Environmental governance: A practical framework to guide design, evaluation, and analysis

Nathan J. Bennett1,2,3 | Terre Satterfield1

1 Institute for Resources, Environment, and Sustainability, University of British Columbia, Vancouver, BC, Canada, V6T 1Z4
2 Institute for the Oceans and Fisheries, University of British Columbia, Canada, Vancouver, BC, Canada, V6T 1Z4
3 Center for Ocean Solutions, Stanford University, Stanford, CA, USA

Correspondence
Nathan Bennett, University of British Columbia, AERL Building, 429–2202 Main Mall, Vancouver, BC Canada V6T 1Z4.
Email: nathan.bennett@ubc.ca

Funding information
Liber Ero Fellowship Program; OceanCanada Partnership; Social Sciences and Humanities Research Council of Canada, Grant/Award Numbers: SSHRC IDG #430-2014-00569, SSHRC IG #F12-04439

Abstract
Governance is one of the most important factors for ensuring effective environmental management and conservation actions. Yet, there is still a relative paucity of comprehensive and practicable guidance that can be used to frame the evaluation, design, and analysis of systems of environmental governance. This conceptual review and synthesis article seeks to address this problem through resituating the broad body of governance literature into a practical framework for environmental governance. Our framework builds on a rich history of governance scholarship to propose that environmental governance has four general aims or objectives – to be effective, to be equitable, to be responsive, and to be robust. Each of these four objectives need to be considered simultaneously across the institutional, structural, and procedural elements of environmental governance. Through a review of the literature, we developed a set of attributes for each of these objectives and relate these to the overall capacity, functioning, and performance of environmental governance. Our aim is to provide a practical and adaptable framework that can be applied to the design, evaluation, and analysis of environmental governance in different social and political contexts, to diverse environmental problems and modes of governance, and at a range of scales.

KEYWORDS
conservation, effective governance, environmental governance, environmental management, equitable governance, responsive governance, robust governance

1 INTRODUCTION

While environmental problems are often viewed as having technical, managerial, or behavioral dimensions, increasing attention has been paid to environmental governance as an overarching means to address these complexities. Indeed, interest in environmental governance has led to research at all scales from the local to the global and focused on issues such as resource scarcity and conflicts, allocation and access, and biodiversity conservation in forest, agricultural, freshwater, marine, and even atmospheric systems. One broad and enduring insight from this research is that governance is one of the most important factors in enabling or undermining the effectiveness of conservation and environmental management (Armitage, de Loë, & Plummer, 2012; Lockwood, Davidson, Curtis, Stratford, & Griffith, 2010; Ostrom, 1999). Yet, we argue that there is still a relative paucity of comprehensive and practicable guidance that can be used to frame the evaluation, design, and analysis of systems of environmental governance.

This is a bold claim to make regarding a field that is as broad as it is deep. This is especially so as the academic literature on environmental governance has produced a plethora of governance theories and analytical frameworks. For example, environmental governance scholars have developed theory in the...
TOWARD A COMPREHENSIVE
AND PRACTICAL FRAMEWORK
FOR ENVIRONMENTAL
GOVERNANCE

2.1 | Methods

Our first step was to reduce the complexity of the main analytical elements, objectives, and related attributes that pertain to environmental governance while still being comprehensive (Figure 1). When developing the framework, we first reviewed the literature to ascertain clear definitions and conceptualizations of the analytical elements (i.e., institutions, structures, and processes) of governance (see below). We then reviewed the academic literature on environmental governance to develop a comprehensive list of considerations (alternately termed principles, attributes, or indicators of governance by different authors) associated with the capacity, functioning, and performance of governance. As our aim was to be comprehensive, we reviewed the literature until thematic saturation was achieved – that is, no new themes were emerging. To develop a summary list of attributes and objectives from this long list, we combined commensurate terms into a set of 19 attributes, which we checked against the literature to ensure comprehensive thematic coverage. Finally, we assigned these attributes to four overarching categories that encompass the general aims or objectives of environmental governance. In so doing, we sought to evaluate and construct each category according to guidance on designing clear and appropriate attributes and objectives. That is, we ensured they were: distinct, comprehensive, direct, operational, understandable and unambiguous (Keeney, 2007; Keeney & Gregory, 2005). A summary of this review of the literature is in Table 1 with supporting references provided throughout the text, whereas a more succinct representation of the primary objectives and attributes as they relate to the elements of governance is in the framework in Figure 1.

