

RESPONDING TO CHANGE:

EXPEDITING AND SCALING UP INTEGRATED APPROACHES FOR SUSTAINABLE COASTAL RESOURCE MANAGEMENT THAT IMPROVE LIVELIHOODS AND FOOD SECURITY FOR COASTAL AND SMALL SCALE FISHING COMMUNITIES



INTEGRATING HUMAN DEVELOPMENT AND POVERTY ALLEVIATION WITH CONSERVATION



KEY MESSAGES

- Many poor households in coastal communities rely on healthy ecosystems for survival and to defend against climate change, but poverty, food insecurity and vulnerability to social, environmental and economic shocks mean they're often driven to exploit these ecosystems unsustainably
- Protected or locally-managed areas can be used to create new income streams for local communities, compensating for restricted access to marine resources
- Understanding how social, cultural and economic factors interact with conservation goals is key to using development approaches to advance conservation goals
- Broad-based development plans encompassing a 'population-health-environment' approach are more likely to succeed than narrow initiatives
- Listening to the community to understand their needs and engaging them through participatory development approaches from conception to delivery and ongoing management is essential
- Approaches must be inclusive, with particular attention paid to addressing obstacles to the participation of women and other marginalised groups in any program.

THE ISSUE

In the Coral Triangle, coastal ecosystems are critically important, providing food and resources to more than 350 million people – 130 million of those are vulnerable coastal communities directly

dependent on coastal and marine resources for their food and livelihoods. These ecosystems provide many services including fisheries productivity, building materials, maintenance of coastal water quality, coastal protection against storm surges, cultural and spiritual benefits, and tourism opportunities. These functions can't be replaced if these ecosystems are lost.



FAILURE OF A
COMMUNITY-BASED
CONSERVATION PROJECT
AND ASSOCIATED INCOME
GENERATION AND FUNDING
ENTERPRISES WILL
IMPACT ON COMMUNITY
DEVELOPMENT
ASPIRATIONS

Most coastal communities in areas with higher infant mortality and malnourished children are in low and lower-middle-income countries. Infant mortality and malnutrition – often used as proxies for poverty – vary considerably across the Coral Triangle. While the level of infant mortality has dropped, there remains significant malnutrition causing stunting and wasting among children. With the ever-increasing pressure on marine resources in the Coral Triangle combined with climate change impacts, coastal communities are uniquely vulnerable.

Poor households in coastal communities tend to have limited options for income generation and often find it difficult to undertake a range of activities to reduce the risks of their high economic dependency on a single activity. Many of the poorest households – including in the Coral Triangle – have very few productive assets, namely small holdings of land and some form of agriculture/fishing.³ Often they rely on selling unskilled labour, which is their only other asset: they generally obtain most of their income as agricultural/fishing labourers or in unskilled paid work close to home.

Poor households' livelihoods therefore often depend on the fluctuating value of their labour and the productivity of finite natural resources, such as mangrove and small-scale fisheries. As community demand for natural resources intensifies, especially in communities with inadequate governance or management systems, overexploitation occurs and productivity decreases. This drives more people to seek outside work. In constrained economic environments, the increased supply of available labour can quickly outstrip demand, which then leads to falling wages. Once wages fall below a certain level, many rational economic actors will return to drawing their income from the already-depleted natural resources upon which their communities depend. This vicious cycle is often referred to as a poverty-environment trap (Figure 1).4

POVERTY is defined as 'a multidimensional phenomenon affecting people, encompassing inability to satisfy basic needs, lack of control over resources, lack of education and skills, poor health, malnutrition, lack of shelter, poor access to water and sanitation, vulnerability to shocks, violence and crime, lack of political freedom and voice'. Infant mortality and child malnutrition rates serve as a useful proxy for overall poverty levels because they are highly correlated with many poverty-related metrics, such as income, education levels and health status.

