Governance of Marine Protected Areas: Integrating the Human Dimension into Management and Implementation

Introduction

This policy brief explores how the human dimension can be integrated into the governance and management of Marine Protected Areas (MPAs) to minimize the social implications of ineffective and inequitable MPA establishment. The human dimension in conservation may be defined as the sum total of people's knowledge, values, actions, and behaviors that influence and are affected by decisions around conservation and management of natural resources. MPAs display unique characteristics due to their interaction with social-economic-political factors across different contexts and communities, challenging the stereotypic "one size fits all" solution. However, many MPAs continue to be established with little consideration for the human dimension, such as values, visions, lifestyles, cultural heritage, local ecological knowledge, local economies, governance systems, etc., which may significantly impact their implementation. Incorporating this dimension can lead to the social acceptance of marine conservation initiatives through an adaptive and flexible approach to governance. By understanding the objectives of the MPA, stakeholders involved, tradeoffs, and structural factors, an effective governance approach that combines top-down and bottom-up strategies can be developed to ensure social equity in policies around marine conservation.

This policy brief focuses on the principles and approaches of MPA governance with guidelines for the consideration and incorporation of the human dimension into MPA management and implementation, particularly in the context of local communities directly dependent on the marine environment and its natural resources.

Background

The International Union for Conservation of Nature (IUCN) defines a Marine Protected Area (MPA) as a "clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve long term conservation of nature with associated ecosystem services and cultural values (IUCN, 2008)." Marine Protected Areas (MPAs) have gained global attention as an important policy tool in conservation intended to protect and restore biodiversity while improving human welfare through economic opportunity and poverty alleviation. International organizations such as the Convention on Biological Diversity (CBD) had set a global target to conserve 10% of global oceans, including coastal and marine ecosystems, through effective and equitably managed systems of MPAs by 2020 (McNeill, 2018). In efforts to meet this target, countries such as the United Kingdom, France, and the United States have scaled-up development of large MPAs and MPA networks covering areas larger than 100,000km^2 with ten such sites declared since 2004 (Richmond & Kotowicz, 2015). However, the target remained unmet in 2020, and the percentage of global oceans managed by MPAs currently stands at 6.35%. Despite this, calls are increasing for the more ambitious target of effectively protecting at least 30% of the ocean by 2030 (Grorud-Colvert, 2021).

The rapid proliferation of MPAs worldwide is due to their ability to provide ecological and socio-economic benefits by making the case the biodiversity conservation is compatible with sustainable economic development (Chaigneau & Brown, 2016). However, only MPAs that maximize "no-take" zones (zones that do not permit the removal or extraction of any resource) have shown to maximize ecological success. MPAs are complex socio-ecological systems where society and the marine environment interact; hence establishing no-take zones, does to some, disregard the human dimension of conservation. Numerous studies indicate the strong correlation between the human dimension and the ecological performance of MPAs. Hence, institutional, organizational, and social factors such as governance, capacity, human and financial resources, capital, enforcement, local livelihood, values, interests, and perceptions determine the overall success of management, implementation, and increased consideration of the human dimension to sustainable environmental management (Di Franco, 2020).

The political pressure to meet global protection targets and potential of MPAs to meet conservation targets creates a false panacea; a "one size fits all approach" built on the assumption of political-social-economic-environmental sustainability that does not always transform into reality ("paper parks") with critical management issues (Rossiter & Levine, 2014). These conservation initiatives undermine the potential for long-term sustainability in two ways. First, the focus on global percentage targets may weaken the science-policy interface of environmental decision-making by prioritizing political and economic incentives over ecological and social networks of MPAs. Second, the designation of larger MPAs with no-take zones may lead to social injustices of environmental conservation undermining local perspectives, cultural attributes, and value associated with marine environments leading to future opposition to their designation (De Santo, 2013).

This policy brief aims to highlight the increasing need to incorporate human dimension into MPA governance and management in improving acceptance of MPA by local communities by 1) addressing the current governance intervention approaches; 2) examining the impacts of such intervention on socio-ecological well-being; 3) and providing recommendations to improve local acceptance of MPAs through social equity.

The Vision of Governance: MPAs as Governing Systems
The primary objectives or visions for implementing MPAs are often stated in ecological terms – "The goal of marine reserves is to ensure the persistence of the full range of marine biodiversity – from gene pools to populations, to species to whole systems (Lubchenco et al., 2003). To include the human dimension as part of the marine ecosystem, a broader definition of socio-economic-political objectives regarding the impact on human communities would benefit the MPA vision and, subsequently, governance. The socio-ecological success of MPAs should also consider humans across different societal levels when considering visions for the design and implementation of protected areas (Jentoft, 2007). Pursuit of one goal can have consequences for other goals which fall under a broad range of categories from local versus commercial economic resource use, geopolitical through legal ramifications or navigation by nature, technical considerations such as size, density, and boundaries, and ecological/scientific protection and restoration, etc.