2.2 | Definition and conceptual elements of environmental governance

Governance is generally defined as the institutions, structures, and processes that determine who makes decisions, how and for whom decisions are made, whether, how and what actions are taken and by whom and to what effect (Graham et al., 2003; Lockwood et al., 2010). An important conceptual
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Attributes (Qualities or Capacities)</th>
<th>General Characteristics or Inputs (Capacity)</th>
<th>Idealized Outputs (Functioning)</th>
<th>Idealized Outcomes (Performance)</th>
</tr>
</thead>
</table>
| **Effective** Supports maintenance of system integrity and functioning. | Direction | Scope, goals and aims are comprehensive, clearly articulated and communicated to stakeholders. Clear boundaries on action and scope exist. | Defines what effective action encompasses and sets milestones for achieving success. | • Improvement in ecosystem functioning.  
• Greater biodiversity or species.  
• Increases in productivity of system or provisioning of ecosystem services.  
• Better environmental health. |
| | Coordination | The roles, functions, and mandates of different governments, agencies and organizations are coordinated. A coordinating body or unit is present. | Produces system of rules for use, mechanisms for exclusion, management actions and spatial coverage that are complementary and adequate to achieve objectives. Provides a forum for discussion, debate, negotiating and resolving trade-offs. | |
| | Capacity | Capacity, skills and resources are sufficient and are being actively developed. Capable and visionary leadership is present. Mechanisms are present to resolve conflicts between groups. | Enables successful decision-making and the initiation, organization, implementation and evaluation of actions. | |
| | Informed | Planning and management decisions and actions are informed by best available information and integration of a diversity of knowledge types and systems. | Increases the likelihood that management actions will lead to effective outcomes. | |
| | Accountable | Procedures are present to hold governors accountable for performance of system. Mechanisms are in place to ensure that means and rationales for making decisions are transparent. | Ensures that governors act on mandated decisions and that effective actions are being taken. | |
| | Efficient | Efficacy guides decisions regarding management actions and deployment of resources. Time requirements of actors are reasonable. Economic costs and actions taken are commensurate with productivity of system. | Maximizes the productivity of management actions while minimizing the wasteful use of available resources. | |

