

Discussion Paper

INCENTIVES IN MARINE CONSERVATION APPROACHES

Comparing buyouts, incentive agreements, and alternative livelihoods

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I. INTRODUCTION¹

Conservation practitioners increasingly are turning to incentive-based approaches to encourage local resource users to change behaviors that impact biodiversity and natural habitat. Although past approaches have employed the stick of fines and penalties (negative incentives), many current conservation tools incorporate subsidies and payments of various forms (positive incentives) to encourage particular practices. These approaches recognize that conservation can impose a loss in terms of foregone income or access to resources (opportunity cost). Since people face pressing socio-economic needs in many priority areas for conservation, such potential losses can hamper initial acceptance as well as long-term sustainability of conservation interventions. Thus, unless conservation programs address economic needs and opportunity costs, local resource users will be compelled to make choices that generate short-term economic returns despite their destructive impacts.

The role of incentives in conservation efforts is receiving increased recognition, but projects can incorporate incentives in many different ways. Consequently, conservation approaches vary widely in the directness of incentives for resource users to change behavior. Directness refers to the link between project benefits as an incentive and the desired change in behavior or conservation outcome, i.e. to what degree benefits are a function of conservation performance. Paying someone to desist from dynamite fishing is a very direct incentive. An example of an indirect incentive is training someone to be a dive guide, with the expectation that they then will be less inclined to overharvest. Indirect incentives do not explicitly reward individuals for pursuing conservation activities or penalize them for destructive activities, but conservation outcomes are anticipated as a collateral impact of the benefits provided. Usually indirect strategies are based on the premise that a short-term investment can become self-sustaining and permanently alter incentives, while direct incentives typically require a long-term strategy to secure ongoing external financing.

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II. PURPOSE OF THE STUDY

This study seeks to assess the design and functioning of marine conservation interventions with varying types of incentives. Approaches seeking to encourage MMA establishment or improve MMA management can be ordered in terms of how directly they channel incentives to choose sustainability, thus comprising a spectrum of directness. Table 1.1 summarizes general characteristics of interventions in descending order of directness:

Table 1: Spectrum of directness in conservation approaches

Intervention	Dynamic	Incentive	Notes
Buyout of fishing licenses	Payment for transfer of property rights	Compensation conditional upon relinquishing the right to use a resource	Incentives are one-time and do not continue after the initial compensation
Conservation incentive agreements	Provision of benefits in exchange for changes in resource use	Compensation conditional on not exercising the right to use a resource	Examples of benefits: Cash Social services Support for management
Sustainable management	Establish a no-take zone and/or manage harvest levels	Sustaining/increasing yields in harvest areas	
Alternative livelihoods	Re-direct people away from use of resources of concern	Income from activities that do not involve resource extraction (or that require some form of intact resource or ecosystem)	Can take three forms: Extractive resource-based (e.g. sustainable fishery) Non-extractive resource-based (e.g. ecotourism) Non-resource based (e.g. set up a sewing collective)
Education/awareness programming	Influence perceptions of incentives operating within the existing scenario	No exogenous influencing of incentives	

This research effort focused on three of these tools by examining a collection of case studies, each of which can be categorized into one of the following approaches:

1. *Buyouts of resource rights*: Conservation investors purchase resource rights or equipment with the intention of retiring them, thereby reducing the overall level of effort applied to harvesting. Compensation to resource owners or users is typically in the form of an up-front, one-time cash payment, with reliance on government enforcement afterward to prevent illegal activities.

2. *Conservation incentive agreements*: Conservation investors negotiate contracts by which resource-users forego destructive activities in exchange for benefits that are conditional on conservation performance. Benefits may be in the form of cash, services, or goods, and are provided periodically upon verifying that conservation performance targets are met. Agreements are typically for a specified length of time and, as with buyouts, can be seen as aiming to compete directly against earnings from unsustainable resource use.
3. *Alternative livelihood programs*: Conservation investors establish livelihood activities to replace destructive activities by resource-users. Income may be generated through entirely new economic activities or revised forms of previous activities. As income is sought through enterprises, benefits depend on market profitability. Whether or not these enterprises are resource-based, benefits provided by the conservation implementer typically are not contingent on conservation performance *per se*.

Although the stylized descriptions of these three approaches form a clear spectrum in terms of directness of incentives, characteristics of the projects in the case studies vary widely such that not all alternative livelihood programs or buyout initiatives are alike, and some share important similarities with each other or with conservation agreements. Nevertheless, basic project design does allow differentiation. At the same time, some considerations apply to all approaches, such as whether the project is supported by an explicit agreement between the community and the project implementer, or what kinds of monitoring and enforcement provisions are in place. In addition to comparing the approaches, the analysis also explores which factors influence effectiveness regardless of the approach taken.

