



## Engaging Stakeholders in Natural Resource Decision-Making

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**OVERVIEW:** Natural resource managers frequently face difficult decisions, many of which involve diverse stakeholders, competing objectives, multiple management options, and uncertainty of outcomes. Participatory decision-making has emerged as an effective approach for addressing such decisions. This approach hinges on stakeholder engagement – a process that includes fostering a shared understanding of the issue, stakeholder buy-in, and co-creation of solutions as an effective means to address the issue. Effective engagement of stakeholders requires that organizers of the decision-making process have ample knowledge of relationships between stakeholders and the natural resource issue, strategic communication and trust within the community. Although many resources have described methods and tools for *executing* participatory decision-making (e.g., decision analysis), few resources describe effective methods for *initiating* the process of stakeholder engagement; this often presents a key barrier to participatory decision-making. This report explores issues and proposes solutions involved in stakeholder engagement to provide a cursory resource for those interested in leading a participatory decision-making process. After introducing the topic of participatory decision-making and highlighting its benefits, steps for initiating the stakeholder engagement process, discussion of common challenges encountered and best practices for overcoming them are presented. In order to more efficiently address natural resource issues, those interested in leading participatory decision-making efforts should apply and pursue further training in the topics discussed in this report.

**THE WHAT AND WHY OF PARTICIPATORY DECISION-MAKING:** Most problems facing the field of natural resource management are inherently complex (Game et al. 2014). Managers often grapple with multiple objectives that conflict or compete for limited resources (e.g., provide freshwater, protect biodiversity, promote economic development), an abundance of potential management alternatives (e.g., buy parcel-A or parcel-B), and substantial uncertainty regarding the consequences of any decision (Gregory et al. 2012). Still, decisions will be made. Here, a decision is defined as an irreversible allocation of resources (Howard 1966), such as staff

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time and funds, intended to meet a set of objectives. Therefore, decision-making approaches help managers navigate complex and uncertain natural resource issues and reach defensible, equitable decisions.

Natural resource decisions rarely impact a single person or group, so managers often need to consider diverse stakeholders. These are defined as groups of people who can influence or are influenced by potential actions (Freeman 2010). As such, there is a growing awareness that higher quality decisions and improved outcomes can occur when stakeholders, including public groups, contribute knowledge and perspectives to the decision-making process (Lynam et al. 2007). Stakeholder participation can take on many forms along a continuum (Arnstein 1969). At one end of this spectrum, stakeholders are given few opportunities to engage and contribute information (e.g., through public forums), which decision-makers may or may not use. At the other end, stakeholders and decision-makers work together to co-frame problems, find solutions, and implement actions that benefit many parties. Choosing high or low levels of participation requires careful consideration of the scope of the problem and the perceived gains and losses of involving or not involving various stakeholders.

Many have advocated for pursuing higher levels of stakeholder participation in natural resource decisions, contending that the benefits outweigh the barriers of potentially being more time consuming or contentious early in the process (Lynam et al. 2007; Reed et al. 2009). Better decisions and outcomes can arise, but are not guaranteed, if decision-makers are informed by diverse knowledge, preferences, and values of stakeholders affected by a natural resource issue (Beierle 2002). When stakeholders contribute to the decision-making process, the breadth of objectives can be characterized more holistically. This allows leaders to anticipate and potentially reduce areas of conflict among groups, ultimately designing and evaluating management actions that meet these objectives. Participatory processes also benefit the individuals involved. Engaging together around a common issue allows a team to develop social capital: feelings of trust, reciprocity, and a shared set of values and understanding related to the issue that promotes mutually beneficial behaviors and relationships for further cooperation (Pretty and Smith 2004). Lastly, involving stakeholders in the decision-making process cultivates a sense of satisfaction and ownership with final decisions. This sense of ownership can translate to positive outcomes and is expected to limit contention that could otherwise result in policy delays. This allows for more efficient on-the-ground implementation of decisions and facilitates further productive involvement of stakeholders (e.g., using citizen scientists to collect data for monitoring outcomes of management actions). In sum, the benefits of participatory decision-making include increases in the following: a) the likelihood of finding better solutions, b) the likelihood of stakeholders accepting the decision, c) capacity for future collaborative decision-making, and d) knowledge and learning capacity of stakeholders. Later sections review the potential barriers to using a participatory process as well as techniques for overcoming them.