*continued*
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Attributes (qualities or capacities)</th>
<th>General characteristics or inputs (capacity)</th>
<th>Idealized outputs (functioning)</th>
<th>Idealized Outcomes (performance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equitable</td>
<td>Recognition</td>
<td>Policies and processes ensure acknowledgement of, respect for and incorporation of diverse perspectives, values, cultures and rights. Views of marginalized and vulnerable groups are considered.</td>
<td>Facilitates socially acceptable governance and perceptions of legitimacy. Aids in the design of management actions that are appropriate to the social context.</td>
<td>• Inclusion in decision-making processes. • Improved socio-economic outcomes. • Increases in quality of life or wellbeing. • More fair distribution of wealth. • Better access to justice and protection of rights.</td>
</tr>
<tr>
<td>Participation</td>
<td>Spaces and processes to enable participation and collective choice are present. Structures that ensure the representation and engagement of different stakeholder groups are in place.</td>
<td>Contributes to just power relations and decision-making processes. Leads to plans and actions that represent the interests of different groups. Allows parties to democratically debate decisions and maintain dignity.</td>
<td>Ensures a fair balance of costs and benefits accrue to different groups.</td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td>Mechanisms are in place to ensure socio-economic costs and benefits are just and fairly distributed. Rights and responsibilities are shared and assigned fairly. Unequal circumstances are considered.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Just</td>
<td>Laws and policies are present to protect local rights and mechanisms ensure that groups have access to justice.</td>
<td>Ensures rights (e.g., title, historical tenure, access, use, management) are not undermined and that reparations or compensation are made for past damages.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsive</td>
<td>Learning</td>
<td>Monitoring, evaluation, reflections and communication of performance is institutionalized. Processes and platforms are in place to co-produce knowledge and enhance social and institutional memory.</td>
<td>Ensures that information is produced, documented, shared and informs decision-making.</td>
<td>• Enables the resilience of resource. • Enables the resilience of local communities. • More adaptable institutions to changing conditions. • More flexible institutions that can be altered to work in different contexts.</td>
</tr>
<tr>
<td>Anticipatory</td>
<td>Long-term planning and foresight thinking are institutionalized. Known and unknown risks and opportunities are considered, analyzed and planned for.</td>
<td>Produces plans and steps to prepare and prevent consequences of unexpected risks. Enhances knowledge, capacity and flexibility for disturbance.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Attributes (qualities or capacities)</th>
<th>General characteristics or inputs (capacity)</th>
<th>Idealized outputs (functioning)</th>
<th>Idealized Outcomes (performance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptive</td>
<td>Spaces for reflection and deliberation are institutionalized. Processes exist to revisit and evolve policies, institutions and adapt actions.</td>
<td>Ensures that management plans and actions are being actively adapted to reflect changing social-ecological contexts and new knowledge.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovative</td>
<td>Innovation and experimentation is encouraged and success and failures are monitored. A higher risk tolerance is embodied.</td>
<td>Allows change to be seen as an opportunity. Enables new and more effective ideas and actions to emerge.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexible</td>
<td>Policies exist that recognize the need to downscale environmental management and conservation models to fit local realities. Efforts are taken to understand and document about the diverse contexts where policies are applied and to deliberate on necessary adjustments.</td>
<td>Enables governance systems and management models to be adjusted to better fit with local social, cultural, political, economic and environmental contexts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robust</td>
<td>A collective vision shapes policies and guides actions at all scales. Institutional legitimacy is conferred (e.g., in policy) and perceived (e.g., by constituents). Governors act with integrity and consistency. Institutions are transparent.</td>
<td>Ascertains that there is support from above and that there is a supportive constituency.</td>
<td>- Institutions are strengthened and well supported. - Institutional performance and functioning is more or less consistent. - Institutions persist over time.</td>
<td></td>
</tr>
<tr>
<td>Legitimate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connected</td>
<td>Networks of organizations and actors are strongly linked vertically and horizontally. Bridging organizations are present. Processes are in place to support network development, to develop social relations and to support mutual learning.</td>
<td>Helps to bridge between and across scales. Creates supportive community, produces social capital, fosters respect and trust and builds social memory. Encourages communication, information exchange, enables diffusion of innovations, and facilitates collaboration.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nested</td>
<td>Tasks are assigned to appropriate levels. Decision-making authority and responsibility are conferred to the lowest level possible. Self-organization is encouraged and supported. Authority and responsibility is supported by adequate state or other outside support (legal recognition, political will, time commitment) and oversight.</td>
<td>Empowers appropriate entity to take necessary action. Allows also for shaping and adapting institutions and decision-making processes to different local sub-contexts (social circumstances, governance, ecologies) within larger system.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Objectives and attributes for environmental governance

Previous governance scholarship and frameworks tend to prioritize or even neglect certain fundamental objectives of environmental governance. It is not surprising, for example, that the literatures on adaptive and anticipatory governance emphasize features that enable responsive-ness, such as learning, innovation, foresight, and adaptation (Armitage et al., 2010; Boyd et al., 2015). Good governance frameworks, on the other hand, focus heavily on normative concerns related to equity, such as participation, fairness and justice, as well as transparency and legitimacy, but tend to give less attention to effectiveness (Graham et al., 2003; Lockwood, 2010). The research applying institutional and network governance theories have tended to concentrate on institutional robustness (Cudney-Bueno & Basurto, 2009; Morrison, 2017) and the functional effectiveness of governance at practices and processes such as knowledge sharing or collaboration (Cárcamo, Garay-Flühmann, & Gaymer, 2014; Wyborn, 2015a). Problematically, across much the environmental governance literature, effectiveness at achieving ecological outcomes is often assumed or relegated to discussions of management.

