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SOCIO-ECONOMIC ASSESSMENT TOOL (SEAT): ASSESSING THE SOCIO-ECONOMIC BENEFITS OF MARINE PROTECTED AREAS (MPAs)

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INTRODUCTION

Marine Protected Areas (MPAs) have been scientifically proven to enhance the earth's natural capital in the marine ecosystem, thus contributing to improved human wellbeing by providing healthy habitats for fisheries, sources of recreation, buffers for storms, and a host of other natural processes that make human life possible the way we know it.

From a human point of view, the ultimate goal of resource management is to strive for a balance between consuming now and leaving enough for future generations to continue to enjoy the benefits from natural ecosystems. Thus, MPAs become socially acceptable if they are able to contribute to both present and future needs. At the very least, their establishment should not be seen as costs that outweigh the intended benefits that the present generation should be enjoying.

There are two sets of indicators that are being measured. The first set contains input indicators, which refer to inputs or resources that local government units (LGUs) employ to set up and manage their MPAs. The second set contains output indicators, which refer to basic socio-economic indicators that contribute to building financial, human and social capital at the local level. Hence, while MPAs are primarily meant to build up natural capital, they are further being designed, or at least encouraged, to simultaneously impact other aspects of human well-being in order to be acceptable and sustainable.

SEAT complements the existing MPA Effectiveness Assessment Tool (MEAT), which assesses governance effectiveness in managing Philippine MPAs. SEAT makes a determination if the social and economic benefits from MPAs are more than their costs to stakeholders that should benefit from them. The SEAT results serve as incentives for managers to continue or expand their MPAs, and as inputs to redesign MPAs towards enhanced social and economic benefits.



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INPUT INDICATORS

Input indicators refer to the interventions made by MPA managers, i.e. the LGUs where the MPAs are located, that establish and sustain the MPAs. They are classified as follows:

1. ***Budgets allocated for MPA management***

The budget indicator attempts to demonstrate the LGU's determination to sustain MPAs by allocating regular funds for management. The budget may come from various sources, but if the LGU puts priority on MPA management, then the funds will be sourced from their regular allocation from the national government even if MPA revenues are not realized.

An implicit prerequisite is that the LGU has an MPA Management Plan drafted, in order to claim that budgets are indeed allocated towards MPA management. This prerequisite is consistent with MEAT wherein MPAs are said to have reached Level 1 if a management plan has been drafted and adopted.

At the onset, it would be difficult to expect most LGUs to fund all requirements of their MPA management plan solely from their regular budget allocations. Competing programs on infrastructure, education, health and poverty allevation have always dominated public investment plans, especially in lower class municipalities where many of MPAs are located. The scoring scheme of SEAT recognizes this thus LGUs get a positive score if they are able to fund even a third of their MPA's budget requirements. Higher scores are provided with enhanced LGU ability to fund more programs in their MPA Management Plan. The highest score is accorded to LGUs who are able to provide 75% and above of their MPA budget requirements.

2. ***Revenues generated from MPA management***

Part of the benefits of sustaining MPAs is the potential of earning revenues from its users. In some successful case studies, MPAs have become favorite destinations of snorkeling and scuba diving enthusiasts, and have provided an opportunity for LGUs to earn revenues through the establishment of entrance fees. In other cases, LGUs have successfully raised revenues from the issuance of auxiliary invoices, based on taxes imposed on the transport of fish and other marine products outside of a fish port or fish landing site. With an increase in fish biomass due to the presence of MPAs, fish landed and transported may also increase, thereby allowing an LGU to earn more from the tax. The key is to properly identify who the major users are, and impose fees that are acceptable to them, ideally based on willingness-to-pay principles of environmental economics. Needless to say, the scheme/s should be consistent with the allowable uses identified in the MPA management plan. Endowment funds can qualify as revenue generating schemes, as well as other regular donations made for the upkeep of the MPA.

LGUs who are able to establish a revenue-generating scheme, legally through a local ordinance, are accorded a score of 1. Those who are able to start collecting revenues are



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given a higher score of 2, while those who use the revenues to fund most of their MPA budget requirements are given the highest score.

