An Economic Justification for the Development and Establishment of Seascapes in the Coral Triangle

Source: Conservation International

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August 4, 2016

Glossary of Terms

For the purposes of this paper the below terms are used as follows:

Economic Benefits: Increases in income and generated revenue as well as decreases in loss of revenue (for example, in an industry.) Benefits are also actions that help create conditions under which economic growth can more easily occur and economic opportunities arise.

Sustainable Financing: The financial resources needed to cover conservation costs such as the management costs of marine protected areas are generated by the protected areas themselves. Examples of revenue sources include but are not limited to tourist charges, environmental services fees and payment schemes for environmental services.

Lost Costs: Business revenue that is lost due to the increased activities of another business. For example, mining operations creating pollution that decreases fish catch and revenue for fishermen operating in the same area.

Payment for Ecosystems Services: Payments made to maintain and manage land or water in order for them to provide an environmental service.

Food Security: Long-term physical and economic access to safe and nutritional food.

Nature-Based Tourism: Tourism based on natural areas and natural attractions.

Eco-Tourism: Considered a form of nature-based tourism that also works to improve the lives of local communities.

Sustainable Sourcing: Products that are gathered and harvested through sustainable means. For example, fish caught from sustainably managed fisheries.

Marine Spatial Planning: A form of marine planning that brings together multiple users of the ocean in order to plan for coordinated use and manage marine resources sustainably.

Executive Summary

Spanning six counties and over six million square kilometers, the Coral Triangle is home to 75% of the world's coral species, 37% of the world's coral reef fish, 6 out of 7 of the world's marine turtle species and an array of pelagic fish and cetaceans. In addition to its outstanding biodiversity, the Coral Triangle provides economic, social, and cultural benefits to over 396 million people and directly supports the livelihoods of over 130 million inhabitants[i]. It is also one of the fastest growing regions of the world. The same economic opportunities driving the region's growth are also putting enormous pressure on its natural resources and threatening ecosystem health. Given the development needs of the region, efforts to safeguard marine ecosystems need to be coupled with opportunities for economic growth. The seascapes approach acknowledges this need and, within defined marine geographies, organizes human activity and different management techniques in a holistic, integrated manner in order to both protect marine ecosystems and promote human wellbeing.

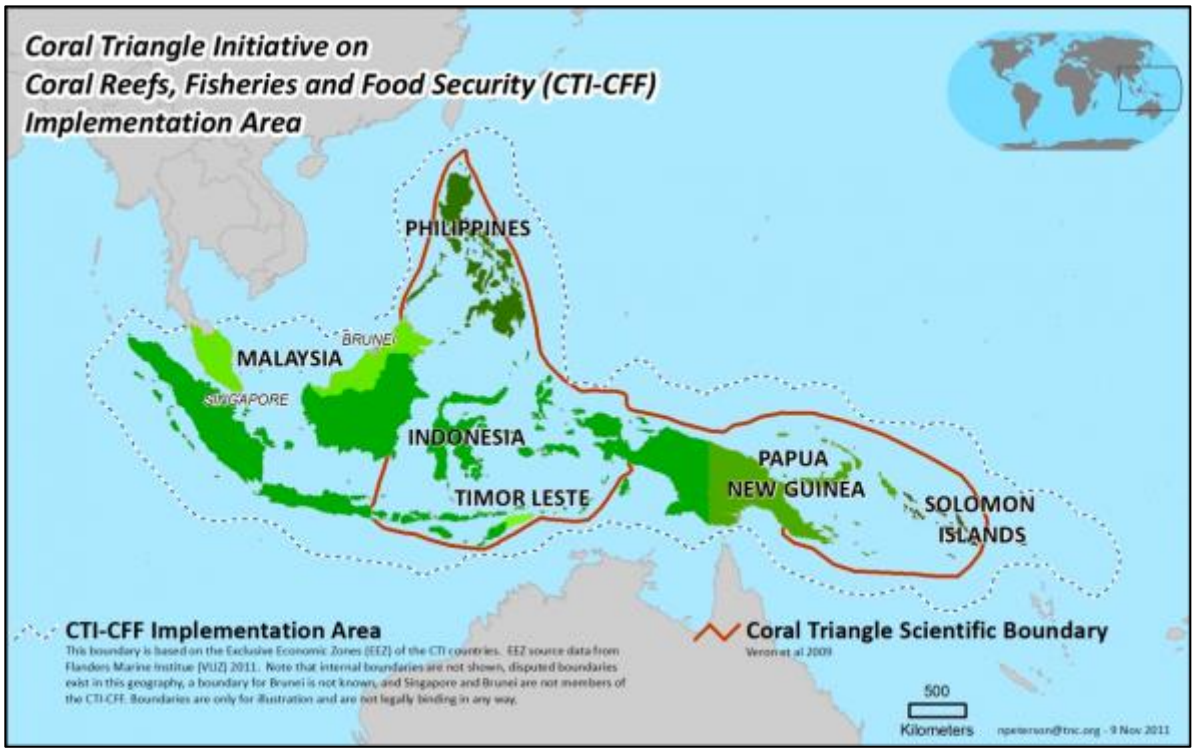
Examples from the Bird's Head and Sulu-Sulawesi Seascapes show how different communities, industries, and governments have applied the seascapes approach and worked together to successfully establish marine protection while also promoting economic growth. The economic benefits exemplified by these cases range from benefits to local people, communities, and businesses, to larger industry growth, to increased certainty of access for private sector investment and sustainable financing, to increased long-term food security and safeguarding ecosystems services. These examples also provide lessons learned for establishing future seascapes in the Coral Triangle and recommendations for moving forward.

Purpose and Overview of Research:

The purpose of this paper is to highlight the economic benefits communities and businesses receive by being involved in seascapes – large-scale, comprehensive, multi-sectoral marine management. Using examples from the Bird's Head and Sulu-Sulawesi Seascapes in the Coral Triangle, it shows how local communities and businesses have benefitted economically by working together to protect the marine environment. The ultimate purpose of this research is to provide a justification for the development and establishment of seascapes.

Introduction

The Coral Triangle:



Source: CTI-CFF Regional Map

The Coral Triangle spans six million square kilometers off the coasts of Indonesia, Malaysia, Papua New Guinea, Timor-Lester, the Solomon Islands and the Philippines. While the Coral Triangle covers less than two percent of the Earth's oceans, it is home to 76% of the world's coral species, 6 out of 7 of the world's marine turtle species, 37% of the world's coral reef fish species and an array of pelagic fish and cetaceans. It also sustains over 130 million people who are directly dependent on its marine resources for sustenance and income.

The Coral Triangle is also one of the fastest growing regions of the world. Containing major economic hubs and emerging market economies, its waters contain heavily

utilized trade routes and shipping traffic. The area is rich in natural resources and industries including agriculture, tourism, fishing, drilling, mining, and forestry, which are quickly expanding. The same economic opportunities that are driving growth in the region are putting extraordinary pressure on both the marine environment and local people whose livelihoods are directly dependent on a healthy marine ecosystem.

Since the nations of the Coral Triangle are still developing, economic growth often takes precedence over environmental stewardship. Destructive fishing practices are threatening long-term sustainability for short-term gain and emerging industries are threatening ecosystem health through overuse and unsustainable practices. In many cases, the economic benefits of marine stewardship are not clear and economic gains are sought out at the expense of a healthy ecosystem. Given that the Coral Triangle is such a large, complex, rapidly growing region, with multiple sectors and user groups, marine management needs to be coordinated and integrated in order to be effective. Management also needs to be done at large enough scale to adequately address environmental threats.

Seascapes management takes on an integrated and coordinated approach to marine conservation that also promotes economic growth. It operationalizes marine spatial planning (MSP) and applies it in large scale, transboundary situations that allow it to be successful in the Coral Triangle. There are numerous examples from within the Coral Triangle of where the use of the seascapes approach has led to improved ecosystem health and also created economic benefits for both local communities and businesses. These examples show that economic growth can co-exist and even profit from well-planned and coordinated marine stewardship.

While this paper focuses heavily on MPAs, fisheries, and tourism, the seascapes approach allows for and encourages all relevant sector involvement. The involvement of all sectors and users of a seascape area is critical not just for seascapes management but for the health of Coral Triangle itself. While not all uses

of marine areas are inherently incompatible, many are, and need to be, managed in coordination to prevent overuse and environmental degradation. Overuse and uncoordinated planning not only lead to environmental degradation, destroying the basis of life for local communities, but it decreases the value of many industries operating in the region. As development continues and threats to the marine environment continue to grow, seascapes offer a comprehensive governance framework to bring stakeholders together, tackle threats and enhance conservation successes.

The Seascapes Approach:

Seascapes: " large, multiple-use marine areas, scientifically and strategically defined, in which governments, communities, private organizations, and other stakeholders cooperate, collaborate, and coordinate to manage for sustainable development, biodiversity conservation, and human well-being[ii]*."*

In order to sustainably manage the ocean's resources, different sectors need to work together in an integrated manner. Integrated management already exists in the form of integrated coastal zone management (ICZM), which is operationalized through different tools including marine spatial planning (MSP.) Seascapes use MSP to engage different industries and plan for marine use while also providing a broader context for marine management. As with MSP, seascapes management engages different sectors and industries to plan for marine use, however, seascapes go beyond administrative bodies and jurisdictions and operate in larger geographic areas and in transboundary contexts. With the nations of the Coral Triangle being geographically close together, single nation or single jurisdictional planning is often ineffective and inefficient. The seascapes approach applies MPS across territories and jurisdictions allowing for large-scale, multi-sectoral management of the marine environment.

In addition to having the ability to manage transboundary areas, the seascapes approach tackles threats to the marine environment by building coalitions among governments, corporations, and civil society[iii]. Engaging different industries and stakeholders is crucial for generating political will and ensuring long-term sustainability. One way to engage industries and communities is to highlight the economic benefits that communities and businesses have received by being involved in integrated marine management. Highlighting real economic benefits is critical for securing buy-in and generating compliance[iv] as well as generating the political will to scale up management to larger areas.

