging from consultations to self-help remediation actions, proved beneficial. The report noted that effective public communication is crucial for revitalization, exemplified by the establishment of the Decontamination Information Plaza in Fukushima City in January 2012. Local communication efforts, including dialogues between experts and the public and advice on self-help actions, were instrumental in restoring communication and trust with Fukushima residents. The remediation process, depicted in a flow chart (Figure 5) reproduced from IAEA (2015), emphasizes stakeholder participation and consultation at all stages, with landowner agreement necessary for remediation on private lands. The media, including traditional outlets and social media, played a significant role in communicating information post-accident. The extensive coverage focused on the accident and the protective measures by authorities, with social media amplifying individual and NGO perspectives. However, the information quality varied, affecting its credibility. Radiation safety experts faced the challenge of understanding public information needs and communicating effectively, particularly in addressing critical concerns about safe radiation levels.

Figure 5. Flow chart of the process for remediation and for consultation with residents.



From IAEA (2015; p. 161)

The report by IAEA (2015) offered several observations and lessons learned, which are provided below.

1. Pre-accident planning for post-accident recovery is necessary to improve decision making under pressure in the immediate post-accident situation. National strategies and measures for post-accident recovery need to be prepared in advance in order to enable an effective and appropriate overall recovery program to be put in place in case of a nuclear accident. These strategies and measures need to include the establishment of a legal and regulatory framework; generic remediation strategies and criteria for residual radiation doses and contamination levels; a plan for stabilization and decommissioning of damaged nuclear facilities; and a generic strategy for managing large quantities of contaminated material and radioactive waste.
2. Remediation strategies need to take account of the effectiveness and feasibility of individual measures and the amount of contaminated material that will be generated in the remediation process.
3. As part of the remediation strategy, the implementation of rigorous testing of and controls on food is necessary to prevent or minimize ingestion doses.
4. Further international guidance is needed on the practical application of safety standards for radiation protection in post-accident recovery situations.

5. Following an accident, a strategic plan for maintaining long term stable conditions and for the decommissioning of accident damaged facilities is essential for on-site recovery. The plan needs to be flexible and readily adaptable to changing conditions and new information.
6. Retrieving damaged fuel and characterizing and removing fuel debris require solutions that are specific to the accident, and special methods and tools may need to be developed.
7. National strategies and measures for post-accident recovery need to include the development of a generic strategy for managing contaminated liquid and solid material and radioactive waste, supported by generic safety assessments for discharge, storage and disposal.
8. It is necessary to recognize the socioeconomic consequences of any nuclear accident and of the subsequent protective actions, and to develop revitalization and reconstruction projects that address issues such as reconstruction of infrastructure, community revitalization and compensation.
9. Support by stakeholders is essential for all aspects of post-accident recovery. In particular, engagement of the affected population in the decision-making processes is necessary for the success, acceptability and effectiveness of the recovery and for the revitalization of communities. An effective recovery program requires the trust and the involvement of the affected population. Confidence in the implementation of recovery measures has to be built through processes of dialogue, the provision of consistent, clear and timely information, and support to the affected population. (IAEA, 2015; pp 161-163)

Spain

Vari and Pescatore (2006) provided a review and lessons learned from a critical nuclear incident spanning from the 1980's to 2005. Specifically, the critical incident from which the lessons were drawn was the failed attempt in Spain to site a high-level waste (HLW) disposal facility and the dismantling of the Vandellós-I nuclear power plant. Initially, the site selection for the HLW facility, undertaken by Enresa in the 1980s, was based on a technical-hierarchical approach. This process, conducted by technical experts, did not involve public participation and aimed to find the "technically best" site. By the mid-1990s, forty potential siting areas were identified. However, when details of the proposed sites leaked, it led to vigorous public opposition, resulting in the halting of the siting process in 1998 and the postponement of any decision on underground disposal until 2010. In contrast, the dismantling of the Vandellós-I nuclear power plant, following a fire in the turbine hall in 1989, presented a different approach. The decommissioning and dismantling activities were undertaken by Enresa with regulatory oversight by the Consejo de Seguridad Nuclear (CSN). Throughout the decommissioning and dismantling period, the focus was on safety, transparency, information dissemination, and economic development. A Municipal Monitoring Commission was established, involving various stakeholders, to oversee the dismantling process and keep the local public informed. This approach showed a more participatory and transparent model, engaging local communities and stakeholders effectively.

These experiences highlighted the need for a societal-technical approach in radioactive waste management, emphasizing public participation, transparency, socio-economic considerations, and ethical responsibility. The contrast between the two approaches led to significant lessons on stakeholder engagement and the importance of considering a broader range of factors beyond just technical criteria in such projects. The core lessons learned discussed in the text from the OECD/NEA Forum on Stakeholder Confidence (FSC) workshop focus on decision-making processes in radioactive waste management, particularly regarding high-level waste (HLW) disposal facilities

and the dismantling of nuclear power plants. The key lessons outlined by Vari and Pescatore (2006) are listed:

1. ***Involvement of Local Communities and Public Participation***: The failure of the initial HLW disposal facility siting process in Spain, due to public opposition, highlighted the importance of involving local communities and the public in such decisions. This approach contrasts with the earlier technical-hierarchical model, which was characterized by limited public access and a focus on technical criteria.
2. ***Transparency and Information Sharing***: Emphasizing the need for transparency in decision-making processes, the dismantling of the Vandellós-I nuclear power plant demonstrated the importance of regularly informing and engaging local stakeholders.
3. ***Socio-Economic Considerations***: Alongside safety concerns, the socio-economic development of affected regions should be considered. This includes local employment opportunities and other forms of compensation for communities hosting waste management facilities.
4. ***Institutional Frameworks and Multi-Level Decision Processes:*** The "COWAM Spain" initiative underlined the need for robust institutional arrangements and decision-making processes at multiple levels, from local to national governments. This includes clearer protocols for safety, information, transparency, and public participation.
5. ***Ethical Responsibility and Sustainable Development***: The principle of responsibility was emphasized, suggesting that the current generation should manage its own waste. Additionally, the importance of linking nuclear energy policy with radioactive waste management and fostering public participation in both areas was highlighted.
6. ***Role of National and Regional Authorities***: There was a consensus on the role of different governmental levels in waste management, with the national government often taking primary responsibility. Strengthening the role of the regulator as the "people's expert" was also seen as desirable.
7. ***Evolution of Local Information Committees***: The transformation of local information committees into more institutionalized mechanisms for long-term involvement was discussed. Their role varies from transferring information to advising decision-makers and planning facilities.
8. ***Active Participation of Host Communities:*** It was observed that communities hosting radioactive waste often become active players in decision-making processes, proposing solutions and representing community interests.

Overall, these lessons reflect a shift from a purely technical approach to waste management towards a more inclusive, participatory, and multi-level approach, considering both societal and technical aspects.

ADDITIONAL BEST PRACTICES

While not particularly rich in detail, the Association for Project Management (APM) offers 10 key principles of stakeholder engagement, and they are included here:

1. Communicate: Before aiming to engage and influence stakeholders, it's crucial to seek to understand the people you will be working with and relying on throughout the phases of the project lifecycle. Sharing information with stakeholders is important, but it is equally important to first gather information about your stakeholders.
2. Consult, early and often: A project, particularly in the early stages, may be unclear to its stakeholders for example, in terms of purpose, scope, risks and approach. Early, then

regular consultation is essential to ensure that requirements are agreed and a delivery solution is negotiated that is acceptable to the majority of stakeholders.

3. Remember, they're only human: Accept that humans do not always behave in a rational, reasonable, consistent or predictable way and operate with an awareness of human feelings and potential personal agendas. By understanding the root cause of stakeholder behavior, you can assess if there is a better way to work together to maintain a productive relationship.
4. Plan it: A more conscientious and measured approach to stakeholder engagement is essential and therefore encouraged. Investment in careful planning before engaging stakeholders can bring significant benefits.
5. Relationships are key: Developing relationships results in increased trust. And where there is trust, people work together more easily and effectively. Investing effort in identifying and building stakeholder relationships can increase confidence across the project environment, minimize uncertainty, and speed problem solving and decision-making.
6. Simple, but not easy: Over and above conventional planning, using foresight to anticipate hazards, and taking simple and timely actions with stakeholders can significantly improve project delivery. Although this principle is self-evident, in practice is still only rarely done very well.
7. Just part of managing risk: Stakeholders are important influential resources and should be treated as potential sources of risk and opportunity within the project.
8. Compromise: The initial step is to establish the most acceptable baseline across a set of stakeholders' diverging expectations and priorities. Assess the relative importance of all stakeholders to establish a weighted hierarchy against the project requirements and agreed by the project Sponsor.
9. Understand what success is: Project success means different things to different people and you need to establish what your stakeholder community perceives success to be for them in the context of project delivery.
10. Take responsibility: Stakeholder engagement is not the job of one member of the project team. It's the responsibility of everyone to understand their role and to follow the right approach to communication and engagement. Good project governance requires providing clarity about stakeholder engagement roles and responsibilities and what is expected of people involved in the project.

DISCUSSION

This literature review was written in service to the NRC's strategic goal to enhance stakeholder confidence, as outlined in their 2022-2026 five-year strategic plan (NUREG-1614). While the NRC has often considered various stakeholders in decision-making processes, a robust stakeholder analysis, and subsequent identification of precise stakeholders has yet to be accomplished. Further, many of the stakeholder engagement activities and the measurement of their impacts have remained siloed within offices, regions, projects, or independent working groups. Thus, an agency-wide, centralized approach to stakeholder management has not been developed. To more effectively realize the goal of enhancing stakeholder confidence, the NRC contracted with PRE to develop this literature review of core concepts, a theoretical framework around stakeholder management, and a review of case studies and best practices to better inform the development of stakeholder engagement strategies.

This literature review accomplishes this task by reviewing some of the most rigorous and widely regarded academic, governmental, and nuclear industry sources related to the topics of stakeholder management. This literature review provides an overview of stakeholder theory, provides the most widely accepted definitions of the term stakeholder, outlines and synthesizes robust methods of stakeholder analysis to define and identify the core stakeholders of the NRC, describes the core activities and related constructs of stakeholder engagement, and defines key outcomes and impacts of these activities to organizations, decision-making processes, and stakeholders. Regarding the outcomes and impacts of stakeholder engagement and related activities, this review also describes some of the "dark side" of stakeholder engagement, or potential negative outcomes that have been observed or could occur in the pursuit of engaging various stakeholders who may have competing interests or who's interests go against the mission of the NRC. With this understanding, this review offers some perspective for ensuring that the right level of stakeholder engagement leads to positive, rather than negative, outcomes.

Finally, this literature review also provides a sample of relevant case studies by nuclear industry organizations or other regulatory activities, lessons learned from these case studies or events, and potential best practices in the realm of stakeholder management. This review also directs readers to relevant guides and tool kits that have been developed by the DOE, EPA, and FWS, and may serve as helpful resources as the NRC embarks on developing its own strategies related to stakeholder management. In conclusion, this literature review provides a foundation of theoretical and practical understanding around stakeholder theory, stakeholder engagement and related activities, and the potential impacts of these activities, including the enhancement of stakeholder confidence.