In the last few decades, stakeholder participation has been incorporated into existing decision analysis frameworks that break down complex decisions into several key components (lower half of Figure 1). Decision analytic approaches (e.g., structured decision-making, multi-criteria decision analysis, the USACE Planning Process) provide a powerful framework for stakeholders to collaboratively define the natural resource problem, specify management objectives, create alternative strategies, predict the performance of diverse strategies in achieving the objectives,

and consider the gains and losses of pursuing each strategy via tradeoff analysis. Structured decision-making has yielded improved, defensible decisions across many natural resource contexts, including private industry, non-profit organizations, and local, state, and federal governments. Much has been written about the mechanics and applications of decision analysis. Readers interested in more information can consult several resources for a deeper coverage of decision-making within the context of natural resource and environmental management (Linkov and Moberg 2011; Gregory et al. 2012; Conroy and Peterson 2013). Representative applications of decision analysis in the primary literature for issues such as endangered species management (e.g., Gregory and Long 2009), invasive species management (e.g., Liu et al. 2012), reintroduction (e.g., Converse et al. 2013), dredge material management (Collier et al. 2014), and species harvest regulations (e.g., Nichols and Williams 2006) are recommended. U.S. Army Corps of Engineers (USACE) planning guidance and reports from workshops addressing diverse natural resource issues with decision analysis through the U.S. Fish & Wildlife Service's National Conservation Training Center<sup>1</sup> are also available.

**PROJECT PURPOSE:** Before participatory decision-making can be applied successfully, the “right” stakeholders must be identified and engaged productively. Leaders of decision-making efforts often have some training in *executing* the process once everyone is at the table, but *initiating* the process via stakeholder engagement remains challenging since few training resources exist to offer solutions to overcoming barriers to effective engagement. This report presents a preliminary analysis of the potential issues and explores solutions associated with initiating stakeholder engagement for natural resource decision-making. Specifically, our objectives are:

- to outline the steps for initiating a participatory decision-making process by identifying and engaging stakeholders and
- to discuss best practices for overcoming potential barriers to promote effective, participatory decision-making.

This report does not intend to exhaustively address stakeholder engagement and facilitation. Instead, the process is introduced and key issues that can arise are discussed (drawing from existing decision-making literature and our own experiences derived from leading and facilitating diverse participatory efforts). The material discussed is useful to anyone interested in participatory decision-making for natural resources; however, it is primarily directed toward those interested in leading such an effort. Here, a leader is defined as the person, group, or agency who sees the value of using participatory decision-making to address an issue and is responsible for initiating the process. The leader can have other roles (e.g., champion, facilitator, expert, or analyst) in a specific decision context (described in Table 1), and the leader may be affected by a decision. However, leaders, along with facilitators, experts, or analysts, should strive to act as “honest brokers” – neutral parties who are only interested in pursuing a fair, transparent process and not in advocating for a particular policy or outcome (Pielke Jr 2007). Importantly, all parties can fill one or more roles, but understanding and stating roles can clarify the process for all involved. Participatory decision-making efforts will generally require that all roles in Table 1 be fulfilled by at least one actor.

