

Monitoring and Evaluation Framework for Marine Conservation Agreements in Fiji



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1. Marine Conservation Agreements

Top-down regulation from government agencies on spatial aspects of marine area protection, or restrictions on fishing gear restrictions, fish harvest or other types of human use of coastal and marine resources, can sometimes be confrontational, difficult and expensive to implement and enforce, inflexible, have inadequate process transparency and buy-in from all involved stakeholders including resource users (*Jones 2012; Gaymer et al. 2014*). In contrast, voluntary agreements, as opposed to regulations, in very special cases, can be very powerful forces for conservation and human well-being goals, through clear alignment of incentives between the parties involved in the agreement (*Wiley et al. 2008*). Government agencies can also participate in voluntary agreements, as such approaches to conservation can involve various parties (e.g., communities, small private businesses, large industries), with an interest in making a commitment to environmental performance that is higher or up to stricter standards than required by law (*Karamanos 2001*).

Marine Conservation Agreements (MCAs) have emerged as a strong form of such effective voluntary agreements and have been used in at least 13 countries. Marine Conservation Agreements are "*any formal or informal contractual arrangement that aims to achieve ocean or coastal conservation goals in which one or more parties (usually right-holders) voluntarily commit to taking certain actions, refraining from certain actions, or transferring certain rights and responsibilities in exchange for one or more other parties (usually conservation-oriented entities) voluntarily committing to deliver explicit (direct or indirect) economic incentives*" (*The Nature Conservancy, www.mcatools.org*).

MCAs must explicitly say what direct or indirect economic benefits are provided in exchange for specific conservation actions. MCAs have several core components to them (adapted from Wunder 2005):

- a. **agreement mechanisms**, which can be any formal or informal contractual arrangement;
- b. **conservation goals** that contribute to biodiversity conservation, fisheries management, or sustainable financing for conservation; well-defined ecosystem service maintenance through a form of marine use area likely to secure that service;
- c. **right-holders** (one or more parties) which hold certain rights over natural resources and can enter into an agreement;
- d. **clearly defined parties to agreement: providers and beneficiaries**

- e. **voluntary transaction** in which parties voluntarily commit to taking certain actions, refraining from certain actions, and/or transferring certain rights and responsibilities in exchange for conservation-oriented entities;
- f. **incentives** (explicit incentives, whether direct or indirect, monetary or non-monetary); and
- g. **conditionality** where the agreement is maintained only if provider continues to supply service.

MCAs are not required to have a monetary component or money exchange between providers and beneficiaries. Payments for Ecosystem Services (PES) are classified as a subset of MCAs that specifically involve monetary transactions between buyers and sellers of a particular marine resource use or practice. PES and MCA schemes, in general, can have spatial extent; for example, there could be voluntary agreements involving the creation of no-take marine reserve, or the agreement may be one that just focuses on certain behavior that is to be avoided, e.g., agreement to stop using certain destructive fishing gear types regardless of any marine reserve boundary.

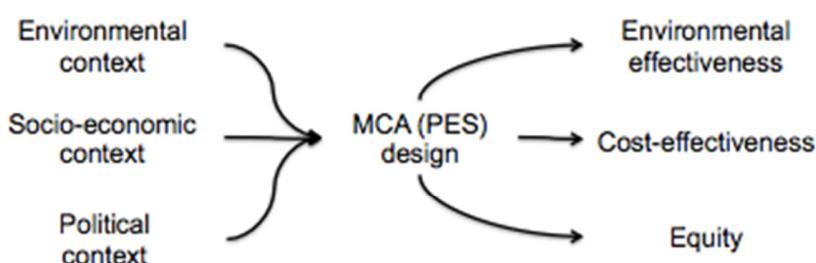
Many MCAs, and all PESs, focus on maintaining ecosystem services, i.e., benefit flows to people coming from healthy ecosystem processes and functions, which has positive outcomes for both biodiversity conservation as well as human well-being goals. Ecosystem services are the diverse benefits people around the world derive from processes and functions of different ecosystems. Ecosystem services are formally defined as provisioning (e.g., food, drinking water), regulating (e.g., carbon sequestration, water filtration, coastal protection), supporting (e.g., oxygen production, food webs, nutrient cycling), and cultural (e.g., recreational, spiritual) (*Millennium Ecosystem Assessment 2005*).