Some authors have put forward various proposals for more integrative sets of governance objectives. For example, Adger et al. (2002) proposed that four broad integrated and indivisible criteria be taken into account in environmental governance: resilience, adaptability, efficiency, and participation. Each of these criteria is designed to ensure that governance systems are able to respond effectively to environmental shocks and changes, while maintaining stability and sustainability over time. The integration of these criteria provides a framework for assessing the effectiveness of governance systems in achieving ecological outcomes.
Effective environmental governance and decision-making: efficiency, effectiveness, equity, and legitimacy. Recent literature on protected areas governance use evaluative indicators under the broad but vague categories of quality, diversity, and vitality (Borrini-Feyerabend & Hill, 2015). Alternately, while not focused on the environment, North (2010) suggests that economic change depends on having societal institutions that are productive, stable, fair, broadly accepted, and flexible. There are numerous other proposals. Yet, we felt there was no framework or set of objectives that adequately captured the entirety of potential aims and attributes of governance, nor that was easily applied to diverse contexts, problems, scales, and types of governance.

Thus, our framework builds on a rich history of governance scholarship but proposes a different set of overarching objectives supported by a more comprehensive set of attributes. Our literature review and categorization suggests that environmental governance has four generalizable and distinct objectives – to be effective, to be equitable, to be responsive, and to be robust – that ought to be considered simultaneously across institutional, structural, and procedural elements (Figure 1). We define the four objectives as follows: (1) effective governance supports the maintenance of system integrity and functioning; (2) equitable governance employs inclusive processes and produces fair outcomes; (3) responsive governance enables adaptation to diverse contexts and changing conditions; and (4) robust governance ensures that functioning institutions persist, maintain performance, and cope with perturbations and crises. Below, we briefly review the attributes that correspond with each objective (see Table 1 for a summary).

2.3.1 Effective environmental governance

A central objective of environmental governance is maintaining or improving the ability of environmental systems to function and to produce ecosystem services through the persistence of species, habitats or biodiversity (see Figure 1). Attributes of the first objective – effective environmental governance – include: direction, coordination, capacity, informed, accountable, and efficient. Clear direction is provided through precision in the articulation of vision, goals, aims, and the establishment of clear boundaries on action and scope (Graham et al., 2003; Lockwood et al., 2010; Wyborn, 2015b). This establishes what effective action encompasses and sets milestones for achieving success. Coordination of the roles, functions, and mandates of different governments and organizations, perhaps through a coordinating body or management unit, helps instead to establish systems of rules, ensure the adequacy of management actions, and resolve trade-offs (Abe, Brown, Ajao, & Donkor, 2016; Wyborn, 2015a). The presence and active development of capacity, including skills (e.g., leadership, conflict resolution) and resources (e.g., financial, infrastructure), enables the initiation of planning processes and implementation of management actions (Armitage et al., 2010; Lockwood et al., 2010; Wyborn, 2015b). When planning and management decisions are informed by the best available knowledge – which includes diverse and integrated knowledge types (natural and social) and of systems (scientific, local, and indigenous) – this can increase the likelihood of effective outcomes (Charnley et al., 2017; Tengö, Brondizio, Elmqvist, Malmer, & Spierenburg, 2014). Clear mechanisms to hold governors accountable can help to ensure that mandated decisions are followed and effective actions are being taken (Lockwood, 2010; Lockwood et al., 2010; Secco, Da Re, Pettenella, & Gatto, 2014). Transparency, in communicating the means and rationales for decisions and the outcomes of potential future or past actions, makes accountability possible. Efficient governance requires that time requirements of actors are reasonable, that efficacy guides the choice of management actions and deployment of public resources, and that costs and actions are commensurate with system productivity (Ostrom, 1990; Secco et al., 2014).