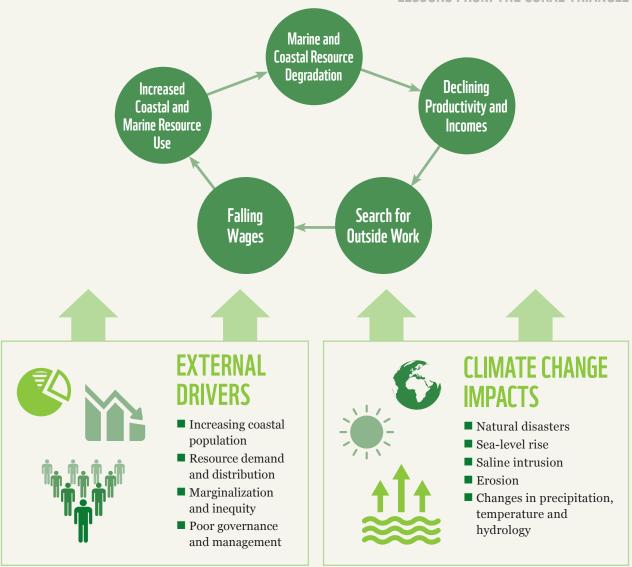


Figure 1: The poverty-environment trap and climate change in coastal areas of the Coral Triangle (adapted from Barbier 2015).

The coastal communities susceptible to this poverty-environment trap are highly vulnerable to an increase in climate change-induced coastal hazards such as inundation from sea-level rise, storm surges, coastal erosion and saltwater intrusion. These factors either directly threaten their livelihoods, or do so indirectly by impacting the key coastal and near-shore ecosystems on which their livelihoods depend. Climate change impacts reinforce the poverty-environment trap.

Of course, poverty is about much more than income levels, with multidimensional factors ranging from weak or broken state-society relationships, a high prevalence of violence and poor healthcare and sanitation, to the exclusion or marginalisation of particular groups and high levels of gender inequality. However, where there is an inclusive and sustainable increase in and diversification of income, poverty among coastal communities can be reduced – and they will be better able to cope with and adapt to the hazards associated with climate change.⁸

While there is much debate in the literature regarding the relationship between conservation and poverty reduction, the links are real; and failure to account for them places conservation interventions at risk of failure. The key is not to ignore the human development aspects, but rather to understand how they affect the biodiversity of interest. Understanding how human development factors interact with conservation goals is key to using development as a mechanism to achieve a conservation outcome.



A HOLISTIC AND INTEGRATED APPROACH TO CONSERVATION



RECOGNISING THE KEY ROLE WOMEN PLAY IN REDUCING VULNERABILITY AND BUILDING RESILIENCE IN COMMUNITIES AT ALL SCALES IS FUNDAMENTAL For the past few decades conservationists have grappled with how to balance these challenges, aiming to develop integrated projects that included both conservation and development goals to find a win-win strategy. ¹² For example, there have been efforts to develop ecotourism opportunities to benefit local people while encouraging the sustainable management of their marine resources: in theory this sounds easy, but in practice it has proved much more difficult to realise, given the complex situations on the ground. As a result many projects have been less than successful. ^{13,14}

Likewise, given the crucial role of women in small-scale fisheries in the Coral Triangle (in harvesting as well as processing and marketing), their inclusion in decision-making, policy development and the implementation of solutions should be inextricably linked to poverty alleviation and food security, as well as more effective resource management. However, it's often overlooked.^{15,16}

Against the impacts predicted from climate change, recognising the key role women play in reducing vulnerability and building resilience in communities at all scales is fundamental. In small-scale fisheries, most of the catch taken by women (or the earnings from it) goes towards feeding their families, making the contribution of women to household nutrition critical. ¹⁷ Good nutrition is paramount to immune functions, childhood growth, cognitive development and function, and to reproductive success. ¹⁸

In addition, women play a key role providing food and increasingly cash income through related subsistence activities, such as reef gleaning and market activities. ¹⁹ Consequently, there is an urgent need for Coral Triangle leaders to invest resources into addressing the obstacles to gender equality by ensuring access to education and skills development for women, youths and children, and promoting and facilitating their inclusion in decision-making on marine resource management. Reducing gender inequality in education is also a vital part of promoting sustainable development more broadly (*see SDG4 – education and SDG5 – gender equality*).

PROTECTED AREAS

Marine protected areas (MPAs) or locally managed marine areas (LMMAs) are a dominant tool used to conserve marine biodiversity, protect ecosystem services and restore fisheries in coastal communities across the Coral Triangle. There's a common concern that establishing protected areas which restrict access to marine resources may lead to conflict between conservation goals and broader economic and cultural activities, exacerbating poverty by limiting the sources of income available to the local community. However, under the right conditions MPAs/LMMAs can also improve incomes. Alternative revenues may be created through tourism business opportunities, and where ecosystem services are strengthened there are often improvements in household nutrition, lower vulnerability to illness and higher incomes that in some cases enable savings and investment in supplementary livelihoods.^{20,21,22} Likewise, demonstrating the economic benefits of marine management to fishing communities in meaningful timeframes can catalyse community engagement in conservation while helping to rebuild fisheries and safeguard livelihoods.²³

It's important to jointly consider the particular context of the situation, the project design, and the environmental and socioeconomic outcomes – and also to understand the trade-offs. It's also important to note, however, that the linkages between conservation and poverty are complex and vary: whether and how conservation contributes to poverty reduction in practice will depend on the specific nature of those linkages.

