

RESEARCH ARTICLE



Practitioner approaches to trade-off decision-making in marine conservation development

M. Fortnam¹ | T. Chaigneau¹ | L. Evans² | L. Bastian^{1,3}

¹Environment and Sustainability Institute, University of Exeter, Cornwall, UK

²Geography, University of Exeter, Exeter, UK

³Ocean Visions, Atlanta, Georgia, USA

Correspondence

M. Fortnam

Email: m.fortnam@exeter.ac.uk

Funding information

Global Challenges Research Fund, Grant/Award Number: NE/P021107/1

Handling Editor: Ian Thornhill

Abstract

1. Mounting evidence suggests that win-wins are elusive and trade-offs are the norm in marine conservation development practice. The status quo involves trade-offs, and any change brought to ecosystems, economies and societies will alter the distribution of costs and benefits, creating other winners and losers among ecosystem services, sectors and people.
2. While studies are increasingly acknowledging the prevalence of trade-offs, this article analyses how practitioners working for conservation development agencies consider, facilitate and make trade-off decisions a priori and post hoc when designing and implementing marine conservation development programmes in Southeast Asia.
3. We find that these practitioners recognize both substantive trade-offs, which are diverse social and ecological trade-offs resulting from their programmes, and process trade-offs, related to how they design programmes, including between their prioritization of different locations; between strategic relationships; and between the efficacy, equity and sustainability of projects.
4. Existing decision support tools only capture a limited range of substantive (mainly ecological) trade-offs, however, and are not widely used. Typically, social trade-offs are not systematically assessed. Instead, they are implicitly identified by participants and beneficiaries voicing their concerns during consultation processes.
5. Importantly, whether a trade-off is then deemed acceptable is not determined through transparent assessment of trade-offs and principles of equity or justice but by the uneven political power of stakeholders to project their values in decision-making processes.
6. The article concludes that practitioners should facilitate inclusive, transparent and systematic identification and deliberation of the social acceptability of multidimensional trade-offs, and formulate response options to avoid or minimize adverse consequences. Tackling trade-offs in this way has the potential to make invisible trade-offs visible and improve the sustainability and legitimacy of marine conservation development programmes while promoting the interests of the most marginalized in efforts to achieve the sustainable development goals.

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2023 The Authors. *People and Nature* published by John Wiley & Sons Ltd on behalf of British Ecological Society.

KEYWORDS

conservation development, decision-making, justice, marine governance, trade-offs

1 | INTRODUCTION

Conservation development practice posits that improved ecological management generates improved outcomes for people (Adams et al., 2004; Senko et al., 2011; Wieland et al., 2016). This win-win discourse is the basis of most conservation development initiatives, from community-based protected areas to large-scale integrated landscape and seascape management and market-based approaches (Chambers et al., 2020; Evans et al., 2018). Achieving win-wins is challenging in practice, however, with social, economic and ecological objectives often competing rather than aligning (Chaigneau & Brown, 2016; Howe et al., 2014; McShane et al., 2011; Rice & Garcia, 2011). 'Trade-offs' arise when initiatives result in gains for some objectives, ecosystem services, stakeholders or economic sectors at the cost of others. Trade-offs have been '*recorded almost three times as often as synergies*' in the literature (Howe et al., 2014, p. 263) and making difficult trade-offs has been posited as a key governance challenge for achieving the sustainable development goals (SDGs) (Bowen et al., 2017). Trade-offs are therefore the rule rather than the exception in conservation development decision-making (McShane et al., 2011).

Trade-offs resulting from conservation development initiatives may be inevitable, but they are not inherently undesirable—making them can protect species and ecosystems, and/or redistribute income and benefits to marginalized or deprived stakeholder groups. However, change initiatives that reinforce or lead to more inequitable distributions of costs and benefits among stakeholders, ecosystems, jurisdictions and generations can also result in social and political conflict, poor compliance with rules, disenfranchised stakeholders and ultimately unsustainable conservation development initiatives (Hirsch et al., 2013; Weeks et al., 2014). In the context of the SDGs, failure to consider how gains come at the expense of other system components (who and what wins and loses) risks widening inequalities, failure to meet conservation and/or development objectives or expectations and the most vulnerable and marginalized being left behind or, worse, driven unintentionally into serious harm (Raworth, 2017; Schreckenberg et al., 2018).

The academic literature on trade-offs in environmental decision-making has expanded in recent years (Gill et al., 2019; Schreckenberg et al., 2018), pointing to diverse ecological, social and well-being trade-offs, occurring across spatial and temporal scales (Davies et al., 2018; Gill et al., 2019; Woodhouse et al., 2018). This literature has also demonstrated that negotiating, promoting and undertaking conservation development initiatives is a value-centred endeavour: the desirability of different objectives, processes and outcomes is subjective and varies according to the perspectives, needs, aspirations and motivations of different stakeholders (Manfredo et al., 2017). Trade-offs therefore prioritize certain values over

other values (Vucetich et al., 2021), which can result in disagreement and conflict (Schaafsma et al., 2021).

The conservation development literature introduces various trade-off typologies and, here, we focus on two distinct but related types: process trade-offs and substantive trade-offs. Organizations make *process trade-offs* through choices about which activities to conduct and how to conduct them (Morrison-Saunders & Pope, 2013). These can include strategic decisions on resource allocation, prioritization of one action or relationship over others, non-disclosure of sensitive information versus transparency with stakeholders and activity timing and design. Process trade-offs may prioritize security of project financing, adherence to proposed timelines or accountability to funders at the expense of best practices around meaningful engagement of local communities and broader procedural equity (Crosman et al., 2021; Massarella et al., 2018). Substantive trade-offs are the tangible costs and benefits or win-loss outcomes resulting from a policy, programme or intervention. Substantive trade-offs are more often the focus of trade-off research, and they often occur because of process trade-off decisions (Morrison-Saunders & Pope, 2013), making it important to distinguish the two.

Research has primarily examined the post hoc substantive trade-offs between conservation or ecosystem services and development or well-being that arise from conservation development initiatives, many explored as case studies and at the local scale (Gill et al., 2019; Howe et al., 2014). Relatively little research has interrogated the uptake of trade-off thinking and tools in conservation development decision-making a priori, including whether and when process and substantive trade-offs are identified and how they are managed by practitioners (Mikkelsen et al., 2022; Wiréhn et al., 2020). In this article, we explore the perspectives and experiences of practitioners involved in designing, implementing and evaluating marine conservation development initiatives at a programme level to understand to what extent and how trade-offs are systematically assessed (a priori or post hoc) and the principles by which trade-off decisions are made. Our analysis is intended to inform reflection by practitioners on how they can facilitate decision-making processes that acknowledge trade-offs—going beyond the win-win discourse and the view that trade-offs are inherently undesirable—and produce transparent, fair and equitable trade-offs.

Specifically, we answer the questions: (i) What trade-offs are recognized by marine conservation development practitioners? (ii) What tools and approaches are used for trade-off identification and decision-making? (iii) What and whose principles of acceptability underpin trade-off decisions in marine conservation development programmes? We focus on the perceptions and experiences of senior technical staff developing, implementing and evaluating marine conservation development programmes in Southeast Asia where

the coastal marine environment is under immense pressure from multiple and competing human needs and uses, including fisheries, settlement expansion, tourism, conservation, science and recreation (Burke et al., 2006; Christie et al., 2016; Fidelman et al., 2012). The region was selected because designing and implementing marine conservation development programmes in this low- to middle-income context requires numerous high stakes trade-off decisions to be made. Nevertheless, many of the organizations included in our study work internationally and our findings are applicable to contexts beyond Southeast Asia. By better understanding how process and substantive trade-offs are explicitly and implicitly considered, we provide critical insights on how trade-offs could be better analysed and managed in practice.