Marine Protected Areas (MPAs) are the structural basis for many seascapes. Their benefits to marine ecosystem health are generally understood and accepted, however, there is less understanding of how MPAs can help alleviate poverty and contribute to sustainable development goals. In fact, often the costs of MPAs to local communities are highlighted over any potential social or economic benefits they may generate. While MPAs are used in many seascapes, they are developed in tandem with local communities and different sectors, ensuring that marine protection is coupled with economic growth. The seascapes approach shows that when MPAs are designed right and overlaid with other industries such as tourism or fisheries, they have a great potential to benefit surrounding communities and businesses.

A Note on Economic Benefits:

Economic value is not the only indicator of the benefits of seascapes but it is a critical perspective as "social behavior is based largely on economic factors and incentives[v]." As a result, many indicators of successful seascape are rooted in the variety benefits they provide to communities. For the purposes of this paper, it should be noted that economic benefits of seascapes are often most realized at a community level. However, the majority of industries operating in the Coral

Triangle are local, small to medium sized businesses and many localized benefits can become regional benefits when realized in enough locations.

While many economic analyses capture larger, more tangible changes such as job shifts, regional increases in income and dollar value generated from industries, they do not always capture more localized benefits, which need to be acknowledged. This paper seeks to incorporate such local scale and often less tangible benefits. For example, it acknowledges job diversification of income sources leading to more income stability for local families as an economic benefit as well as increased ability for local trade. It also accounts for the abilities of local people to expand their horizons, perhaps travel for the first time and move to larger cities if they so wish. Within the scope of this paper, this recognition is crucial because many places lack the capacity for more formal economic benefits to materialize. Such economic benefits are always captured but do have large impacts on local individuals, communities, and businesses operating within seascapes and long-term economic growth.

It should also be noted that often the establishment of MPAs, fishing ordinances or restrictions of use leads to short-term economic losses, especially for local people. Acknowledging this, special efforts are made to show how such vulnerable groups can benefit in the long run as well as more immediately through supplementary, alternative and altered livelihood opportunities.

Economic Benefits of Seascapes

The following section is a synthesis of economic benefits that local communities and businesses can receive by being involved in seascape management. They are drawn from studies and conversations with people working in the Raja Ampat area in the Bird's Head Seascape as well as Apo Island, Donsol, Tubbataha Reef Natural Park, Turtle Islands Heritage Protected Area, Tun Mustapha Park, and the Verde Island Passage in the Sulu-Sulawesi Seascape. It should be noted that not all of the below benefits apply to all seascapes, rather are common among successful seascapes.

Seascapes define users and terms of use for localized goods: Seascapes are rooted in local contexts – the local marine environment, the industries operating and developing in the area and the needs of local communities. Working with local communities and businesses, seascapes define use in a way that ensures the long-term sustainability of the marine environment but also benefits local communities and businesses. Defining use of space helps create a set of localized goods and services, which can translate into economic opportunities for local people and businesses. For example, the establishment of no-take MPAs within existing seascapes has helped create a market for tourism. In Donsol, the establishment of a whale shark sanctuary helped protect the iconic species while also promoting a dive tourism industry in the area. The development of tourism has created local jobs, boosted the local economy and resulted in a surge in private investment[vi].

Seascapes define users and create incentives that promote long-term sustainability and continued economic gain: By defining use and users, seascapes create opportunities that establish incentives for sustainable use[vii]. For example, well-crafted and implemented fishing ordinances with sustainable licensing and permitting procedures allow fishermen to yield constant catches both now and in the long-term. The promise of long-term gain helps eliminate perverse incentives to engage in destructive fishing practices, which have limited long-term

economic viability and create incentives for sustainable management and use. In the Bird's Head Seascape studies have suggested that the elimination of explosive fishing on reefs will allow the snapper fisheries to sustain a stock biomass of 9,000 tons, with consistent catches being worth between USD $2.85 and $6.5 million over the next 45 years[viii]. Snapper fishermen will receive the benefits of their investment in the sustainable management of the fishery through its continued profitable yield.

Communities and businesses that can benefit directly from marine stewardship will be more likely to work to sustain it, especially when they have a defined right over the use of its resources. Defined user rights also create a platform of ancillary benefits to emerge. "Place-based rules that assign better-defined rights to well-defined user groups, may lead to collective choice, bottom-up group organization, and nested enterprises.[ix]" In the Bird's Head Seascape, local home-stay networks have emerged, entirely self-initiated and with strong local legitimacy. Locally run businesses such as these, directly link the economic benefits of seascapes to local communities and provide incentives for continued marine conservation. One community homestay owner noted, "by running businesses, we become visible to the government, they take what we say more seriously[x]." Such benefits, including increased local empowerment and buy-in, can also serve as a justification for the scaling up of seascapes to encompass larger areas and more industries.

Defined and respected areas of use allow for greater certainty of access for private sector investments and help facilitate sector growth: In a private sector focus group on the enhancement of private sector interest and engagement in seascapes, businesses voiced the challenges of making investment decisions when rules are not clearly defined[xi]. Seascapes help define use and user rules while also reducing overuse, providing more certainty of access to desirable areas for investors.

A critical component of seascapes is the involvement of different stakeholders in planning and management. The inclusion of local needs and interests coupled with

strategic management helps generate local buy in and compliance, which is critical for long-term sustainability. For example, tourism and hospitality related businesses are more likely to invest areas where MPAs have been established and fisheries are managed sustainably. MPAs and sustainable fisheries provide more certainty of long-term marine ecosystem health, which is the foundation for eco and nature-based tourism. A greater certainty that marine ecosystems will continue to thrive reduces the risk of investing in the tourism industry, while also promising growing returns.

Local compliance and buy-in also reduces risk for investors seeking to invest in seascapes. Local involvement and commitments to marine conservation and seascapes management helps provide a stable management regime, which reduces risk for companies seeking to invest in the area.

Seascapes help areas meet the growing demand for eco-tourism and sustainable sourcing: There is a growing consumer demand for eco-tourism, which promotes responsible travel while improving the well-being of local communities and nature-based tourism, which capitalizes on healthy, undamaged ecosystems. Nature-based and eco-tourism are growing three times faster than mass tourism[xii]. Many consumers are even willing to pay more to tourism operations that benefit local communities and protect the environment[xiii]. Investors can capitalize on this growing demand by making increased efforts to engage with local communities and contribute to marine conservation.

Seascapes manage opportunities for sustainable financing: Seascapes provide an overarching governance scheme to manage opportunities for a diversity of sustainable financing schemes. Tourism fees have already been successful in financing the management of marine protected areas, reducing dependence on external funding. In Raja Ampat dive fees are allocated to the management of the park, which in turn employs 144 local people. In the Tubbataha Reef Park, half of the core management costs of the park come from tourism revenue. Conservation fees

can also be used to support fishermen during closed seascapes and fund community development projects and education initiatives, increasing opportunities for local communities. Using tourism revenue to manage parks and support local communities can help secure local commitment to marine conservation also helping ensure stable governance. Local commitment can also secure local government commitment that lasts and increase government allocations to MPAs[xiv]. Besides tourism, there are many sectors including shipping, oil, coastal development, that can engage in sustainable financing schemes. The seascapes management approach helps provide an overarching management structure to help coordinate and provide transparency and accountability to different financing programs.

Seascapes provide increased opportunities for the private sector to engage in market-based instruments such as payment for ecosystems services: In Raja Ampat, visiting tourists are charged an "environmental service fee" of USD $75. 70% of the fees go directly towards the management and protection of Raja Ampat's MPAs. The remaining 30% goes towards economic development, education, health and community services[xv]. $150,000 a year is given to a community fund that goes specifically towards local livelihood programs. The funds directed towards the management employ 144 local people who monitor and maintain the MPAs. Not only does the environmental service fee employ local people, directing benefits to the local community, but it also generates enough revenue to be self-sufficient[xvi]. In paying to maintain Raja Ampat's MPAs, the fee helps maintain healthy ecosystem function, which has multiplying benefits for local fishermen and communities who depend on a healthy marine ecosystem.

Such environmental services fees have the potential to be expanded and applied to different industries in the private sector whose operations also depend on healthy ecosystem function. For example, fishermen directly benefit through MPAs, no-take zones and temporary closures through increased catch, increased catch rate and increased catch per unit of effort. A similar system to an environmental service fee placed on tourists could be placed on fishing companies to help maintain the healthy

ecosystem they depend upon. The same could potentially be applied to ships passing through, coastal development projects and any offshore extractive industries that may emerge[xvii].

Seascapes define users, helping manage local impacts: By defining users and terms of use, the private sector and the government has a greater ability to manage local impacts. While fisheries closures and ordinances have long-term economic benefits there is often a short-term loss due to such restrictions. With user groups better defined, special effort can be made to mitigate these losses by providing temporary alternative sources of income or employing affected groups to monitor and patrol areas under restrictions.

Seascapes help make licensing procedures more streamlined and efficient: Establishing a more centralized and comprehensive licensing and permitting system can help increase efficiency and manage impacts from different industry use. In a more comprehensive system, the permitting process can better consider the cumulative effect of one industry on other operating nearby or in the same area as well as prevent over-use and marine degradation.

Seascapes work with communities to mitigate short-term losses through supplemental, altered and alternative livelihood programs*:* Well-managed seascapes acknowledge the temporary economic hit that local people and businesses may be subject to with use restrictions. Including different stakeholders in the planning process helps identify where these shortfalls are most likely to occur in order to best mitigate them. As seascapes exist within specific geographies and are rooted in local contexts they are better able to assess the needs of the local market and support projects that will help local people build the skills they need to be successful in alternative or supplemental work opportunities.

Alternative livelihood programs are often referred to in the context of marine conservation however, such programs are often lacking appreciation of local culture and lifestyles. Often, a complete transition of a group of people from one lifestyle to another is unrealistic, undesirable and unsustainable. However, supplemental livelihood options still help reduce pressure on marine resources by providing additional sources of employment, reducing dependence on the marine resources for income. Moreover, supplemental livelihood projects are cheaper and less risky to undertake, as they do not involve complete transitions.