The vision for marine conservation through MPAs can be categorized broadly as social, economic, cultural, political, and institutional objectives (Sowman, 2014). These objectives of MPAs below aid the foundation of MPA governance frameworks which will be discussed in the following section.

*Figure 1: Primary objectives or visions of MPA governance and implementation by stakeholders.*
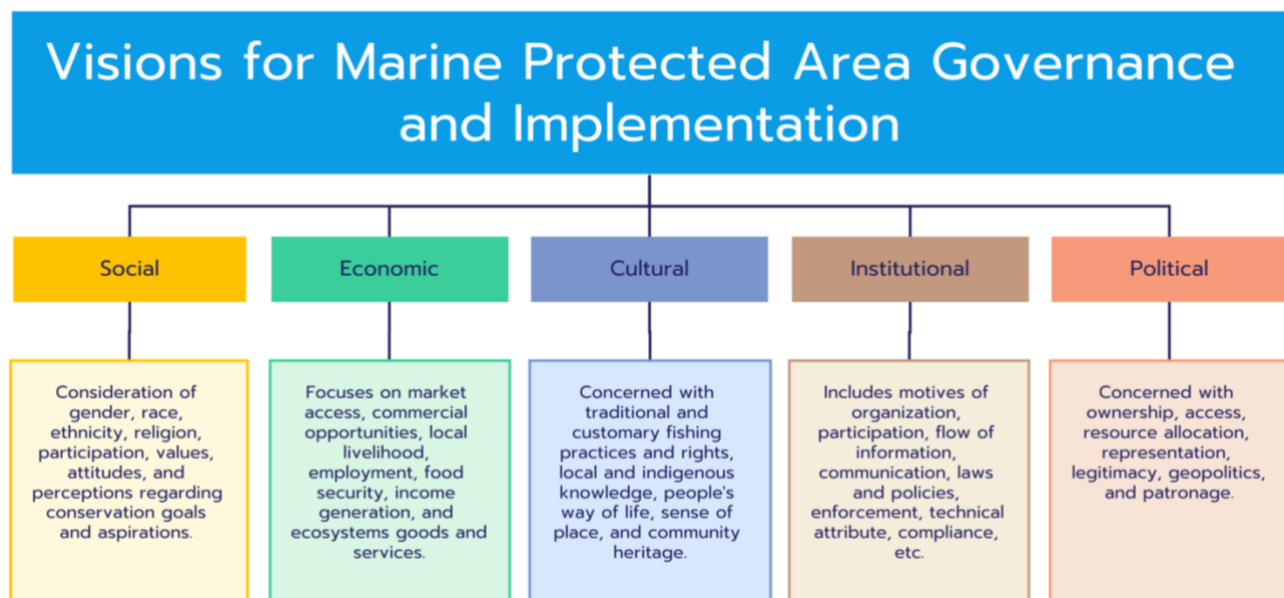
Governance of Marine Protected Areas and its Implications for Management

Governance Approaches
Governance can be defined as a continuous process that sets the groundwork for management of human behavior through negotiations, partnerships, and economic influences involving a wide range of institutions and actors in producing policy outcomes. For MPAs, "the ecological, economic, and social benefits of protected area can only be enhanced and sustained when they are effectively managed through good governance (Mulongoy & Gidda, 2008 in Day, 2015)". An effective and equitable governance of MPAs is inclusive and promotes a sense of stewardship by engaging local communities, focusing on social and economic benefits alongside ecological success (Jones, 2019). The complex socio-ecological relationship associated with MPAs requires a governance framework that adapts to changes within the MPA itself. To create such a framework, there must be an understanding of the activities that take place within the MPA and the environment surrounding relative to its impact on the objectives that have been set. Key elements that enable governance approaches are the objectives (or visions) in place for the MPA, the impacts resulting from human behavior, and the driving forces of human behavior that lead to conflict in MPA governance and management.