2 | MATERIALS AND METHODS

2.1 | Data collection

We conducted elite, semi-structured interviews to leverage interviewees' 'insider' knowledge and facilitate in-depth exploration of trade-off decision-making in their programmes (Jupp, 2006; Kuzel, 1992).

The interview protocol introduced the research to participants as aiming to learn from their experiences of assessing and dealing with trade-offs in their programming and projects. The protocol included questions on the decision-making processes of organizations' programmes and interventions; the types of trade-offs they encountered; the approaches and tools currently employed to analyse and manage trade-offs; the processes and bases upon which decisions on the acceptability of trade-offs were made; and their perspectives on how to improve existing tools and approaches. The interviews were guided by the protocol to ensure all topics were discussed, but they also provided for in-depth discussion of commentary and interpretations raised as relevant by the experts during the interview (Jupp, 2006). The lead author conducted interviews by teleconference. They lasted 50–100 min and were digitally recorded and transcribed verbatim. Ethical approval for the study was received from Geography Research Ethics Committee at the University of Exeter (Reference Number eCLESGeo000422), and informed consent to participate in the study was received in writing from all research participants.

2.2 | Sampling and participants

We used purposive and snowball sampling to select expert participants with specialized knowledge relevant to marine conservation development trade-off decision-making in Southeast Asia. Research participants included six senior technical staff at five key Big International Non-Governmental Organizations (BINGOs) working on marine conservation development in Southeast Asia, five senior independent consultants each with experience of working for a

diversity of BINGOs and international donor agencies in Southeast Asia, and one director in each of two regional intergovernmental organizations ($n = 13$).

The organizations sampled are highly influential in Southeast Asia and globally: They play a pivotal role in making process trade-offs and influencing substantive trade-offs through their resource mobilization, technical assistance and scrutiny of government policies (Christie et al., 2016; Lawrence, 2018). We focused on conservation development practitioners, noting their organizations' influence in how governments and communities are enrolled in conservation development initiatives across scales, especially in low- to middle-income countries (Merrie & Olsson, 2014).

Participants were identified through their affiliation with the key conservation development organizations with active large-scale marine programmes in Southeast Asia. The lead author searched the organizations' regional and country team websites and the professional social networking site, LinkedIn, for marine technical leads, who were invited to participate in the research by email or direct message. The high-level experts interviewed were deliberately selected because of their knowledge and experience of working on, and technical oversight over, a diversity of programmes and approaches/tools to decision-making in various Southeast Asian contexts. They were positioned to explain the ways in which trade-offs are considered at strategic and tactical levels, and the approaches, challenges and opportunities relevant at local, national and regional levels. Each participant was asked to recommend other high-level experts with relevant knowledge (snowball sampling), which resulted in supplementary sampling of consultants with experience of working for multiple conservation development organizations. We concluded snowball sampling when we reached data saturation (Fusch & Ness, 2015). Within the limited resources of the study and context of the Covid-19 global pandemic, we were not able to include the perspectives of local/field site practitioners or the affected stakeholders.

2.3 | Qualitative analysis

Findings relevant to our three research questions were identified using a systematic and iterative process of reading and rereading transcripts, coding phrases used by the interviewees and refining codes using the qualitative data analysis software, NVivo (Strauss, 1987). Codes were initially coded according to themes emergent in the data, and then converted into broader, informative themes (e.g. trade-off types, acceptability, power relations, responses) that formed the basis of interpretations and insights relevant to our research questions. While the word trade-off was not always used explicitly by interviewees, discussion related to trade-offs (e.g. positive and negative impacts, costs and benefits, choices, winners and losers) was interpreted during data analysis. The NVivo coding informed the selection of quotes and paraphrases used in this article. The interview data were then substantiated by and triangulated with a review of grey and scientific literature when possible.

3 | RESULTS

3.1 | Recognition of trade-offs

The term 'trade-off' was not generally used explicitly in practice according to the interviewees, with terms like environmental and social impact more commonly used. However, interviewees recognized that new trade-offs were 'inevitable' because marine conservation development initiatives invariably involve 'prioritization' and 'negotiation' between different interests. Based on their experience and knowledge, interviewees identified a range of common, substantive ecological and social trade-offs resulting from their interventions

(Table 1). In addition, they frequently discussed process trade-off decisions made by the organizations they work or consult for when designing and implementing projects, such as between the equity and effectiveness, or effectiveness and sustainability of projects (Table 2).

3.2 | Approaches to trade-off identification

Respondents highlighted that they do not yet explicitly or comprehensively use trade-off thinking to inform their decision-making in programme development or implementation. However, the data

TABLE 1 Respondent examples of substantive trade-offs that emerge from marine conservation development initiatives in Southeast Asia.

Type of trade-off	Examples of substantive trade-off	Spatial	Temporal
Ecological outcome versus other ecological outcomes	Not discussed by interviewees	Displacement of fishing effort by MPAs benefits enclosed marine ecosystems at the expense of nearby ecosystems	Not discussed by interviewees
Conservation versus development outcomes	<p><i>Conservation and fisheries livelihoods</i>, e.g. MPA size and location (and thus conservation benefit) can have adverse effects on fisher incomes and expenses (e.g. fuel for travelling to more distant ground)</p> <p><i>Tourism and conservation</i>, e.g. Improved ecological outcomes through small-scale ecotourism versus economic opportunities of larger-scale tourism</p> <p>Ecotourism turns into mass tourism, having negative effect on the marine environment through increased pollution and resource consumption</p>	Displacement can increase fishing effort in other locations, potentially affecting fish catches and income there, e.g. <i>'where you put the emphasis on a particular community, it doesn't stop the problem a lot of times because it just goes somewhere else...that stereotypical, squeezing the balloon because the fishing activities move to a different community'</i> (Regional marine director)	Fish catches and fishing productivity and effort restricted in return for long-term increased catches (e.g. from MPA spillover) and fisheries sustainability
Social/stakeholder group outcomes versus other social/stakeholder group outcomes	<p><i>Economic growth versus preservation of cultural values</i>, e.g. ecotourism development can cause cultural change in communities</p> <p><i>'Freeriding' resource users</i>, e.g. Some fishers suffer opportunity costs by participating in MPA management, while others do not comply with rules or participate yet benefit from improvements to the fisheries resulting from the MPA</p> <p><i>Changing access rights</i>, e.g. protected areas can give management rights to a community organization, with power to open and close it seasonally, and prevent other resource users from accessing the area.</p> <p>Tourism and aquaculture employment opportunities taken up by migrant tourism workers and farmers respectively</p>	<p>Alternative livelihood opportunities in tourism or aquaculture benefit migrants rather than local population, with fishers not transitioning to tourism to take up opportunities</p> <p>Restricting access to MPAs or preserving access for local fishers stops fishers from other places fishing there</p>	Short-term income against long-term food security

Note: The examples are illustrative of the types of trade-offs visible to, or commonly observed, by the practitioners interviewed, including where respondents note spatial and temporal dimensions to the trade-offs (it is not a comprehensive list of all marine conservation development trade-offs). Additional or alternative trade-off examples may be provided by other implementing agencies or impacted stakeholders.

TABLE 2 Respondent examples of process trade-offs that emerge from marine conservation development initiatives in Southeast Asia.