2.3.2 Equitable environmental governance

Second, to achieve the objective of being socially equitable, environmental governance should engage decision-making processes and produce socioeconomic outcomes that might be characterized as: inclusive, participatory, fair, and just. Equitable environmental governance begins with policies and processes that recognize, respect, and are inclusive of the perspectives, knowledge systems, values, cultures, and rights of diverse stakeholders (Borrini-Feyerabend et al., 2015; Lockwood et al., 2010; McDermott, Mahanty, & Schreckenberg, 2013), including the views of groups who are often marginalized (e.g., women, indigenous peoples, or minority groups) or vulnerable (e.g., impoverished communities). Effective participation requires context and scale-specific spaces, processes, and structures to enable inclusion, representation, and engagement of stakeholder groups in collective decision-making processes (Lockwood, 2010; Reed, 2008). This facilitates the sharing of power, democratically debated decisions, maintenance of dignity, and the creation of representative plans and actions. Power- and benefit-sharing mechanisms can help ensure that the socioeconomic benefits and burdens of conservation and environmental management are distributed in a fair manner, and that rights and responsibilities are shared and assigned commensurate to circumstances (Bennett, Teh et al., 2017; Pascual et al., 2014; Zafra-Calvo et al., 2017). Finally, equitable governance is safeguarded when laws and policies are present to protect local rights and tenure, ensure that consent is freely given, and groups have access to justice to defend against incursions.
2.3.3  Responsive environmental governance

Third, the objective of being responsive ensures that environmental governance is adaptable both to changing environmental and social conditions and to diverse contexts. Responsive environmental governance arrangements exemplify: learning, anticipation, adaptability, innovation, and flexibility. Institutional and social learning is realized through ongoing monitoring and evaluation, communication, and reflection on the social and ecological performance of environmental governance (Armitage & Plummer, 2011). Collective memory, and consequently the ability to effectively manage and adapt to change, is enhanced through practices such as documentation and sharing of lessons learned, knowledge coproduction, and developing communities of practice (Berkes & Turner, 2006; Maida & Beck, 2016). The knowledge and capacity to address disturbances can also be improved through the institutionalization of anticipation or foresight, including consideration, analysis, and planning for the consequences of both chronic and acute risks (Boyd et al., 2015; Tschakert & Dietrich, 2010). Adaptive environmental governance is enabled by institutionalized spaces for dialogue, reflection and deliberation, and clear processes and steps to ensure that policies, institutions, and management actions are periodically revisited and actively updated or changed when required (Armitage et al., 2010; Dietz, Ostrom, & Stern, 2003). A culture of innovation, coupled with a higher risk tolerance, encourages experimentation with new ideas and the monitoring and documentation of their outcomes.
of successes and failures to enable effective management actions to emerge (Chaffin et al., 2016; Dietz et al., 2003). Rather than promoting one-size-fits-all approaches, flexibility in institutions and policies allows for the calibrating of environmental management and conservation models to diverse local realities (Epstein et al., 2015; Gaymer et al., 2014). This requires that efforts are made to understand and document the social, cultural, political, economic, and environmental contexts where interventions are being implemented and to deliberate on necessary adjustments to idealized models.

2.3.4 Robust environmental governance

The final objective of environmental governance is to be robust – that is, functioning institutions – persist over time, maintain performance, and cope with perturbations and crises. Robust environmental governance institutions are legitimate, connected, nested, and polycentric. Legitimate institutions are guided by a collective vision, conferred with formal legitimacy (e.g., through law or policy) and perceived to be legitimate by constituents and stakeholders (Lockwood, 2010; Lockwood et al., 2010). This ensures both strong political justification and local support. Robust networks of institutions and actors are structurally connected horizontally and vertically, often enabled by bridging organizations, and characterized by positive social relations (e.g., trust and social capital; Bodin, 2017; Bodin & Crona, 2009; Folke, Hahn, Olsson, & Norberg, 2005). Functional networks facilitate collaboration, knowledge and information exchange, and diffusion of innovations (Barnes, Lynham, Kalberg, & Leung, 2016; Blythe et al., 2017; Cohen et al., 2012). In nested governance, decision-making authority, responsibility, and tasks are devolved to the lowest-possible and most administratively appropriate level, which enables the proper entity to self-organize, make decisions, and take actions (Lebel et al., 2006; Marshall, 2007; Ostrom, 1990). Responsibility and authority at lower scales need to be matched with adequate support and oversight from higher levels. Polycentric systems of governance have semiautonomous decision-making and action-taking centers in multiple locations, across jurisdictions, and at multiple scales that interact and cohere toward a common goal (Carlisle & Gruby, 2017; Ostrom, 2010). Polycentricity, through providing institutional diversity and redundancy in purpose and function, helps to buffer against change and avoid institutional collapse when faced with adversity (Morrison, 2017).