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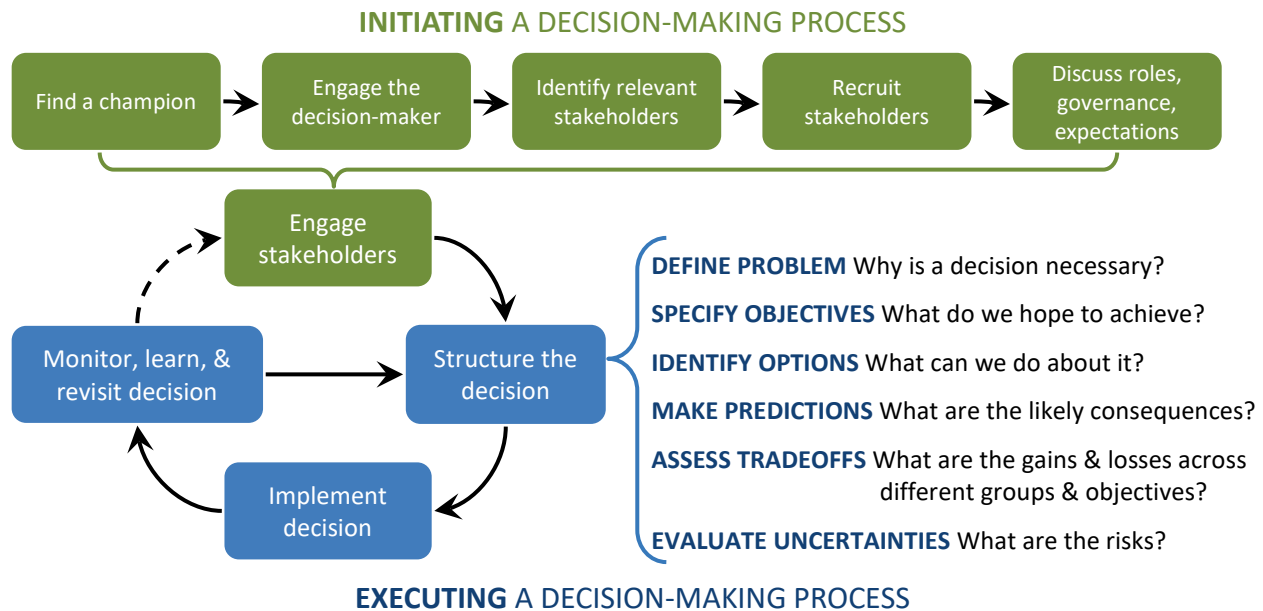
<sup>1</sup> Available at <https://training.fws.gov/courses/ALC/ALC3159/reports/index.html>

Many decision-making processes are initiated in response to a legal mandate that requires a decision (“top-down” motivation) (e.g., endangered species impacts); however, this paper focuses on stakeholder engagement in contexts where decision-making efforts seek to proactively address an issue and participation is viewed as voluntary (“bottom-up” motivation). From experience, it can be challenging to engage stakeholders, particularly decision-makers, in this context, and the steps and recommendations proposed in this report should help leaders be more effective in both mandated and proactive decision-making processes.

**Table 1.** Roles for actors involved in participatory decision-making processes. Definitions follow Gregory et al. (2012) and Conroy and Peterson (2013) unless noted otherwise.

Role	Description
Analyst	Has technical skills (e.g., modeling) to evaluate decision outcomes
Champion	Has political influence with decision-makers; can facilitate buy-in and trust between decision-makers and leaders (Chakrabarti 1974)
Decision-maker	Has ultimate authority and power to act within the decision context; is also a stakeholder
Expert	Has expert knowledge about the natural resource issue and/or stakeholders
Facilitator	Has communication and facilitation skills to lead team through the decision-making process
Leader	Has knowledge about natural resource issue, stakeholders, and participatory approaches; can also serve as analyst, expert, or facilitator
Regulator	Has authority or legal obligation to constrain decisions and outcomes
Stakeholder	Has ability to affect or be affected by decision; contributes knowledge and perspectives of decision context (Freeman 2010)

**STEPS FOR INITIATING PARTICIPATORY DECISION-MAKING:** Participatory decision-making starts before the first “initiation” step when the leader of an emerging decision-making effort recognizes a problem or opportunity concerning natural resource management. The leader can initiate the decision-making process when they have a baseline awareness of the issue and some of its ecological, social, and economic dimensions and at least some of the actors linked to the issue, especially the decision-maker. For example, one would not pursue a decision-making process for managing environmental flows without first recognizing that current flow regimes may be suboptimal for humans and wildlife and identifying a municipal water authority as the group managing flows. Only with an adequate knowledge base about the issue and potential stakeholders can a leader offer participatory decision-making as a useful process that will benefit multiple stakeholders. Perfect knowledge of all dimensions of an issue is not a prerequisite for beginning the process (and perfect knowledge will not exist), but a leader can most efficiently address each step in the process when they are well informed of the core issues and actors, can ask key questions, and recognizes the essential actors. With this in mind, steps outlined for initiating the decision-making process are defined in the upper half of Figure 1. Leaders can generally follow a linear progression to complete the steps of stakeholder engagement; however, the processes of initiating and executing a decision can always be iterative. It may be necessary to revisit any step in the stakeholder engagement process at any time (including after a decision has been implemented), if the team determines the scope of the problem has changed, stakeholders have been excluded, or other information has been uncovered.