Type of trade-off	Examples of process trade-offs	Related quote
Allocation of limited resources between strategic objectives	Prioritize resource allocation to community development objectives at the expense of conservation objectives or vice versa	We face difficult choices about investing in improving the basic needs of the community, which could later improve their willingness to engage in conservation, or investing directly in natural resource management and not 'spreading resources too thinly' (paraphrased M&E coordinator)
	Prioritize resource allocation to site preservation/protection versus site recovery/restoration	'Do we set up projects to preserve pristine or species rich sites ... or try to recover the degraded sites ...' (Consultant)
Between strategic relationships	Prioritize community support for project sustainability at the expense of donor expectations to deliver impact within project lifecycle	<i>"how do we work with communities effectively when we have to deliver on [project cycles of] every two to three years?"... funders want things to move at a much faster speed [...] than what the community wants and the reality of doing effective community based management..."</i> (M&E coordinator)
	Community empowerment can come at expense of government relationships if it conflicts with national policies	
Between procedural equity and (short-term) effectiveness of projects	Emphasizing women's participation at the expense of breaking cultural norms and thus losing engagement of men and the support of key male influencers	<i>'You might not have women in meetings, but if you don't do that, you're trading off men's engagement more broadly with the whole thing, and trust for the process'...'there's a real sensitivity... around not repeating colonialist issues and saying we believe in equality and therefore [you need to change]. We have to partner with communities in a meaningful way. And that does to some degree mean that existing inequities are going to continue in some degree'</i> (marine programme manager)
	Work in areas where most likelihood of success or neglected places.	
Between (short-term) effectiveness of projects and capacity building and durability of projects	Non-governmental organizations may implement activities more effectively than government actors at the expense of development of local ownership and capacity for long-term project durability, or vice versa	<i>'Going with the government might increase sustainability [sensu durability] but then there may be animosity from the community towards the local government so you lose their buy-in'</i> (M&E coordinator)

suggest that trade-offs were identified implicitly using decision support tools (DSTs), community-based and participatory planning processes, or through monitoring and evaluation tools.

Respondents reported that DSTs such as Marxan with Zones (Watts et al., 2009) and InVEST (Guerrey et al., 2012) are used on occasion but not routinely in programmes to map and prioritize the spatial allocation of management zones. These tools use data and models on features such as habitat, species and fishing grounds to achieve conservation (e.g. minimum percent representation of habitats and species) and (less often) development objectives. In some instances, output maps are reviewed and negotiated by stakeholders. However, respondents noted that these tools were not widely used in Southeast Asia, and some interviewees questioned their value and utility. The tools were said to be highly technical so require external scientific support, prioritize conservation objectives, and the outputs were not considered to be easily understood by stakeholders. A M&E coordinator said: *'We're not a research institute so we don't have that capacity to really [use these scientific tools]; [even] pens and papers not familiar to some people'*. Respondents often cited data deficiencies in many Southeast Asian contexts, which weaken the ability of these tools to accurately represent complex systems and provide meaningful outputs. A consultant with expertise in Marxan with Zones said, it *'can be quite dangerous because it's easier to use than it is to use*

intelligently and understand all of the outputs [...and...] of course, the outputs you get are only as good as the data that you have going in'. Even with good ecological data or data on specific sectors (e.g. fisheries), respondents said the tools are unable to capture values and thus trade-offs outside of those that fit into models and quantitative data: *'you're comparing apples and oranges, you are comparing sacred values with monetary values, social values versus ecological value'* (marine programme manager).

Instead, respondents suggested that their organizations more commonly use community-based and participatory planning processes as a core strategy to identify potential conflicts and underlying trade-offs:

We don't have a specific way of doing [trade-off analysis]...a lot of our work is done by discussing with the community how they think it might affect them.
(M&E Coordinator)

In principle, communities, through their participation, are empowered to influence the design of interventions to favour their interests and rule out interventions that they find have unacceptable impacts. The perceptions of respondents reflected arguments in the literature that participation can also nurture ownership and willingness to accept short-term costs (e.g. displacement by a marine

protected area) for long-term gains (e.g. increased fish catches). However, despite examples given by respondents of efforts to improve representation (e.g. gender-sensitive programming) and minimize elite capture (e.g. using non-resident local facilitators), participation was said to still be limited to direct beneficiaries represented by relatively few village leaders and those organized in associations (e.g. a cooperative). This narrow participation of stakeholders was said to constrain the diversity of trade-offs voiced and led to trade-offs affecting unrepresented stakeholders not being considered. A consultant noted it often *'depends on who is in the room'* as to which trade-offs are recognized in these processes, and a marine programme manager explained how tourism interests are often better organized and thus easier to include in participatory processes than fishing interests. Some interviewees also observed that stakeholders voice tangible livelihood, income and food impacts more often than less tangible or indirect costs, such as loss of recreation services, navigation passages or cultural impacts. In addition to participatory processes, some respondents referred to monitoring and evaluation as a programming tool that can identify trade-offs as they emerge or retrospectively by assessing the impacts of interventions. In practice, however, ecological outcomes were said to be monitored more often than socio-economic outcomes, and respondents noted that costs and benefits can manifest after a project terminates, and reporting tended to prioritize positive outcomes (winners) and ignore negative ones (losers) to demonstrate a programme's success: *'In Southeast Asia or Pacific as a whole, the good stories, there's a few out there, but bad stories, there's absolutely nothing out there [documented]'* (regional marine director). To add, one respondent said that theories of change, or results chains, developed at the outset of programmes map pathways to desired change for targeted beneficiaries, but not potential costs of these pathways from different perspectives. Subsequent programme evaluations use a narrow set of metrics based on these results chains to measure success: *'...often a step that gets missed [in the results chain], is...the potential negative results – taking a gender lens, taking a disability lens, or taking different cultural group's lens'*. Data suggested that external audits by donors at times provided a layer of scrutiny by questioning local people about how an intervention has affected them, but these were not explicitly driven by trade-off considerations and rarely informed future interventions. Despite these limitations, a respondent highlighted that learning is increasingly shared across conservation development organizations through collaborative mechanisms (e.g. the Coral Triangle Initiative), meaning some trade-offs can be anticipated. Learning-by-doing or adaptive management approaches were said by another respondent to be used to help avoid unintended, emergent or unknown trade-offs and associated conflict.

3.3 | The acceptability of trade-offs

Participants described three broad principles that underpinned whether a trade-off is regarded as acceptable to practitioners:

alignment with law and policy, the extent of ecological benefit and community acceptance.

Firstly, formal laws and policies were said to define the boundaries for decisions on the acceptability of trade-offs. In particular, some respondents highlighted the growing visibility and attention to human rights concerns in their work, embedded within international to local legal frameworks. A respondent explained that conservation development organizations, of course, seek to avoid trade-offs that violate laws or undermine the legal exercise of rights, and they work within frameworks of international commitments, such as the Convention on Biological Diversity. Because these organizations often partner with all levels of government, these commitments and legal frameworks work to provide a minimum threshold against which trade-offs decisions may be evaluated as acceptable or unacceptable.

Secondly, interviewees expressed that a corresponding minimum threshold of conservation benefit is required for a trade-off to be acceptable to a conservation development organization:

We're an environmental NGO, we have to show a conservation benefit...[if] a trade off or a particular course of action will not have a conservation benefit, then that's a red flag, that's a line that we absolutely can't cross.

(marine programme manager)

Trade-off decisions that break international conservation standards, risk an endangered species or involve significant uncertainty about ecological impacts are examples of ecological thresholds that the practitioners considered unacceptable.

Finally, the data showed that community acceptance of an intervention was a primary operational concern for practitioners because of a recognition that community ownership and support is needed for effective and enduring projects. Community acceptance is highly context dependent and political, varying across geographies, stakeholder groups and individuals. Interviewees specified that values, attitudes, trust and the magnitude and cultural congruence of implied changes determine community acceptance. Participants cited entrenched attitudes (e.g. *'there will always be fish in the sea'*), the track record of marine conservation development programmes, and the strength of trust in the implementing organization as affecting willingness to accept narratives that long-term benefits are worth short-term costs. The type and degree of potential change also affects community acceptability. A marine programme manager gave the example of interventions that curb fishing effort, including bans on destructive fishing, as normally being considered unacceptable for many communities because of their livelihood effects. The capability of negatively affected members of a community to adapt to the changes brought about by an intervention was perceived as a further consideration in the calculus of acceptability by communities and conservation development organizations, according to another respondent. In particular, several respondents identified cultural congruence of an intervention as a key factor in community acceptance of associated trade-offs. For

example, the cultural influence of foreign tourists or a women's empowerment agenda may be unacceptable because it challenges cultural and gendered norms in the beneficiary community. Respecting local social and cultural norms was considered critical for programme success (and thus whether the conservation development organization considered a trade-off acceptable), even if that meant compromising on equity concerns held by the organization:

It's a sacred cow to speak about making any adjustments to that customary framework. There are limits we're working within...[If] we stepped outside those, the overt resistance would be pretty [strong]... And that does to some degree mean that existing inequities are going to continue.