Figure 2: *Elements of Governance Approaches (Jones, 2019).*
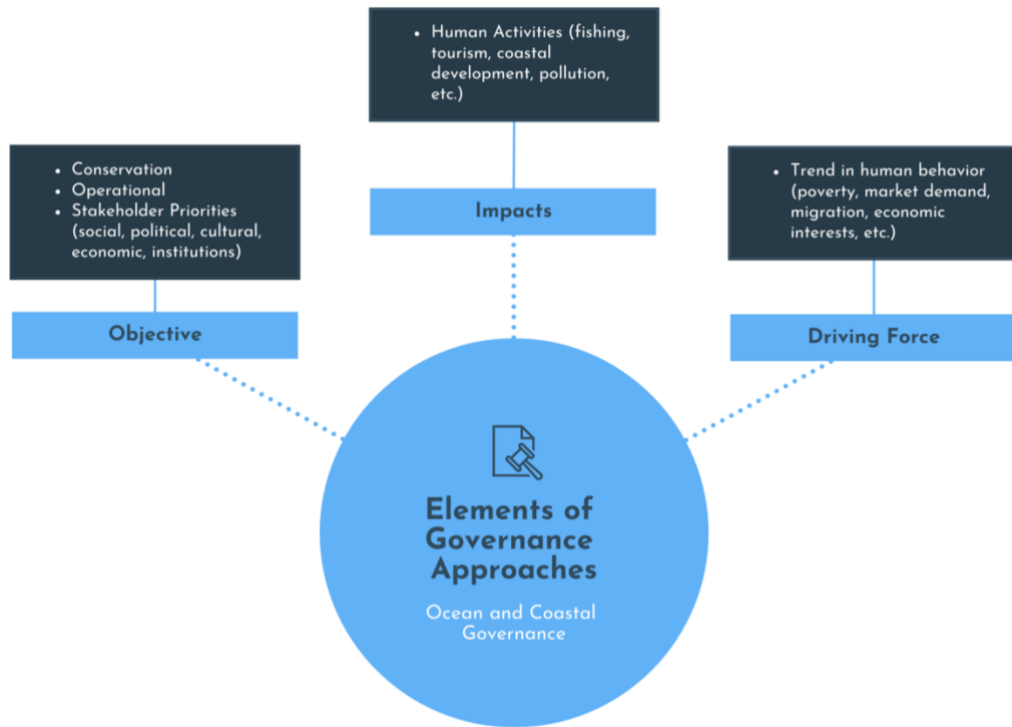
The context of MPA governance can be framed at the global level through international conventions, regional level through coordination between neighboring countries, at the national level through government legislation, and at the local level through NGO-driven motivations. Within these contexts, approaches may vary from state-level laws and regulations, market-based initiatives, and community involvement to promote biodiversity conservation, recognize the economic value of biodiversity, and enhance collaboration.
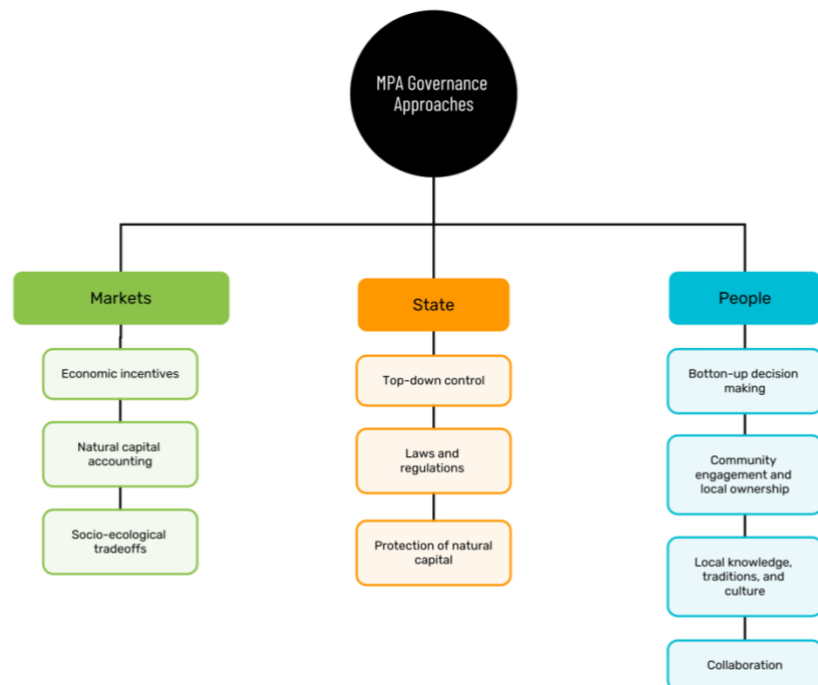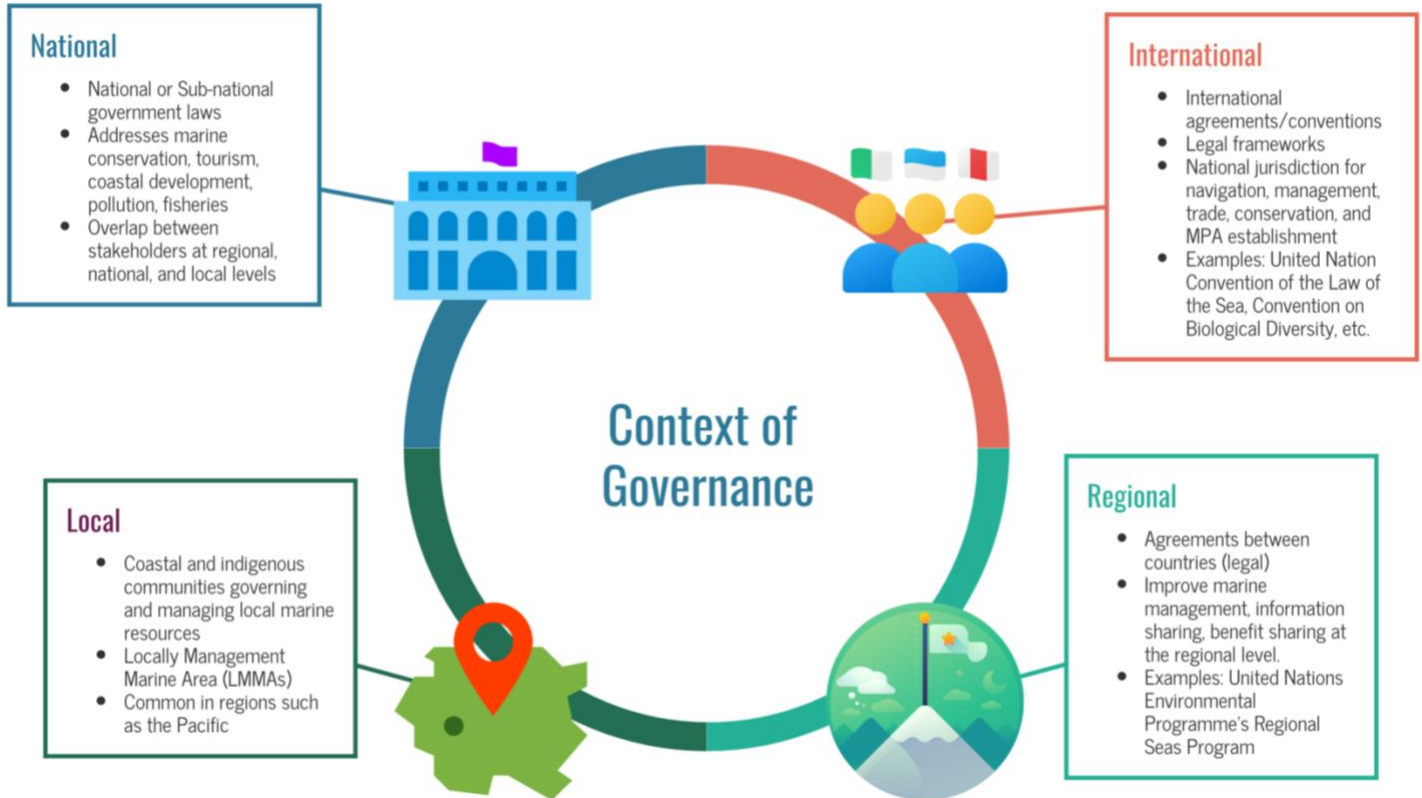
Figure 3: *Approaches to MPA Governance (Jones, 2019).*