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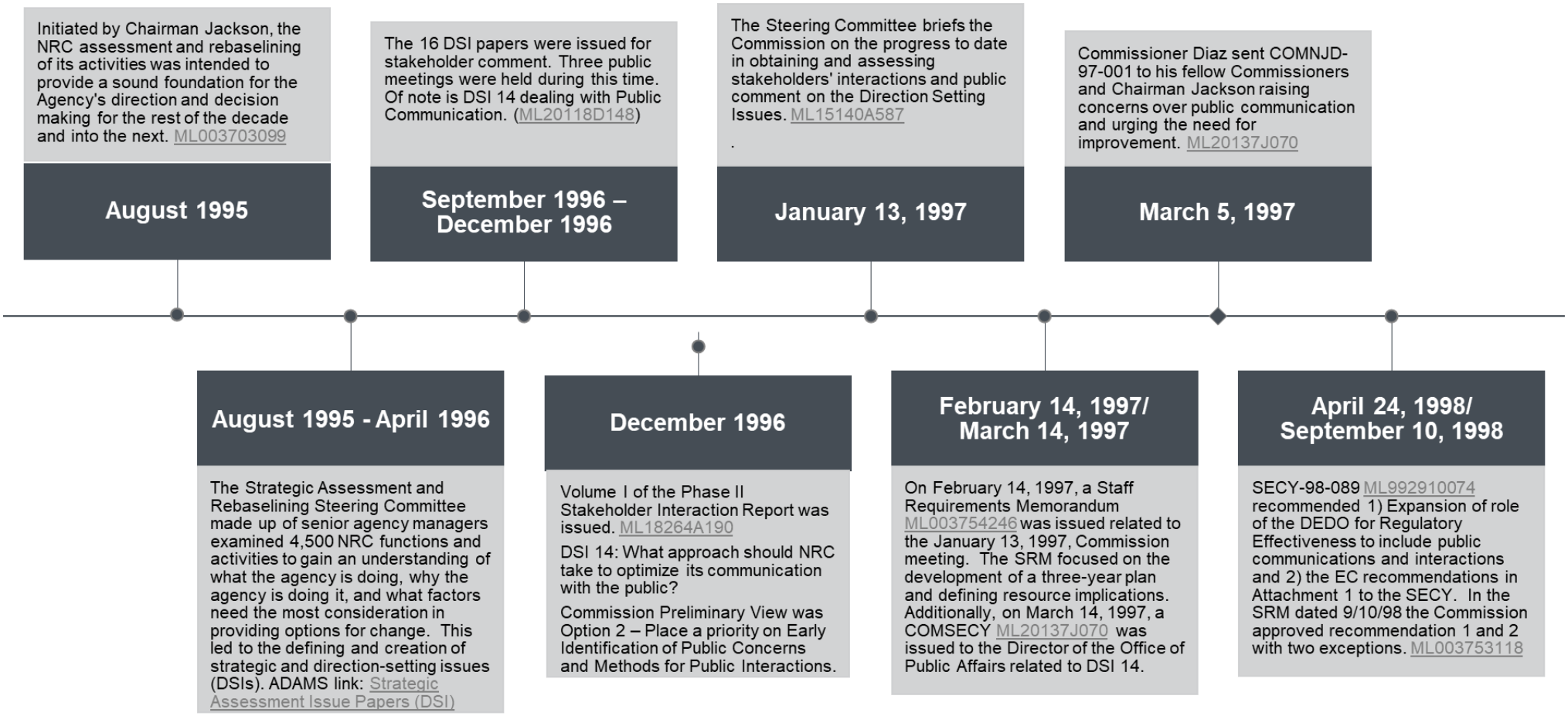