(marine technical advisor)

For this reason, explained respondents, some biodiversity conservation objectives may be traded off to prioritize community support and compliance, especially in the short term. However, a regional director stated that as climate- and development-related resource degradation accelerates, their tolerance of trading-off conservation gains for community acceptance may be waning.

Thus, beyond legal and policy standards providing clear decision-making guidance, interviewees described necessarily subjective processes that determined whether it was deemed acceptable to trade-off biodiversity objectives and equity principles for community acceptance of initiatives.

3.4 | Whose principles of acceptability matter?

As with the identification of trade-offs, our data showed that contextually defined power relations shape whose principles of acceptability, and thus whose values, are voiced and prioritized in decision-making processes. Interviewees discussed how decisions are influenced by power asymmetries in communities. For instance, traditional or local leaders, and local elites, who are mainly elderly men, were recognized to have disproportionate influence because of their social status, capacity to participate in programme activities, and control over traditional property rights. They can silence other voices, as exemplified by a marine technical advisor:

the women's meeting was organised...and basically a couple of the [male] Chiefs...decided that they [would attend uninvited]... They just all sat there quietly... They've made sure that nothing untoward happened and they left. [Only] then [we heard] women voice their concerns...So, that to me was a striking example of just how easy it is to silence people.

Yet some respondents said conservation development organizations abide such power dynamics because these leaders '*are opinion formers...and encourage people to come along*' (country director).

Donors and implementing organizations themselves are powerful in influencing community sentiment. Interviewees discussed a range of strategies they employ to influence communities into accepting the substantive trade-offs of their programmes. These included only investing in communities willing to adopt conservation practices and withdrawing funding if community actions are deemed unacceptable. Incremental strategies, in particular, were discussed by several participants as a strategic choice to obtain community support for conservation. Examples of such approaches given by respondents included starting with small uncontroversial activities (reef restoration, beach clean-ups and school programmes) or prioritizing quick wins (e.g. investing in fisheries with fast replacement rates) that have less pronounced trade-offs. For example, an M&E coordinator explained how setting up a small octopus no-take zone will quickly benefit local fishers as '*octopus grow really quickly*' and participation in its management builds community capacity and support for broader marine management. Incremental strategies were said to aim to minimize or divert conflict, resistance or bureaucratic barriers in the initial phases of a project or engagement with the community with the aim of building trust and the eventual acceptance of more conservation-oriented activities favoured by the conservation development organization. A consultant and regional marine director pointed out, however, that such attempts to improve community acceptability can come at the expense of conservation and long-term community objectives: '*we make the MPA smaller and not in the place we recommended to satisfy fishers, then the community doesn't understand potential conservation and fisheries benefits are being compromised*' (paraphrased, consultant).

Interviewees also recognized the power asymmetries that result from the technical and financial resources of conservation development organizations, often enabling them to frame problems and the acceptability of solutions. Using scientific evidence and/or their respected expertise, organizations seek to persuade communities of the biodiversity conservation and development win-win.

Some interviewees also spoke of the power wielded by government institutions and politicians, influencing the rules of the game in which practitioners and the communities they support make trade-off decisions. A country programme director pointed out that '*the hierarchy*' of government ministries means that trade-offs that harm the interests of more powerful ministries (such as tourism or fisheries) for the benefit of the interests of less powerful ministries (such as environment/conservation) are unlikely to be acceptable. Others explained that acceptability from a government perspective often depends on the priorities of the current political leadership. What is deemed acceptable can therefore change over political cycles and can be corrupted by lobby groups and clientelism. For example, another respondent said that it is difficult to implement marine conservation development that curtails fishing activities that are lucrative to, and thus protected by, corrupt politicians and government officials.

Politics and power dynamics among and within communities, conservation development organizations and government therefore shape not only which trade-offs are identified and explicitly considered but also whose principles of acceptability ultimately determine

trade-off decisions about which initiatives go ahead and in what ways. According to some interviewees, the marginalized tend to lose out from the decisions—within communities, among government departments and between private, public and civil society sectors. Overall, our data suggest that current approaches to a priori and post hoc trade-off identification and decision-making in contemporary conservation development programmes reproduce rather than rectify these unequal power relations.

4 | DISCUSSION

We investigated high-level practitioner perspectives and experiences on how trade-off decision-making in marine conservation development is navigated in Southeast Asia. Our research reveals that these practitioners recognize inherent trade-offs in their work, but do not explicitly or systematically identify or address trade-offs. The interviewed practitioners highlighted several challenges with how current scientific and participatory tools and decision-making processes reveal trade-offs and are used to discern whether or not these trade-offs are acceptable, to whom and on what basis.

Regardless of the pressure to deliver win-wins (McShane et al., 2011), those interviewed recognized that their interventions had or could cause multiple types of temporal and spatial social and ecological substantive trade-offs (Table 1), which reflected typologies in the literature (e.g. Gill et al., 2019; Woodhouse et al., 2018). In addition, interviewees also expressed process trade-offs that arise from programme design and implementation choices (Table 2). Although neglected in the conservation literature, the findings from this study show that process trade-offs are critical to conservation development organizations' decision-making. Such trade-offs, in principle, define the problem–solution space and constrain the choices available. In turn, they shape the eventual substantive trade-offs and the decisions made by actors with the authority to make them, such as government and community organizations (Morrison-Saunders & Pope, 2013).

Despite awareness of trade-offs, practitioners in the Southeast Asia region rarely use specific tools to explicitly identify or address trade-offs. Available DSTs, such as Marxan with Zones, were not widely used because of implementation challenges in data scarce contexts and their perceived shortcomings in analysing social substantive trade-offs and capturing deeper context-specific values. Our data therefore reinforce social science critiques of DSTs related to their inability to address equity and justice concerns (Gurney et al., 2015; Halpern et al., 2013; Law et al., 2018). The quantification of trade-offs using such tools results in marginalized groups' values being underrepresented and the ignorance of sacred values and the disproportionate ability of different individuals and groups to bear costs (Daw et al., 2011, 2015; Dawson & Martin, 2015; Tetlock, 2003).

Instead of, or in addition to, DSTs, participatory or community-based processes are the dominant approach used by marine conservation development practitioners in Southeast Asia to plan and

design their projects. Participatory processes are known to elucidate a broader set of values than DSTs, including those difficult to quantify (Halpern et al., 2013), and can reveal some social costs. However, none of the DSTs or participatory processes discussed by respondents involved an explicit, systematic or transparent process for assessing a full range of trade-offs, or deliberating the acceptability of who will win and lose because of an intervention. For instance, practitioners do not explicitly use trade-off language (or similar) in such forums or employ participatory DSTs or equivalent processes that systematically analyse the pros and cons of decisions for different social groups and ecosystem functions and services.