Taking account of human needs in conservation isn't unreasonable, and it's often strategically paramount. Yet this isn't the same as reducing poverty. ²⁴ The circumstances and conditions under which projects are delivered play a significant role in how successful their integration of objectives will be, meaning there is no one-size-fits-all solution. There are many approaches and projects underway throughout the Coral Triangle that can be learned from, but it's important to remember that a successful approach in one country may not be successful in another. The key is to look for the principles and enabling conditions behind successful projects, and consider how they can be adapted to suit each situation where appropriate.



DEMONSTRATING
THE ECONOMIC
BENEFITS OF MARINE
MANAGEMENT...CAN
CATALYSE COMMUNITY
ENGAGEMENT IN
CONSERVATION WHILE
HELPING TO REBUILD
FISHERIES AND
SAFEGUARD LIVELIHOODS



THE PHE APPROACH
EMPOWERS PEOPLE TO
MAKE THEIR OWN FAMILY
PLANNING CHOICES
AND UPHOLDING THEIR
REPRODUCTIVE RIGHTS

THE PHE APPROACH

At a local scale, where a lack of choice (local poverty) threatens biodiversity, an integrated approach can make a real difference. ²⁵ Clear links are now emerging between poor health, unmet family planning needs, food insecurity, environmental degradation and vulnerability to climate change. ²⁶ Using the 'population-health-environment' approach (so-called because it recognises the link between the three), expanding access to family planning services in areas where actual fertility is higher than desired fertility can reduce pressure on natural resources. ²⁷ It also makes an important contribution to gender equity and women's empowerment, and strengthens overall community engagement in conservation. ²⁸

Blue Ventures have demonstrated much success with this approach in southwest Madagascar, where they began implementing an integrated health-environment program in 2007 with partner health organizations. The Velondriake LMMA is home to approximately 10,000 people, who were concerned that fish stocks would collapse without improved access to family planning. Blue Ventures listened to the community and took an approach which entailed the integration of community-based reproductive health services with locally-led marine conservation initiatives, including temporary octopus fishery closures, permanent marine reserves and alternative coastal livelihood activities such as aquaculture.

The PHE approach empowers people to make their own family planning choices, upholding their reproductive rights while equipping them with the skills they need to manage their natural resources sustainably. The success of the program has led to its expansion to more than 25,000 people across over 60 communities along Madagascar's west coast. To date 2,125 unintended pregnancies have been averted, fish stocks are being actively managed and some species are now recovering, biodiversity conservation is being strengthened through stronger enforcement in the LMMAs, and women are more closely engaged in decision-making.

As these experiences in Madagascar demonstrate, the PHE approach can be implemented with ease through cross-sector partnerships that combine the complementary expertise of environmental and health organizations. PHE has been shown to produce greater impacts than single-sector interventions over the long term, to prevent over-use of coastal resources, and to generate additional benefits such as the increased engagement of women in alternative livelihood activities.^{29, 30}

The PHE approach is starting to be incorporated into projects in places such as Cenderawasih in Indonesia, and could be integrated more broadly into conservation projects in the Coral Triangle.

Recognised as a protected area since 1990, Cenderawasih Bay officially became Indonesia's largest marine national park in 2002. It's host to a vast diversity of marine life, including whale sharks, dugongs, sperm whales and sunfish. The area also provides nesting habitat for green turtles and critically endangered hawksbill turtles, as well as feeding areas for leatherback and Olive Ridley turtles. Nearly 1,000 fish species and 500 coral species have been identified in the park (14 of which were previously unknown to science), with some reef areas boasting up to 66% live hard coral coverage.

Named after the Bird of Paradise (Cenderawasih), the park is located on the eastern side of the famous Bird's Head Peninsula in the Coral Triangle, and covers an area of 14,535 km2 – larger than the entire area of the Bahamas. There are around 5,000 domestic and international visitors to the park each year. The Cenderawasih area also holds 50 villages, 18 of which are within the National Park, with a combined population of approximately 6,000.