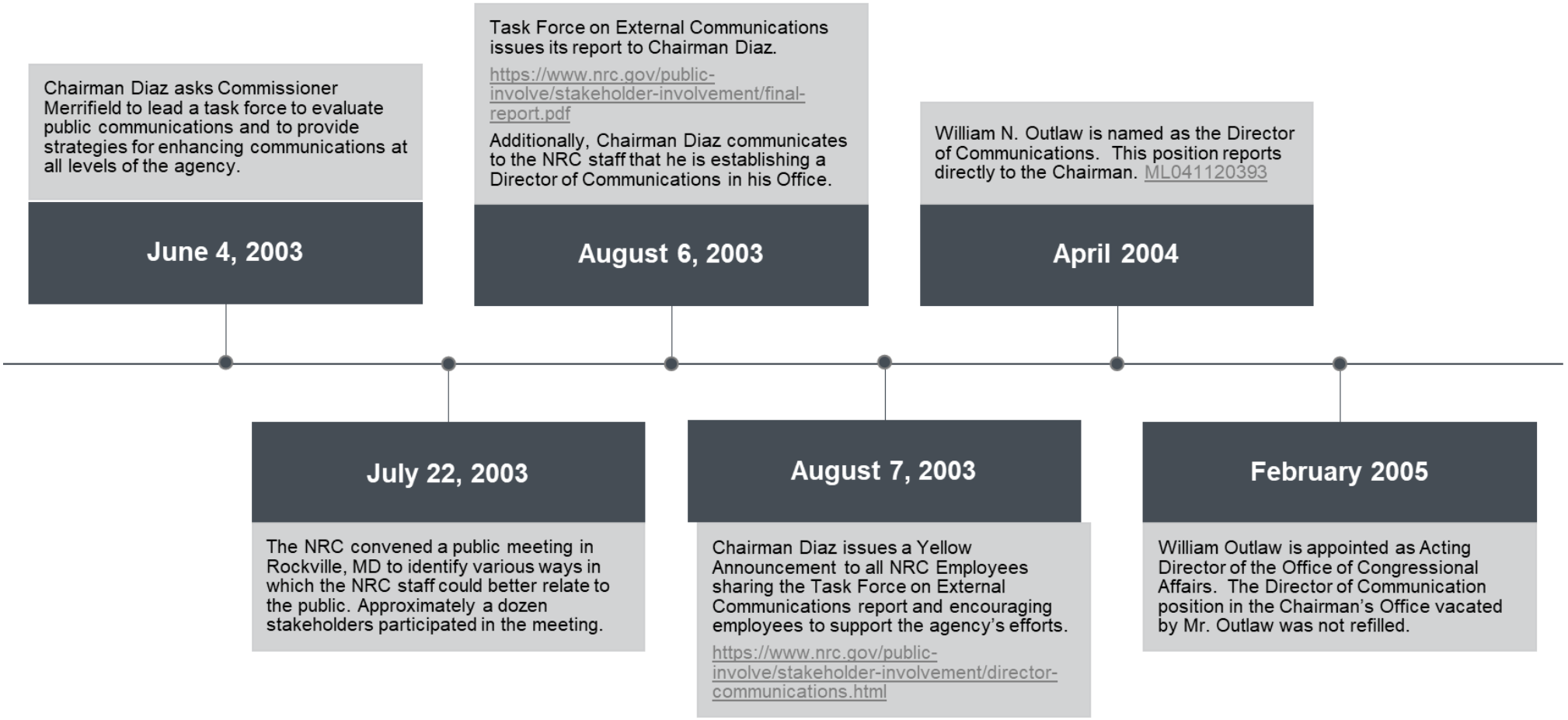
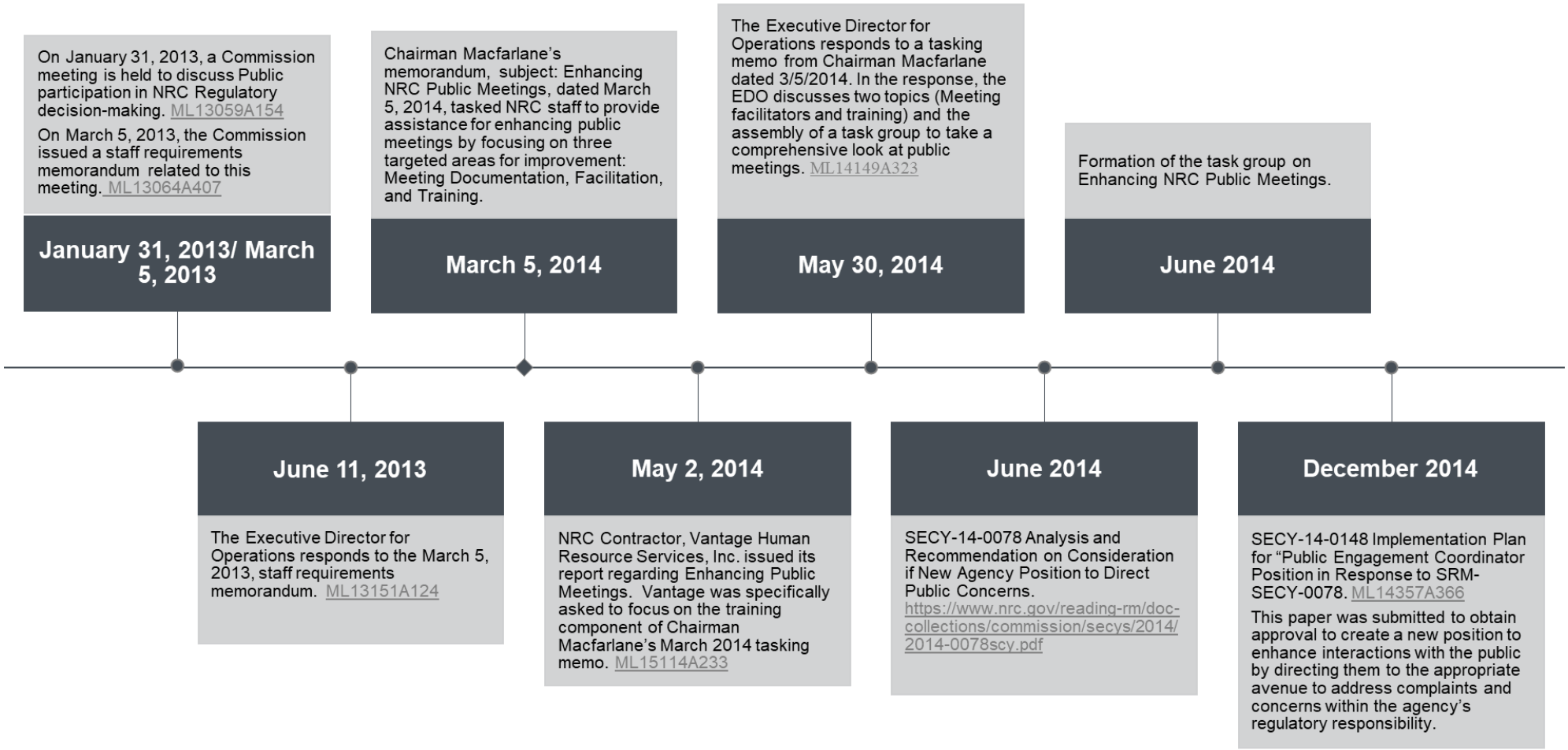
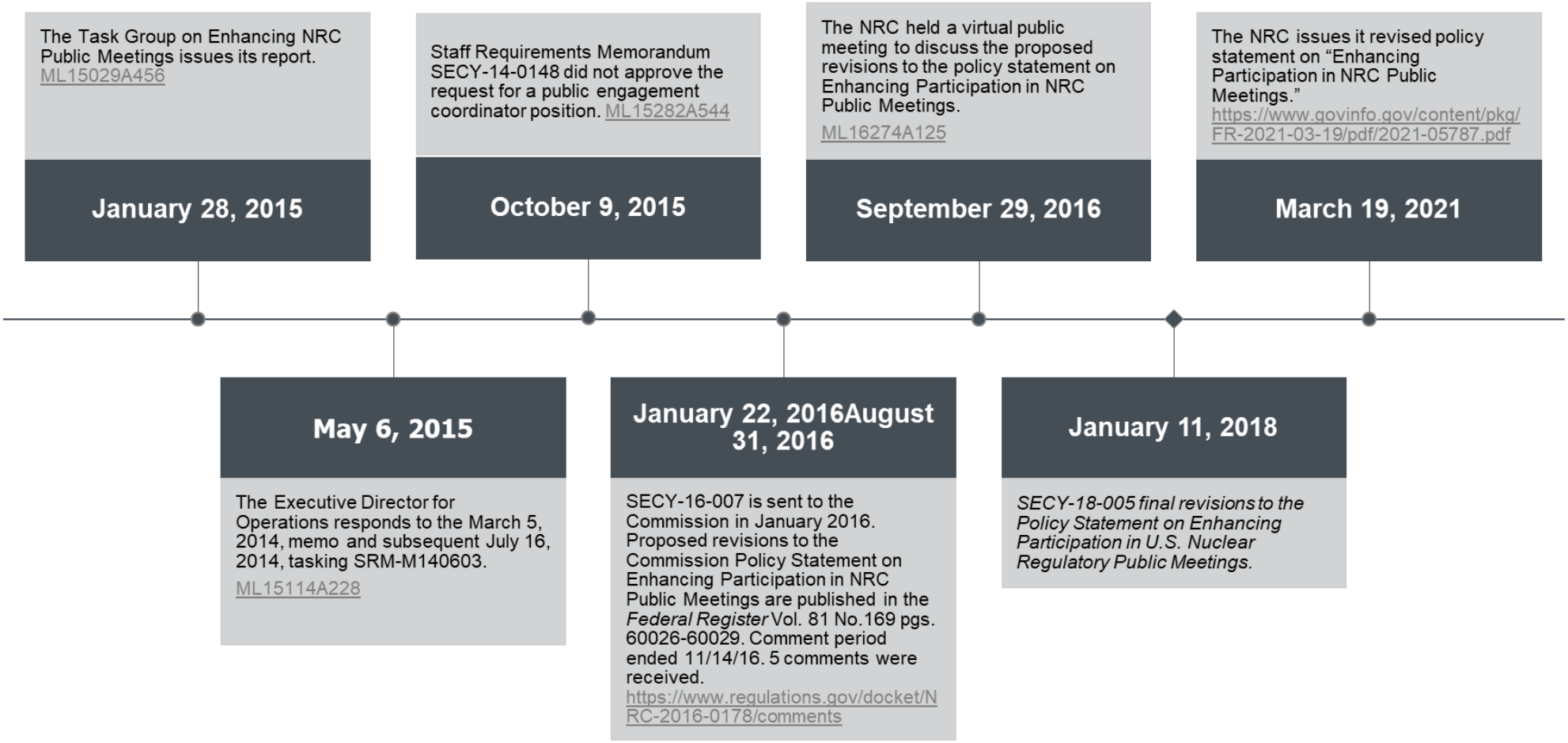
APPENDIX A