While participatory approaches remain a dominant and vitally important approach, the practitioners recognized that their participatory processes are keenly influenced by power relations. As the literature shows, conservation development agencies themselves, in upholding their commitment to donors and win-win aspirations, exercise discursive power by defining problems, concepts, goals, the range of solutions and who is recognized as participants, which can inadvertently promote some and hide other trade-offs in decision-making processes (Chambers et al., 2020; Daw et al., 2015; Tetlock, 2003). Moreover, our findings reflected well-documented critiques of participation related to elite capture (Cinner et al., 2014) and working within existing community institutions (e.g. Lane & Corbett, 2005). While making trade-offs is unavoidably a political process in which actors negotiate their different goals (Dawson et al., 2018), trade-off thinking can, in principle, promote more systematic, transparent and acceptable decisions. Yet, we found that current approaches in marine conservation development in Southeast Asia do not employ tools or processes to mediate these power relations: They do not facilitate explicit, systematic or transparent deliberation and resolution of trade-offs, which are instead determined by the relative power of winners over losers in the pursuit of their interests (Fisher et al., 2014; Galafassi et al., 2017). We do not mean that participatory processes (or DSTs) per se are incapable of dealing with trade-offs, but that better tools and decision-making frameworks are needed (or existing ones applied, see below) to support these processes to better account for trade-offs and the local political economy.

Our study indicated that resolution of trade-offs centred around their perceived acceptability—a critical yet unstudied concept in trade-off conservation science. Whether a trade-off was deemed acceptable was based on which groups were represented in decision-making processes and the diverse principles, values and power relations of those participating in or influencing decision-making. The data highlight that there can be tensions between the values and goals of a conservation development organization and those of local communities, but that some organizations were willing to trade-off biodiversity goals, at least in the short term, for community acceptability and support of the respective project. Some of the boundaries of acceptance can be considered 'hard' legal, organizational and ecological thresholds that represent generally agreed-upon limits of acceptability articulated in national and international laws and policies. Other principles related to community support,

political salience and cultural congruence can be considered softer subjective, elastic and contextually defined determinants of acceptability. 'Soft' thresholds of acceptability are an expression of the diverse norms and values of stakeholders and the organizations themselves (Jacobs et al., 2014). Research shows that social-cultural preferences (Martín-López et al., 2012) and different ethical and social justice values and frameworks of what is good and right (Law et al., 2018; Vucetich et al., 2021) determine willingness to make trade-offs and an intervention's acceptability to a particular stakeholder. Some trade-offs may be fundamentally unacceptable or un-negotiable for a certain stakeholder and cultural context because, for example, they break social taboos (Daw et al., 2015), while others may be negotiable.

'Hard' and 'soft' thresholds of acceptability reflect notions of 'negotiable' and 'non-negotiable' impacts (e.g. threat to human life or ecosystems) outlined in the environmental impact assessment literature (Sippe, 1990); the ecological, social and cultural 'limits' to adaptation discussed in the climate change literature (Adger et al., 2009; Evans et al., 2016); and public acceptability in environment and energy policy scholarship (Schuitema & Bergstad, 2018; Upham et al., 2015). Our study suggests that current approaches are oversimplified: There is no assessment or deliberation of what is acceptable to whom, and what is open or closed to negotiation in marine conservation development practice in Southeast Asia.

Finally, our findings show that in responding to trade-offs deemed unacceptable on socio-cultural grounds, programmes primarily rely on incremental and adaptive approaches. Particularly in the case of community acceptability, marine conservation development programmes often begin with uncontroversial activities to minimize short-term livelihood impacts and secure community support for conservation action, before later implementing more radical activities, which has the trade-off of diminished progress towards conservation goals in the short term. There is, however, rarely a mitigation or compensation process to address unavoidable adverse social impacts resulting from trade-offs. Project theories of change were said to normally focus on how positive change could be achieved rather than potential unintended and negative consequences of that change process—this influenced what was monitored during project implementation. Evaluations were said to not sufficiently inform future programming and focus on impacts rather than the distribution and relationships between costs and benefits captured in trade-off thinking. That is, evaluations are not driven by an explicit consideration of trade-offs.

The insights provided by the study should be considered in the context of limitations related to participants' substantive and geographic expertise as well as the sample size. Study participants were senior professionals working at or consulting for conservation development organizations in regional-level units. The results presented, therefore, do not capture potentially important process trade-offs being made in field operations and the resultant substantive trade-offs experienced among communities and ecosystems. The interviewees' seniority may have also shaped their identification of and perspectives on trade-offs decisions; for example, senior

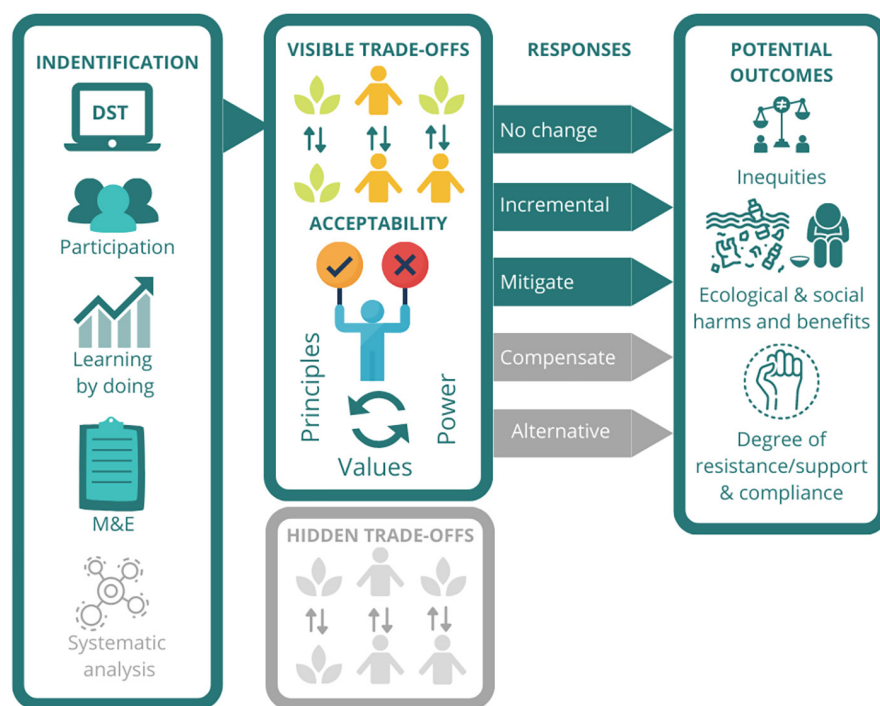
conservationists tend to be less satisfied with collective goal progress (Pienkowski et al., 2022) and more likely to hold people-centred views of conservation compared to more junior conservationists that favour science-led ecocentrism (Sandbrook et al., 2019); senior staff, through their experience, may therefore understand that difficult trade-offs need to be made to make conservation effective in practice. The study's regional focus on Southeast Asia and its sample size also limit the ability to generalize the findings to other geographies or decision-making populations, although many of the organizations included have an international remit. Future research could build upon these findings and explore differences across contexts by investigating trade-off decision-making at the project site level in Southeast Asia and in other regions of the world.

In sum, within current approaches, many trade-offs are invisible to decision makers and narrowly defined by available data and models or skewed towards the interests of the most powerful. Left unaddressed, narrowly defined and hidden trade-off results in haphazard decision-making and the potential for resistance from, and conflict among, those adversely affected or disenfranchised by decision-making processes. Such unjust decision-making can undermine the legitimacy and durability of programmes (Evans et al., 2011; Fortnam, 2019; Giordano et al., 2020). Failure to consider trade-offs systematically can also seriously harm marginalized stakeholders by interventions restricting livelihoods, breaking cultural taboos, pushing households into critical deprivation or violating human rights (Woodhouse et al., 2018). These issues become especially pertinent in low-income countries, where many people live below or close to thresholds of social deprivation. There is broad agreement among conservationists that conservation should seek no harm to poor people (Sandbrook et al., 2019), but findings from this study show that this ambition may not always be realized in practice using current decision-making approaches and tools. Figure 1 summarizes our findings from the study.

The findings suggest that marine conservation development practitioners and the communities they work with would benefit from deliberately and systematically identifying multidimensional trade-offs, deliberating their acceptability and devising response options to mitigate or avoid unacceptable adverse outcomes.