These people rely heavily on the marine environment for their sustenance. Fishers from communities within the park and from nearby areas have historically employed destructive fishing techniques including dynamiting, compressor fishing and the use of cyanide. While the park had long had designated marine zones within which there are various limitations on activities, the sheer vastness of the area made monitoring and surveillance of these

zones extraordinarily challenging, and in reality they became largely open access. As a result, the region has suffered extensive overfishing, with catches being hauled from the ocean faster than they could be replenished. Such activities threaten the ecological viability of the area, which in turn threatens not only the local communities' livelihoods, but also their foundational ability for subsistence living.

Jürgen Freund / WWF-Indonesia

Faced with these challenges to sustainable fisheries management, food security and biodiversity conservation, an integrated approach was needed that effectively engaged, involved, and enabled local communities to become more proactive stewards of the marine environment. To this end, WWF-Indonesia worked alongside the National Park Authority (TNTC) to undertake extensive awareness-raising, educational activities and training in order to generate greater understanding of the importance of sustainable management and to create motivation for custodianship.

WWF launched the Gurano Bintang education ship in 2012. The crew of the Gurano Bintang were originally a mix of environmental educationalists and sailors. However, when travelling to communities in the bay, the crew sometimes observed destructive and illegal fishing taking place. Therefore, they added a surveillance crew to the team to effectively engage and counter illegal fishers they met along the way and provide monitoring services to complement the park's patrols. In addition, the crew saw the lack of healthcare

in many of these extremely remote communities. As a result, they also engaged medical practitioners and doctors on the voyages to support health checks, administer medical support and re-stock village pharmacies with critical medicines and materials.

WWF-Indonesia and TNTC worked with the communities within the park to develop tailored collaborative marine managed areas and related regulations, based on traditional customary marine ownership and historical tribal access rights. These areas could then be managed to limit access and fisheries extraction levels, both vital components of sustainable fishery management. In addition, destructive fishing practices were prohibited across all of these communities, and fishers from areas outside the community were not permitted to fish in the designated traditional marine management areas. Fishing in these community waters now requires personal permission from the relevant village leader and the payment of a fee of 500,000 IDR (~\$35 USD) to support the costs of community patrols.

Tourism operators were also engaged to support the development of sustainable visitor management systems. While key outputs were successful (e.g. a code of conduct restricting numbers of snorkelers with whale sharks), compliance remains challenging. A Regent Decree was also enacted to support a one-door payment policy for whale shark tourism, so payments are clear and fair for all parties. This payment system includes requirements for visitors entering traditional marine management areas to contribute to the village fund of that area to support sustainable management. A Payments for Ecosystem Services (PES) provision has been included in village agreements to enable the communities in the bay to receive village fund income that is directly related to (and reliant upon) their marine and cultural resources remaining viable, productive, and attractive to visitors; it also provides a further incentive for proactive community-driven sustainable management

A good example of this proactivity is in Yomaken village, where in addition to establishing village agreements for two traditional management areas, the community brokered a deal with a private sector fish trading company for Yomakan fishers to provide a consistent supply of sustainably caught fish utilizing

hook and line gears that meet a minimum hook size standard (to avoid the capture of juvenile species). This village also undertook coral transplantation efforts to restore and rehabilitate areas of reef that had been previously damaged by dynamite fishing. Yomakan became the first village in Cenderawasih Bay to establish a dedicated fishers' group, known as 'Tapapai'. This group developed a clear area management plan, and is now working to promote the incorporation of Total Allowable Catch (TAC) plans into its agreements for grouper fisheries: research has shown these are in good condition and remain under-exploited.

To support this group, WWF-Indonesia has provided considerable training and mentoring over the years. This has included training in scuba diving, ecological survey techniques, reef fish data collection, fishery productivity and catch/effort data collection, coral transplantation, and resource use monitoring. Tapapai now participates in joint patrol and surveillance activities in collaboration with WWF-Indonesia staff. The group is keen to engage with tourists visiting the area, and to broaden livelihood opportunities through ecotourism: one plan is to establish a permanent mooring buoy for liveaboards and other tourist vessels in community waters. The group will also manage the collection and coordination of visitor fees through its visitor information center (in development).

These achievements have been followed closely by other communities in the region, and to date eight more villages have initiated the processes to formalise traditional fishing areas for their communities. The integration of traditional management practices into more formal regulatory frameworks, and the creation of entrepreneurial livelihood opportunities based on safeguarding principles, are proving to be crucial to sustainable fisheries management in Cenderawasih Bay.

The harmonization of conservation, culture and commerce is essential if conservation practitioners are going to meet the complex challenges faced by fishing communities and find solutions for protecting and preserving oceans and marine resources for future generations.