A TIMELINE OF STAKEHOLDER ENGAGEMENT AT NRC




Chairman Diaz asks Commissioner Merrifield to lead a task force to evaluate public communications and to provide strategies for enhancing communications at all levels of the agency.
June 4, 2003
Task Force on External Communications issues its report to Chairman Diaz.
https://www.nrc.gov/public-involve/stakeholder-involvement/final-report.pdf
Additionally, Chairman Diaz communicates to the NRC staff that he is establishing a Director of Communications in his Office.
August 6, 2003
William N. Outlaw is named as the Director of Communications. This position reports directly to the Chairman. ML041120393
April 2004
July 22, 2003
The NRC convened a public meeting in Rockville, MD to identify various ways in which the NRC staff could better relate to the public. Approximately a dozen stakeholders participated in the meeting.
August 7, 2003
Chairman Diaz issues a Yellow Announcement to all NRC Employees sharing the Task Force on External Communications report and encouraging employees to support the agency's efforts.
https://www.nrc.gov/public-involve/stakeholder-involvement/director-communications.html
February 2005
William Outlaw is appointed as Acting Director of the Office of Congressional Affairs. The Director of Communication position in the Chairman's Office vacated by Mr. Outlaw was not refilled.


January 31, 2013/ March 5, 2013
On January 31, 2013, a Commission meeting is held to discuss Public participation in NRC Regulatory decision-making. ML13059A154
On March 5, 2013, the Commission issued a staff requirements memorandum related to this meeting. ML13064A407
June 11, 2013
The Executive Director for Operations responds to the March 5, 2013, staff requirements memorandum. ML13151A124
March 5, 2014
Chairman Macfarlane's memorandum, subject: Enhancing NRC Public Meetings, dated March 5, 2014, tasked NRC staff to provide assistance for enhancing public meetings by focusing on three targeted areas for improvement: Meeting Documentation, Facilitation, and Training.
May 2, 2014
NRC Contractor, Vantage Human Resource Services, Inc. issued its report regarding Enhancing Public Meetings. Vantage was specifically asked to focus on the training component of Chairman Macfarlane's March 2014 tasking memo. ML15114A233
May 30, 2014
The Executive Director for Operations responds to a tasking memo from Chairman Macfarlane dated 3/5/2014. In the response, the EDO discusses two topics (Meeting facilitators and training) and the assembly of a task group to take a comprehensive look at public meetings. ML14149A323
June 2014
SECY-14-0078 Analysis and Recommendation on Consideration if New Agency Position to Direct Public Concerns. https://www.nrc.gov/reading-rm/doc-collections/commission/secys/2014/2014-0078scy.pdf
June 2014
Formation of the task group on Enhancing NRC Public Meetings.
December 2014
SECY-14-0148 Implementation Plan for "Public Engagement Coordinator Position in Response to SRM-SECY-0078. ML14357A366
This paper was submitted to obtain approval to create a new position to enhance interactions with the public by directing them to the appropriate avenue to address complaints and concerns within the agency's regulatory responsibility.