Figure 4: *Context of Marine Protected Area Governance (Day, 2015).*

National
- National or Sub-national government laws
- Addresses marine conservation, tourism, coastal development, pollution, fisheries
- Overlap between stakeholders at regional, national, and local levels

International
- International agreements/conventions
- Legal frameworks
- National jurisdiction for navigation, management, trade, conservation, and MPA establishment
- Examples: United Nation Convention of the Law of the Sea, Convention on Biological Diversity, etc.

Local
- Coastal and indigenous communities governing and managing local marine resources
- Locally Management Marine Area (LMMAs)
- Common in regions such as the Pacific

Regional
- Agreements between countries (legal)
- Improve marine management, information sharing, benefit sharing at the regional level.
- Examples: United Nations Environmental Programme's Regional Seas Program

Context of Governance

Management of Marine Protected Areas

Management forms part of governance and represents the official decisions in establishing and implementing the MPAs and its objectives. These include management plans, management groups, and regulations (Jones, 2019). Management approaches under governance make use of technical and legislative tools to regulate access, control, and mitigate impacts associated with human interaction in the environment of MPAs or address environmental pressures (such as climate change and related impacts on biodiversity). Similar to governance, the management process is continuous, interactive, adaptive, and participatory to meet the set of objectives associated with MPA implementation (Day, 2015). The type of governance framework applied has implications for the management of MPAs and its ability to achieve conservation, social, and economic objectives. Often, this occurs through incentives associated with a particular type of governance employed designed to encourage people to behave in a way that supports the achievement of specific strategic policy objectives (Jones, 2019).