For more information: https://lcs-rnet. org/pdf/lcs_rnet_presentations/6th/P2.C-6_ Suprayogi.pdf



Indonesia has more mangroves than any other country globally, and the mangrove ecosystems in Northern Sumatra are particularly complex and rich in species. Unfortunately, these ecosystems are also rapidly disappearing through the expansion of intensive shrimp ponds, palm oil and human settlements: 69,304 ha were lost between 1989 and 2009.

A key challenge has been how to empower the local communities to become directly involved in sustainable community resource management. One important response was initiated by Yagasu, an Indonesian NGO, with support from the Indonesian government, NGOs and multinational companies: the Coastal Carbon Corridor project. This multiple benefit program involves around 4,800 local people from 165 community groups in 118 villages along 1,107 km of coast from Banda Aceh to Labuhan Batu. Adopting an integrated approach, the goal of the 20-year program is to increase the environmental carrying capacity of mangrove ecosystems for natural disaster risk reduction, local livelihoods improvement and climate change mitigation and adaptation. Since its inception, local communities have restored around 9,600 ha of mangroves.

In 2011 – following extensive capacity building with the local communities – Yagasu facilitated Indonesia's first blue carbon credit program for community mangrove restoration. Funded by a range of private sector investors through a combination of the Voluntary Carbon Scheme, livelihoods development and REDD+ programs, this scheme plays a unique role in the Coastal Carbon Corridor model in mitigating and adapting the harmful effects of climate change. The investors purchase carbon

credits directly from the mangroves planted by the local communities, potentially offsetting around 2.5 million tonnes of CO2 from the mangrove carbon stocks over the 20 years of the program. The funds received for the credits directly fund ongoing restoration activities.

The program also created a leverage funding mechanism through a cooperative agreement with USAID-Indonesia to develop a village land-use plan (VLP), mangrove protected area (MPA) and village regulation; conduct research activities; operate a community patrolling unit; and improve the local economic situation through various village business incentives and cooperatives.

As an incentive for mangrove protection, economic alternatives for local communities, particularly women's groups, were introduced to reduce pressure on coastal ecosystems. The local economic program includes organic silvo-fishery, recreational fishing, mangrove eco-tourism, crab fattening and soft crab production, organic 'batik' mangrove inks, mangrove foods and beverages, and other coastal businesses. Ecotourism opportunities are also being explored. A revolving fund and village cooperatives have been set up for these businesses and product marketing.

Prior to the project the average income was Rp 1.850.000 (US\$205) per family per month. This has now increased by 57% to Rp 3.071.000 (US\$323) per family per month.

For more information: http://wwf.panda. org/what_we_do/where_we_work/coraltriangle/ solutions/marine_protected_areas/



"Our vision for KAWAKI is to unite women to celebrate community, conservation and culture. The KAWAKI women will look after our natural environment and culture. We will build a better future for our children and communities."

Marilyn Gede: Chair of the KAWAKI Women's Network

The Nature Conservancy (TNC) has worked in the Solomon Islands since 1995, partnering with the Mother's Union to train 40 women facilitators who have now visited 12,000 people in remote communities, raising awareness of the importance of making well-informed decisions about mining and logging.

At the Arnavon Community Marine Conservation Area (ACMCA) in the Solomon Islands, TNC works with three local communities to protect the largest hawksbill turtle nesting area in the Western Pacific. Although

men from these communities have been involved in the ACMCA for 20 years as community conservation officers, women have not had a formal role there. TNC recently supported the formation of a new group, KAWAKI Women's Network, where women are taking a leading role in conserving the most important hawksbill turtle rookery in the South Pacific.

Even though turtles are relatively safe while they nest at the ACMCA, they face dangers when they leave these protected islands. Poaching, fishing nets and litter such as plastic bags all pose threats to sea turtles as they swim and feed in the area. A photo book has been produced to tell their story.

