

**Priority 4 Annotated:**

**To what degree, and how, are diverse people and their values represented in political and decision-making processes, how does this representation affect ecosystem recovery outcomes, and how are diverse people affected by these outcomes?**

\* = not local

- (1) Biedenweg, K., Harguth, H. and Stiles, K. (2017). The science and politics of human well-being: a case study in cocreating indicators for Puget Sound restoration. *Ecology and Society*. 22(3). <https://doi.org/10.5751/ES-09424-220311>

In this article, the authors' purpose is to identify concepts of human wellbeing that support diverse representation and participation across different communities and cultures within the Puget Sound. Biedenweg et al. suggest that current decision-making processes in the realm of ecosystem recovery only represent selective values and viewpoints as there is a trade-off between socially just and politically viable information (e.g., balancing transparency and trust with privacy). The authors report that human wellbeing indicators vary drastically between local stakeholders, Indigenous peoples, social scientists and decision-makers, supporting the need for diverse voices in the decision-making process. Biedenweg et al. also noted temporal differences in timelines between policy and social science priorities which can lead to barriers. While policy is often quickly enacted for immediate needs to the public, social science takes lengthy, in-depth study designs to ensure accuracy and careful analysis, suggesting that there may be a conflict in goals (e.g., swiftness versus widely supported outcomes). The data represented was collected via a three-year survey involving decision makers, social scientists, stakeholders and groups within the Puget Sound, in addition to interviews, workshops, literature reviews and indicator ranking exercises. This piece is relevant to priority four as it discusses the barriers to promoting diverse representation in environmental policy.

- (2) \*Burger, J. (2011). *Minority Participation in Environmental and Energy Decision Making in Stakeholders and scientists: Achieving implementable solutions to energy and environmental issues* (pp. 27-37). New York, New York: Springer.

Chapter 2 details the emergence of the modern environmental justice movement in legislature, the socio-demographic factors correlated with disproportionate minority exposure to environmental hazards, and the importance of minority involvement in the environmental decision-making process. Black Americans and minority or low-income communities are unjustifiably located closest in proximity to Toxic Release Inventory (TRI) facilities, typically within two miles of multiple stations, and facilities with highest operations risk are most often located in predominantly Black American-inhabited counties. The authors suggest that disempowerment of low-income, minority, and Indigenous voices in the decision-making process plays a major role in this relationship as well as housing/income constraints which lead to unfair allocation of resources and hazards among income levels. Major barriers to minority and Indigenous empowerment may include lack of trust through historical wrongs, lack of capacity for direct engagement (e.g., in academia), and religious and cultural barriers. Support for these claims is documented through cited literature and legislation. This article proves relevant to priority four as it details the environmental inequalities experiences by minority and low-income communities and how better representation in the decision-making process can empower healthier and safer futures.

- (3) \*Crowley, S., Fuller, D., Law, W., McKeon, D., Ramirez, J. J., Trujillo, K. A. and Widerman, E. (2004). Improving the climate in research and scientific training environments for members of underrepresented minorities. *Neuroscience and Society*. 10(1), 26-30. DOI: 10.1177/1073858403260304

In this article, Crowley et al. examine the underrepresentation of racial, ethnic (specifically Black Americans, and Hispanics), and Indigenous groups in science and academia, noting that little effort has been invested in improving institutional social climates which could improve both retention and recruitment. The authors suggest that a more diverse workforce can benefit the sciences both ethically and functionally through increasing diverse perspectives for the advancement of knowledge and promoting social environmental justice by eradicating

environmental health inequalities among different groups. Studies show that individuals from minority backgrounds perceive institutional climates as more biased and discriminatory than those from majority backgrounds who are often oblivious to these dynamics, fueling an “outsider” vs “insider” climate instead of a collaborative and inclusive community. The authors recommend promoting interaction and creativity among teams, using external trained consultants, encouraging community decision making, developing policies to ensure respect, assigning mentors, and providing opportunities to find common ground among all team members. A major limitation of this article is the lack of a methods summary, but it appears the basis for this article is literature reviews. This article is useful for priority four as addresses minority representation in environmental sciences and suggests ways to increase representation and diverse viewpoints.

- (4) \*Jones, P. J. S., Qui, W. and De Santo, E. M. (2013). Governing marine protected areas: social-ecological resilience through institutional diversity. *Marine Policy*. 41, 5-13.  
<http://dx.doi.org/10.1016/j.marpol.2012.12.026>

In this article, Jones et al. express the importance of institutional diversity when implementing Marine Protected Areas (MPAs) to support socio-ecological resilience. The authors elaborate that global anthropocentric driving forces in biodiversity loss (e.g., increasing development, enhanced human mobility, drive to increase standard of living, increased tourism, and expanding reach of wealthy populations) can also result in unequal distribution of benefits/costs of MPAs, as well as impacts to the human livelihoods. Jones et al. express that utilizing a diverse combination of incentives (economic, interpretive, knowledge, legal and participative), including increasing integration of Traditional Indigenous Knowledge systems in decision-making, promoting mutual respect, enhanced public communication and awareness, and promoting collective learning between various knowledge owners, leads to increased success of MPAs. The authors stress a strong need for equity of MPA benefits among local users which requires integration of diverse incentives and institutional participation in MPA planning. This data was compiled from twenty case studies across the world that employed different forms of governance in MPA planning. Limitations of the study include lack of locality, and lack of information on specific suggestions for implementation of knowledge and participative incentives. Despite

these drawbacks, this article proves useful to priority four as it describes current structures of civil representation in MPA planning.