Governance and its Implications for Management

Historically, the governance and management of MPAs have been fragmented and tailored to suit perspectives and needs in the short term rather than embodying the holistic nature of socio-ecological relationships used to ensure long-term conservation and sustainability (Day, 2015). MPA governance by Jones (2019) has identified five broad types of governance associated with MPAs. Each contains varying levels of government, community, and private sector involvement, consequently impacting management through differences in implementation and enforcement. The five types of MPA governance are as follows:

Figure 5: *Types of MPA Governance.*
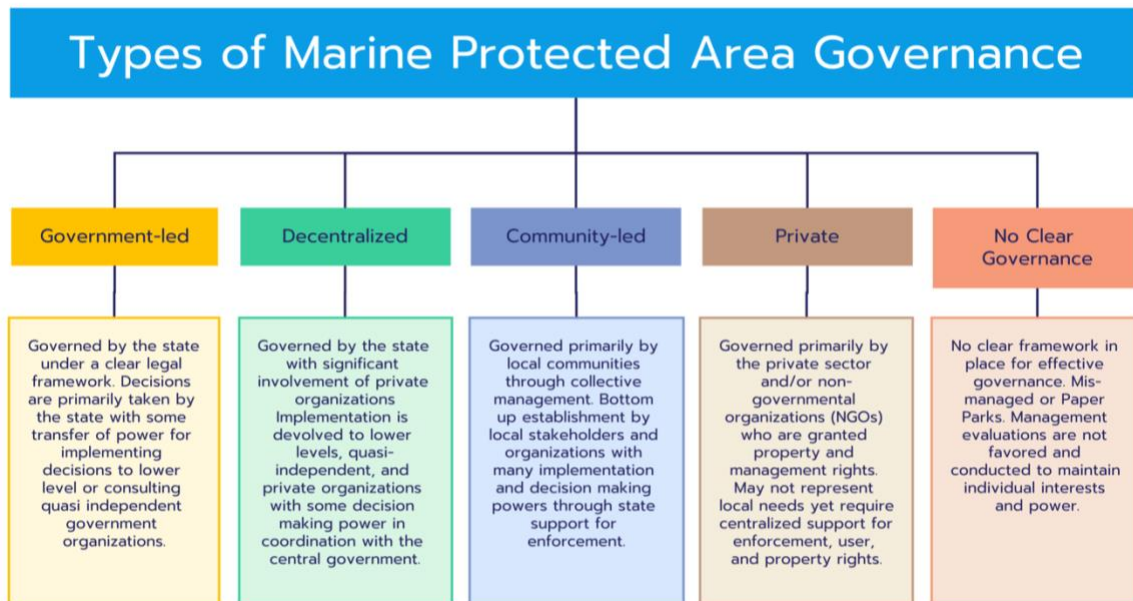
The types of governance associated with a particular MPA aim to achieve their objectives by imposing incentives that steer human behavior through a combination of state, market, and people approaches. An incentive is a particular governance approach designed to encourage people to behave in a way that supports the achievement of certain strategic policy outcomes (Jones, 2019). The incentives implemented to build the foundation of governance enable state, market, and people approaches (individual or combined).

Table 1: *Governance Incentives to achieve MPA objectives (Jones, 2019).*

Category	Description	Incentive	Governance Approaches
Economic	Achieve MPA objectives through economic and property rights	Examples: Payments for ecosystem services; property rights; reducing leakage of benefits; profitable and sustainable fisheries and tourism; green marketing; alternate livelihood; compensation; investment in MPA income; state funding; NGO, private sector, user fee funding	Markets
Communication	Promote conservation awareness, evaluative measures, and benefits associated with MPAs	Examples: Raising awareness; promote recognition of benefits; recognition of regulations and restrictions	Supports all three approaches
Knowledge	Respect and promote different sources of knowledge for decision making in MPAs	Examples: Collective learning; addressing uncertainty; advice and arbitration	Supports all three approaches
Legal	Enforcement of laws and regulations to promote MPA objectives	Examples: Hierarchal; capacity for enforcement; penalties; protection; conditional; cross-jurisdictional; legal definitions; jurisdictional limitations; transparency, accountability, fairness	State
Participation	Involvement of users, communities, and interest groups to participate and influence MPA decision making and implementation of decisions	Examples: Collaborative platform; facilitation; decentralized responsibilities; peer enforcement; trust building and cooperation; enhancing relationships; local customs; potential to influence higher institutional levels	People

Implications for Management

The competing rationalities of stakeholders and actors involved in MPA establishment can lead to the preference of one type of governance and subsequent implications for its management that ensures varying degrees of ecological, economic, and social benefits. The outcome of governance approaches is measured in the following table across variables of biodiversity, management, knowledge, policies, design, involvement, enforcement, and human activities adapted from Halik et al., 2018.