For more information: https://www. nature.org/ourinitiatives/regions/asiaandthepacific/ solomonislands/explore/solomon-islands-kawakiwomens-group-slideshow.xml?redirect=https-301

KEY PRINCIPLES IN DESIGNING INTEGRATED PROJECTS



BE CLEAR ON THE THEORY OF CHANGE

It is important to understand the theory of change for how a project will achieve its goals and how tradeoffs can be addressed. By mapping out the relationship between these threats and the targets using, for example, a result chain, optimal conservation solutions can be identified while socio-economic constraints are also considered. Understanding who will benefit and over what timeframe is key. Any poverty-conservation linkages and rationales need to be made explicit. It is important to clearly identify underlying assumptions, and test them wherever necessary. This will assist in setting multiple performance measures, and ultimately will ensure greater clarity and improved conservation actions.³¹



LISTEN TO AND INVOLVE THE COMMUNITY

It is important to listen to the community and to work with them to address their priorities. Where possible, a diverse range of community members should be directly involved in the design, implementation and monitoring and evaluation of interventions. Often it can be helpful to start by addressing immediate needs such

as food security and health rather than income, and strengthening or building on existing livelihood options before introducing alternatives. These are areas where it's often easier to demonstrate impact, and engaging with them will build greater trust with the community. However, it's important to recognize that there are no 'magic bullets', and appropriate actions can only be identified in partnership with communities (remember the phrase 'Nothing about us, without us'!). Training and capacity-building for local institutions in financial management, access to markets, partnership development, conflict resolution, ecotourism establishment, business planning and marketing are important elements of livelihoods-focused projects. Conservation NGOs don't necessarily have all these skills or experiences, so it's important to partner with others who can bring this expertise.³²



INCENTIVIZE LOCAL FISHERS TO CONTROL MPA MANAGEMENT

Managing access to fishing areas and promoting sustainable fisheries management is inherently challenging. The lack of clear and meaningful incentives for fishers to support conservation has resulted in the erosion and breakdown of countless MPAs. The fundamental condition for success is local control. There may at times be some government or NGO support, but critically it's the fishers themselves who must make management decisions based on their needs, their priorities, and their traditional ecological knowledge.



STRIKE A BALANCE BETWEEN REGULATIONS AND TRADITIONAL RIGHTS

Balancing traditional customary rights and formal regulatory frameworks is important, and changes to government policy can have trickle-down impacts on achievements on the ground. Vertically aligning bottom-up processes with top-down legislative requirements is important, as is ensuring efforts align with prevailing government policy at all times so systems can remain robust into the future.



HAVE REALISTIC TIMESCALES, AND REGULARLY REVIEW AND ADAPT STRATEGY

It's important to be realistic about the timeframes required for benefits (and costs) to be realized, particularly with the community, donors and other key stakeholders. When dealing with issues such as sustainable use, reduced vulnerability and increased resilience there may be short-term costs to achieve longer-term gains, and projects can realistically take 20 years to reap rewards for communities and biodiversity. Regularly reviewing the rationale and impacts of the approach and adapting actions accordingly will help to keep it on track.³³



INCLUSION AND EQUALITY MUST BE AT THE CORE OF ALL PROJECTS

Addressing the threats facing the Coral Triangle may impact men and women differently, since men and women have different skills and perspectives to contribute. Excluding gender risk from programs and projects is inappropriate and may mean the benefits are inaccessible for a large proportion of target communities, or it may even amplify existing social inequalities within these communities. Inclusion, gender equality and women's empowerment are fundamental dimensions of human development. Active participation from minority groups and women in small-scale fisheries and marine resource management will lead to improved decision-making and greater benefit-sharing. Women also play a crucial part in strengthening community resilience, from ensuring that fragile ecosystems are protected to helping their families become better prepared to face natural disasters.



ENGAGE WITH THE HUMANITARIAN AND DEVELOPMENT SECTORS

Engaging the humanitarian and development sectors in environmental and biodiversity issues means working more closely with them and demonstrating a stronger rationale for integrated approaches – to show that sustainability and biodiversity loss are important issues that impact on their outcomes.



MAKE THE PROJECT APPROACH CONTEXT-SPECIFIC

Not all conservation projects will be best served by this approach. Depending on the context and willingness of a community, other approaches such as species protection may be more appropriate.



ENSURE TANGIBLE PROJECT BENEFITS CAN BE DEMONSTRATED

Where a project claims to be generating benefits, whether socio-economic or environmental, then it needs to be able to tangibly demonstrate them to a broad cross-section of the community and other key stakeholders. The participation of women, youth, people living with a disability, ethnic or religious minorities and other individuals and groups that are often excluded should be promoted. Appropriate monitoring and evaluation is important to understand what is actually having an impact before solutions can be scaled up.

Where to go for further information

www.barefootguide.org/

https://blueventures.org/conservation/approach/phe/

wwf.panda.org/what_we_do/where_we_work/coraltriangle/solutions/marine_protected_areas/

http://naturesleadingwomen.org/women/solomon-islands/

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