- (5) \*King, J. (2021). The shades of participation: assessing the barriers to community participation in land-use decision-making processes that address environmental injustices for low-income communities of color (Masters Dissertation). Oregon State University, Corvallis, Oregon.

In this article, King explores how participation-related policies affect Black, Indigenous, and People of Color (BIPOC) involvement in the decision-making process and what influence this level of participation has on resulting environmental outcomes. The author asserts that despite the intentions behind President Clinton's 1990's Executive Order to address environmental inequalities, individual states design and implement their own policies and forms of assessment, therefore there is no universal enforceable legislation and therefore they often lack adequate funding and resources. King adds that while recent efforts have increased in Oregon to promote BIPOC participation, it stills lacks structural support at the community decision-making tier. Barriers to meaningful participation from the BIPOC community include technical language hurdles, lack of diverse representatives in decision-making positions, lack of trust or relationship, barriers to cultural inclusion (primarily white upper-class culture), and logistical challenges (e.g., lack of monetary compensation/funding, childcare requirements, inaccessible location, transportation challenges, etc.). Potential solutions include acknowledging past failures to address the needs of marginalized communities, making meetings more attainable (including compensation for time and travel), creating a welcoming atmosphere, and encompassing a larger diversity of participants in positions of power. King conducted semi-structured interviews with members of central environmental organizations in Portland, Oregon, in addition to collection and analysis of local and federal land use, environmental justice and decision-making literature. A major limitation of this study is the lack of study participants, with only five interviewees ultimately participating. This literature provides valuable insight into priority four as it addresses barriers to BIPOC engagement in the environmental decision-making process and strategies to encourage better representation and participation in the future.

- (6) Leach, W. D., Pelkey, N.W. and Sabatier, P. A. (2002). Stakeholder partnerships as collaborative policymaking: evaluation criteria applied to watershed management in California and Washington. *Journal of Policy Analysis and Management*. 21(4), 645-670. <https://doi.org/10.1002/pam.10079>

Leach et al. describe how in recent years stakeholders have become a much larger part of the policymaking and implementation process in the U.S. and discuss how stakeholders in Washington and California interpret these partnerships as mostly beneficial, while occasionally disadvantageous, towards goals. The authors summarize that while the majority of stakeholders agree that these partnerships have helped achieve powerful results at a local or regional scale, many also feel that this comes at the cost of property rights, regulations or economic drawbacks. The authors suggest that the age of the partnership plays a major role in the effectiveness of restoration projects and perceptions of achievements- with most partnerships being a minimum of two years (but typically between four to six years) old before being able to reach sustainable agreements, obtain financing and begin executing plans. The overwhelming majority of participants strongly felt that no one stakeholder or stakeholder group was actively excluded from meetings, but that not all were actively encouraged to participate, despite the majority (93%) utilizing consensus-based decision-making. Leach et al. add that challenges arise in meetings due to the diverse number of participants (including lay people and scientists or experts) which can cause communication challenges (due to vocabulary use and the role of science in management), adding that in regions of lower income and education, this can further widen the rift. The data analyzed was collected between 1999 and 2000 during a case study of 44 watershed partnerships across Washington and California which were randomly sampled, and key participants interviewed and surveyed. Primary limitations of the study include the age of the data (over 20 years old), and lack of pre- and post-project monitoring data to analyze impacts of stakeholder involvement on environmental conditions. This study proves relevant to priority four as it discusses stakeholder diversity and involvement in environmental decision-making and addresses potential barriers to successful communication and inclusion.

- (7) Lemieux, C. J., Groulx, M. W. and Beechey, T. J. (2018). Evidence-based decision-making in Canada's protected areas organizations: implications for management effectiveness. *Facets*. 3(1). <https://doi.org/10.1139/facets-2017-0107>

This article examines how and to what extent Canada incorporates collective evidence (in the form of peer-reviewed literature, Indigenous Knowledge, and grey literature) into the decision-making process for protected areas organizations. The authors maintain that various forms of evidence are utilized in the decision-making process by managers but internal information (derived from the manager's organizations and staff, such as staff assessments and legislation) are prioritized over and valued above other types of evidence. Indigenous Knowledge was identified as the least utilized of the forms (reported as "never used" 80% of the time, or "occasionally used" 71% of the time), with women regarding the value of Indigenous knowledge much higher than men. The largest perceived barriers to incorporating different forms of evidence were reported as insufficient funds (79%), time constraints (73%), limited staff (71%), absence of monitoring programs (70%), and a divide between decision-makers and researchers (65%). The authors conclude that that protected areas management lacks a culture of diversity and depth to information procurement, facing many institutional barriers in addition to a science-policy disconnect among stakeholders and shortcomings of academic rigor. Lemieux et al. conducted a national web-based survey of protected areas managers as well as an in-depth literature review of over 30 publications. It is worth noting that the majority of the survey respondents were male (55%) with most holding educational backgrounds in the natural sciences (65%; under 12% in social sciences, and under 4% in humanities). This article proves relevant to priority four as it discusses the current knowledge systems and values represented in Canadian environmental decision-making, as well as the institutional barriers to increasing diverse representation.