Table 2: Type of MPA Governance and Implications for Management (Halik, 2018).

Variable	Government-led	Decentralized	Community-led	Private	No-clear governance
Biodiversity	Ecosystem stability; scarce yet manageable; needs are given so supply had to be managed	Ecosystem stability; scarce yet manageable; demand problem as needs can be decreased	Source of human well-being; depleted and unmanageable; demand problem	Entrepreneur; abundant and manageable; demand is economically driven, and scarcity is a market problem	Personal power: ecological status is unknown; scarcity is an individual problem
Management	Regulatory with some implementation decisions transferred; controlled by central government; improvement of functional and global standards	Regulatory in coordination with local levels and private organizations; improvement of local and global standards	Preventative; community-based management to ensure sustainability and social equality	Private arrangement; exploitable; economic growth and individual liberty	Gain at the expense of others; the focus is to maintain or expand power
Types of Knowledge	Western science preferred	Western science with some incorporation of traditional ecological knowledge (TEK)	TEK preferred	Knowledge sources for efficiency	No preference
Policies	Focus on ecosystem functioning; short term and long-term benefits	Focus on ecosystem functioning; community; short term/long-term benefits	Focus on community and insurance of long-term benefits	Ecosystem benefits	Personal benefit
Design	Expert knowledge; government decisions; large-scale relative to anticipation for future stressors	Expert knowledge and participatory; large or small scale for anticipation and mitigation of future stressors	Group and participatory decisions; small scale relative to mitigation and adaptation	Entrepreneur/individual decisions; efficient design for adaptation	Secretive (politics/lobbying); opportunistic
Involvement	Stratified (hierarchal) with imposed compliance	Stratified with active involvement of community, imposed and self-compliance	Active involvement of local community; self-compliance	Compliance through market systems	No involvement; forced compliance because of rivalry
Enforcement	Required; government officers; high-tech	Government officers; voluntary by communities; mixed methods	Voluntary by communities; low tech, traditional	Based on necessity; costs driven	Required only to control rival; restoration only when beneficial
Activities	Limitations decided by experts; industrial activities recommended with strict regulations	Limitations decided by experts with community input; some industrial activity with local input on regulation	Limitations and regulations agreed by community; no impact by industrial activities	Restrictions desirable if cost-effective	Restrictions imposed on others; preferred for personal benefits

Social Impacts of Marine Protected Area Governance

Acknowledging the dynamic nature of the marine environment and its relationship with society is central in ensuring the socio-ecological success of marine protected areas. West et al. (2006) caution against the simplistic assessments that condense "rich and nuanced social interactions to a few easily conveyable and representable issues or topics." The scalability of MPAs based on global expert frameworks often cannot satisfy local implementation indicators, which may vary on a contextual basis. Hence, in addition to ensuring ecosystem stability and functioning, it is imperative to improve the social acceptance of MPAs and reduce conflict to demonstrate the instrumental and ethical implications of MPA implementation and ensure equitable outcomes (Gruby, 2017). Numerous studies illustrate the social impacts of MPAs across livelihood benefits, opportunity costs for local and small-scale fishers, social injustices, etc., which encompass direct or indirect effects alongside unintended consequences that may be experienced at the level of social organization (Vanclay 2002). This results in short-term benefits of environmental protection at the expense of long-term sustainability of community well-being and their environment.

Figure 6 depicts a conceptual framework of domains that encompass community well-being (This policy brief uses the term "well-being" to capture the complexity of social impacts that extend beyond economic and political issues into matters of culture, identity, and community). Table 3 aims to show domains of community well-being impacted by the establishment of MPAs that fail to account for local social factors (Preliminary list of well-known social impacts adapted from Sowman, 2018; impacts may vary by type, scale, and degree based on underlying socio-political-economic conditions between regions).