**Figure 1.** Conceptual diagram of recommended steps for initiating (green) and executing (blue) a participatory decision-making process. Questions listed for structuring the decision generally follow those presented in a variety of decision analysis approaches. The dotted line indicates that it may be necessary to revisit the stakeholder engagement process even after a team has implemented a decision.

**Step 1: Find a champion.** To make a decision, you need to identify a decision-maker; a person, group of people, or authority that can ultimately make decisions that affect ecological, social, or economic values and who is committed to the decision-making process. If the project leader already has a respectful, trusting relationship (professional or personal) with the decision-maker, the leader may skip to Step 2 and engage the decision-maker directly. However, what if the leader and decision-maker have never worked together or even corresponded? What if the decision-maker has limited time to engage in a new project with a new collaborator? What if the decision-maker simply does not believe a participatory decision-making process will be worthwhile? In these cases, the first step in stakeholder engagement is finding a champion who can connect leaders with decision-makers and advocate for the process. A champion of a decision-making effort is a person or group who:

- Is willing to buy into the effort themselves,
- Can participate throughout the process, potentially as a stakeholder,
- Has political authority or influence within the decision context,
- Has prior, productive relationships with the leader (or their colleagues) and decision-maker, and
- Serves as a trusted advocate that helps the project leader communicate with and ultimately recruit the decision-maker and other stakeholders into the process.

The leader should meet and discuss with the champion the importance, scale, and scope of the natural resource issue (Guerrero et al. 2013), the anticipated tradeoffs and potential sources of conflict associated with a decision, and the benefits of using participatory decision-making to address these tradeoffs. The champion can then help the leader engage decision-makers and other key stakeholders, discuss these topics, and motivate buy-in for the participatory decision-making

process. Lastly, a champion can encourage decision-makers to trust project leaders, facilitators, and analysts as honest brokers with no stake in the outcome and only interested in a fair process.

**Step 2: Engage the decision-maker(s).** The next step is for the champion and leader to engage the decision-maker, which might be an individual, panel, agency, or set of entities. The decision-maker has the legal authority or responsibility to carry out a decision, so their involvement is crucial for the process to be effective. Recommendations are unlikely to be implemented without the buy-in of the decision-making body. The leader should work with the champion to organize a meeting, preferably in-person, with the decision-maker(s) and use this opportunity to:

- Allow the decision-makers to describe their needs and concerns,
- Motivate decision-makers to participate by describing the participatory approach and emphasizing its benefits as an effective tool, and
- Identify other stakeholders that should or should not be involved, given the scope of the problem and historical relationships with the decision-maker.

Decision-makers may be especially wary of engaging in a process with other stakeholders for a variety of reasons related to politics, power, time, and effort. When motivating the decision-maker to participate, the leader and champion should emphasize the merits of the decision-making process; how it leads decision-makers to their goals; how the process is inclusive of all perspectives relevant to the context; how it protects against sabotage from contentious actors; and how it insulates decision-makers from litigation after a decision. The decision-maker's ultimate authority in the system should be re-emphasized. The decision-maker is not obligated to execute the recommendation simply by engaging in a structured process – unless they wish to pursue alternate governance systems with stakeholders (see *Step 5*). If decision-makers anticipate a high risk of litigation or poor public relations resulting from the process, leaders can work with them to pursue safeguards, such as a closed-door system where all participants sign a contract agreeing not to disclose any information discussed during the process. If the decision-maker believes the process will require too much investment or risk and does not agree to participate, the process may still proceed if the champion can serve as a proxy for the decision-maker and continue communicating between the team of participants and decision-maker. This may benefit the decision-maker by protecting them from scrutiny early in process (they can choose to enter the process later if desired).