2. Marine Conservation Agreements as Mechanisms for Creating Marine Reserves

MCAs as voluntary agreements have been used in the past in many countries to aid in the creation of marine reserves ('no-take' areas) or multiple use marine protected areas (MPAs). Both types of MCAs can be used to protect specific sites and natural resources of conservation importance, and complement more formal networks of MPAs.

The Namena Marine Reserve in Fiji is a great example of an MCA with clear spatial boundaries for a no-take marine reserve via voluntary arrangement with dive tourism operators that frequent the areas. In other countries, there are examples of communities restricting certain gear types as part of arrangements with local dive operators, to achieve biodiversity outcomes or a reduction in fishing pressure (Kaiser et al. 2001; TNC, 2010).

Rigorous monitoring of the effectiveness of voluntary environmental agreements, including MCAs, regardless of whether they involve spatial protection or area-based fishing gear restrictions, is very difficult and typically plagued by lack of data and sometimes poor design (Wiley et al. 2008). Therefore, there is a need to be a deliberate, careful, and methodical approach to designing the MCA as deciding how the progression or success of the MCA will be monitored and evaluated. Lessons can be learned from effectiveness monitoring of marine reserves and MPAs broadly (Naidoo et al. 2006; Pressey et al. 2007; Koehn et al. 2013, LeCornu et al. 2014). The main aspects of MCAs generally, and PES in particular, can be captured by the following graphic (modified from Jack et al. 2008). These aspects would need to be carefully considered and monitored during the design and implementation phase of the MCA.



3. Broad aspects of enabling conditions for successful MCAs in Fiji

Many factors for success, or enabling conditions, particularly those involving trust and technical capacity, will be shared between buyers and sellers in an MCA. Some of the main factors are summarized here for reference:

a. Perceived benefit from MCA

Minimal cost to get involved and/or adequate compensation; for example, if they are fishermen who are giving up fishing rights, then the MCA deal must compensate them or they must be provided with an appropriate alternative for livelihood, income source, or food source (if fishing for subsistence).

b. Functional financial management infrastructure

An entity/committee trained in financial management must have the responsibility to handle the PES fund and disburse funds as per the MCA agreement (e.g., marine reserve management costs, community development expenses, student scholarships, etc.).

c. Effective governance

There must be no doubt who is responsible for which resources or who has which access rights to which areas and which authorities have jurisdiction in certain areas; the governance structure must ensure transparency and inclusivity in decision-making. The governance structure must also work with the financial management entity responsible for the fund in order to coordinate fairness and effectiveness in decision-making and fund disbursement.

d. Compliance with resource rules set forth in the MCA

The providers must respect the agreement and if they have given up fishing access rights to certain areas in order to secure a MCA fund, then they must comply and not be found poaching fish in the marine reserve.

e. Desire to conserve nature

Goals of MCAs by their very definition have the desire to conserve nature as core. This goal may be shared by one or all parties, with a willingness to pay for maintaining or improving biodiversity and/or fisheries in the area.

f. Clear legal structure

MCAs work best when there is legislative support for the establishment and implementation of the MCA agreements, preferably enforceable by law if necessary.

g. Performance-based payments

Buyers, which can be a diverse group of NGOs, dive operators, or individual tourists, may require adaptive re-negotiation of the MCA agreement based on continuous monitoring of the ecological condition of spatial area covered by the MCA. If the MCA area maintains a healthy resilient ecological state, then payments would continue, but if the ecological state deteriorates, payments will likely decline or cease altogether until the sellers/providers can improve ecological condition as best as possible through measures that are in their control (e.g., 'no-take' compliance, gear restrictions).

h. Monitoring and evaluation

Both buyers and sellers/providers are likely to have an intermediary group or third party that helps both negotiate the MCA and to also undertake the monitoring and evaluation of the MCA throughout the MCA deal lifetime. This can be a government entity, local NGO or university, with experience in MCAs.

4. Monitoring and Evaluation Framework for MCAs

A rigorous monitoring and evaluation (M&E) framework is necessary to track the success of MCAs towards the specific MCA biophysical and socioeconomic goals and objectives. Specifically, M&E enables buyers and sellers to track interventions or activities, achievements and milestones towards goals, so that the MCA can be adaptively managed to meet the goals in original agreement. When monetary transactions are present in the MCA (i.e. a PES), it becomes arguably even more important to have a clear and detailed M&E plan because monetary aspects of the agreement can skew incentives for participation in the agreement.