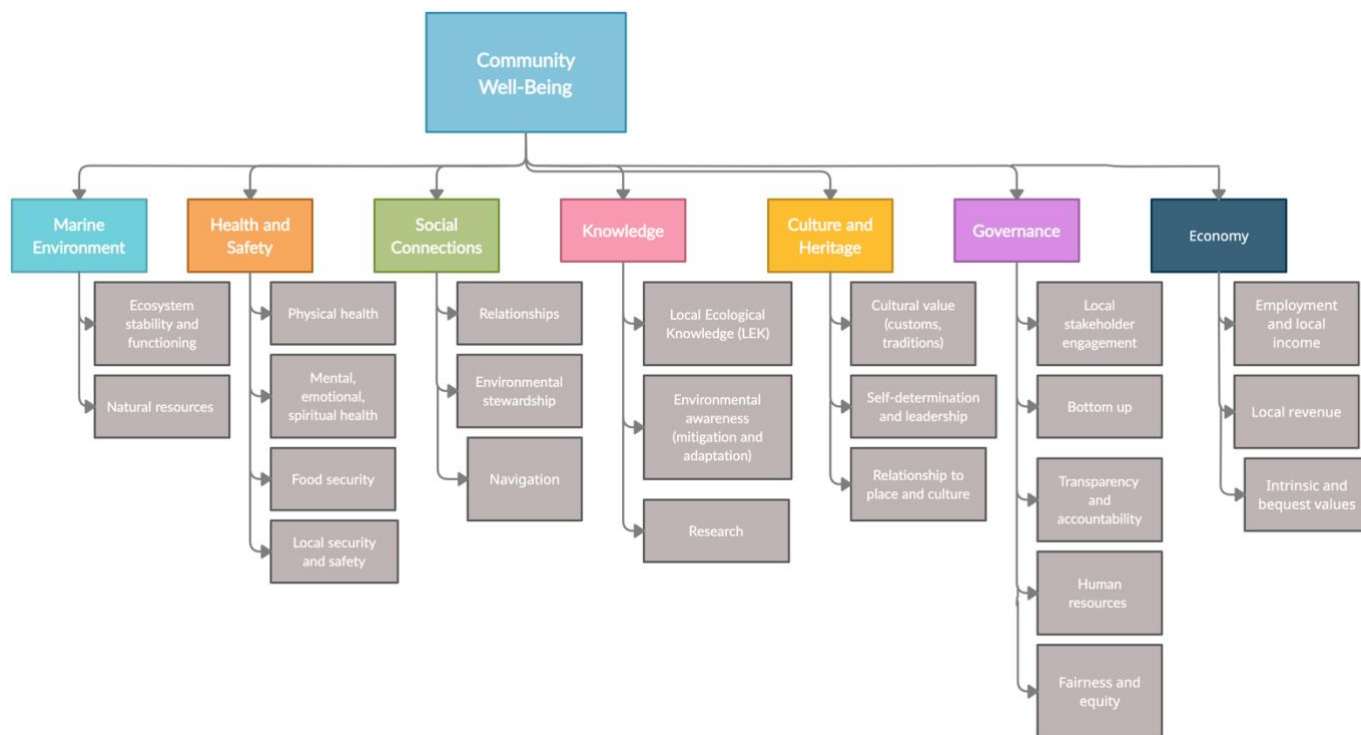*Figure 6:* Domains of Community Well-Being (Gollan, 2020).

Table 3: Matrix of Community Well-Being Impacts as a result of Social Implications of MPA implementation (Sowman, 2018).

Impacts	Marine Environment	Health and Safety	Social Connections	Knowledge	Culture	Governance	Economy
Displacement (forced or induced)		■	■	■	■	■	■
New regulations	■	■	■	■	■	■	■
Loss of access to resources	■	■	■		■	■	■
Psychological		■	■		■		■
Social structure			■	■	■	■	
Wealth gap		■	■			■	■

	1	2	3	4	5	6	7
Loss of income/employment		✓					✓
Loss of tenure rights	✓		✓		✓	✓	✓
Conflict between communities and authorities	✓	✓	✓		✓	✓	✓
Unfair arrests, fines, and jail time		✓	✓			✓	✓
Physical abuse		✓					
Distributive injustice	✓	✓	✓	✓	✓	✓	✓
Erosion of local governance systems	✓	✓	✓	✓	✓	✓	✓
Local practices criminalized	✓	✓	✓	✓	✓	✓	✓
Participation undermined			✓	✓	✓	✓	
LEK weakened	✓		✓	✓	✓		
Food security	✓	✓	✓		✓		✓
Exacerbation of poverty/social inequalities		✓	✓	✓	✓	✓	✓
Gender gap/ increased burden on women		✓	✓	✓	✓	✓	✓
Impact on lifestyle	✓	✓	✓	✓	✓	✓	✓
Impact on sense of place	✓	✓	✓	✓		✓	
Community cohesion undermined		✓	✓		✓	✓	
Identity fragmented	✓	✓	✓	✓	✓	✓	✓
Changes in power dynamics		✓	✓		✓	✓	
Increased competition over scarce resources	✓	✓	✓		✓		✓