Note: This timeline developed by NRC staff, provided to PRE, and reproduced here for reader convenience.

APPENDIX B

SELECT TABLES (TABLES 5-7)

Table 5. Studies by influence on strategy, processes, and performance

Steps/Authors	Scope	Findings
Strategy definition		
Bartkus and Glassman (2007)	Decision-making	A relationship between firms with mission statements that mention specific stakeholder groups (employees, customers, and community) and behaviors regarding these stakeholders does not exist
Foo (2007)	Decision-making	Only when firm stakeholder interactions are overwhelmingly rule-governed, then the true and cooperative relationships with stakeholders result in competitiveness
Harrison and Qureshi (2000)	Decision-making	The views of various stakeholders increase the effectiveness of data and information provided to support decision-making in natural resource management
Minoja (2012)	Decision-making	The development of a theoretical framework that links together stakeholder management (SM), stakeholder commitment to cooperate with the firm, key decision makers' ethical commitment, and firm strategy
Wu and Wokutch (2015)	Decision-making	Confucianism forms an additional normative basis for stakeholder theory and the inclusion of stakeholder expectations in strategy
Bourne (2011)	Relationship management	A structured process of stakeholder engagement leads to the development of timely, appropriate, and effective communication
Habisch et al. (2011)	Relationship management	The institutional context favors the adoption of stakeholder-management strategies
Kolk and Pinkse (2007)	Relationship management	The climate strategy of a company depends on the type of stakeholders that a company manages more proactively, which is in turn determined by the extent to which these stakeholders control critical resources
Shah and Bhaskar (2008)	Relationship management	The ancient Indian scriptures prove that the concept of SM owes its origin to India and it is part of the Indian firms' strategy
Strategy execution		
Helin et al. (2013)	Communication	A description of methods used by the corporation to manage conflicting stakeholder interests
de Colle (2005)	Decision-making	Presentation of a ten-step model of SM to improve decision-making processes within an organization, by enabling managers to identify and respond to legitimate stakeholders' interests
Jack and Green (2004)	Decision-making	Business Support Optimization is an approach to improving alignment between environment and business at the moment in time and suggests how it can be operationalized using value mapping to realize stakeholder expectations
Dentoni and Veldhuizen (2012)	Innovation	Insight on the process used by Unilever that led the company to develop and implement a corporate sustainability strategy working with multiple stakeholders
Watson et al. (2018)	Innovation	Engaging stakeholders in innovation requires three capabilities: specific operational capabilities, dynamic capabilities to manage the engagement, and dynamic capabilities to make use of contrasting ways of seeing the world to reframe problems
Olander and Landin (2008)	Relationship management	Identification of the factors affecting the SM process, positively or negatively, from the perspective of project implementation
Smudde and Courtright (2011)	Relationship management	The retrospective analysis reveals the effectiveness of stakeholder approaches in strategic planning
Walley (2013)	Relationship management	The approach identified the stakeholder mechanisms that caused one project to fail

Performance

Coombs and Gilley (2005)	Decision-making	SM has a negative effect on CEO salaries, but a positive effect on firm's financial performance. These results indicate that CEOs may jeopardize their personal wealth by pursuing stakeholder-related initiatives
Fong (2010)	Decision-making	The CEO pay fairness influences future SM. This relation becomes stronger as the ratio of inside directors on the board increases
Hillman and Keim (2001)	Decision-making	SM leads to improved shareholder value, while social issue participation is negatively associated with shareholder value
Longo and Mura (2008)	Decision-making	The development of a measurement system to measure the intangible resources related to employees and that represents a control tool that may support managers in planning and monitor the social investments of the firm
Perrini and Tencati (2006)	Innovation	The development of the sustainability evaluation and reporting system (SERS), an integrated methodology aimed at monitoring and tracking the overall corporate performance according to the stakeholder
Bendheim et al. (1998)	Relationship management	The existence of differences in SM within industries and between industries are observed
Malvey et al. (2002)	Relationship management	The proposition of a systematic method for the evaluation of key SM using a stakeholder report card
Madsen and Ulhøi (2001)	Risk management	To improve corporate relationships with various stakeholders, companies need to be able to identify these stakeholders and assess their influence
Alpaslan et al. (2009)	Risk management	In the context of crises, SM increases the opportunity for proactive and/or accommodating crisis management behavior, and a stakeholder theory of crisis management is suggested
Boerner and Jobst (2011)	Decision-making	Methods are used to define strategies and manage stakeholder interests in the process of program planning
Walters (2011)	Innovation	An emphasis on the stakeholder-management strategy implemented by the football club, demonstrating a lack of opportunities for involvement in decision-making processes
Pacagnella Ju´ nior et al. (2015)	Relationship management	A description of how the management team of a project identified key stakeholders and established strategies to increase their engagement, get resources and make use of capabilities during the project lifecycle
Eskerod and Vaagaasar (2014)	Risk management	A description of how a project management team worked with its stakeholder relationships
Guo and Saxton (2014)	Communication	Elaboration of new forms of targeted stakeholder communication, a new type of organizational resource, and the relationship between the two
Ferdinand et al. (2015)	Communication	A definition of the network structure of online stakeholder discussions in the planning stage of a public project
Chen et al. (2009)	Decision-making	The development of a prototype (Business Stakeholder Analyzer) that helps managers and analysts identify and classify their online stakeholders

From Pedrini and Ferri (2019; pp. 50-51)

Table 6. Resources required, level of stakeholder participation, strengths, and weaknesses of each of the methods identified in stakeholder analysis typology.