For spatial MCAs involving the establishment of a MPAs, there are already existing frameworks with ecological, socioeconomic, and political indicators to assess management effectiveness (*Hockings et al. 2000; Pomeroy et al. 2005*). Ensuring political and community support for MPAs is often tied to showing MPAs are making progress towards achieving ecological and socioeconomic goals, particularly in cases when an MCA is entered into by fishermen and other marine resource users to create the MPA.

Therefore, evaluations of MCA efficiency are critical for establishing benchmarks of success towards goals, setting course corrections if new priorities are needed, and promoting better organizational management practices focusing on transparency and accountability (*Pomeroy et al. 2005*). Such information is useful not only for different local

stakeholder groups who have an interest in MPA performance, but also donor agencies and policy makers, who help enable MPA efforts.

5. Metrics and Indicators for Monitoring and Evaluation Framework

The outcomes depend on successful governance and management processes relating to the MCA. Therefore, if when the M&E is done, it is found that goals for process and for socioeconomic and ecological outcomes are not met, then the governance structure of the agreement or the management structure of the fund, or trust between all the stakeholders, must be improved. If there is a lack of technical capacity that hinders successful governance and management, the gaps must be identified by the party undertaking the M&E process, and technical capacity must be added from outside or developed within through training programs. If there is lack of technical infrastructure or collaboration with government hinders successful enforcement of Reserve, then ways have to be found within the 'dual' legal system for the MCA agreement in place to improve compliance.

Key important components of a good M&E plan include the stakeholders and the types of outcomes stakeholders are interested in. Another important aspect is clear roles and responsibilities when it comes to who is doing the monitoring, evaluating, and reporting back to the broader base of stakeholders, i.e., community members directly, third party entity, NGOs, the buyer or a designated proxy of the buyer, government agency, etc. Finally, the evaluation questions forming the basis of an M&E plan, along with the indicators, need to be specific, not cost-prohibitive to measure, agreed-upon, realistic considered what is measurable and what is not, and time-constrained.

At every point during the MCA implementation, costs need to be monitored, ideally by the same entity that will be performing the monitoring and evaluation. Careful analysis is necessary prior to executing MCA agreement in order to minimize transaction costs and ensure implementation costs and monitoring costs will be feasible.

The following list of potential M&E questions is based on typical M&E frameworks (*Davidson and Wehiipeihana 2010*), adopted widely, and adapted for the marine reserve MCA setting in Fiji:

- **Process questions:**

- How well was the MCA designed and implemented?
- Was there adequate governance and management for the MCA?
- Was the 'dual' system of marine governance in Fiji effectively integrated into the functioning of the MCA?
- Did community members participate in decision-making in the beginning or throughout the lifetime of the MCA scheme?
- Were people held to the same standards of compliance for *tabu* areas in the beginning as later on during the lifetime of the MCA?
- What are the transaction costs for establishing the MCA?
- What are the costs for monitoring, evaluating and adapting management?

- **Outcome questions:**

- Did the project meet its goals and objectives?
- Has fish biomass, marine species diversity and coral reef health been maintained or enhanced in the 'no-take' reserve since it was created?
- Has returns from the MCA been sufficient to compensate the community for the forgone fishing access rights? It is important to note that compensation does not have to be monetary.
- Have all communities represented in the management committee of the MCA been benefitting from the MCA?
- Are there some significant ecological, social or economic changes directly attributable to the institution and implementation of the MCA?
- How does the management committee, fishing communities, dive operators, tourists, and other intermediaries (e.g., provincial office, NGOs) perceive the benefits of the MCA?

- **Learning:**

- What worked and what did not during the establishment and implementation of the MCA?
- Did the management and governance system ensure transparency and inclusivity in the decision-making process throughout the MCA scheme?
- Did people from some communities still poach in the 'no-take' reserve?
- What were there any unintended consequences of establishing an MCA?
- Did dive operators take it on themselves to catch poachers within the reserve?

- **Investment:**
 - Was the project funding enough to achieve the desired outcomes?
 - Was there another alternative that could have represented a better investment?
 - Who bears the costs and the benefits of the MCA?
 - What were the transaction costs?
 - How much time did it take to negotiate the MCA deal?
 - Could the same outcome have been reached by a top-down approach from the national government to establish and enforce a marine reserve?
- **What next?**
 - Can the project be replicated?
 - Are there spatial or temporal limits to the potential for replication?
 - Can the management and governance structure be improved upon prior to replication?
 - Can financial or legal challenges facing the management of the marine reserve be surmounted prior to the establishment of another MCA deal?