After the decision-maker has agreed to participate or an adequate proxy chosen, discussions should begin about the appropriate scope and scale of the process. What are the expectations of how complicated the problem is, and what does that entail for the duration of the process and engagement needed from different stakeholders? A project timeframe should be discussed and tentatively set, including when other stakeholders will be contacted, the structure for the participatory process (e.g., potential dates for all-stakeholder workshops), and deadlines within the decision context (e.g., constraints based on political, funding, or environmental cycles) for completing the process and providing decision-makers with final recommendations. Lastly, the anticipated products of such an effort (e.g., objective statements, modeled outcomes, value elicitation) should be discussed to ensure expectations are aligned.

**Step 3: Identify relevant stakeholders.** Participatory decision-making strives to be an inclusive process. However, there are always practical, logistical, political or other constraints that prevent the involvement of all groups and all people with a potential stake in the decision. It is the leader's responsibility (with input from the champion and decision-makers) to identify and engage stakeholder groups and representatives that can achieve a balance between being acceptably inclusive and logistically feasible (Keeney 1992).

One common approach useful for this step is stakeholder analysis (Brugha and Varvasovszky 2000; Reed et al. 2009), which is used to characterize stakeholder relationships to the decision at-hand as well as to each other. It begins with identifying a list of potential stakeholders (individuals, groups of individuals with similar interests, or organizations), and it is often valuable to ask the following.

- Who is potentially affected by the decision and how?
- In the past, who has been involved in decisions concerning this or similar contexts? Has this problem come up before? What has changed since then?
- Who, besides the main decision-maker, has resources to implement decisions or perform actions that affect the outcomes of value to stakeholders?
- Who's involvement (or lack thereof) would increase (or decrease) the long-term support of the decision (Freeman 2010)?
- What is the history, relationships, and interests of the parties? What is each party seeking that may drive their position on this issue? Even if some parties' positions are different, do they have any underlying interests in common?

In the simplest form of stakeholder analysis, leaders and decision-makers can identify and rank stakeholders based on two criteria (Table 2); 1) the ability of the decision to affect a stakeholder group and 2) the group's ability to affect a decision. Leaders can then prioritize their efforts to engage stakeholders who meet both criteria, followed by groups who meet one, followed by groups who do not meet either. Although choosing to exclude groups is reasonable in many contexts, leaders should remember that additional stakeholders should be considered if they add substantial value to the process and have been historically marginalized or left out of participatory processes. Importantly, stakeholder analysis does not preclude any group from participating, but instead offers a method for identifying stakeholders that are most closely linked to the decision and whose input is most essential for the process to be effective.

Table 2. Simple stakeholder analysis for assessing the priority level of stakeholder groups to involve in a participatory decision-making process.			
Priority level		Can the group affect a decision?	
		No	Yes
Can the group be affected by a decision?	No	Low	Medium
	Yes	Medium	High

Leaders can further use discussions with decision-makers and other collaborators to identify specific people within each stakeholder group who are most capable of representing the group's

knowledge, perspectives, and values. Representatives can also be identified using online searches of an organization's website (e.g., for board members). Although participatory decision-making should strive to be inclusive, decision-makers may request certain stakeholder groups (or representatives within stakeholder groups) not be invited to participate due to historical, antagonistic actions or relationships. A set of stakeholder representatives that can engage productively and respectfully is a valid prerequisite for efficient decision-making; however, the expected benefits and potential barriers from excluding actors should be carefully considered as this can alienate groups and potentially defeat the purpose of a participatory process.