3. ***Trust Fund created***

Raising revenues from MPAs is a good indicator, as shown above. Ensuring that the revenues are used to fund MPA management activities exclusively is even better. If the WTP principle in economics is used as basis to determine revenue-generating schemes, then it necessarily follows that users are willing to pay only if their payment is used to enhance the resource or ecosystem service they are paying for. It can be assumed that current users of MPAs would want to continue using the MPA in perpetuity, thus sustainable management would be their top priority in supporting the revenue generating scheme.

The creation of the Trust Fund is the sole sub-indicator for this category. The amount of revenues and their sufficiency to fund the MPA management plan has been captured by the previous indicator. The Trust Fund intends to measure the earnestness of the LGU in using the revenues exclusively for MPA management.

4. ***Business Plan formulated***

Crafting a management plan is a sign that the LGU intends to support the continued existence of the MPA. In the experience of the country though, having a management plan does not always translate to actual management. In many cases, the MPA management plans are underfunded, sometimes because of the lack of resources due to a variety of reasons, but many times because the planners did not really know how to proceed in implementation after enumerating their strategies. In both cases, a business plan helps the LGU in transcending such constraints, and enabling them to actually implement what they planned for. A business plan translates all objectives, strategies and programs into actual activities and budget items, allowing the LGU to come up with realistic plans and identify sources of funds that will enable them to implement their strategies.

Similar to the previous indicator, there is only one sub-indicator for this, i.e. the presence or absence of a business plan, which translates the MPA Management Plan into a workable and realistic plan.

5. ***Incentive Scheme/s in place***

Economic theory suggests that incentives and disincentives heavily influence decisions and behavior of people. In this case, the continued management of MPAs, as well as the increase or decrease of threats to the MPA, can be influenced by incentive and disincentive schemes. To ensure sustainability of management inputs, incentive schemes should therefore be introduced for both users and managers to continue enhancement activities and programs. There are a number of schemes that are in place in some areas, e.g. best MPA awards, insurance and scholarship programs for Bantay Dagat members, tax breaks for private sector companies that support MPAs, etc. LGUs can therefore put a number of incentive schemes in place to influence various users to support their MPA management plans.



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The scoring system intends to recognize LGUs who are more creative and proactive in setting up incentive schemes, by allotting a higher score for those who establish more schemes.

6. Disincentive Scheme/s in place

Corollary to the previous indicator, disincentive schemes for violators of MPA rules should be set up in order to discourage continued degradation of marine resources. Current laws prescribe minimal fines for violations of environmental rules, pegged at PhP 2,500 per violation. As experience has shown, the amount is not enough to deter illegal activities from occurring, and in many cases, violators would willingly pay the fine if given that option.

To discourage further illegal activities, LGUs are now being egged on to establish fines for violations occurring within their municipal waters at the minimum, or even be creative in setting up fines. Hence, a score of 1 is given for those who are able to establish fines for MPA violations. For LGUs that use the legal maximum of PhP 2,500 per violation, a score of 2 is given. If the fines go beyond PhP 2,500 per violation, a score of 3 is given. Current laws limit the imposition of fines at PhP 2,500 per violation. However, the amount has not served as a deterrent, but has sometimes been used as a “pass” to violate, whereby violators would rather pay the fine rather than follow the law because it is cheaper for them to do so. To get around this limitation, some LGUs have creatively amended their fines system so that the fines can serve their purpose of deterring violations. Some LGUs impose PHP 2,500 for every fisher aboard a commercial boat caught encroaching in municipal waters, while some impose PhP 2,500 for every meter of fishing net found to have violated the allowable mesh size. In effect, the fine goes beyond the legal limit of PhP 2,500 per violation as previously interpreted.

TABLE 1. SUMMARY OF INPUT INDICATORS FOR SEAT

Indicator	Possible Points	Actual Points	MOV
1. BUDGET ALLOCATED	3		
A substantial portion of the MPA Management Plan is funded			Income and expenditure statements of LGUs
a. 30% = 1			MPA Management Plan
b. 50% = 2			
c. 75% or > = 3			
2. REVENUES GENERATED	3		
Revenues from CRM activities are generated (auxiliary income taxes, tourism fees, etc.)			Ordinance/s creating the revenue generating scheme/s