Not all of these questions and aspects can be turned into indicators, but they should always be considered in the implementation, monitoring, and evaluation of marine conservation agreements and payments for ecosystem services in settings in Fiji.

6. Monitoring and Evaluation Framework for MCAs in Fiji

This document outlines an M&E framework for new MCAs in Fiji, to help measure conservation impact. The implementation of this framework is done through specific ecological survey techniques and socioeconomic surveys focused on key informants and household surveys and questionnaires. Some of the indicators will apply only to the period prior to establishing the MCA, while others will become part of the long-term monitoring.

Metrics	Indicators	Measures of success
COMMUNITY SOCIO-ECONOMIC ASPECTS: Process-oriented metrics		
1. Percent of households familiar with how the rules will change as a result of the establishment of the marine reserve through a MCA	Communication, transparency of process	High %
2. Percent of community supporting the rules being changed to establish the marine reserve	Trust in leaders	High %
3. Percent of respondents who feel they can participate in decision-making	Knowledge of human agency	High %
4. Percent of households who were able to identify who initiated the changes and the creation of the marine reserve or MCA	Creators of rules about resource management	High %
5. Percent of households/respondents who get to participate in decision-making about the MCA	Participation in decision-making	High %
6. Percent of households/respondents who believe the decisions about the MCA are made fairly	Perceived fairness in decision-making	High %
7. Percent of households who are familiar with where the funds are coming from	Participation and transparency in decision-making	High %
8. Percent respondents who feel they receive fair benefits from the voluntary user fee-based funds of the MCA	Equity of resource management/social performance	High %
9. Percent of households who feel their community receives fair benefits from the voluntary user fee-based funds of the MCA	Equity of resource management/social performance	High %
10. Percent of households who used to fish in the area which is now a marine reserve	Perception of opportunity cost	Low %
11. Number of fishers and fishing households affected by the MCA	Fisheries dependence	Low %
12. Percent of household income from fisheries livelihoods	Fisheries dependence	Low %
13. Percent of households who eat seafood frequently	Dependence on local fishing grounds for food security	Low %
14. Percent of households who perceive there is higher fish biomass as a result of the MCA	Local observation of benefit	High %

COMMUNITY SOCIO-ECONOMIC ASPECTS: Outcome-oriented metrics		
15. Percent of households satisfied with the health and status of local marine resources	Dependence on local seafood for subsistence	High %
16. Percent of fishers/fishing households who lost fisheries income due to the MCA	Equity of resource management	Low %
17. Percent estimated loss of income due to foregone catches or additional effort	Equity of resource management	Low %
18. Percent of households who feel it is fair to distribute funds according to those who used to fish in the area covered by the marine reserve the most	Equity of resource management	High %
19. Percent of households who feel it is fair to distribute funds according to level of customary rights in the place where the marine reserve is established	Equity of resource management	High %
20. Percent of households who feel it is fairest to distribute funds according to poverty level	Equity of resource management	Low %
21. % of respondents/households who know and respect the spatial boundaries of the marine reserve set up by the MCA	Well-defined spatial boundaries	High %
22. Percent of respondents who observed poaching/illegal fishing in the marine reserve (established through an MCA)	Knowledge of rules about resource management	Low %
23. Percent of respondents who support the rules changing as a result of the implementation of the MCA	Knowledge of rules about resource management	
24. Percent of respondents who perceive significant positive benefits to themselves from the MCA	Positive impact of MCA	High %

TOURISM OPERATOR PERCEPTIONS: Process-oriented metrics		
25. Percent dive operators who have >50% of their dive operations in the area of interest for a MCA reserve	Commitment and vested interest of stakeholder	High %
26. Percent of dive operators who trust and agree with the decisions made by the governing entities of the <i>qoliqoli</i> and <i>tabu</i> areas	Trust in leaders	High %
27. Percent of dive operators who believe a Resource Management Committee is adequately managing or would adequately manage a dive fund generated by voluntary contributions	Technical capacity in financial management	High %
28. Percent dive operators who support the changing of the fishing pressure rules with the establishment of the no-take reserve	Trust	High %
29. Percent of dive operators who participate in the decision-making of setting up the management rules for the MCA (including boundaries, voluntary contributions, etc.)	Equity in decision-making	High %
30. Percent of dive operators who believe decision-making on the marine reserve (even if they do not participate) is adequate	Trust	High %
31. Percent of dive operators who perceive they have a responsibility to play role in enforcing the rules of the marine reserve	Enforcement capacity	High %
32. Percent of dive operators who believe the local authorities have to use their authority to discourage poaching/illegal fishing	Non-compliance	High %
33. Percent of dive operators who believe the governance and management of the agreement with communities can be improved	Governance and collective decision-making	Low %
34. Percent of dive operators who see a risk to their operations because of the MCA	Business Risk	Low %
35. Percent of dive operators who see a risk to the ecosystems they access because of the MCA		