**Step 4: Recruit stakeholders.** Armed with a list of stakeholder groups and representatives, the leader must now systematically contact and coordinate with potential participants. Different methods of contact may be appropriate for different stakeholders, such as e-mails, phone calls, or in-person meetings. Whenever possible, the leader should contact stakeholder representatives through mutual collaborators that have already bought into the effort (e.g., through the champion, decision-maker, or other stakeholders). This approach can facilitate trust in the intentions of the process and motivate representatives to participate. Stakeholders may be more willing to engage because the process will give them a voice, which may not be typical. One of the most efficient methods for contacting and recruiting participants across stakeholder groups is distributing a formal letter of request via e-mail. When contacting stakeholder representatives via e-mail or another method, it is important to include the following details:

- A brief project background and goals,
- A brief description of participatory process and its benefits (e.g., transparency, inclusivity of the stakeholders' perspectives, defensible decisions),
- The decision-maker who is being informed by but not beholden to the process,
- The stakeholder group they are being asked to represent,
- The group to which the project leader/facilitator belongs, and
- Next steps and response deadlines required of the representative (e.g., respond to calendar poll, provide initial perspectives of group, attend meeting).

**Step 5: Discuss roles, expectations, and governance.** Next, all participating representatives should meet to discuss and agree on roles for each actor and rules to guide the structured decision-making process. Stakeholders should be clear about who is responsible for facilitating the process, conducting analysis, providing information and preferences, and making final decisions. In general, the full team of stakeholders provides information and perspectives, and critiques and approves the direction and products from each step of the process (e.g., objectives hierarchy, proposed management alternatives, data and experts used to make predictions).

Stakeholders should also discuss shared principles and norms to be adopted by the team to foster cooperative behavior as the process moves forward (Glicken 2000), which may include:

- Honesty when conveying knowledge, experiences, and perspectives,
- Respect and open-mindedness when listening to others' viewpoints,
- Willingness to let all stakeholders contribute productively instead of letting one group or individual dominate, and
- Trust that all voices can genuinely inform and improve strategies and outcomes.



Stakeholders should discuss and agree on a governance structure or a set of agreed-upon rules for how stakeholders interact and make decisions throughout the participatory process. Key questions to be addressed during this step are:

- What are important deadlines for the process (e.g., as determined by resources, political or funding cycles, events linked to environmental processes, individuals' schedules)?
- How will the process be structured? What format will be used at various steps (e.g., all-stakeholder workshops, conference calls, online solicitation of input)?
- What are the roles of the leader, facilitator, decision-maker, and other stakeholders?
- Will stakeholders be given voting authority? If so, will votes be distributed equally across groups, in proportion to the number of representatives present, or based on other criteria such as legal authority or community importance or influence?
- How will the concerns of stakeholder groups be included in making final decisions? How will the decision-maker use the products from the participatory process when making final decisions (e.g., decisions will be based on a consensus, a majority vote, or the decision-makers' vote)? If seeking consensus, what will the definition of consensus be?
- Will the process be closed or open to public input? Will information discussed during the process remain private or made available to the public?
- Will decision-makers be protected if they choose not to implement the recommended decisions identified from the process?

**BARRIERS AND BEST PRACTICES FOR EFFECTIVE PARTICIPATION:** Participatory decision-making has ample benefits for addressing natural resources issues, but it may require at least some, and potentially considerable, investment of leaders, decision-makers, and other stakeholders to organize and contribute to the process. Drawing from the literature and experiences with participatory processes, several barriers were identified (**logistical, cognitive, and social / psychological** in nature) during the stakeholder engagement phase that prevent different actors from being willing or able to participate effectively. In order to better prepare leaders and champions, specific barriers for each of these three general categories as well as best practices to overcome them are given in Tables 3–5. Logistical barriers may involve a lack of communication, space, time, or funding. Cognitive barriers may involve a lack of understanding of decision-making processes, an actor's role and responsibilities, or the perspectives of other stakeholders. Social/psychological barriers may involve a lack of buy-in or motivation of decision-makers and stakeholders to participate in the process due to mistrust or unequal power dynamics among participants. Social/psychological barriers are potentially the most difficult but important to overcome. Still, initiating any decision-making effort entails addressing each type of barrier in order to ensure the right people are included in the process and in the right way. It is noted that stakeholder engagement requires facilitating participation, which is a behavior. Extensive social science research has examined determinants of human behavior (e.g., Ajzen 1991; Bamberg and Möser 2007; St John et al. 2011). Although a deeper exploration of behavioral mechanisms is outside the scope of this Technical Note, readers can see Stern (2000) for an overview of causal factors of human behavior in environmental contexts. These include contextual (the capabilities and constraints provided by technology, institutions, or physical environments), personal capabilities (one's knowledge and skills), and attitudinal (one's norms, beliefs, and values) causal factors that parallel the logistical, cognitive, and social/psychological barrier types discussed below, respectively.