3 DISCUSSION

3.1 Summary

In this article, we present a framework that aims to be both practical and comprehensive for environmental governance that might be applied to diverse contexts, problems, and scales. For example, it might be adapted and applied to examine or evaluate the governance of a locally managed community forest, a national system of marine protected areas, a transboundary fishery or efforts to conserve biodiversity and ecosystem services at regional or global scales (Díaz et al., 2015). However, we are neither naïve to the challenges of environmental governance nor the potential limitations of this framework. First, the ability of the governance system (structures, institutions, and processes) to achieve desired objectives – whether this is in a fishery, a marine protected area, a watershed, a forest, an agricultural landscape, or other system – is also determined by the complexity of the context and the problem being addressed (Bavinck, Chuenpagdee, Jentoft, Kooiman, 2013). Governance systems that are more responsive – that emphasize learning, anticipation, adaptation, innovation, and fit – may be better able to address this complexity (Armitage et al., 2010; Epstein et al., 2015). Second, issues related to power and politics can challenge or undermine the functioning and performance of any system of environmental governance. For example, some actors or groups might have greater access to or influence over decision-making or policy creation processes with repercussions for both social and environmental performance (Boonstra, 2016). The ability of environmental governance to handle power rests, in part, in how well governance structures, institutions, and processes fulfill the objective of equity, which can facilitate recognition of diverse groups and worldviews, inclusion of stakeholders in decision-making, fairness in the allocation of costs and benefits, and access to justice when principles are violated. Third, as all ecological systems and social contexts are unique, systems of environmental governance need to be locally grounded. Indeed, the framework that we offer is not intended as a “one-size-fits-all” approach, but rather a guide to be adapted to fit diverse realities and governance challenges. Finally, we recognize that the depth of treatment given to each attribute is somewhat limited by the scope and length of the article. There are certainly more sophisticated treatments of each of these considerations in the literature, to which those engaging with these ideas should turn if they desire more information. Local perspectives on these considerations may be different yet. We definitely encourage building on and from the foundation of objectives and attributes provided by the framework.

Our particular goal is a framework that advances governance in several ways. First, our aim is to provide clarity on the elements of governance and so a useful reference for future research that seeks to characterize systems of environmental governance. Second, we provide a broader and more comprehensive set of attributes than has any particular theory or framework alone – which will provide a useful reference for the design of indicators for evaluation of environmental governance. Third, we suggest that future evaluations of
Environmental governance need to better address the four general objectives that we propose here – (1) to be effective, (2) to be equitable, (3) to be responsive, and (4) to be robust – across the institutional, structural, and procedural elements of governance. We suggest that it is important to engage with all four objectives simultaneously as there can be interactions – both synergies and trade-offs – between them. For example, equity (in decision-making processes or outcomes) can support perceptions of legitimacy and thus the robustness of institutions (Bennett, 2016; Ostrom, 1999; Turner et al., 2016). Similarly, effectiveness relies on the responsiveness of institutions to changing environmental and social conditions (Weeks & Jupiter, 2013) and the flexibility of environmental governance models to fit or match diverse contexts (Epstein et al., 2015; Sarkki, Rantala, & Karjalainen, 2015). On the other hand, when too much emphasis is placed on one objective over others in systems of environmental governance, unintentional trade-offs and negative consequences can follow. For example, when primary importance is placed on environmental effectiveness over equity, this might have unintended social consequences and negative feedbacks for ecosystems (Larrosa, Carrasco, & Milner-Gulland, 2016). Institutions that are ineffective or inequitable might also persist when robustness is not balanced with features that enable responsive, equitable, and effective environmental governance. Thus, research on and the practice of environmental governance needs to address the four objectives simultaneously – while also seeking to better understand the relationships between and how to achieve balance across objectives. From a practical standpoint, the common lexicon that we offer will be helpful for those seeking to develop guidance on all dimensions of governance, and also assist in the design of indicators for evaluating that governance.

3.2 Application of the framework for design, evaluation, or analysis

In sum, the novelty of this framework is in the merging of the diversity of governance frameworks and recommended features into a more comprehensive offering to guide: (1) design, (2) evaluation, and (3) analysis of environmental governance.