III. RESEARCH METHODOLOGY

The research relies on a purposive (non-random) sample of sites representing a range of geographical and other conditions. Sites were also chosen so that different interventions in similar contexts were included. This allowed examination of how each intervention performs in similar settings, as well as how a given intervention performs across settings. A case study template was used to collect comparable information for each site. The data include a detailed characterization of the project (location, stakeholders, conservation objective, principal threats, intervention model, budget, duration, etc.). A key characteristic of each project in the sample is the degree of directness of the incentives, as per the descriptions above. Another key characteristic is the formal ownership and use rights regime governing the resource (i.e., government, private, or communal). The property rights regime forms a critical component of the context for the intervention. In most cases the research team visited the project site and met with project implementers to collect information. Implementers and other key informants, including community representatives, were interviewed to complete and verify information in the template. Each case study was written as a project review, on which project implementers were

invited to comment. The individual case studies then informed analysis of the full sample to compare approaches in terms of design, implementation, challenges, and best-practices, and to examine how context and objectives affect tool selection.

Table 2 lists the sites included in the analysis. The sample includes buyouts, incentive agreements, and alternative livelihoods in 10 countries, representing a great degree of geographical diversity with case studies from Southeast Asia, the South Pacific, the Eastern Pacific, the Caribbean, and Africa regions. The projects were implemented to address local threats to marine habitat or species and/or to strengthen resource owner capacity to address external threats. The ultimate aim of the research is to provide guidance for conservation practitioners and policy makers with respect to selecting and deploying incentive-based approaches.

Table 2: List of case studies

	Buy-out	Incentive Agreement	Alternative Livelihood
<i>Ecuador</i>	Galapagos	Galera	
<i>Belize</i>		TIDE Maya Mountain Marine Corridor Scholarship Program (MMMCSP)	TIDE Alternative Livelihood Training (ALT)
<i>Tanzania</i>	Mafia Island gear substitution program	Mafia Island turtle incentive payments	
<i>Mexico</i>	Mexico Northern Gulf permit buyout	Laguna San Ignacio easement	Punta Abreojos sustainable fisheries
<i>Philippines</i>		Gilutongan Marine Reserve	Tubbataha Marine Reserve
<i>Indonesia</i>		Raja Ampat (Misool Eco Resort), Jamursba Medi scholarships	Raja Ampat (Ayau)
<i>Solomon Islands</i>		Rendova turtle incentive payments, Tetepare scholarships, Olive clinic	Baraulu MPA and women's sewing projects
<i>Kiribati</i>	Phoenix Islands		
<i>USA</i>	Morro Bay, Palmyra		
<i>Palau</i>		Helen Reef	Helen Reef

IV. BUY OUTS

Buyouts comprise the most direct approach with respect to incentives, involving a complete transfer of property or user rights. In a typical buyout, the conservation implementer acquires resource rights or equipment for the purpose of retiring them from use. Doing so seeks to reduce the level of harvesting effort, and thereby reduce pressure on the resource base. Thus, a buyout can take several forms:

- Purchase and retirement of fishing permits, quotas, or licenses to reduce effort. This strategy requires that the total effort or harvest level is constrained through regulation so that acquiring and retiring resource rights leads to a reduction in total effort.
- Purchase of vessels or gear to reduce effort or change harvesting methods. Retiring purchased equipment will only reduce harvest effort if the retired capacity is not readily replaced by either existing resource users or new entrants. Some projects try to overcome this problem by replacing the purchased equipment with alternative technology that is less harmful to the resource base.
- Purchase of an area and the accompanying resource rights. This last form of buyout involves withdrawing the area entirely from the extractive sphere, much like when a land trust purchases forest land for conversion to a reserve or other type of protected area.

In a pure buyout, compensation to resource owners or users typically is in the form of an up-front, one-time cash payment. Following the transaction, prevention of violations depends on government enforcement. The one-time payment to relinquish rights distinguishes buyouts from other approaches that provide ongoing incentives for resource users to adopt particular behaviors.

Historically, purchases of fishing rights or equipment primarily have been motivated by objectives related to industry profitability or concern over declining commercial fish stocks rather than biodiversity conservation. Also, buyouts are used far more commonly in developed countries rather than developing country contexts. Recently, buyouts are increasingly being implemented for other goals such as reducing bycatch, protecting ecosystems and endangered species, and conserving biodiversity in general. Particularly when conservation involves the creation of strictly protected areas, buyout programs can be used to compensate resource users for displacement of economic activity.