Several existing systematic approaches could provide ways forward for conservation development practitioners to better account for trade-offs in this way. The guidance of DSTs on spatial optimization of marine plans could be coupled with systematic participatory approaches (e.g. fuzzy cognitive maps, role playing games, participatory modelling, scenario planning) to disaggregate costs and benefits across all stakeholder groups. Participative multicriteria decision analysis (MCDA) involves weighting and prioritizing objectives and criteria upon which to evaluate trade-offs of alternative management options (Brown et al., 2001). The wider use of MCDA in marine conservation development could help to clarify a wider range of stakeholders' values than the existing DSTs discussed by participants (Estévez & Gelcich, 2015). However, participatory MCDA processes are often designed to establish an aggregated or consensus weighting of criteria, which

FIGURE 1 Trade-off decision-making tools and processes in marine conservation development. The figure shows the tools and processes used (blue) by marine conservation development practitioners in Southeast Asia to identify trade-offs, which determines which trade-offs are visible and hidden in decision-making; how the acceptability of trade-offs is decided based on the interplay between diverse principles, values and power relations; options to respond to adverse effects of trade-offs; and the potential for adverse outcomes. Figure elements coloured grey are suggested as missing in current approaches. Source: authors.



tends to mask diverse perceptions of the acceptability of trade-offs. Instead or additionally to MCDA, open deliberation of the acceptability of trade-offs identified by systematic participatory methods could nurture a shared understanding and acknowledgment of the diversity of stakeholder value orientations and changes deemed acceptable, by whom, and why. In this way, recent methodological advances are incorporating considerations of trade-off acceptability into sustainability (de Magalhães et al., 2019) and marine planning decision-making (Fortnam et al., 2022).

Even if systematic open deliberation of trade-offs provides valuable perspectives on acceptability, trade-offs will invariably result in adverse outcomes for some groups. Biodiversity compensation and offsetting, and no net loss of biodiversity, compensate for ecological damage by development (Brown et al., 2014), but little attention has been given to offsetting the social impacts of conservation development, even though international best practice calls for people to be no worse off because of the implementation of a project (IUCN, 2021). Furthermore, research is needed to understand how trade-offs can be monitored and evaluated (e.g. during mid-term project evaluations) to adjust interventions or mitigate impacts if unexpected unacceptable trade-offs become apparent, and to support sharing of lessons learnt for integration into future trade-off analysis in marine conservation development.

4.1 | Conclusion

Despite increasing attention to equity, justice and trade-offs in conservation science (Bennett et al., 2019; Law et al., 2018), practitioners still lack the tools and decision-making processes to ensure their trade-off decisions duly recognize stakeholders'

values, facilitate meaningful and inclusive stakeholder participation and provide for the fair distribution of costs and benefits among stakeholders. Participatory approaches remain a dominant and vitally important vehicle for revealing stakeholder perspectives. Through these processes some, though not all, trade-offs may be uncovered and deliberated. Our study suggests that such participatory processes could, in principle, benefit from bespoke decision-support tools that more explicitly and systematically consider: (i) the new *process* and *substantive* trade-offs that arise from conservation development interventions; (ii) how acceptable they are to different and, often disparate, groups; and (iii) how implementing agencies might respond to minimize adverse impacts and avoid ecological and social harms. Such tools could go some way to mediating the power dynamics inherent in participatory processes and better ensure procedural equity and transparency for the diverse array of stakeholders involved in and impacted by conservation development decisions. These concerns are not only important for marine conservation development programming. To achieve the SDGs in the context of the leave no one behind commitment, trade-off analysis must go beyond technical optimization and avoidance of conflict, to consider diverse principles of justice, equity and acceptability in decision-making and programming.

AUTHOR CONTRIBUTIONS

Matt Fortnam conceived the ideas and designed methodology, collected the data, analysed the data and led the writing of the manuscript. Tomas Chaigneau, Louisa Evans and Liliana Bastian contributed to the ideas and design of methodology, analysis of data and writing of the manuscript. All authors contributed critically to the drafts and gave final approval for publication.

ACKNOWLEDGEMENTS

This article results from a Global Impact Acceleration Account (GIAA) project 'Scaling-up impact and application of Blue Communities' marine management tools and approaches in Southeast Asia'. This was a subsidiary project of the GCRF Blue Communities programme, funded in part from the Global Challenges Research Fund (GCRF) via the United Kingdom Research and Innovation (UKRI) under grant agreement reference NE/P021107/1. We would like to thank the conservation development practitioners who dedicated their scarce time to participate in the research.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest.

DATA AVAILABILITY STATEMENT

The study collected qualitative data during 13 semi-structured interviews. The data have not been archived because participants were informed (in participant information sheets and consent forms) that all research data would be destroyed 5 years after the termination of the Blue Communities programme.