Seascapes create employment opportunities helping diversify income: In addition to reducing pressure and on the marine ecosystem, supplemental livelihood programs allow communities to diversify their sources of income, reducing their economic dependence on extracting marine resources. This diversification builds resilience and stability against unforeseeable events, fishing seasons with limited yields or the negative impacts of climate change.

Seascapes create employment opportunities helping increase income: Access to supplementary jobs as well as the emergence of new employment opportunities have increased local income and provided opportunities to women. In the Turtle Islands Heritage Protected Area, women involved in handicrafts projects reported an average increase of USD $35-71 per person per month[xviii]. In the Verde Island passage, tourism has created jobs for women who previously had no work. In the Tun Mustapha Park, local handicrafts projects have helped women reach the national minimum wage. In the Verde Island Passage, tourist resorts are estimated to employ 10% of the local community and a survey showed that local residents preferred income from tourism, as it was more dependable than fishing[xix]. Tourism and conservation fees have also provided the funding to pay local people to monitor, control and survey areas including MPAs, providing both employment and increased monitoring capabilities[xx].

Seascapes work to increase standards of living: Along with increases in income and job diversification, seascapes provide opportunities for community development and increased standards of living. In the Sulu-Sulawesi Seascape, there are numerous examples of community improvements. Between 2000 and 2005 in Cagayancillo, conservation fees from Tubbataha Reef Park increased lot ownership by 4%, house ownership by 10%, toilet ownership by 10%, and 15% of households gained access to electricity.

Seascapes promote long-term food security: The sustainable management of fisheries is critical to long-term food security in the Coral Triangle. As a result, a primary concern of seascapes is establishing lasting fish stocks so fisheries can continue to support communities. Sustainable and well-managed fishing practices can help guarantee constant yields continuing to sustain and support local communities. Fisheries closures in the Verde Island Passage have increased fish biomass. A three-month closure of the sardine fishery increased catch by 30% both in the passage and in surrounding areas. The success of the closure has created a surge of interest among local stakeholders pushing for regular seasonal closures to sustain such benefits.

MPAs around Cagayancillo and Raja Ampat have also increased fish catch and biomass. In Cagayancillo, surveys have shown a 100% increase in fish biomass since the establishment of the Tubbataha Reef Park, which has led to a 90% increase in income in the nearest fishing villages[xxi]." In Raja Ampat, an increase in fish abundance, especially important food fish families, have been widely reported and attributed to the establishment of MPAs.

Seascapes increase efficiency: The comprehensive approach of seascapes helps identify which industries will be the most efficient and effective in creating jobs, which will have the largest multiplier effects and which will yield the greatest lasting benefits. An economic valuation study conducted in Sabah, Malaysia compared the value of different industries and found that tourism had a value of RM

1.81 billion while extractive industries had a value of RM 1.56 billion. The study also suggested that the simultaneous development of both tourism and extractive industries would have substantial economic losses for the tourism industry[xxii]. Looking holistically at the surrounding communities and industries, the study also valued tourism as having greater multiplier effects, and a greater ability to create more lasting jobs, bring in larger investments, and generate more revenue.

The holistic perspective of seascapes can also help promote the most economically beneficial use of a resource. In the Bird's Head Seascape, manta rays have traditionally been hunted for their gills, which are highly valued for their use in traditional Chinese medicine. However, an economic valuation study showed that a living manta ray is worth over 2,000 times more alive than dead in the tourism revenue they generate. The estimated fishery value for a single dead manta ray is valued at under USD $500 while a single manta ray alive is valued at over $1,000,000 over its lifetime[xxiii]. In this case, the economic benefits of conserving manta rays and promoting tourism are significantly higher than extracting them for medicinal use. The holistic outlook of seascapes can identify which sectors can generate the most revenue and how different sectors can work together to generate economic benefits and achieve conservation goals.

Industries have also articulated that is often more costly for businesses to be non-compliant with environmental policies and management regulations[xxiv]. Clearly defining use and engaging different stakeholders can help boost compliance through industries being more involved and having a better understanding of what use rules and regulations are and how these rules affect them.

Seascapes help avoid lost costs: The value of different sectors often depends on other sectors. For example, while not inherently incompatible, fisheries can influence the economic potential of marine tourism. Increases in artisanal fishing, commercial fishing, reef gleaning, agriculture, mining, and logging can negatively affect tourism. Increases in commercial fishing, reef gleaning, pearl farming,

tourism, logging, and mining can negatively affect artisanal fishing[xxv]. Increases in artisanal fishing, commercial fishing, reef gleaning, agriculture, mining, logging, and tourism can all negatively affect ecosystems services, which also have an array of economic benefits.

Many of the emerging industries within the Coral Triangle are inherently incompatible and need to be developed in coordination with each other to avoid lost costs. Defining use and separating conflicting use not only reduces overuse, conflicts of interest, and associated lost costs but also encourages activities to take place where they bring the most value, while avoiding devaluing other industries. In the Bird's Head Seascape the loss of income for tourism and fisheries industries from impaired and degraded ecosystems and has been estimated to be RP 1.4 trillion over 20 years.[xxvi] The presence of mining in Bird's Head has shown to decrease artisanal fishing revenue from USD $7 million to $6.5 million, commercial fishing revenue from $2.28 million to $2 million and eco-tourism revenue from $1.6 to $1.2 million[xxvii]." Separating incompatible use reduces such costly conflicts. Furthermore, seascapes hold the potential to help identify conflicts and incompatible use early on, avoiding future conflict and lost costs.

Seascapes increase opportunities for local communities: Coupled with increased income, job diversification, and the array of other economic benefits, seascapes have the potential to provide less tangible but related benefits. Increased income provides more opportunities for local people to pursue new opportunities, perhaps travel for the first time and move to larger cities if they so wish. In many cases, such increased opportunities also provides more access to education which is proved to increase economic returns for people and contribute to national economic growth[xxviii]. Around the Turtle Islands Heritage Protected Area employment opportunities have helped families send their children to school. In the Verde Islands Passage, community members participating in monitoring and enforcement receive scholarship benefits for their children as well as free capacity-building

trainings and workshops. Such trainings help make local participants more marketable for other jobs and broaden their employment opportunities.

Seascapes have multiplying effects: In many areas where seascapes operate, mechanisms to fully quantify benefits do not exist. For example, increased fish biomass may lead to an increase for local trade and participation in less formal market systems. Many communities within the Coral Triangle are largely isolated and self-sufficient, relying heavily on marine resources and intra-community trade. While not easily quantified, a healthy marine ecosystem supports and helps these communities remain stable.

Seascapes promote healthy ecosystem function: Healthy ecosystem function holds values that are beyond the scope of this paper but that can be quantified and should be considered. An economic valuation study conducted in the Bohol Triangle, a subset of the Coral triangle, estimated that municipal fisheries have a direct value of USD $1.33 million and tourism had a direct value of $1.48 million. However, the Bohol Triangle also held a yearly value of $356,761 from indirect and option values related to coral reef biodiversity, mangroves and shoreline protection, habitat and nursery function and general biodiversity[xxix]. In the Bird's Head Seascape, the total indirect use value ecosystem services in Raja Ampat is valued at over RP 1.7 trillion a year[xxx].

Seascapes improve capacity to plan for emerging industries and technologies: There are numerous areas within the Coral Triangle where the seascapes approach is not being used but there is a recognized need for it. There are also areas where seascapes are operating but key emerging industries are not yet involved. For example, in the Verde Island Passage, shipping, oil and gas industries are prevalent but have not been included in seascapes. In the Solomon Islands, there is no integrated planning at the policy or the community level. As a result, costs are lost and industries do not reach their full capacity in terms of economic gains[xxxi]. Other emerging industries such as deep-sea mining are being developed outside of any

coordination with other industries or policy regulations[xxxii]. Engaging in integrated planning and management in the early stages of emerging industries helps ensure that holistic policies are created from the beginning and that bad policies that later need to be fixed are not created[xxxiii].

Seascapes can be scaled up: Integral to the seascapes approach is the ability to scale up management. The collaborative nature of seascapes and commitment of communities and businesses to work together can lead to better cooperation and comradeship within larger regions[xxxiv].

Lessons Learned

Examples from the Bird's Head and Sulu-Sulawesi Seascapes show that integrated and comprehensive marine management can succeed in promoting marine conservation while economically benefitting local communities and businesses. However, in order for economic benefits to be both fully realized and directed towards local communities and businesses there are important considerations, which are outlined in this section.

It is necessary that mechanisms exist to help realize economic benefits: Healthy marine ecosystems help attract tourists who are seeking nature-based experiences such as diving and snorkeling. Seascapes promote a healthy marine ecosystem, which provides the basis for nature-based tourism. Tourism brings multiple economic opportunities to seascapes, inducing the need for accommodation, food and tour services. Many seascapes that contain MPAs have been successful in implementing conservation or environmental services fees. These fees are charged to visiting tourists and help generate revenue that can be used for financing the continued management of MPAs and community development projects.

It is necessary that mechanisms exist to direct benefits to local communities: When mechanisms are in in place to generate revenue, special attention should be paid to direct these funds and their benefits to local communities. For example, directing portions of conservation and environmental service fees to community development projects. In the Bird's Head seascape, a portion of funds raised by the environmental services fee charged to tourists is used to hire local people to manage and monitor Raja Ampat's MPA network, creating employment opportunities and financing the continued management of the MPAs.

Local ability to engage in meaningful participation needs to be strengthened: In all seascapes increasing local awareness of ecological limits and giving people the tools they need to meaningfully participate in planning and management efforts is critical. Fostering local engagement is essential for securing buy-in, which is necessary for long-term sustainability and scaling-up. It also helps develop and support local conservation leaders. For example, training local people to effectively monitor and enforce MPAs and fisheries ordinances directly engages community members in conservation efforts. In the Tubbataha Reef Park management plan, a key management strategy is to build legal capacity to strengthen local ability to enforce illegal activity and violations. Developing competent local rangers, engages the local community, strengthens enforcement of regulations while also creating a significant enforcement presence within the community, deterring potential violators.