First, many studies often treat governance as the context within which environmental management occurs or as something that emerges from sociopolitical contexts rather than as something that can be produced, shaped or designed. We propose that this framework can be a useful reference for the development of guiding principles or recommendations for different environmental issues (e.g., marine conservation, fisheries management, terrestrial protected areas, water governance, wildlife management, and forestry). For example, the lead author of this article used the general framework proposed here as the basis for a collaboration with several NGOs and government agencies to design governance objectives and principles for a system of marine reserves in the Gulf of California of Mexico (Bennett, Lasch-Thaler et al., 2017). While this process is still underway, one important lesson learned to date was that this is not meant to be a blueprint per se, but the framework can be usefully adapted and applied to the design of governance in different social and political contexts.

Second, since all policies should be seen as experiments that require continual monitoring and adaptation (Armitage et al., 2008), indicators have become an important part of learning and reflection. In this article, we stopped short of developing indicators for the different objectives and attributes. This is because the application of the framework for monitoring and evaluation of environmental governance will require adaptation to fit the objectives of different initiatives, calibration to the normative expectations of the setting, and the development of problem and scale-specific indicators. It is also important to ensure that the indicators developed address, as relevant, both: (1) the institutional, structural, and procedural elements of environmental governance and (2) the capacity (inputs), functioning (outputs), and performance (outcomes) associated with each governance attribute and objective (Hockings, Stolton, Leverington, Dudley, & Courrau, 2006; Lockwood, 2010). We recommend that indicators for evaluating environmental governance be developed in collaboration with stakeholders to ensure that they correspond with local norms and increase their legitimacy and salience (Hicks et al., 2016; Keeney & Gregory, 2005).

Third, there has been increasing attention to analyzing the impact of different attributes and elements of governance on social and ecological outcomes to develop generalizable lessons aimed at improving conservation in a variety of contexts (Ban et al., 2017; Cinner et al., 2016; Mascia et al., 2017). Additional efforts are needed to better understand these cause-effect relationships between governance and social and ecological performance (Biesbroek, Dupuis, & Wellstead, 2017; Plummer, Dzyundzyak et al., 2017). To move this body of research forward, there is a need to engage: (1) clearer conceptualizations of the difference between governance and management and (2) more comprehensive sets of features and indicators than might be drawn from a single area of governance theory. We hope that the framework we present here provides one such comprehensive reference set of objectives and attributes from which to draw in future research.

4 Conclusion

To conclude, we recognize the importance of governance in environmental management and conservation and reiterate the need for greater attention to understanding the myriad systems of environmental governance. The framework that we provide here might be applied to better understand environmental governance in different social contexts, for
diverse ecological issues and at a range of scales. Evaluations and deliberations guided by the framework might also support efforts to design and improve the capacity, functioning, and performance of environmental governance systems. However, we emphasize that there are no panaceas and there will inevitably be a continual process of learning and regeneration for any particular system of environmental governance. In presenting this framework, we hope to support such efforts – be that by governments, NGOs, private actors, local communities, researchers, or collaborative networks – to analyze, evaluate, and create more effective, equitable, responsive, and robust environmental governance.

ACKNOWLEDGMENTS

This research was supported in part by funding from the Social Sciences and Humanities Research Council of Canada (SSHRC IDG Grant No. 430-2014-00569 and SSHRC Insight Grant No. F12-04439). NJB acknowledges the support of the Liber Erro and Banting Postdoctoral Fellowship Programs, the Ocean Canada Partnership, and the Community Conservation Research Network. The authors would also like to acknowledge the substantial improvements that were made to the manuscript as a result of the thorough and professional comments provided by several anonymous reviewers.

ORCID

Nathan J. Bennett [ORCID] http://orcid.org/0000-0003-4852-3401

REFERENCES


---

**How to cite this article:** Bennett NJ, Satterfield T. Environmental governance: A practical framework to guide design, evaluation and analysis. *Conservation Letters*. 2018:e12600. [https://doi.org/10.1111/conl.12600](https://doi.org/10.1111/conl.12600)