Method	Description	Resources	Strengths	Weaknesses
Focus groups	A small group brainstorm stakeholders, their interests, influence and other attributes, and categorize them	High quality facilitation; room hire; food and drink; facilitation materials e.g. flip-chart paper and post-its	Rapid and hence cost-effective; adaptable; possible to reach group consensus over stakeholder categories; particularly useful for generating data on complex issues that require discussion to develop understanding.	Less structured than some alternatives so requires effective facilitation for good results
Semi-structured interviews	Interviews with a cross-section of stakeholders to check/ supplement focus group data	Interview time; transport between interviews; voice recorder	Useful for in-depth insights to stakeholder relationships and to triangulate data collected in focus groups	Time-consuming and hence costly; difficult to reach consensus over stakeholder categories
Snow-ball sampling	Individuals from initial stakeholder categories are interviewed, identifying new stakeholder categories and contacts	As above: successive respondents in each stakeholder category are identified during interviews	Easy to secure interviews without data protection issues; fewer interviews declined	Sample may be biased by the social networks of the first individual in the snow-ball sample
Interest-Influence matrices	Stakeholders are placed on a matrix according to their relative interest and influence	Can be done within focus group setting (see above), or individually by stakeholder during interviews (see above) or by researcher / practitioner	Possible to prioritize stakeholders for inclusion; makes power dynamics explicit	Prioritization may marginalize certain groups; assumes stakeholder categories based on interest–influence are relevant
Stakeholder-led stakeholder categorization	Stakeholders themselves categorize stakeholders into categories which they have created	Same as semi-structured interviews	Stakeholder categories are based on perceptions of stakeholders	Different stakeholders may be placed in the same categories by different respondents, making categories meaningless
Q methodology	Stakeholders sort statements drawn from a concourse according to how much they agree with them, analysis allows social discourses to be identified	Materials for statement sorting; interview time; transport between interviews	Different social discourses surrounding an issue can be identified and individuals can be categorized according to their 'fit' within these discourses	Does not identify all possible discourses, only the ones exhibited by the interviewed stakeholders

Actor-linkage matrices	Stakeholders are tabulated in a two-dimensional matrix and their relationships described using codes	Can be done within focus group setting (see above), or individually by stakeholders during interviews (see above) or by researcher/ practitioner	Relatively easy, requiring few resources	Can become confusing and difficult to use if many linkages are described
Social Network Analysis	Used to identify the network of stakeholders and measuring relational ties between stakeholders through use of structured interview/ questionnaire.	Interviewer, questionnaire, training in the approach and analyses, time, software	Gain insight into the boundary of stakeholder network; the structure of the network; identifies influential stakeholders and peripheral stakeholders	Time-consuming; questionnaire is a bit tedious for respondents; need specialist in the method.
Knowledge mapping	Used in conjunction with SNA; involves semi-structured interviews to identify interactions and knowledges	Same as semi-structured interviews	Identifies stakeholders that would work well together as well as those with power balances	Knowledge needs may still not be met due to differences in the types of knowledge held and needed by different stakeholders.
Radical transactiveness	Snow-ball sampling to identify fringe stakeholders; development of strategies to address their concerns	Training in the approach, time	Identifies stakeholders and issues that might otherwise be missed and minimizes risks to future of project	Time-consuming and hence costly

From: Reed et al. (2009; p. 1937)

Table 7. Aims, activities, and impacts of stakeholder engagement according to moral, strategic, and pragmatic motivations.

Aims	Activities	Impacts
Moral		
Legitimacy (Banerjee & Bonnefous, 2011; Castelló et al., 2016; Legacy, 2010; Provasnek et al., 2018; Thaler & Levin-Keitel, 2016)	*Bottom-up stakeholder engagement approaches* (Davila et al., 2018; Harclerode et al., 2016)	*Legitimacy* (Beelitz & Merkl-Davies, 2012)
Trust (Eger et al., 2019; Thaler & Levin-Keitel, 2016)	*Empowering and reaching out to silent or non-visible stakeholders* (Davila et al., 2018)	*Credibility* (Manetti & Toccafondi, 2012; O'Riordan & Fairbrass, 2014)
Fairness (Davila et al., 2018)	*Positive firm involvement in the community and long-term partnerships* (Kumar et al., 2019; Milio, 2014; Reynolds & Yuthas, 2008; Strand & Freeman, 2015)	*Trust among the focal company and stakeholders* (Davila et al., 2018; Winkler et al., 2019)
Corporate Social Responsibility (CSR) and Responsibility (Kumar et al., 2019; Lees-Marshment et al., 2020; Lindgreen & Swaen, 2010; Passetti et al., 2019; Winkler et al., 2019)	*Creation of social infrastructure institutions, alliances, or agreements, including community and employee involvement activities*	*Strengthening societal well-being* (Lindgreen & Swaen, 2010)
Environmental and Sustainability Concerns (Jolibert & Wesselink, 2012; Luís et al., 2018; Scuotto et al., 2020)		*Ensuring a good life* (Noland & Phillips, 2010)
Enhancing Inclusive Stakeholder Engagement (Mease et al., 2018)		*Goodwill* (O'Riordan & Fairbrass, 2014) *Fairness* (Winkler et al., 2019) *Shared responsibility* (Schmitt, 2010)
Aims	**Activities**	**Impacts**
Strategic		
Improved Financial and Operational Performance (Boakye et al., 2020; Henisz et al., 2014)	*One-way information flows: presentations, talks, reports, newsletters, brochures, other publications, websites, and databases* (Jolibert & Wesselink, 2012; O'Riordan & Fairbrass, 2014)	*Efficiency in the form of reduced transaction costs* (Herremans et al., 2016)
Environmental and Social Risk Management (Cundy et al., 2013; Geaves & Penning-Rowsell, 2016; Thaler & Levin-Keitel, 2016)	*Collection of feedback through polls* (Davila et al., 2018), *interviews,* and *participant observation* (Ghodsvali et al., 2019)	*Firm performance measured as ROE* (Ayuso et al., 2014)
Knowledge Creation and Trusting Relationships (Papagiannakis et al., 2019)	*Two-way communication: roundtable meetings, one-on-one conversations and negotiations, workshops, training, conferences, and open-house days* (Jolibert & Wesselink, 2012; Provasnek et al., 2018)	*Effective use of resources* (Chen & Liu, 2020; J. J. Griffin et al., 2021; Harclerode et al., 2016)