In-depth and continuous stakeholder engagement is key: An in-depth, inclusive and continuous stakeholder engagement process is necessary. Such stakeholder engagement secures buy-in and compliance helping promote long-term sustainability. In addition, stakeholder participation can help identify the needs of local communities and identify where short-term losses might be most prevalent and work to mitigate them. Engaging community leaders and businesses early on, especially during initial visioning processes can also help cultivate ownership over natural resources and confidence in the seascapes approach.

Good communication from the beginning is critical for local support and eventual scaling up of projects: Early communication of improvements in ecosystem health and economic benefits to communities and businesses can help garner continued support of MPAs, fisheries ordinances and other sustainable management projects. In addition, communication of the science behind decisions and policies needs to be communicated and perceived as legitimate by stakeholders, especially when there are short-term losses and longer-term gains[xxxv]. In the Verde Island Passage, leading up to the Zamboanga closed season, scientists presented

their data at public meetings that included policy makers, the private sector and local communities. In addition, the private sector and fishermen were involved in data-collection and multiple stakeholder groups were involved in validating the data. Stakeholders were also involved in the selection in choosing the data collectors ensuring that the data would be accepted as legitimate[xxxvi].

There needs to be better communication with the private sector: Environmental compliance rules need to be communicated in a language that is understandable to the private sector. Fines and penalties for infractions need to also be made clear.

Opportunities need to be in place to mitigate short-term losses: MPAs and fisheries ordinances such as temporary closures or restrictions often lead to temporary losses for certain groups such as fishermen. Special attention needs to be made to mitigate these losses by providing supplemental employment and income opportunities.

Efforts need to be grounded in the local community and be focused on community needs: Supplemental employment opportunities need to match the skills of their target demographic and be sensitive to the needs of the local communities. In the Verde Island Passage, after the seasonal closure of Balayan Bay, there were calls to better align cash for work alternatives with existing skills of fishermen.

It is critical to address communities desire for ownership[xxxvii]: It is necessary for local communities to feel a sense of ownership and pride in management approaches and be involved in decisions being made. This can come from locally run businesses emerging and becoming more profitable. Communities are often not satisfied with just receiving a fee for doing something, or receiving handouts. Such approaches to mitigating short-term loses should be avoided as they often lead to communities feeling devalued and humiliated. In addition, solely addressing

nutrition and basic services is not enough. Communities need to feel as though they have control of their futures and over their own land and resources[xxxviii].

Investing in patrols is necessary if MPAs are going to be effective: Enforcement patrols need to be regular and highly visible. Protocols for enforcement also need to be clear along with rules for compliance.

Management needs to be adaptive to local needs and environmental conditions: Decision-making needs to be based off the best available science and data, which requires regular monitoring of the ecosystem. It also needs to track benefits to communities and adapt if benefits to local communities are not adequate or conditions change. This will become especially important as climate change continues to influence the region.

There has to be accountability and transparency of revenues generated: It is critical that there is transparency and accountability surrounding funds generated from mechanisms such as conservation and environmental services fees. How these funds are allocated and used should be made clear to all stakeholders. How funds are allocated as well as cash flow presented in abstract or theoretical economic figures will often not be enough engage local communities and businesses.

Ordinances rooted in traditional management techniques help strengthen the rights and culture of local people[xxxix]: Inclusion and explicit recognition of traditional management techniques such as sasi in Indonesia help legitimize local communities and strengthen culture. Inclusion of these local approaches can help garner local support and buy-in.

It is important that communities understand ecological limits: Communities need to understand the ecological limits of their marine ecosystem and the risks it faces from destructive practices and unsustainable use, especially in the context of

rapid development. Such an understanding can help illustrate a need for action beyond temporary economic losses.

There need to be conflict resolution mechanisms in place: Seascapes can provide means to resolve conflicts at a higher level, rather than individual levels. This can save time and money but it is key that there are mechanisms in place to effectively manage conflicts of use that emerge. For example, conflicts have emerged between fishermen and tourism in which divers destroy fish traps and fishermen destroy dive buoys. There need to be ways to resolve such conflicts when they emerge.

Understand how growth in one industry affects performance in another: Efforts have been made in some seascapes such as Bird's Head and Tun Mustapha National Park to understand the economic impact of growth in one industry to others operating in the region. Such practices can help provide sound justification for more sustainable industries and highlights the losses that unsustainable industries such as drilling and mining can impose on other industries.

Moving forward

In order for seascapes to continue to produce economic benefits and for new seascapes to be successful, special attention should be paid to the following considerations:

Recognize local contexts: When establishing seascapes attention needs to be paid to the location's contextual factors. This includes but is not limited to local governance structures, industries both present and emerging, and community structure and make up. These factors will influence how seascapes should be established and developed.

Understand external influencing factors: There needs to be an understanding of factors outside of seascapes can influence their success. For example, high fuel subsidies largely contribute to over fishing and need to be considered when looking at fishing practices.

Engage all sectors operating within a seascapes space: Seascapes have most commonly engaged with MPAs, fisheries, and tourism. To adequately address the many threats facing the Coral Triangle it is critical to engage and work with all sectors and industries operating within a seascapes space. This includes working with well-established industries such as shipping, traditionally unsustainable industries such as drilling, emerging industries such as off-shore mining and land-based industries such as agriculture that also play a role in marine health.

Properly value marine ecosystems: There is an ongoing need to understand the "real value" of marine ecosystems and ecosystems services. The real value of marine ecosystems is largely hidden from official statistics and accounting systems. More efforts need to be made to translate marine ecosystem services into quantifiable services that can be used in cost-benefit analyses and comparisons. For example, the value of water quality for fisheries and pearl farming is not necessarily quantified

but is crucial for maximizing profits[xl]. Efforts should be made to show how good water quality could increase revenue and cash flow. In doing so, ecosystems services that help maintain high water quality can be better valued from an economic standpoint.

Start small, scale up: Many of the examples used in this paper are small scale. Despite this, small-scale seascapes, done right can generate strong local commitments that help generate compliance and cultivate support for scaling up.

Prioritize good governance: The success of marine management is largely dependent on good governance: inclusive and informed participation, transparency, accountability and predictability throughout all stages. Good governance includes[xli]:

> Participation: Local community and industries need to be involved in making and implementing decisions as well as receive the benefits of implementation.
> Transparency: Decisions need to be made based on the best available science and information.
> Accountability: Participants are responsible for their behaviors and powers that have been entrusted to them.
> Predictability: Rules and processes of enforcement are understood and consistent.

Successful seascapes have worked towards these principles of good governance through means such as: hiring local people to monitor and enforce fishing ordinances and no-take zones; clearly communicating how conservation and tourist fess are used and distributed as well as ecological and economic successes; having integrated and inclusive management boards and prioritizing communication from the beginning; and directing economic benefits towards local communities, especially sectors that are most likely to experience loss due to restricted use.

How decisions are made and implemented and who is involved can greatly influence the effectiveness and the sustainability of marine management. Economic activity without good governance can lead to unsustainable short-term gains, isolation of certain sectors of society, mistrust, lack of compliance and overall ineffectiveness.

Learn from existing, successful seascapes: There are certain characteristics that many successful seascapes share and can help provide guidance for establishing future seascapes. While these characteristics are not necessarily mandatory for success they help set a foundation for seascapes to be successful and economic benefits to emerge.

All of the case studies outlined in this paper are largely structured around an MPA or an MPA network. While it is not necessary for seascapes to be structured as such, this kind of protection helps protect biodiversity and safeguard key ecosystems services. More stable and biodiverse ecosystems provide the foundation for many economic benefits. For example, MPAs provide the basis for a nature-based tourism industry to develop while also benefiting fishermen who profit from increased catch and biomass of key species. In many cases, MPAs are also community based giving them strong local legitimacy and promoting buy-in.

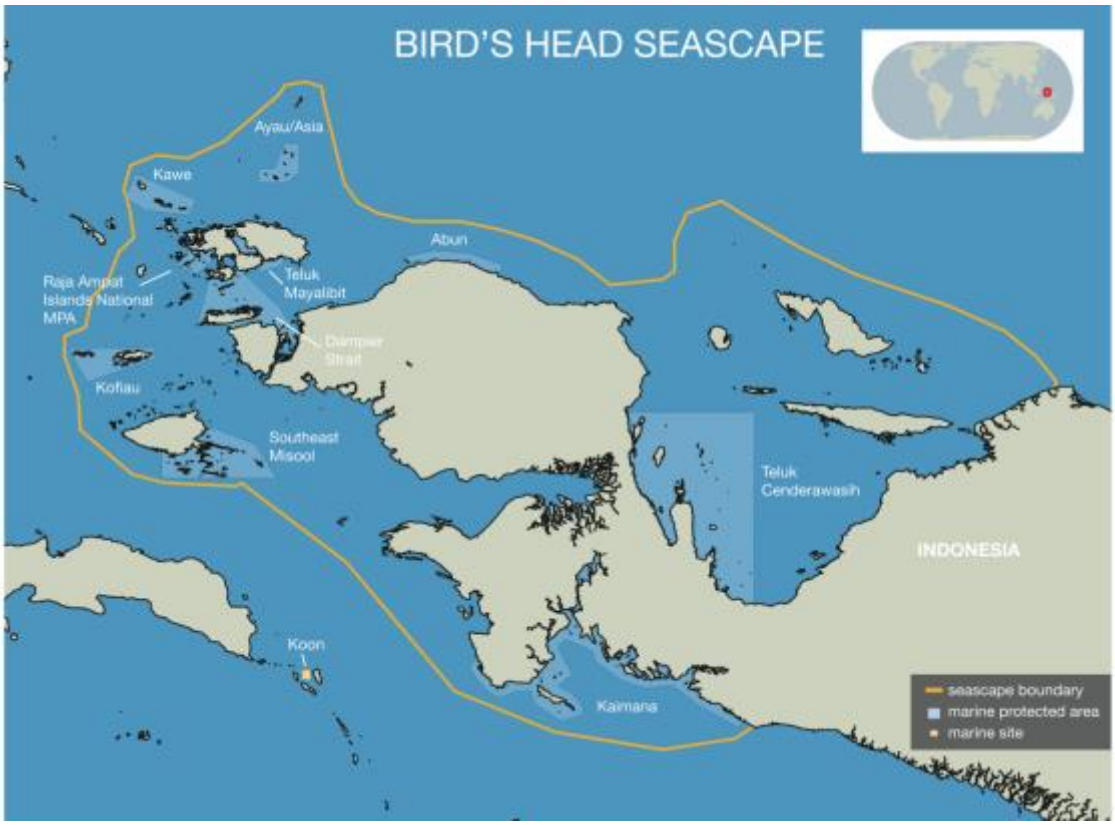
Areas of high or unique biodiversity have greater potential to be marketed as tourist destinations. For example, Donsol's high whale shark population is a unique attraction that draws in international tourism. Areas such as these can capitalize on the protection of unique mega fauna by promoting tourism and directing generated revenue to local communities. The tourism industry can then become an economic driver for associated businesses to emerge such as hospitality services and other activities for tourists to participate in.