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- | | |
|--|--|
| <ul style="list-style-type: none"> a. Scheme/s established = 1 b. Scheme/s generating revenues = 2 c. Scheme/s used to fund at least 75% of MPA budget requirements = 3 | <p>Income and expenditure statements of LGUs</p> |
|--|--|

3. TRUST FUND CREATED	3	
Revenues generated are put in a dedicated fund for MPA management		Ordinance creating the Trust Fund
Yes = 3 No = 0		

- | | |
|---|--|
| <p>4. BUSINESS PLAN FORMULATED</p> <p>The MPA Management Plan is translated into a business plan</p> <p>Yes = 3
No = 0</p> | <p style="text-align: center;">3</p> <p>MPA Management-Approved Business plan</p> |
|---|--|

5. INCENTIVE SCHEME/S IN PLACE	3	
Incentive scheme/s to promote MPA is implemented, e.g. tax breaks for private sector entities, Bantay Dagat incentive schemes, awards system (e.g. BRAVO in VIP), etc.		Ordinance/s creating incentive schemes
<ul style="list-style-type: none"> a. 1 incentive scheme = 1 b. 2 incentive schemes = 2 c. 3 or > = 3 		

- | | |
|--|---|
| <p>6. DISINCENTIVE SCHEME/S IN PLACE</p> <p>Fines for MPA violations are established</p> <ul style="list-style-type: none"> a. Fines established = 1 b. Fines set at PhP 2,500 per violation = 2 c. Fines set beyond PhP 2,500 per violation = 3 | <p style="text-align: center;">3</p> <p>Ordinance/s defining fines</p> |
|--|---|

SUBTOTAL	18	
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OUTPUT INDICATORS

The following indicators attempt to measure the build-up of three types of capital that contribute to improving human well-being: financial, human and social. The first two



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indicators refer to the build-up of financial capital at the private or household level. The next three indicators refer to the build-up of human capital, i.e. health, education and culture. The last four indicators refer to the build-up of social capital, which is seen as the fabric that ties the community together and ensures sustainability of community programs in the long run. Social capital lowers the transaction cost of working together and facilitates cooperation. It may be reflected increased confidence among stakeholders (including women) in investing in collective activities knowing that others will do so.

1. *Incomes increased*

Increase in income is usually the most desired form of economic benefit from any kind of intervention. It is the greatest economic incentive for people to support a government program, and it usually leads to other social benefits as local families are given more options to improve their well-being as spending power increases. The establishment of MPAs has proven to lead to increased fish biomass, therefore providing more harvestable resources for those who rely primarily on harvesting. There are other income-generating opportunities that MPAs offer, such as those related to water sports that center around the MPAs.

If the MPA is able to improve incomes of at least 10% of the local population, then a score of 1 is given. For a higher percentage, a higher score is given. If at least half of the population is earning better due to the MPA, the LGU gets the highest score of 3. The percentages are not based on some statistically proven theory. Nevertheless, the important caveat for this indicator is the attribution, i.e. the increase in income should be attributable to the existence of the MPA. Hence, the source of income is important to note.

2. *Employment increased*

In some cases, income may not be the best measurement of economic benefits, due to data issues. It is common knowledge that fishing families have varied albeit undocumented sources of livelihoods, and total incomes are not always reflected accurately in the country's official surveys and databases. The introduction of a second economic indicator may be useful. In this case, the increase in employment opportunities can be treated as an economic benefit brought about by MPAs. The influx of tourists directly enjoying the recreational benefits from MPAs usually ushers in economic opportunities, e.g. tourism-related jobs or enterprises. Increases in fish catch may bring about the creation of micro or small-scale enterprises involved in processing and packaging. Even MPA management can bring about more jobs, e.g. the creation of Bantay Dagat teams who are officially hired by the LGU. Again, similar to the previous indicator, the jobs should be directly attributable to the existence of the MPA for an LGU to be credited.

Business applications related to the MPA are credited with one point. Higher scores are accorded to the increase in local employment, i.e. local people avail of the employment opportunities created by the MPA. This can capture the bias towards the provision of benefits to local people, which would mean MPA benefits are more equitably distributed



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among those who need them more. The highest score is accorded to MPAs that are able to demonstrate both creation of opportunities and local hiring.