ORCID

M. Fortnam  <https://orcid.org/0000-0002-6440-9214>

T. Chaigneau  <https://orcid.org/0000-0002-0874-216X>

L. Evans  <https://orcid.org/0000-0003-0816-8572>

L. Bastian  <https://orcid.org/0000-0002-5749-449X>

REFERENCES

- Adams, W. M., Aveling, R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., Roe, D., Vira, B., & Wolmer, W. (2004). Biodiversity conservation and the eradication of poverty. *Science*, 306, 1146–1149.
- Adger, W. N., Dessai, S., Goulden, M., Hulme, M., Lorenzoni, I., Nelson, D. R., Naess, L. O., Wolf, J., & Wreford, A. (2009). Are there social limits to adaptation to climate change? *Climatic Change*, 93, 335–354.
- Bennett, N. J., Cisneros-Montemayor, A. M., Blythe, J., Silver, J. J., Singh, G., Andrews, N., Calò, A., Christie, P., Di Franco, A., Finkbeiner, E. M., Gelcich, S., Guidetti, P., Harper, S., Hotte, N., Kittinger, J. N., Le Billon, P., Lister, J., López de la Lama, R., McKinley, E., ... Sumaila, U. R. (2019). Towards a sustainable and equitable blue economy. *Nature Sustainability*, 2, 991–993. <https://doi.org/10.1038/s41893-019-0404-1>
- Bowen, K. J., Cradock-Henry, N. A., Koch, F., Patterson, J., Häyhä, T., Vogt, J., & Barbi, F. (2017). Implementing the 'sustainable development goals': Towards addressing three key governance challenges—Collective action, trade-offs, and accountability. *Open Issue Part II*, 26–27, 90–96. <https://doi.org/10.1016/j.cosust.2017.05.002>
- Brown, K., Adger, W. N., Tompkins, E., Bacon, P., Shim, D., & Young, K. (2001). Trade-off analysis for marine protected area management. *Ecological Economics*, 37, 417–434.
- Brown, M. A., Clarkson, B. D., Barton, B. J., & Joshi, C. (2014). Implementing ecological compensation in New Zealand: Stakeholder perspectives and a way forward. *Journal of the Royal Society of New Zealand*, 44, 34–47.
- Burke, L., Selig, E., & Spalding, M. (2006). *Reefs at risk in Southeast Asia*. World Resources Institute.
- Chaigneau, T., & Brown, K. (2016). Challenging the win-win discourse on conservation and development: Analyzing support for marine protected areas. *Ecology and Society*, 21. <https://doi.org/10.5751/ES-08204-210136>
- Chambers, J., Aguila Mejía, M. D., Ramírez Reátegui, R., & Sandbrook, C. (2020). Why joint conservation and development projects often fail: An in-depth examination in the Peruvian Amazon. *Environment and Planning E: Nature and Space*, 3, 365–398.
- Christie, P., Pietri, D. M., Stevenson, T. C., Pollnac, R., Knight, M., & White, A. T. (2016). Improving human and environmental conditions through the Coral Triangle Initiative: Progress and challenges. *Current Opinion in Environment Sustainability*, 19, 169–181.
- Cinner, J. E., Daw, T., Huchery, C., Thoya, P., Wamukota, A., Cedras, M., & Abunge, C. (2014). Winners and losers in marine conservation: Fishers' displacement and livelihood benefits from marine reserves. *Society and Natural Resources*, 27, 994–1005. <https://doi.org/10.1080/08941920.2014.918229>
- Crosman, K. M., Singh, G. G., & Lang, S. (2021). Confronting complex accountability in conservation with communities. *Frontiers in Marine Science*, 8, 709423. <https://doi.org/10.3389/fmars.2021.709423>
- Davies, T. E., Epstein, G., Aguilera, S. E., Brooks, C. M., Cox, M., Evans, L. S., Maxwell, S. M., Nenadovic, M., & Ban, N. C. (2018). Assessing trade-offs in large marine protected areas. *PLoS ONE*, 13, e0195760.
- Daw, T. I. M., Brown, K., Rosendo, S., & Pomeroy, R. (2011). Applying the ecosystem services concept to poverty alleviation: The need to disaggregate human well-being. *Environmental Conservation*, 38, 370–379.
- Daw, T. M., Coulthard, S., Cheung, W. W. L., Brown, K., Abunge, C., Galafassi, D., Peterson, G. D., McClanahan, T. R., Omukoto, J. O., & Munyi, L. (2015). Evaluating taboo trade-offs in ecosystems services and human well-being. *Proceedings of the National Academy of Sciences of the United States of America*, 112, 6949–6954. <https://doi.org/10.1073/pnas.1414900112>
- Dawson, N., Coolsaet, B., & Martin, A. (2018). Justice and equity: Emerging research and policy approaches to address ecosystem service trade-offs. In K. Schreckenberger, G. Mace, & M. Poudyal (Eds.), *Ecosystems and poverty alleviation: Trade-offs and governance* (pp. 22–38). Routledge.
- Dawson, N., & Martin, A. (2015). Assessing the contribution of ecosystem services to human wellbeing: A disaggregated study in western Rwanda. *Ecological Economics*, 117, 62–72.
- de Magalhães, R. F., de Danilevicz, Â. M. F., & Palazzo, J. (2019). Managing trade-offs in complex scenarios: A decision-making tool for sustainability projects. *Journal of Cleaner Production*, 212, 447–460. <https://doi.org/10.1016/j.jclepro.2018.12.023>
- Estévez, R. A., & Gelcich, S. (2015). Participative multi-criteria decision analysis in marine management and conservation: Research progress and the challenge of integrating value judgments and uncertainty. *Marine Policy*, 61, 1–7.
- Evans, L. S., Brown, K., & Allison, E. H. (2011). Factors influencing adaptive marine governance in a developing country context: A case study of southern Kenya. *Ecology and Society*, 16. <https://doi.org/10.5751/ES-04084-160221>
- Evans, L. S., Cohen, P. J., Vave-Karamui, A., Masu, R., Boso, D., & Mauli, S. (2018). Reconciling multiple societal objectives in cross-scale marine governance: Solomon Islands' engagement in the coral triangle initiative. *Society and Natural Resources*, 31, 121–135. <https://doi.org/10.1080/08941920.2017.1383544>
- Evans, L. S., Hicks, C. C., Adger, W. N., Barnett, J., Perry, A. L., Fidelman, P., & Tobin, R. (2016). Structural and psycho-social limits to climate change adaptation in the great barrier reef region. *PLoS ONE*, 11, e0150575.
- Fidelman, P., Evans, L., Fabinyi, M., Foale, S., Cinner, J., & Rosen, F. (2012). Governing large-scale marine commons: Contextual challenges in the coral triangle. *Marine Policy*, 36, 42–53.
- Fisher, J. A., Patenaude, G., Giri, K., Lewis, K., Meir, P., Pinho, P., Rounsevell, M. D., & Williams, M. (2014). Understanding the