**Table 3. Logistical barriers encountered and solutions for minimizing or avoiding them when engaging stakeholders in a participatory decision-making process for natural resource management.**

Barrier	Description	Potential Solutions
Contact cannot be established with potential participants	Champions, decision-makers, or representatives can be unresponsive to requests to participate, given their daily commitments and potential unfamiliarity with the project leaders.	<ul style="list-style-type: none"> <li>• Avoid cold-contact emails and pursue in-person meetings</li> <li>• When using email, keep messages brief, use easily understood language, and accompany messages with phone calls</li> <li>• Be persistent if the request is ignored and utilize a trusted third party for contact</li> </ul>
Participants' schedules conflict with project timeframe	Potential participants are unable to contribute if prior obligations overlap with the proposed process schedule, such as dates for all-stakeholder workshops.	<ul style="list-style-type: none"> <li>• Plan project far in advance, and use online meeting polls (e.g., Doodle) when coordinating planning meetings</li> <li>• Request that those unable to participate appoint a representative as an alternate</li> </ul>
Participant input is not provided within project deadlines	Participants fail to respond with requested information, which can exclude them from contributing to decisions if the team advances in the process.	<ul style="list-style-type: none"> <li>• Allow adequate time for responses and feedback</li> <li>• Identify alternate participants for each group in advance</li> <li>• Establish clear protocols for how the team proceeds if deadlines are missed</li> </ul>
Process constraints (e.g., meeting space) prevent all groups or voices from contributing	Holding planning meetings is difficult, given limited space, many stakeholder groups, and some groups with a large number of members (e.g., visitors of a state park).	<ul style="list-style-type: none"> <li>• Identify relevant participants with stakeholder analysis</li> <li>• Strategically involve subsets of groups at certain steps (e.g., sub-teams could brainstorm and report back to the group)</li> <li>• Select number of representatives appropriate for the decision context, maximizing the diversity of knowledge and perspectives while minimizing redundancy of views</li> <li>• Work with human dimensions researchers to use online surveys to capture diversity of perspectives of large groups as needed</li> </ul>
Financial constraints	Limited or no funding is available for project personnel, meeting space reservations, meeting supplies, etc.	<ul style="list-style-type: none"> <li>• Apply for funding through U.S. Fish &amp; Wildlife Service's National Conservation Training Center (NCTC)</li> <li>• Work with university (e.g., extension agents, student projects) or USACE centers (e.g., IWR, ERDC)</li> </ul>

**Table 4. Cognitive barriers** encountered and solutions for minimizing or avoiding them when engaging stakeholders in a participatory decision-making process for natural resource management.

Barrier	Description	Potential Solutions
Important stakeholders are inadvertently excluded from process	Leaders and decision-makers can exclude stakeholder groups if they are unaware of groups or their connection with the resource issue.	<ul style="list-style-type: none"> <li>• Perform thorough stakeholder analysis in collaboration with social scientists and local experts</li> <li>• Re-examine the list of stakeholders throughout the process to ensure full range of views and potential strategies are not constrained or biased</li> </ul>
Participants do not understand the issue or process	Participants may lack a general understanding about the natural resource issue, be unfamiliar with an agency's decision process, or be unfamiliar with participatory decision processes (e.g., decision analysis), making them hesitant to participate.	<ul style="list-style-type: none"> <li>• Pursue training in facilitation and science communication</li> <li>• Hold in-person informal meetings allowing for informative dialogue between leaders and potential participants</li> <li>• Communicate clearly and avoid jargon (may require seeking professional training or soliciting advice from third party with experience in decision-making processes and communication)</li> <li>• Use visual aids to better explain concepts and visions</li> <li>• Use examples from similar case studies to illustrate process steps and beneficial outcomes</li> </ul>
Participants do not understand perspectives within their group or across groups	Potential participants may not perceive how the issue affects their group or other groups, making them hesitant to participate. They may be ineffective representatives if they are unfamiliar with the diversity of views within their group.	<ul style="list-style-type: none"> <li>• Allow groups to self-select participants to ensure breadth of views are represented</li> <li>• Conduct preliminary research (e.g., review groups' charters/mission statements, survey groups' knowledge/preferences of resource issue) and provide findings to representatives prior to decision-making process</li> <li>• Encourage the team to adopt governance and norms for respectful, genuine dialogue that are shared across groups</li> <li>• Document information contributed from groups for the team to access and reflect upon (anonymously if needed)</li> </ul>