Case Studies:

The following section details examples from the Bird's Head and Sulu-Sulawesi Seascapes of where multi-stakeholder marine management has benefited both communities and businesses economically. Examples range from small to large scale, single-province to multi-provincial and from single nation to multi-national coordination.

The Bird's Head Seascape:

In the Bird's Head Seascape is located in the conservation province of West Papua, a semi-autonomous region of Indonesia. Considered the global epicenter of marine biodiversity, it supports 600 species of coral and more than 1,700 species of coral reef fish[xlii]. It is also home to 760,000 people who are directly dependent on the marine ecosystem for food and income[xliii]. Over the past 10 years, the Indonesian government, civil society groups and local communities have worked together to protect over 3.6 million hectares of water through the establishment and management of MPAs[xliv]. Since then, MPAs have employed and empowered local people, a flourishing market for eco-tourism has emerged and fisheries have rebounded.



Source: WWF Bird's Head Seascape Report Phase III

Raja Ampat:

The Raja Ampat islands are located in the northwestern tip of the Bird's Head Seascape. Encompassing 40,000 km^2 of land and sea, they are home to roughly 50,000 people. In 2006, community members mapped and designed a network of seven MPAs that were then formalized and adopted by the Raja Ampat Regency Government[xlv]. Since their establishment, the MPA network, in coordination with the tourism and fisheries industry has yielded benefits for both local business and local communities. Tourism entrance fees have raised a growing total of USD $1,090,752 and been directed towards park management, local employment and community livelihood projects, while fishermen have reported increase in local catch and fish diversity. These economic benefits, coupled with multiplying benefits

throughout the community, have helped contribute to local empowerment and commitments to marine conservation[1].

Marine Protected Areas:

MPAs in Raja Ampat are managed by an autonomous body in the local government Department of Oceans and Fisheries (UPTD BLUD.) In the June 2015-2016 tourist season, 15, 701 (2,799 to local tourists and 12,902 to foreign tourists) entrance fees were sold and the local government revenue managed USD $1,090,752, $ 779,533 of which was directly managed by UPTD BLUD. The official establishment of MPAs indicates a commitment to marine protection and greater certainty to potential investors or governments seeking to invest in marine protection. It also creates local employment opportunities. In the June 2015-2016 tourist season, the Raja Ampat Local Management Technical Body MPA Agency (UPTD BLUD) had 144 full time staff (50, daily workers and 94 contract workers[xlvi].)

Intensive Stakeholder collaboration around MPAs has been successful in inciting support for MPAs and the will to expand them. In the Ayau-Asia MPA, stakeholder collaboration and engagements such as 'MPA 101' trainings led to a consensus to expand the no-take area within the MPA. This bottom-up support also initiated an overhaul of the community patrol system in order to mimic other MPAs in the Bird's Head Seascape[xlvii]. Effective stakeholder collaboration has the ability to empower local communities to initiative actions to better protect their marine resources.

[1] The Raja Ampat Protected Areas are managed by The Raja Ampat Local Management Technical Body (UPTD) under the Fisheries Office of the Raja Ampat Regency Government. It was established as a Regional Public Service Agency, which allows to flexibly use tariffs charges to cover the costs of managing and protecting coral reefs, fishes, habitats and other marine resources.

Tourism:

The protection of marine biodiversity in Raja Ampat has helped make way for a profitable nature-based tourism industry. In 2007, Raja Ampat implemented an "environmental service fee" which charges tourists INR 1,000,000 (USD $75) and locals INR 500,000 (USD $38.) Since its establishment, the fee system has collected a growing total of USD $1,090,752[xlviii]. In the June 2015-2016 tourist season alone, 16,169 entrance fee permits were sold, 2,856 to locals and 13,313 to foreigners. 70% of generated revenue goes directly to support management of MPAs while the other 30% is used to support economic development, education, health, and community services[xlix]. Revenue directed towards the management and protection of MPAs is used to employ 144 local people who earn approximately $500 a month to monitor, patrol and enforce MPAs[l]. The environmental service fee is able to cover the management costs of MPAs while also directing over $150,000 a year towards community livelihood projects[li]. The fee system not only sends tourism revenue directly into the community by hiring local people and supporting livelihood projects but also pays to protect MPAs by protecting healthy ecosystem function and supporting environmental services.

Accommodation services to support tourists in Raja Ampat include livaboards, resorts and homestays. Raja Ampat is limited to 40 livaboards boats that are generally based out of Jakarta or larger nearby cities. Livaboards tourists are still subject to the environmental services fees and boats pay a supplemental annual tax of roughly of $6 per person to enter Raja Ampat[lii]. Livaboards entering Raja Ampat typically hire one local person per boat as a guide (adding roughly 40 local employment opportunities) but are otherwise limited in their ability to benefit local communities.

There are roughly 12 resorts and lodges in Raja Ampat[2]. While foreigners generally own these resorts, they typically hire 20-30 local people[liii]. In addition to resorts and livaboards, a network of over 60 local homestay businesses has been established to accommodate tourists. These new businesses generate a gross revenue of roughly USD $1.5 million a year and have created over 600 new local jobs including in hospitality, transport, diving, guiding, and supplying fish and fresh produce[liv]. The homestay network is a locally initiated, established, and run and generated revenue remains within local communities. Homestays have emerged as local, family enterprises with strong legitimacy that creates a sense of local pride and ownership within the tourism industry while also fostering strong commitments to conservation[lv]. These homestays now attract 1/3 of all tourists travelling to Raja Ampat.

An increase in media attention has also grown in tandem with tourism industry. Since 2012, at least 13 high-profile articles on the Bird's Head Seascape have been published and local dive books and guidebooks generated $91,665[lvi]. Local media groups are now meeting with NGO staff in Manokwari and Sorong on a monthly basis to learn about environmental issues. Trainings have been provided to local media groups to improve their journalism skills, and as their awareness of environment issues grows, they are becoming more proactive towards marine conservation[lvii]. In addition to generating tourism interest and revenue, increased media attention and capacity building trainings are empowering local journalists and raising environmental awareness throughout the Bird's Head Seascape.

Fisheries:

Fishing is a key industry in Raja Ampat. In 2006, commercial fisheries were valued at USD $2.28 million and artisanal fisheries were valued at $7 million [lviii], contributing to 50% of Raja Ampat's GDP. The average fisherman in Raja Ampat makes about $1,024 per year[lix]. Their income and livelihoods are dependent on

[2] There are additional hotels and accommodations in Waisai and Sorong

constant and sustainable yields and are threatened by overuse and destructive fishing methods. Initial findings show that sustainable management practices such as MPAs and closed seasons have increased biomass and diversity of key species, particularly among species valued for food.

A 2013 rapid reef fish biomass survey showed a discernible buildup of fish biomass inside the boundaries of most Raja Ampat MPAs[lx]. Surveys within the Kawe MPA found an overall increase in fish biomass of 53.2 tons/km2 in 2008 to 76.8 tons/km2 with particular increases in species prized by the commercial fishing sector (such as coral trout and napoleon wrasse[lxi].) Surveys have also shown increases in fish diversity. A survey of Cape Kri showed a new world-record diversity count of 374 fish species in a single dive, primarily in important food fish families, including groupers, snappers, parrotfish, emperors, sweetlips, and jacks[lxii]. Studies have also suggested that elimination of explosives on reefs will allow the artisanal snapper fisheries to sustain a stock biomass of 9,000 tons, with consistent catches being worth between $2.85 and $6.5 million over the next 45 years[lxiii].

Traditional community based systems of managing fisheries resources such as sasi, are also being used in Raja Ampat and show positive trends towards increased abundance. An open season in 2012 showed that sea cucumbers were larger and heavier than previous open seasons and were 170% more abundant[lxiv]. Such positive trends continue to suggest that MPAs and seasonal closures help rejuvenate stock and increase food security. In addition to being effective, the modernization and use of sasi helps legitimize fishermen's ways of live as well as integrate traditional natural resource management[lxv]. Respecting local traditions and formalizing them into management techniques helps garner local buy-in and support.

Given the huge contribution of fisheries to local income and the overall economy in Raja Ampat and the Bird's Heads Seascape, the sustainable management of fisheries has the ability to be a consistent revenue source for the government and local communities[3].

Enforcement:

The MPA network in Raja Ampat has established a need for monitoring and enforcement, which has created local employment opportunities. There are currently 18 positions as patrollers within the UPTD BLUD[lxvi]. Enforcement efforts have succeeded in reducing MPA infringements, illegal, and destructive fishing practices[lxvii] and led to ecological improvements such as increases in biodiversity[lxviii] and increased hard coral coverage[lxix]. In addition, increased enforcement and the declaration of zoning plans, has reduced the total catch taken by outsiders and increased catch for local fisheries[lxx].