3. Health status improved

Health indicators that can be attributed to the MPA will be measured. Seafood intake will be the most basic indicator, given that seafood is considered the best source of Omega 3. For higher scores, diversity in diets of MPA communities may be considered a higher level of improved health status. According to a recent paper by Alva et. al. (2015), a positive correlation can be established between proximity of living near an MPA and children's dietary intake.

Only two sub-indicators are included due to the paucity of literature that establishes a direct link between MPAs and health and nutrition status of people. However, unlike previous indicators where only one score can be used for each indicator, an MPA can be scored for both sub-indicators under "health status improved". In other words, both "increased seafood intake" and "dietary diversity for children" may apply simultaneously to one MPA. An MPA may therefore have a maximum score of 2 in this category.

4. Knowledge increased

Knowledge about MPAs is used as a proxy for the build-up of human capital. The wide dissemination of IEC materials means there is a probability that people will increase their knowledge about MPAs in their area, therefore will garner a score of 1. The responsibility for disseminating IEC materials lies with the MPA management authority; hence may even be considered as an input indicator. On the other hand, the next two sub-indicators are more accurate measurements of outputs, e.g. of IEC campaigns and awareness about MPAs. Inclusion of MPAs in town meetings signals that the MPAs are significant enough to affect the community's situation, and that the MPAs are treated as common property that they need to manage themselves. Targeting the youth through the inclusion of MPAs in school curricula is another good indicator that knowledge about MPAs is being disseminated extensively.

The target stakeholders for "IEC materials disseminated", "inclusion in town meetings" and "inclusion in school curricula" are different groups; therefore an MPA can score for all sub-indicators simultaneously when applicable. The last two sub-indicators are accorded higher scores since they ensure greater probability of knowledge increase relative to the first one. An MPA can therefore garner a maximum score of 5 for this indicator.

5. Cultural values enhanced

Potential benefits from MPAs include the promotion or enhancement of cultural values. Culture may cover different aspects for different groups. The sub-indicators proposed in this instrument therefore refer to the idea that MPAs are able to contribute to preserving, promoting and enhancing the positive aspects of the existing culture in the area, thereby creating a "culture of conservation" among the locals. If the MPA is seen as a source of local



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pride, then a score of 1 is provided. If it serves as a platform or an opening for resolving conflicts in the area, then another score of 1 can be garnered. The preservation of traditional practices is accorded another score of 1, particularly if having a marine or fish sanctuary is part of the tradition of the locals, e.g. among indigenous people. Finally, if the MPA is able to promote moral values among the locals and users, then another score of 1 is given.

6. *Social groups are formed and diversified*

Social groups are venues for collective decision-making, information dissemination and collaborative action, which form part of the capital that leads to social cohesion. The social groups measured in this category should be directly attributable to the MPA. It may be the case that the MPA causes the reactivation of an existing but dormant group. This will still fall within the definition of this sub-indicator. If diversified groups are formed due to the MPA, a higher score is garnered. Examples of diversification would include, but not limited to: youth groups, women's groups, religious groups, ethnic groups, etc.

7. *Funding of social groups is multi-sourced*

Just like any other endeavor, funding is crucial to allow a social group to operate and exist sustainably. Sources should be diversified and varied to the extent possible, to minimize risks of not meeting revenue or collection targets. Groups that are able to raise their own funds are given a score of 1 for this indicator. Those that can source from more than one are provided a higher score.

8. *Social interactions improved*

Social capital lowers the transaction cost of working together and facilitates social interaction and cooperation. Collective actions on MPAs can start from sharing of information. If PO meetings reflect sharing of information among its members, a score of 1 is provided. As stakeholders gain increased confidence in investing on collective activities knowing that others will do so, values and norms on collaboration change. For example, if there are more volunteers emanating from the community who engage in implementing MPA management strategies, a score of 2 is given. This may be reflected in an increase in the membership of the POs involved in MPA management, or through an increase in the membership of Bantay Dagat teams, or even an increase in individuals from the community who volunteer in other MPA-related tasks. The highest score is given to collective actions that result to mutual benefits. For instance, if the LGU officially delegates POs to implement portions of the MPA management plan, and the PO gets rewarded either through direct compensation or through other incentives provided by the LGU, a score of 3 is garnered.