- (8) \*Olsen, V. B. K., Galloway, G. E. and Matthias, R. (2018). The Demographics of Public Participation Access When Communicating Environmental Risk. *Human Ecology Review*. 24(1), 115-136. <https://doi.org/10.22459/HER.24.01.2018.06>

This article examines the diversity of representation in regional environmental planning meetings (specifically flood risk due to climate change), reporting that the majority of attendants (and thus

voices represented) were affluent, educated, English-only speaking, older homeowners, representing a mismatch with United States Census Bureau demographic reports. Olsen et al. suggest that this lack of participation from poor or minority communities is the result of lack of trust in the government, language barriers (English-only brochures, pamphlets, announcements, and absence of translators), cultural norms, and limited funds to allocate towards risk reduction measures. Lower income households may also face barriers including lack of access to childcare/elder care, less flexibility in work hours, as well as social barriers, while women are more likely to be the primary caregivers, have lower education and have a lack of flexibility in their work schedules; similarly, older individuals are more likely to have health conditions and higher distrust of strangers, which may prevent them from attending. Renters are also largely absent from these meetings as they may believe the responsibility lies with landlords. The authors express that future outreach efforts should be adapted to target lower-income earners, renters, non-English speakers, and younger adults. The data was collected through US Federal Emergency Management Agency-endorsed community meetings in the mid-Atlantic region of the US, with 10 of 71 communities randomly selected for analysis, and compared with US Census Bureau information through univariate and multivariate analyses. A major limitation of this literature is that it lacks geographic relevance, with data collected on the East Coast. However, the information provided still proves relevant to priority four as it provides insight on who (demographically) is attending climate change risk planning meetings and potential solutions for improving their participation.

- (9) \*Pearson, A. R., Schuldt, J. P., Romero-Canyas, R., Ballew, M. T. and Larson-Konar, D. (2018). Diverse segments of the US public underestimate the environmental concerns of minority and low-income Americans. *Proceedings of the National Academy of Sciences of the United States of America*. 115(49), 12429-12434.

<https://doi.org/10.1073/pnas.1804698115>

This article examines the misperceptions of the general U.S. public on low-income and non-white Americans' levels of environmental concern, suggesting that cultural stereotypes may be the driving force behind the false belief that the most vulnerable groups to environmental impacts are also the most unconcerned with climate change and environmental health. The

authors suggest that by miscalculating the awareness of these key groups, minorities continue to be hindered in their ability to address environmental inequalities through participation and prioritization in policy making, while simultaneously widening social divides which decreases public desire to contribute. Pearson et al. point out that while surveys reveal strong levels of awareness and support for environmental protections, ethnic and racial minorities are largely underrepresented in decision-making parties in both governmental and non-governmental environmental agencies, constituting just 12% of staff in the U.S. despite accounting for 40% of the population. As the U.S. continues to increase in diversity, it is important that environmental policies are inclusive and just to underrepresented and disproportionately affected groups. Data was collected via a 2016 online national survey of 1,212 randomly selected U.S. adults. The authors note that some limitations of the study include a focus on attitudinal norms with little attention to prescriptive or behavioral norms, and ethnic/racial groups were limited to the four largest US census categories in order to optimize statistical analysis. Additionally, all factors that affect attitudinal norms were not studied, thus the results may be skewed by outside aspects. This literature is relevant to priority four as it addresses whose knowledge systems are prioritized in environmental planning through both formal and informal avenues, and how diverse values could better be represented.

- (10) Wellman, K. F., Biedenweg, K. and Wolf, K. (2014). Social sciences in Puget Sound recovery. *Coastal Management*. 42(4), 298-307. DOI: 10.1080/08920753.2014.923129

In this article, the authors stress the importance of considering socio-ecological interactions in ecosystem recovery policy with focus on three primary themes. The themes are as follows: (1) Human actions affect the environment through both negative and positive changes; (2) Puget Sound ecosystem services benefit human wellbeing both directly (spiritually, recreationally, culturally) and economically; and (3) Sense of place provides an influential attachment between people and the Puget Sound landscape. These concepts emphasize the importance of involving diverse stakeholders and groups in ecosystem management to ensure that a variety of values and perspectives are considered in managing human interactions with the environment. Wellman et

al. suggest that a social-science focused approach is central to comprehending humans complicated and heterogeneous relationships with socio-ecological systems and improving both ecosystem functioning as well as human wellbeing. The bulk of supporting evidence for this paper is the result of a workshop implemented by the Social Science Subcommittee of Puget Sound Partnership in 2011, in which individuals in the social science community were invited to contribute to the discussion on social science research needs. This article proves relevant to priority four as it stresses the importance of incorporating diverse perspectives and values in the environmental decision-making process.