Looking Forward:

Despite the many success of the Bird's Head Seascape it faces several threats from emerging industries[lxxi]. Already, the loss of income for tourism and fisheries industries from impaired and degraded ecosystems and has been estimated to be Rp 1.4 trillion over 20 years.[lxxii] Integrated and comprehensive management of marine areas has the potential to reduce such loss and allow for industries to co-exist.

[3] Fisheries licenses for small local fishing boats and pearl aquaculture operations have collected IDR 2,030,341,253 (IDR 1,541,149,753 of which was from pearl famers)[3] and licenses from lobster, Humphead Wrasse and Grouper farming generated IDR 148,845,000. While a relativity small contribution to the overall economy, the ability of fishing licenses to generate revenue should not be undervalued.

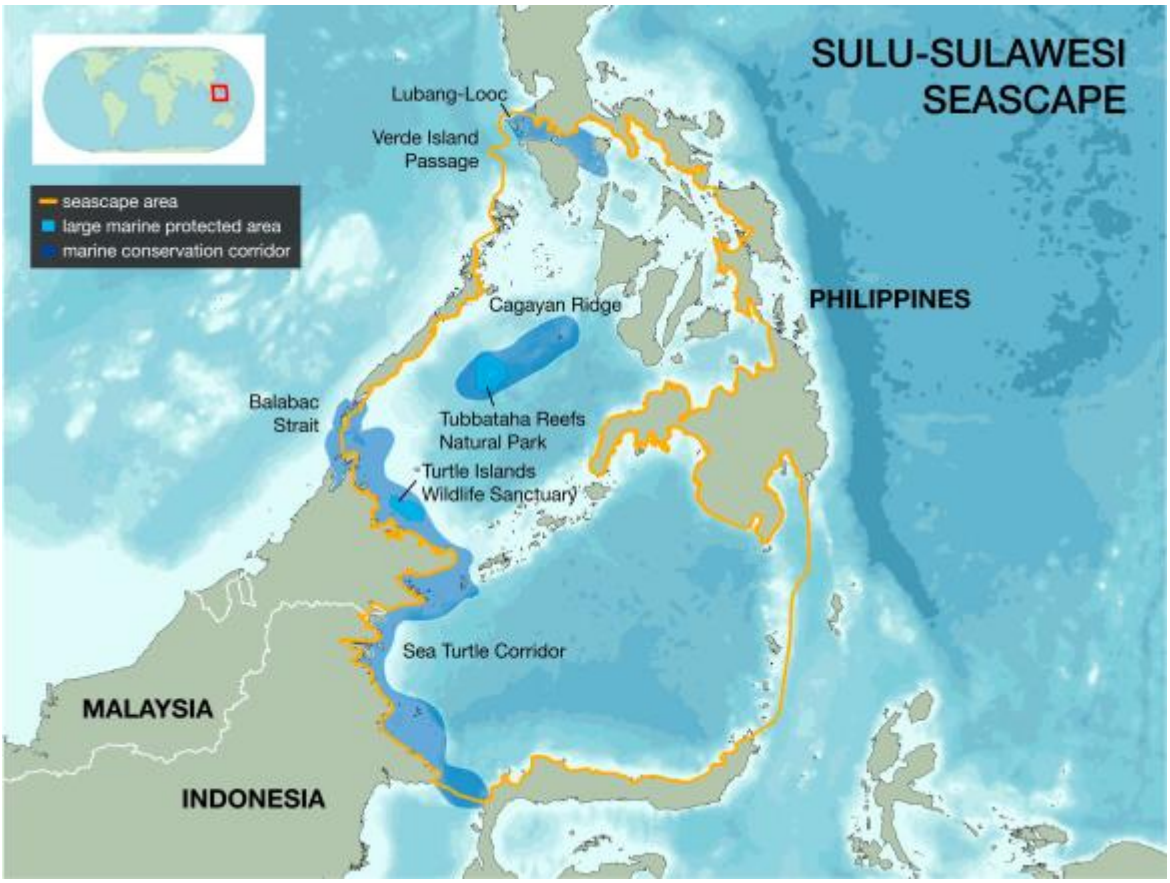
Within the seascape, nickel mining has been valued at Rp 1.3 trillion, oil drilling at Rp 113 billion and forestry at Rp 12 billion. However, it should be noted that while extractive industries hold value on paper, such value is often not realized in a way that benefits communities or even the industry itself. For example, while oil drilling has been highly valued, external market forces such as the price of oil control its value making it a more unstable and volatile industry. While there is potential for oil development around Raja Ampat and the Bird's Head Seascape, developers are largely sitting on sites, unable to move forward due to low worldwide oil prices and lack of profitability[lxxiii].

Mining operations in the Bird's Head have increased, yielding a constant return of USD $700,000 million a year. Given that mining resources are non-renewable, it is unclear how these returns will last. In addition, mining activities are undermining the value generated from fisheries. The presence of mining in Bird's Head has shown to decrease artisanal fishing revenue from USD $7 million to $6.5, commercial fishing revenue from $2.28 million to $2 million and eco-tourism revenue from $1.6 to $1.2 million[lxxiv]." Value lost through incompatible industries, such as mining and tourism, operating in the same area have the potential to be avoided under the seascapes approach and the application of tools such as MSP.

As the development of oil production plays out in Raja Ampat, seascapes maybe able to provide guidance to avoid conflicting use and lost costs. While the national government does have the power to override local MPA networks, seascapes help garner a local economy and social constituency that is empowered to push back and fight to protect their natural resources[lxxv].

The Sulu-Sulawesi Seascape

Spanning 900,000 km^2, the Sulu-Sulawesi Seascape spans the waters between Malaysia, Indonesia and the Philippines. There are approximately 40 million people living along the seascape coasts who are dependent on its marine resources for food and livelihood. Coastal and marine ecosystems, along with the ways of live of many people in the region are facing intense pressures from population growth, over-use, unsustainable development, and climate change[lxxvi]. Throughout the seascape, efforts to establish and enforce MPAs, manage fisheries sustainably and restore mangroves have helped restore ecosystems while also creating economic opportunities for local communities and businesses.



Source: MPAAtlas.org

Apo Island

Philippines

Apo Island is located in the Philippines and is one of the best examples of a community run marine reserve[lxxvii]. In 1983, the site was selected by fisherman and established as a marine reserve. Since then, biomass of fish has increased, fishing efforts have been reduced and increased tourism has provided direct benefits to the local community.

Fisheries:

The protection of Apo Island's fisheries has increased fish biomass within the reserve as well as catches in surrounding waters. Since the reserve was established, the biomass of surgeonfish and jack has both tripled from 40 to 120 kg/1000 m^2[lxxviii]. In addition to increased fish biomass, fishing effort has dropped by 50%. Decreased catch efforts allow fishermen to spend less time fishing and more time seeking other employment opportunities, increasing and diversifying income, if they so wish. Many fishermen around Apo have taken up opportunities providing transportation for tourists between islands[lxxix].

Tourism:

Abundance in fish life and biodiversity around the island has attracted a large number of tourists who contribute to the local economy. In one tourist season (Nov 2006 – May 2007,) boats operating directly out of Apo received USD $9,214, and income from diving operations was valued at $143,871. Two hotels and a dive shop have been established which, while owned by foreigners, employ several dozen locals and have generated $16,069 in income[lxxx].

Tourism revenue fees have generated a total of $289,125, most of which is used to support the tourism industry while the other 20% goes to the Apo residents for community development. The fees have been used to finance a diesel generator that supplies electricity to every home in the islands main village in the evening. Tourist fees have also helped finance a local elementary school, garbage collection, improvements in water supply and school scholarships for over half the children on the island[lxxxi].

Donsol

Sorsogon, Philippines

Located on the northwestern edge of Sorsogon Province in the Philippines, the town of Donsol, Philippines is famous for its reputation as the "whale shark capital of the world." It is home to 51 barangays, 11 of which are on the coast and a growing local population of almost 50,000 people[lxxxii]. Its municipal waters are not only home to one of the largest collection of whale sharks in the world but to an array of fisheries including a large commercial sardine fishery. The emergence of a profitable tourism industry has helped reduce pressures on local fisheries and diversify local income.

Fisheries:

A 2005 study showed that the municipal waters around Donsol were overfished by 32.5%. Daily catches were down to 0-50 kg from 200kg forcing fishermen to travel further and exert more effort to find fish. The establishment of protected areas and an increase in whale shark tourism in the area has helped reduce pressure on fisheries by providing an alternate source of income for locals[lxxxiii].

Traditionally, the greatest threat to whale sharks is the high value of their meat. 1 kilogram of meat can be sold for USD $4.8-16.7 and a kilogram of fin can be sold for as high as $744[lxxxiv]. While immediately profitable, such practices are unsustainable

and decimate whale shark populations. A study showed that between 1990 and 1996, there was a 60-70% decline in whale shark catch[lxxxv]. Sharks were also threatened by entanglement in fishing nets, especially around Donsol.

Recognizing the threats to the sharks[4], the local government set up the Philippines' first whale shark sanctuary (Municipal Ordinance No. 12 March 9, 1998[5].) As news of the high whale shark populations spread both nationally and internationally, an opportunity for tourism quickly emerged. Given the multiple uses of Donsol's waters, conservationists, fishermen, and the tourism industry came together to manage the area in a way that was conducive to both conservation and economic opportunity[lxxxvi]. Since then, studies from municipal fisheries, coastal habitats, as well as economic valuation of the whale shark tourism industry have guided stakeholders, especially from the fishery sectors, to engage in and create policies that will help support fisheries as well as whale shark tourism and conservation[lxxxvii]. In 2000, the Integrated Fisheries and Aquatic Resources Management Council was created as a collaborative mechanism and conducts fish monitoring, patrol operations, regulation measures, and licensing and operations. The fisheries management plan also reinforces implementation of whale shark interaction safety protocols.