**Table 5. Social / Psychological barriers** encountered and solutions for minimizing or avoiding them when engaging stakeholders in a participatory decision-making process for natural resource management.

Barrier	Description	Potential Solutions
Mistrust and/or past conflict exist between potential participants	Potential participants may be unwilling to collaborate with groups/actors with a history of undermining efforts and being unwilling to compromise. Decision-makers may be motivated to exclude such groups/actors from the process.	<ul style="list-style-type: none"> <li>• Work across groups in conflict to carefully select productive representatives and recruit them through trusted peers</li> <li>• Define “ground rules” to minimize conflicts</li> <li>• Emphasize inclusivity/transparency of process, neutral party facilitation, and expectations that all groups adhere to rules</li> <li>• Organize multiple meetings to incorporate a group’s input without direct conflict or bias by other groups (Collier et al. 2014)</li> <li>• Emphasize to decision-makers that exclusion of groups, even vocal minorities, can lead to political turmoil</li> <li>• Hold all-stakeholder meetings at neutral site</li> <li>• If the leader or champion is mistrusted, consider proceeding with neutral facilitator and appoint a new coordinator</li> <li>• Use team-building exercises to spur dialogue/trust</li> </ul>
Participants believe the process is not necessary	Participants are unwilling to invest in process if they do not believe the problem is severe or they are satisfied with the status quo. This may occur when the current decision is not mandated to be revisited by law or policy.	<ul style="list-style-type: none"> <li>• Work with a respected champion to motivate participants</li> <li>• Emphasize complexity of the problem, including its ecological and social dimensions and uncertainties</li> <li>• Listen to the goals and concerns of decision-makers and other participants, then emphasize how the process can lead them to these goals and what they can gain from the process</li> </ul>
Decision-makers believe the process will diminish their power and flexibility to act	Decision-makers often do not use formal processes to make decisions and value this flexibility. They may believe participatory processes restrict flexibility, make them vulnerable to public scrutiny, and distribute power to less knowledgeable groups.	<ul style="list-style-type: none"> <li>• Work with a respected champion to motivate decision-makers</li> <li>• Discuss governance options the decision-maker can choose to adopt (i.e., decision-makers maintain sole authority) and emphasize how the process can only provide recommendations and not obligate any decision</li> <li>• Emphasize how the process protects them against litigation</li> </ul>
Stakeholders believe their voices will not be heard	Stakeholders may feel disenfranchised if their needs have not been met from engaging in previous efforts or if they believe the decision is already made.	<ul style="list-style-type: none"> <li>• Emphasize inclusivity of process</li> <li>• Articulate group expectations early in the process</li> <li>• Establish and document governance for all groups to contribute</li> </ul>

**CONCLUSIONS:** Participatory decision-making efforts are increasingly used to address complex natural resource issues by drawing on the knowledge, perspectives, and values of diverse stakeholders (e.g., Share Vision Planning; IWR 2012). Although many training resources discuss how to facilitate and execute decision-making processes once all groups have agreed to participate, leaders often struggle with initiating the process. This Technical Note illustrates five steps involved in engaging stakeholders in a participatory process and prepares those leading these efforts to overcome common challenges. This Technical Note also presents a cursory treatment of these topics and is designed to spur discussion in how to better initiate and engage diverse stakeholders in participatory decision-making to increase efficient, effective, and equitable management of natural resources.

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