Recommendations: Social Equity in Marine Conservation
Generally, social equity is concerned with fairness and justice in how people are treated or how public policies are formulated and implemented (Bennett et al., 2021). Today, this draws from elements of environmental and social justice covering four aspects of equity that need to be addressed in conservation – recognitional, procedural, distributional, and contextual. Although studies address some aspects through various conservation frameworks, they fail to account for local leadership in conservation (Bennett et al., 2021). There is a need to differentiate governance as the policies, institutions, and processes that determine who participates in decisions and how decisions are made from the application of governance (Bennett et al., 2021). The interconnected relationship between environmental sustainability and human well-being emphasizes the need for ecological quality, the efficacy of conservation actions, and management to be integrated as foundational aspects of social equity frameworks. Thus, the recommendations suggested below hope to advance social equity and human integration in marine conservation through six core factors– recognition, procedures, distribution, management, environment, and contextual or structural factors (Bennett et al., 2021).

Figure 7: *Components of Social Equity.*

Table 4: *Considerations to Improve Social Equity in MPA Management.*

Social Equity Component	Considerations
Recognition	▪ Understanding social context ▪ Recognition of stakeholders and rights ▪ Respect for customary rights, tenure, oral histories, cultural traditions to the local environment (Bennett et al., 2021) ▪ Incorporation of cultural institutions, practices, and knowledge systems ▪ Integration of worldviews, perspectives, and needs of diverse and marginalized groups (including gender, ethnicities, classes etc.) (Bennett et al., 2021) ▪ Affirmation of sovereignty, autonomy, and the right to self-determination (Bennett et al., 2021) ▪ Protection of human and indigenous rights
Procedures	▪ Inclusive and participatory decision making ▪ Local capacity to engage and lead decision-making processes ▪ Transparency of information, decisions, intentions ▪ Consent of the local community ▪ Mechanisms for accountability ▪ Account for scale and location (top-down and bottom-up processes)
Distribution	▪ Account for short term and long-term benefits across different aspects of well being ▪ Mitigate and manage social impacts to maximize benefits and reduce burden on disadvantaged groups (distributive costs and benefits) (Bennett et al., 2021) ▪ Sustainable and guaranteed livelihood alternatives or compensations ▪ Develop local capacity
Management	▪ Active local participation in management ▪ Local ownership ▪ Sustainable financial mechanisms to support local activities
Environment	▪ Management that ensures environmental sustainability, health, and the productivity of resources (Bennett et al., 2021) ▪ Adequacy and effectiveness of management

	▪ Benefit-sharing		
Context	▪ Account for broader contextual or structural factors ▪ Effects of economic supply-demand ▪ Governance frameworks or political factors to achieve recognitional, procedural, and management equity ▪ Acknowledge whether conservations organizations/institutions are enabling or undermining equitable conservation		

Concluding Remarks

MPA governance must engage critically with geographies, historical, and political ecologies of conservation. Management and implementation of MPAs can thrive holistically only when they are accepted by the communities they impact. This calls for an imperative change in the ways conservation policies are formulated. The social implications that prevail due to the "one size fits all" model of MPA governance, and implementation is receiving greater attention in scholarly and policy today. MPAs can be an effective conservation and fisheries management tool only when dynamic factors associated with the human dimension are integrated into planning and management. An equitable approach to conservation requires recognizing human rights and socio-economic needs within the ecological context of conservation alongside planning and policy decision-making processes. It is imperative to note that management and governance within the marine environment are complex. Long-term sustainability requires active participation and cooperation between stakeholders across various social-economic-political structures that address local, regional, national, and international needs. Knowledge sharing between external agencies and community beneficiaries is pivotal to governance effectiveness and building cohesive relationships by incorporating both evidence-based and evidence-informed insight into decision making.

Governance that incorporates all three approaches (state, market, and people), a mixture of bottom-up and top-down initiatives, through associated factors of political will, community engagement, human and financial capital and support, legislation, monitoring, and enforcement will generate the most effective and equitable form of governance and management of MPAs. This will require partnerships between governments, NGOs, communities, and other stakeholders to ensure productive MPA management by equalizing power, authority, responsibility, and leadership (Bennett et al., 2021). Today, tools and methods of social scientists are valuable in understanding local engagement and contexts, which can benefit scientists and policy decision-makers in their conservation efforts to ensure that MPA establishment satisfies the local socio-cultural context by accounting for contextualized indicators. The socio-ecological relationship in marine environments creates conservation trade-offs. Hence decision-making that recognizes these tradeoffs can help ensure mechanisms in place are effective, equitable, and socially acceptable (Bennett et al., 2021). Marine conservation that fails to recognize the human dimension further re-enforce systems of colonial and structural racism that lead to marginalization and human rights abuses. Hence, conservation should aim to assure sovereignty and autonomy through a flexible and adaptable governance structure that pursues management with humility and respect for local communities.

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