This collaborative management has been successful in maintaining the shark sanctuary and advancing fisheries policy[lxxxviii] [lxxxix] and will likely add to the productivity of fisheries in the long term.

[4] 1 shark sold on the meat market averages a quarter million dollars. Assuming a life of 60 years, one shark could be worth $2 million in tourism value over its lifetime (WWF)
[5] Marked the beginning of working together/integrated management

Tourism:

The increase of tourism has created local employment opportunities, reduced pressures on fisheries and provided alternative sources of income. Tourism revenue has also been used to subsidize the losses incurred by small-scale fishermen from fishing restrictions[xc].

In 2005, the average Filipino tourist spent USD $82 per visit to Donsol and the average foreign tourist spent $167 per visit. A total of $150,000 was retained by the local economy[xci]. In 2005 alone, 328 jobs were created for boat operators, interaction officers, boat captains, interaction officers, boat captains and assistants, spotters, restaurant crew, home stay operators, mask and snorkel rental operators, tour operators and van drivers. An increase in tourism also resulted in a surge in private investment[xcii]. Overall, the whale shark tourism in Donsol has resulted in a vibrant local economy while also advancing fisheries policy, community development and coastal resources management[xciii] [xciv] and stakeholders, including the local community have received substantial economic benefits[xcv].

Tubbataha Reef Natural Park

Cagayancillo, Palawan, Philippines

The Tubbataha Reef Natural Park is located within the island municipality of Cagayancillo, Philippines. Since the establishment of the park, nearby fishing villages have reported a 100% increase in fish biomass and a 90% increase in income[xcvi]. Ecotourism in the region has flourished, entrance fees generate enough revenue to cover 50% of park management costs and fund community development projects.

Fisheries:

The local communities surrounding Tubbataha Reef Natural Park are highly dependent on fishing for both income and food. Since the establishment of the park, observations have shown that fisheries have rebounded from a highly damaged and degraded state. Fish biomass and catch have both increased resulting in an increase food security and household income.

Observations in the region show that fish catch has increased from 4kg/hr to 8-10kg/hr leading a household income increase of PHP 2,800 – 4,200[xcvii]. Between 2004 and 2005 hard coral coverage increased from 40%-46%, even surpassing pre-bleaching levels of 42%[xcviii]. In 2005, fish biomass doubled from 166 metric tons per square kilometer to 318 as a result of fish size. In addition, counts of top predators including white tip sharks and jack fish, all increased, indicating that spawning stocks are maintained with in the park[xcix]. Most recently, a fish biomass of 210m/t/km^2 has been recorded making it one of the most productive reefs in the entire world[c]. Fish catch in areas adjacent to the park have also been reported as is at least equal to that of the lost fishing ground showing an increase from 10 kg/day to 15-20 kg/day[6ci]. As a result, commercial fishermen have recognized the importance of MPAs and no take zones and have become involved in monitoring and enforcement as well as seaweed farming which has helped diversify local income.

Tourism:

In addition to increased fish catch, the establishment of Tubbataha Reefs Natural Park has led to a thriving tourism industry with direct benefits for the local communities. Economic valuation studies estimate the net present value of the park, including fisheries and tourism at USD $15.8 million. A separate study using the

[6] For the period 1999-2004

willingness to pay showed that the intrinsic value of the park ranged from $69.2 million $113.6 million[cii].

Entering tourists are charged a PHP 3,000 conservation fee that is used to manage the marine area and endow support in the long run. In the spring diving season of 2000, USD $40,000 was collected[ciii] and by 2005, half of the core management costs of the park (PHP 6 million) were funded by tourism revenue with the other costs covered by the Philippine Coast Guard, Navy and WWF-Philippines. 10% of conservation fees are allocated to the Municipality of Cagayancillo to support communities and support local livelihood projects[civ] [cv]. The estimated ratio of managing the park in relation to the benefits it gives back to communities and the nation were found to be 8:1, showing that the park gives back eight times the amount it costs to manage it[cvi].

By 2018 it is estimated that with a cap of 2,285 annual visitors and a total of 130 dive trips there will be a total influx of PHP 7,236,615.54[cvii]. However, an economic valuation study conducted in 2006 suggests that the recreational value of the Tubbataha Reefs is PHP 3,479.00[cviii] indicating that if the conservation fee were to be raised, the new total influx from tourism could be: PHP 9,140,000.00 by 2018[cix].

Community Development:

Conservation fees from the park have been used to increase standards of living in surrounding communities[cx]. Projects include building roads to market areas, increasing education and health services as well as giving out loans and marketing support for seaweed farming initiatives. The repayment of loans is recorded at 90% and the beneficiaries of loans have since been made co-owners of a fund that works towards savings and capital build up. Other community improvements include a 4% increase in lot ownership, house ownership increasing 10% between 2000 and 2005. Household utilities were also upgraded with toilet ownership increasing 10%, and 15% of homes gaining access to electricity[cxi].

Stakeholder representatives have also been trained and deputized as fish wardens, both employing them and empowering then to arrest violators and enforce regulations. As a result of increased patrols, awareness and enforcement, illegal and destructive fishing the park has been virtually eliminated[cxii].

The tangible social, economic and operational benefits from the park have helped develop local commitments to conservation. The inclusion of community members and different stakeholders, coupled with the equitable sharking of benefits have helped show the communities and businesses that by protecting the park they are protection their own interests and livelihoods. In fact, the park was so successful, that in 2006 it was extended to include the Jessie Beasley Reef, which increased the size of the park from 33, 200 hectares to 96,828 hectares[cxiii].

Tun Mustapha Park

Sabah, Malaysia

Tun Mustapha Park, formally gazetted in May 2016, is the largest MPA in Malaysia. Led by government authorities and advocated for by civil society, the park protects 1 million hectares of coral reefs, mangroves, and seagrass beds and fisheries while also improving the lives of 800,000 local people. The present value of marine capture in the Tun Mustapha Park is estimated at RM 561.1 million[cxiv] and it supports a profitable tourist industry.

Tourism:

In 2011, an economic valuation study showed the tourism value for the Tun Mustapha Park was RM 1.81 billion[cxv]. The study suggested that if the next 5 years was focused on developing and promoting tourism in the park, ecotourism specific revenue could be as lucrative as RM 343 million for 20 years[cxvi]. The study assumes 10,000 tourists a year (equivalent to that of Turtle Islands Park) each spending 6.25

days in the Park and spending a daily average of RM 288.47[cxvii]. The value of ecotourism was estimated to be three times greater that the potential benefits of proposed mining activities in the area, which were estimated to be worth approximately RM 100 million in 20 years [cxviii]. While there are economic benefits to mining in the area, tourism was estimated to have greater multiplier effects than mining as well as an ability to create more jobs and bring in larger investments. In addition to not being as profitable as tourism, mining would actively decrease/undermine the value of tourism by threatening water quality, marine life and geo-tourism in the area.

In tandem, local initiatives to teach women to weave and sell handicrafts to sell to tourists have emerged helping reduce pressure on marine resources and helping fisheries rebound while also increasing local income. Interviews with local women show these opportunities have helped women reach national minimum wage [cxix]. The establishment of a more defined weaving industry has also attracted further investments. For example, recently, the Shangri-la Tanjung Aru resort in Kota Kinabalu contracted women to weave 1,200 napkin rings. The resort has also shown interest in selling local handicrafts in their shops helping lay a solid foundation for women to gain profits from their handicrafts in the future [cxx].

Fisheries:

A 2014 monitoring study around Cagayancillo showed a 43% increase in fish biomass. The increase was attributed to the establishment of MPAs and their effectiveness in replenishing fish stocks[cxxi]. Monitoring reports have also shown an increase in live coral coverage[cxxii]. These positive trends come after declining fish landings in many areas within the Tun Mustapha Park. Between 2000 and 2008, Sabah's wholesale marine fish value declined from RM729 million to RM623 million due to decreased catch and biomass and fishermen were reporting exerting the same effort for less reward[cxxiii]. Fisheries decline in the area were primarily

attributed to overfishing but also to mangrove destruction, agricultural runoff, seabed habitat destruction, destructive fishing and land-use change.

As MPAs limit fishermen's ranges, community development projects have been implemented to help mitigate losses. In 2007, the Banggi Agropolitan Project was launched to cultivate rubber. The project succeeded in creating many jobs for locals who have previously been involved solely in fisheries activities[cxxiv]. In addition to creating jobs an increasing income, benefits of the project include long-term employment opportunities, economic gain through sales and overall development of the region.

The formal gazetting of the Tun Mustapha Park provides ecotourism development potential, promotes food security by managing commercial fisheries, local community use, and establishes no-take zones but also creates a legal platform for a "concerted and collaborative effort to sustain and improve livelihoods, conserve biodiversity, manage resource use and extraction via a multiple-use park approach[cxxv]." If other industries were to emerge in the future, such as offshore mining, they can be planned according to its compatibility with tourism and in a way that does not negatively affect tourism activities.

Turtle Islands Heritage Protected Area

Malaysia and the Philippines

The Turtle Islands are a group of nine islands located in the Sulu Sea, 1,000 km southwest of Manila and 40 km north of Sandakan, Sabah. Six of the nine islands are located in the Tawi-Tawi province of the Philippines with the other three in Malaysia. In 1996, the two countries jointly declared the Turtle Island Heritage Protected Area (TIHPA.) The islands are critical nesting grounds for green and hawksbill turtles. Since the establishments of TIHPA turtle eggs have increased, averaging at 2 million eggs laid annually providing a boost to the tourism industry,

which has secured a P58 million budget for ecotourism projects[cxxvi]. In addition, supplementary and alternative livelihood projects have helped lessen dependence on turtle eggs while increasing and diversifying local income

Tourism:

Attention to, and protection of, turtles in surrounding islands has provided a major boost to the local tourism industry. A P30 million budget for ecotourism projects has already been secured for the area with an additional P28 million to come from the Tourism Infrastructure and Enterprise Zone[cxxvii]. Residents are recognizing the potential for tourism to bring in revenue while also ensuring that natural resources are protected[cxxviii]. Investment in tourism is also providing increased opportunities for community development projects, which are beginning to emerge around the islands.