Linking Effectiveness and Responsibility (Beelitz & Merkl-Davies, 2012)	*External partnerships* (Ayuso et al., 2014; Cundy et al., 2013; Girard & Sobczak, 2012; Goodman et al., 2017) and	*Competitive advantage* (Scruggs & Van Buren, 2016)
	Exchange of information (Dobele et al., 2014; Hasan et al., 2018) Supportive internal structures (Cundy et al., 2013; Dawkins, 2014; Garard & Kowarsch, 2017; Papagiannakis et al., 2019; Shackleton et al., 2019)	*Reducing uncertainty* (Herremans et al., 2016) Achieving control (Passetti et al., 2019; Winkler et al., 2019)
	Relationship building involving mediators (Dawkins, 2014), moderators (Garard & Kowarsch, 2017), and consultants for initial design work (Cundy et al., 2013)	*Maintaining corporate autonomy and flexibility of operations* (Dawkins, 2014; Herremans et al., 2016)
	Top management commitment (Holzer, 2008; Reynolds & Yuthas, 2008)	*Improved profitability, lower agency costs, significant impact on market value, revenue/profit-generating potential* (Boakye et al., 2020; Cheng et al., 2014) *Innovation outcomes* (Bendell & Huvaj, 2020; Pucci et al., 2020) Reputation and image (Scruggs & Van Buren, 2016) *Aiding stakeholders to endorse and champion the corporate message and reports* (Boiral et al., 2019) *Eco-efficiency* (Watson et al., 2020) *Improved knowledge generation and learning* (Baltazar Herrera, 2016; Luís et al., 2018; Wiesmeth, 2020) *Communication of complex scientific information to stakeholders and revealing stakeholder willingness to support various courses of action* (Tompkins et al., 2008)

Aims	Activities	Impacts
Pragmatic		
Strengthened Stakeholder Relationships, Collaboration, and Dialogue (Davila et al., 2018; Garard & Kowarsch, 2017; Geaves & Penning-Rowsell, 2016; Passetti et al., 2019)	*Building and strengthening dialogue and collaboration* (Girard & Sobczak, 2012; Manetti & Toccafondi, 2012; Viglia et al., 2018)	*Ethical decision-making processes* (Noland & Phillips, 2010)
Co-generation of Knowledge (Reed et al., 2013)	*Mutual understanding, learning, educating, and building awareness* (Papagiannakis et al., 2019; Shackleton et al., 2019)	*Behavioral activation for a common vision* (Viglia et al., 2018)
Problem-solving and Reaching Consensus (Manetti & Toccafondi, 2012; Patzer et al., 2018)	*Exchange of knowledge and other resources* (Novoa et al., 2018)	*Encouragement of stakeholders to believe in the norms, values,*

		and objectives of the company (Girard & Sobczak, 2012) *Partnership* (Reed et al., 2013)
Bringing Change that Benefits Societies (Geaves & Penning-Rowsell, 2016; Lumpkin & Bacq, 2019)	*Interaction in the context of challenging issues* (Golob & Podnar, 2014)	
Reducing and Resolving Conflicts of Interest (Laude, 2020; Morsing & Schultz, 2006)	*Continuous learning and development with stakeholders* (Burchell & Cook, 2006; Calton & Payne, 2003; Payne & Calton, 2004)	*Consensus-building* (Beelitz & Merkl-Davies, 2012; Novoa et al., 2018)
	Using criticism and feedback for value creation (Lee et al., 2015; Mena & Chabowski, 2015)	*Greater realization of the jointness of interests among stakeholders when ambiguity is solved through consensus* (J. R. Mitchell et al., 2022; Strand & Freeman, 2015)
	Cooperative initiatives like collaborative interventions (Legacy, 2010; Shackleton et al., 2019)	
	Interactive opportunities for consensus-building (Ghodsvali et al., 2019; Harclerode et al., 2016)	
	Co-creation and co-production activities, including jointly diagnosing challenges, producing knowledge, developing capabilities (Papagiannakis et al., 2019; Shackleton et al., 2019),	
	Designing solutions (Baltazar Herrera, 2016), *informing jointly owned decisions* (Shackleton et al., 2019), and	
	Implementing solutions (Baltazar Herrera, 2016) *Building positive relationships and effective strategies through co-creative activities* (O'Toole et al., 2013; Pantano et al., 2020)	

From: Kujala et al. (2022)