TOURISM OPERATOR PERCEPTIONS: Outcome-oriented metrics		
36. Percent of dive operators who have noticed improvements in the coral reef habitats and fish biomass in the marine reserve since its establishments	Perceived ecological benefit	High %
37. Percent of dive operators perceiving benefits to their operations from the MCA?	Perceived individual economic benefit	High %
38. Percent of dive operators who perceive all dive operators collectively have benefitted from the MCA	Equity	High %
39. Percent of dive operators who expect a positive impact of the MCA on the people of the district	Benefit sharing	High %
40. Percent of dive operators who have observed increased tourism visitation to the marine reserve after creation of the reserve	Perceived individual economic benefit	High %
41. Percent of dive operators who have observed poaching/illegal fishing in the no-take reserve	Non-compliance	Low %
42. Percent of respondents who do not believe the ecological and socioeconomic benefits could have been achieved without this MCA agreement	MCA additionality	High %

ECOLOGICAL METRICS		
43. Reef Fish Biomass (kg/hectare) in the reserve	Productivity of the system	High kg/ha
44. Reef Fish Biomass (kg/hectare) outside of the reserve ('spillover')	Productivity of the system	High kg/ha
45. Percent hard coral cover in the marine reserve	Biodiversity protection and resilience	High %
46. Coral genera richness in the marine reserve	Essential Habitat	High
47. Reef fish species richness inside the marine reserve	Biodiversity protection and resilience	High levels of species richness
48. Reef fish species richness outside the marine reserve ('spillover')	Biodiversity protection and resilience	High levels of species richness
49. Structural complexity inside the marine reserve	Habitat complexity	Highly complex
50. Density of invertebrates (abundance/m ²) inside the marine reserve	Density of targeted invertebrates	High abundance/m ²

ECONOMIC METRICS (including MCA Transaction Costs)		
51. Money and time spent by MCA parties and other supporting stakeholders (e.g. supporting NGO, government) to design the MCA (e.g. meetings, feasibility study)?	Design costs	
52. Money spent by MCA parties and other supporting stakeholders (e.g. supporting NGO, government) to establish the MCA (e.g. meetings, bank account & initial investment, official launching)?	Establishment costs + potential investment costs	Cost-benefit ratio $<=1$
53. Money spent by MCA parties and other supporting stakeholders (e.g. supporting NGO, government to operate the MCA (e.g. time spent by the board, control & enforcement, M&E)?	Operating costs	
54. Money spent by all partners to make any change to the MCA (e.g. new feasibility, surveys, meetings)?	Adapting management costs	
55. Money from the voluntary payments, and the proportion of payments used to cover operating costs.	Benefits from the MCA	

7. Lessons from Payments for Ecosystem Services on Land

Payments for watershed services on land, as well as other terrestrial ecosystem service payment schemes, have taught a few valuable lessons with respect to M&E. Often, the most important aspect of testing any type of PES effectiveness is **additionality**, i.e., what kind of ecological and social benefits has the PES resulted in (or is expected to result in) that would otherwise not have occurred if this PES scheme was not implemented. We also have to monitor for unintended or unforeseen positive or negative ecological and social impact that the PES may result in (*Porras et al. 2013*).

The true test for **additionality**, however, requires understanding attribution, i.e., how every stakeholder groups' activities, as well as ecological and other processes operate, so that there is a clear understanding of how much human and ecosystem processes contribute to the success or failure of a MCA scheme to deliver ecosystem services results. The best way to design monitoring and evaluation that tests for **additionality** and attribution is to have an impact evaluation design which has an experimental site as a "counterfactual", i.e., a site which is not 'disturbed' or 'altered' by the implementation of a MCA, but is otherwise very similar to the experimental site in ecological, social, political, socio-economic, cultural, legal, and other attributes (*Pressey et al. 2015*). Such experimental impact evaluations are very difficult to set up and require much pre-analysis of what could constitute a comparable site.

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