Fisheries:

Both a national and local focus on conservation and tourism has succeeded in decreasing unsustainable fishing practices in the islands. Malaysian trawlers encroaching and exploiting fisheries in the Turtle Islands have significantly decreased and Malaysian shrimp trawlers have decreased from 200 to 18 boats[cxxix].

Community Development:

Alternative and supplementary livelihood programs have worked to diversify income for local people while also reducing pressures on the islands natural resources. The Taganak Women's Buying Club was provided seed capital to set up convenience (sari-sari) stores and FRIENDS was provided with the capital and training to set up souvenirs and handicrafts operations on the island. Members from both of these groups have since been able to provide additional income to their families. Members of the Taganak Women's Buying Club reported and average

income increase of USD $35-71 per person per month from sales of goods from their sari-saris shops. Members of FRIENDS reported earning $1,000 over 8 months through selling handicrafts and souvenirs[cxxx]. Increased capital has not only increased and diversified income, but also provided families with opportunities to improve their homes, send children to school and build wells[cxxxi].

Verde Island Passage

The Philippines

The Verde Island Passage marine biodiversity corridor covers an approximate area of 4,947 km^2. Home to critically endangered marine mammals and turtles as well as economically important pelagic fish[cxxxii], the passage is threatened by multiple human threats including unregulated fishing, tourism and busy shipping lanes[cxxxiii]. In recognition of the ecological significance and multiple threats facing the passage, the Verde Island Passage Marine Protected Area Network (VIPMPAN) was established to maximize connectivity between existing MPAs. The network was achieved through engagement with scientific experts, universities, private institutions, NGOs and local government[cxxxiv]. Since its establishment, the network has grown to cover an area of 17,000 hectares of critical habitats, 3,000 hectares of no-take zones, 14,000 hectares of fishery reserves and 300 hectares of mangrove conservation areas[cxxxv]. The area also includes two cities, 20 municipalities and 69 no take zones[cxxxvi]. As a result, increases in income and employment as well as increase in fish catch and biodiversity have been reported in multiple areas.

Tourism:

The Mabini and Tingloy MPAs also known as “Anilao” are located 127km away from Manila. Its close proximity to three other major cities makes it a popular tourist destination not only for foreigners but also for Filipinos. To help protect its natural resources and gain from increased tourism, Mabini and Tingloy established conservation fees for their MPAs, which they later integrated into one, co-managed

system. Between 2003 and 2006, funds from conservation fee collections totaled USD $112, 563[cxxxvii]. At the same time as the conservation fee was established the Coastal Resources Management Board (CRMB) was established. Representation on the board includes NGOs, academia, government, boat operators, diving communities, and resort owners. The establishment of a unifying board to manage coastal resources is seen as a success beyond financial gain and the gains from the conservation fee are generally benefiting all parties involved[cxxxviii].

The tourism industry has also provided income stability and employment for local communities. One study estimated that by 1994, the resort industry already employed 10% of the local labor force[cxxxix]. Another study revealed that many local residents found that income from tourism was more dependable than income from fishing due to increased pressures on the ocean and uncertainty of the ocean's yield[cxl].

Jobs have also emerged in tourist related services, particularly for transportation services. Boatmen, or *bangkeros* have noted substantial increases in come and many former fishermen now make a full-time living from operating boats for tourists.

Community Development:

The rise of tourism has led to many benefits in the surrounding communities. In Mabini, infrastructure and utilities have improved including better roads, cellular phone networks, and 24-hour electricity. Locals have also been able to sell real-estate to both resort owners and other people seeking to build homes in the area. As a result, a demand for construction materials and construction related jobs have provided opportunities for laborers, retailers and suppliers. A 2002 study estimated that the income from 52 resorts in the area exceeded PHP 40 million and tourism as a whole contributed to 34% of local income in 2003[cxli].

Fisheries:

Fisheries closures in the parts of the Verde Island Passage have been successful in increasing fish catch biomass. Zamboanga, a highly urbanized city located in Mindanao, implemented a three-month closure for sardine fisheries in 2011, which resulted in a 30% increase catch between 2012 and (a total of 20,000 metric tons) 2013. In parallel with the sardine fishery closure, Zamboanga reported the fastest economic growth in 2012 attributing it to a significant increase in canned sardine production. In addition, spill over benefits in the neighboring regions of Palawan, Davao, and Tawi-Tawi all reported increased catch of sardines. The closure of the sardine fishery in Zamboanga was so successful that is created a surge of interest among local stakeholders pushing for seasonal closures to sustain the benefits that the closures bring them. Similar closures where consequently replicated in other parts of the Sulu-Sulawesi Seascape including the Visayan Sea and Palawan[cxlii]."

Key to the success of the sardine fishery closure was early stakeholder and private sector engagement as well as successes being communicated early on via national media. In Anilao, early positive results of fisheries closures pushed stakeholders to consider expanding the geographic scope of closures for longer periods of time and including small-scale municipal fishing operations in future closed seasons[cxliii]. Community involvement including the establishment of a community environmental law enforcement system also helped reduce fishing violations, and improve fish catch and coral reef coverage.

Operating in Mabini and the MPAs of the Verde Island Passage are Bantay Dagat. The Bantay Dagat is a participatory civilian group that works to protect the marine environment by activities such as enforcing fisheries ordinances, patrolling for illegal fishing and providing rescue operations. In Balayan Bay close to Mabini, the Bantay Dagat is under the supervision of the Tourism Officer and is comprised of 380 local people, mostly fishermen. Enforcement from the Bantay Dagat was so successful that zero violations of seasonal closures were recorded in the December 2014 closure.

Every member of the Bantay Dagat is trained in key skills in including:

- MPA Management Training
- Climate Change Training
- Vulnerability Assessment
- Paralegal Training
- Deputy Fish Warden Training
- Advance Fishery Law Enforcement
- Marine Mammal and Sea Turtle Stranding Rescue Training
- GPS Literacy Training
- Reef Check Eco-Diver Training
- Population, Health and Environment Training
- Organizational Development
- First Aid Training
- Basic Life Saving Training
- Intelligence Training
- Community Based Oil Spill Training
- Community Based Coastal Resource
- Management Orientation
- Stress Management Workshop
- Basic Ecology and Coral Reef
- Biology Training [cxliv]

These trainings not only help participants succeed in monitoring fisheries closures, MPAs, and tourism regulations but also gives them more specialized, transferable skills that may be able to provide them with different future opportunities. In addition to training, participants in the Bantay Dagat in Mabini receive multiple incentives and benefits including daily stipends, free health insurance, accident and life insurance coverage, scholarship benefits for children and free capacity-building trainings and seminars[cxlv]. Local fishing companies, recognizing their long-term interest in seasonal closures have been key in in providing the benefits to members of the Bantay Dagat. In addition, participating private sector leaders have been key insisting that closures are based on the best available science and data. In addition to employing local people and providing benefits to their families, the Bantay Dagat shows the larger community the importance and prevalence of local participation in marine protection helping promote community awareness and buy-in to conservation and marine protection.

To support fishermen during seasonal closures "cash for work" programs have been implemented to help mitigate the short-term losses for affected fishermen. During the closure of Balayan Bay the Department of Social Welfare and Development was able to support over 1,500 affected fishermen by providing the provincial government with PHP 9 million[cxlvi]." Some activities included coastal clean ups, repair of mangrove paths and ecotourism related activities. Typically, participating

fishermen are were paid approximately USD $6 a day for their services[cxlvii]." Other programs were implemented to create alternative livelihoods for fishermen, one of the most lucrative being seaweed production.

Coastal Resource Management:

Community based projects have also been established to create mangrove rehabilitation sites, creating supplementary and alternative livelihood opportunities. Two rehabilitation sites are being used to address coastal vulnerability related to climate change and are created income sources for local women. In Ang Pulo, local women replanted a 7-hectare area and built a boardwalk for bird watching, created tour raft and created a menu to feed visiting tourists. So far, more that 5,400 guests have paid for tours and meals, having a large impact on local livelihoods. The treasurer for the project, Helen Ricaza noted, "before, there was no work and no income for women, but now we are earning extra income for our families[cxlviii]."

In Balibago, a group of fishing families established a 10-hectare mangrove nursery with 10,000 seedlings. Each year participants sell over 5000 mangrove saplings to nearby towns, helping build coastal resilience. In addition to earning incoming from selling the saplings, residents earn additional income from waste recycling while patrolling sites and harvesting shellfish[cxlix]. Since the onset of restoration efforts, mangrove cover is denser providing more protection for bird populations, water quality has improved, number of shellfish have increased, and sites have attracted tourists[cl].

Looking Forward:

Conservation efforts around the Sulu-Sulawesi Seascape have decreased unsustainable fishing practices, set up key protected areas, and promoted tourism while also benefitting local communities. While home to many successes, the seascape is threatened by many emerging industries and operating industries that

are not yet involved in seascape management. Moving forward, efforts to involve industries such as mining, drilling and shipping will be especially critical. The Sulu-Sulawesi contains heavily utilized shipping lanes, especially in areas such as the Verde Island Passage. Efforts to work with the shipping industry, map out sensitive areas, and establish clear guidelines will be important for marine conservation.

Efforts to include sectors such as drilling and mining are also critical. The island province of Tawi-Tawi has large reserves of nickel, iron, chromite, gold, sand, and gravel, which have starting raising commercial interests. While such operations might be profitable, when managed unsustainably and without coordination with other industries, they could quickly reduce profitability of the tourism, seaweed, fishing, live fish trading industries as well as key mangrove rehabilitation sites. Local people have already voiced concerns over siltation and soil erosion from mining and the negative impacts this would have on seaweed farmers. Working with the mining sector can help map out areas to be avoided and guidelines that will help maintain the ecological integrity of the area

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