- relationships between ecosystem services and poverty alleviation: A conceptual framework. *Ecosystem Services*, 7, 34–45.
- Fortnam, M. (2019). Forces opposing sustainability transformations: Institutionalization of ecosystem-based approaches to fisheries management. *Ecology and Society*, 24, 33. <https://doi.org/10.5751/ES-10996-240433>
- Fortnam, M., Chaigneau, T., & Evans, L. (2022). *Participatory marine planning trade-off analysis: Handbook*. University of Exeter.
- Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report*, 20, 1408.
- Galafassi, D., Daw, T. M., Munyi, L., Brown, K., Barnaud, C., & Fazey, I. (2017). Learning about social-ecological trade-offs. *Ecology and Society*, 22, 2. <https://doi.org/10.5751/ES-08920-220102>
- Gill, D. A., Cheng, S. H., Glew, L., Aigner, E., Bennett, N. J., & Mascia, M. B. (2019). Social synergies, tradeoffs, and equity in marine conservation impacts. *Annual Review of Environment and Resources*, 44, 347–372. <https://doi.org/10.1146/annurev-environ-110718-032344>
- Giordano, R., Pluchinotta, I., Pagano, A., Scricciu, A., & Nanu, F. (2020). Enhancing nature-based solutions acceptance through stakeholders' engagement in co-benefits identification and trade-offs analysis. *Science of the Total Environment*, 713, 136552. <https://doi.org/10.1016/j.scitotenv.2020.136552>
- Guerry, A. D., Ruckelshaus, M. H., Arkema, K. K., Bernhardt, J. R., Guannel, G., Kim, C.-K., Marsik, M., Papenfus, M., Toft, J. E., & Verutes, G. (2012). Modeling benefits from nature: Using ecosystem services to inform coastal and marine spatial planning. *International Journal of Biodiversity Science, Ecosystem Services & Management*, 8, 107–121.
- Gurney, G. G., Pressey, R. L., Ban, N. C., Álvarez-Romero, J. G., Jupiter, S., & Adams, V. M. (2015). Efficient and equitable design of marine protected areas in Fiji through inclusion of stakeholder-specific objectives in conservation planning. *Conservation Biology*, 29, 1378–1389.
- Halpern, B. S., Klein, C. J., Brown, C. J., Beger, M., Grantham, H. S., Mangubhai, S., Ruckelshaus, M., Tulloch, V. J., Watts, M., & White, C. (2013). Achieving the triple bottom line in the face of inherent trade-offs among social equity, economic return, and conservation. *Proceedings of the National Academy of Sciences of the United States of America*, 110, 6229–6234.
- Hirsch, P. D., Brosius, J. P., & Gagnon, P. (2013). Navigating complex trade-offs in conservation and development: An integrative framework. *Issues in Interdisciplinary Studies*, 31, 99–122.
- Howe, C., Suich, H., Vira, B., & Mace, G. M. (2014). Creating win-wins from trade-offs? Ecosystem services for human well-being: A meta-analysis of ecosystem service trade-offs and synergies in the real world. *Global Environmental Change*, 28, 263–275.
- IUCN. (2021). *Impact mitigation and ecological compensation*. Commission on Ecosystem Management. <https://www.iucn.org/commissions/commission-ecosystem-management/our-work/cems-thematic-groups/impact-mitigation-and-ecological-compensation-0>
- Jacobs, M. H., Vaske, J. J., & Sijsma, M. T. (2014). Predictive potential of wildlife value orientations for acceptability of management interventions. *Journal for Nature Conservation*, 22, 377–383.
- Jupp, V. (2006). Elite interviewing. In *The SAGE dictionary of social research methods*. SAGE Publications.
- Kuzel, A. J. (1992). Sampling in qualitative inquiry. In B. F. Crabtree & W. L. Miller (Eds.), *Doing qualitative research* (pp. 31–44). Sage Publications, Inc.
- Lane, M. B., & Corbett, T. (2005). The tyranny of localism: Indigenous participation in community-based environmental management. *Journal of Environmental Policy and Planning*, 7, 141–159.
- Law, E. A., Bennett, N. J., Ives, C. D., Friedman, R., Davis, K. J., Archibald, C., & Wilson, K. A. (2018). Equity trade-offs in conservation decision making. *Conservation Biology*, 32, 294–303.
- Lawrence, P. (2018). *Whither large international non-governmental organisations?* Third Sector Research Centre Plowden Fellowship Report. Birmingham University. ESRC.
- Manfredo, M. J., Bruskotter, J. T., Teel, T. L., Fulton, D., Schwartz, S. H., Arlinghaus, R., Oishi, S., Uskul, A. K., Redford, K., & Kitayama, S. (2017). Why social values cannot be changed for the sake of conservation. *Conservation Biology*, 31, 772–780.
- Martín-López, B., Iñiesta-Arandia, I., García-Llorente, M., Palomo, I., Casado-Arzuaga, I., Del Amo, D. G., Gómez-Baggethun, E., Oteros-Rozas, E., Palacios-Agundez, I., & Willaarts, B. (2012). Uncovering ecosystem service bundles through social preferences. *PLoS ONE*, 7, e38970.
- Massarella, K., Sallu, S. M., Ensor, J. E., & Marchant, R. (2018). REDD+, hype, hope and disappointment: The dynamics of expectations in conservation and development pilot projects. *World Development*, 109, 375–385. <https://doi.org/10.1016/j.worlddev.2018.05.006>
- McShane, T. O., Hirsch, P. D., Trung, T. C., Songorwa, A. N., Kinzig, A., Monteferrri, B., Mutekanga, D., Thang, H. V., Dammert, J. L., Pulgar-Vidal, M., Welch-Devine, M., Peter Brosius, J., Coppolillo, P., & O'Connor, S. (2011). Hard choices: Making trade-offs between biodiversity conservation and human well-being. *Biological Conservation*, 144, 966–972. <https://doi.org/10.1016/j.biocon.2010.04.038>
- Merrie, A., & Olsson, P. (2014). An innovation and agency perspective on the emergence and spread of marine spatial planning. *Marine Policy*, 44, 366–374.
- Mikkelsen, E., Sør Dahl, P. B., & Solås, A.-M. (2022). Transparent and consistent? Aquaculture impact assessments and trade-offs in coastal zone planning in Norway. *Ocean and Coastal Management*, 225, 106150. <https://doi.org/10.1016/j.ocecoaman.2022.106150>
- Morrison-Saunders, A., & Pope, J. (2013). Conceptualising and managing trade-offs in sustainability assessment. *Environmental Impact Assessment Review*, 38, 54–63.
- Pienkowski, T., Keane, A., Castelló Tickell, S., Hazenbosch, M., Arlidge, W. N. S., Baranyi, G., Brittain, S., de Lange, E., Khanyari, M., Papworth, S., & Milner-Gulland, E. J. (2022). Balancing making a difference with making a living in the conservation sector. *Conservation Biology*, 36, e1346. <https://doi.org/10.1111/cobi.13846>
- Raworth, K. (2017). *Doughnut economics: Seven ways to think like a 21st-century economist*. Chelsea Green Publishing.
- Rice, J. C., & Garcia, S. M. (2011). Fisheries, food security, climate change, and biodiversity: Characteristics of the sector and perspectives on emerging issues. *ICES Journal of Marine Science*, 68, 1343–1353.
- Sandbrook, C., Fisher, J. A., Holmes, G., Luque-Lora, R., & Keane, A. (2019). The global conservation movement is diverse but not divided. *Nature Sustainability*, 2, 316–323. <https://doi.org/10.1038/s41893-019-0267-5>
- Schaafsma, M., Eigenbrod, F., Gasparatos, A., Gross-Camp, N., Hutton, C., Nunan, F., Schreckenber, K., & Turner, K. (2021). Trade-off decisions in ecosystem management for poverty alleviation. *Ecological Economics*, 187, 107103. <https://doi.org/10.1016/j.ecolecon.2021.107103>
- Schreckenber, K., Mace, G. M., & Poudyal, M. (2018). *Ecosystem services and poverty alleviation: Trade-offs and governance*. Routledge.
- Schuitema, G., & Bergstad, C. J. (2018). Acceptability of environmental policies. In L. Steg & J. I. M. de Groot (Eds.), *Environmental psychology: An introduction* (pp. 295–306). John Wiley & Sons Ltd.
- Senko, J., Schneller, A. J., Solis, J., Ollervides, F., & Nichols, W. J. (2011). People helping turtles, turtles helping people: Understanding resident attitudes towards sea turtle conservation and opportunities for enhanced community participation in Bahía Magdalena, Mexico. *Ocean and Coastal Management*, 54, 148–157. <https://doi.org/10.1016/j.ocecoaman.2010.10.030>
- Sippe, R. (1990). *Power and accountability: The contribution of environmental impact assessment to sustainable development in Western Australia*. Science, Assessment and Sustainability Conference. p. 7.
- Strauss, A. L. (1987). *Qualitative analysis for social scientists*. Cambridge University Press.
- Tetlock, P. E. (2003). Thinking the unthinkable: Sacred values and taboo cognitions. *Trends in Cognitive Sciences*, 7, 320–324.

- Upham, P., Oltra, C., & Boso, À. (2015). Towards a cross-paradigmatic framework of the social acceptance of energy systems. *Energy Research and Social Science*, 8, 100–112.
- Vucetich, J. A., Bruskotter, J. T., van Eeden, L. M., & Macdonald, E. A. (2021). How scholars prioritize the competing values of conservation and sustainability. *Biological Conservation*, 257, 109126. <https://doi.org/10.1016/j.biocon.2021.109126>
- Watts, M. E., Ball, I. R., Stewart, R. S., Klein, C. J., Wilson, K., Steinback, C., Lourival, R., Kircher, L., & Possingham, H. P. (2009). Marxan with zones: Software for optimal conservation based land-and sea-use zoning. *Environmental Modelling and Software*, 24, 1513–1521.
- Weeks, R., Aliño, P. M., Atkinson, S., Beldia, P., Binson, A., Campos, W. L., Djohani, R., Green, A. L., Hamilton, R., Horigue, V., Jumin, R., Kalim, K., Kasasiah, A., Kereseke, J., Klein, C., Laroya, L., Magupin, S., Masike, B., Mohan, C., ... White, A. T. (2014). Developing marine protected area networks in the coral triangle: Good practices for expanding the coral triangle marine protected area system. *Coastal Management*, 42, 183–205. <https://doi.org/10.1080/08920753.2014.877768>
- Wieland, R., Ravensbergen, S., Gregr, E. J., Satterfield, T., & Chan, K. M. (2016). Debunking trickle-down ecosystem services: The fallacy of omnipotent, homogeneous beneficiaries. *Ecological Economics*, 121, 175–180.
- Wiréhn, L., Käyhkö, J., Neset, T.-S., & Juhola, S. (2020). Analysing trade-offs in adaptation decision-making—Agricultural management under climate change in Finland and Sweden. *Regional Environmental Change*, 20, 18. <https://doi.org/10.1007/s10113-020-01585-x>
- Woodhouse, E., Bedelian, C., Dawson, N., & Barnes, P. (2018). Social impacts of protected areas: Exploring evidence of trade-offs and synergies. In K. Schreckenberg, G. Mace, & M. Poudyal (Eds.), *Ecosystem services and poverty alleviation: Trade-offs and governance* (pp. 222–240). Routledge.

How to cite this article: Fortnam, M., Chaigneau, T., Evans, L., & Bastian, L. (2023). Practitioner approaches to trade-off decision-making in marine conservation development. *People and Nature*, 5, 1636–1648. <https://doi.org/10.1002/pan3.10530>