9. *Community leaders emerged*

The existence of leaders is often key to maintaining good programs in a community. When local leaders are able to garner the respect of their constituents by leading through example, followers become strongly motivated themselves to contribute to the success of the program.



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Existence of motivated and respected leaders garners a score of 1. A greater achievement is if the leader is able to influence self-enforcing mechanisms, which are defined as penalty systems that are marked by strong operational rules designed, enforced and controlled by local fishers and leaders. An example of this is a leader of a Bantay Dagat team that has designed and is implementing their own rules and penalty systems, which the LGU recognizes and supports. An additional score of 1 is provided if the recognized leader is able to do so. Finally, leaders with entrepreneurial skills are given an additional score of 1, wherein the leader is able to influence markets. Examples of market influence include, but are not limited to: creative marketing tactics, improved product quality, shorter intermediaries' chains, more efficient market coordination, and eco-labeling strategies. A leader may possess all three, hence can be scored for all sub-indicators. Others may be good at either enforcement or entrepreneurship, hence may garner a score of 2.

TABLE 2. SUMMARY OF OUTPUT INDICATORS FOR SEAT

Indicator	Possible Points	Actual Points	MOV
1. INCOMES INCREASED	3		
Local stakeholders earn more from the existence of the MPA (from fisheries, tourism, or other economic activities)			HH surveys of income/savings of fisherfolk CBMS/ RSBSA results
10% of population = 1 25% of population = 2 50% or more = 3			Perception surveys
2. EMPLOYMENT INCREASED	3		
MPA-related jobs are available, e.g. tourism-related jobs, bantay dagat, etc.			No. of MPA-related business permit applications at the LGU
Increased no. of MPA-related business applications = 1 Increased local employment of existing MPA-related job opportunities = 2 Increased no. of business applications AND local employment of existing businesses = 3			FishR records Annual income reports of businesses
3. HEALTH AND NUTRITION STATUS IMPROVED	2		



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(Check all that apply)		Perception surveys
Improved health status due to improved ecosystem services from MPAs		Barangay health records
Increased seafood intake = 1		
Increased dietary diversity of children under age 5 = 1		
4. KNOWLEDGE INCREASED	5	
(Check all that apply)		
IEC materials produced and disseminated = 1		Photos of IEC materials displayed, disseminated
Town meetings include MPA discussions = 2		Highlights of town meetings
Elementary and/or HS educational curriculum includes MPA = 2		Educational curriculum of local schools
5. CULTURAL VALUES ENHANCED	4	
(Check all that apply)		
Source of pride = 1		Key informant interviews
Platform for conflict resolution = 1		
Preserves traditional practices = 1		FGDs with locals
Promotes moral values = 1		LGU records
6. SOCIAL GROUPS ARE FORMED AND DIVERSIFIED	3	
Social groups are formed = 1		Registration documents
Social groups are diversified, at least 2 types = 2		
Social groups are diversified, at least 3 types = 3		Key informant interviews
TYPES:		LGU records
a) Barangay/village		
b) Family/Kin		
c) Religion		
d) Gender		
e) Age		
f) Ethnicity/Tribe		
7. FUNDING OF SOCIAL GROUPS IS MULTI-SOURCED	2	
One source = 1		Registration documents



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<p>More than 1 source = 2</p> <p>Possible sources:</p> <ul style="list-style-type: none"> a) Membership dues b) Voluntary contributions from members c) External funding sources (e.g. LGU, donors, NGOs, etc.) 		<p>PO Financial statements</p>
<p>8. SOCIAL INTERACTIONS IMPROVED</p>		
<p>Information sharing exists = 1 Collaboration increases = 2 Collective action results in mutual benefits = 3</p>	<p>3</p>	<p>PO meeting highlights</p> <p>Historical membership records of PO</p> <p>LGU records</p>
<p>9. COMMUNITY LEADERS EMERGED</p>		
<p><i>(Check all that apply)</i></p> <p>Motivated and respected leaders exist = 1 Leaders direct self-enforcing mechanisms = 1 Leaders with entrepreneurial skills influence markets = 1</p>	<p>3</p>	<p>Key informant interviews</p> <p>Recognition/ Leadership awards</p> <p>MPA rules</p> <p>PO documents (e.g. purchase orders, agreements, etc.)</p>
<p>SUBTOTAL</p>		<p>28</p>