Although the basic premise of a buyout is a conceptually straightforward transaction, the case studies show that in execution the details of a buyout are complex and highly context specific. In the Morro Bay buyout The Nature Conservancy sought to reduce bottom trawling and thereby protect ocean floor habitat along the central coast of California by purchasing vessels. In Kiribati, the New England Aquarium and Conservation International worked with the Government of Kiribati to protect atolls and reefs by establishing the largest marine protected area (MPA) in the world. The buyout in Mexico's Northern Gulf of California sought to protect a specific dolphin species, the

vaquita, by reducing bycatch. Each of these cases share the objective of reducing the level and location of harvest effort (and in some cases, the gear used in fishing) – in Kiribati by providing compensation to government for designating no-take zones within an MPA and forgoing fishing license revenue, and the other two cases by buying permits and vessels from fishermen.

Interestingly, although the buyout approach in principle is predicated on a one-time payment in return for relinquishing resource rights, all three cases involved ongoing incentives beyond the initial transaction. In Kiribati, the project is structured such that periodic payments are conditional on continued effective management of the MPA, including enforcement of the no-take zones. Thus, this buyout is adapted to parallel the national system of annual access agreements for fishing fleets. In the Northern Gulf of California, ongoing investment in alternative livelihood efforts – in tourism and alternative fishing methods – is needed to maintain stakeholder support and sustain the original buyout. Similarly, in Morro Bay TNC continues to work with the fishing sector to explore alternative harvest technologies and new markets for sustainably caught fish.

Thus, one component of the appeal of buyouts – the apparent simplicity of a one-time transaction as opposed to long-term engagement – rarely holds in practice. Nevertheless, the basic proposition of acquiring rights or equipment to reduce extraction pressure offers a powerful direct incentive for resource users. The case studies informed the following reflections regarding the buyout approach:

Well-defined property rights and enforcement are critical

A fishery with limited access is necessary so that a bundle of legal interests can be leased, bought, or traded. In addition, these property rights must be enforced, otherwise conservation investors cannot be assured that by acquiring these legal interests they will quantitatively reduce harvest pressure. To maintain the impacts of a buyout, enforcement is necessary to ensure that fishermen can not re-enter the fishery and that new entrants are prevented. The case studies suggest that in the absence of reliable enforcement, buyout project design must become more elaborate and incorporate ongoing incentives. For instance, in the Mexico case the area is quite large, artisanal fishing has been largely unmonitored and there is a long history of illegal fishing. Limited enforcement capacity in this area slowed down the implementation of the buyout and necessitated continued engagement to complement the buyout with alternative livelihood interventions.

There may be a tradeoff between favorable enabling conditions and cost of the buyout

A buyout may require substantial upfront funds for a one-time payment. Declining economic profitability as in the Morro Bay trawl fishery can lower opportunity cost and make a buyout more financially feasible. However, the conditions needed for a buyout to succeed (i.e. a limited-entry fishery with reliable enforcement) are most likely to hold in more developed areas that also tend to exhibit higher costs, so buyouts are unlikely to be cheap investments. The advantage of implementing buyouts in more developed areas is that institutions for fisheries management and enforcement are stronger, but costs tend to

be higher and complex management systems can result in lengthy design, negotiation, and implementation phases. For instance, due to the complexity of US fisheries management, what might be a straightforward private market transaction actually must pass through many layers of consultation and review in what can be a prohibitively protracted process. In contrast, buyouts in developing countries may be less costly but management and enforcement provisions may not be robust enough to guarantee that conservation investors get what they pay for. Consequently buyouts have been implemented to address various threats in different types of areas, but generally not in the least developed areas.

A one-time buyout does not create ongoing incentives for conservation

A buyout also can be accompanied by ongoing financial incentives for compliance instead of relying solely on a one-off payment followed by enforcement. This would make the project a hybrid of buyout and other approaches. In addition to an initial payment to individuals for giving up permits, vessels, or gear (a private incentive), project design can include a public incentive for enforcement and innovation, in the form of periodic payments to the community that depend on measurable performance (e.g. number of nets in the water, amount of bycatch). Such a public incentive can take various forms; one example is a community fund for micro-credit and community livelihood projects.

Resource users and the public will be more receptive if the displaced activity can be replaced by alternative extraction methods or income sources

Buyouts of fishing vessels, permits, or gear can effectively reduce effort and address overfishing. However, in many contexts fishermen do not just want to be compensated for withdrawing effort, but also desire support for developing sustainable fisheries or other livelihoods. Therefore, in many cases a buyout only will be accepted as one component of a broader plan, again yielding a hybrid of approaches. For example, in the Morro Bay trawl fishery, TNC is exploring the possibility of leasing the permits they bought back to the fishermen; these permits would include legally binding gear or time-area restrictions, mimicking the easement approach that is used in terrestrial settings. In the vaquita buyout, many fishermen are not willing to enter a buyout if it will entail permanently giving up the option to fish. The area offers little immediate potential for alternative livelihoods, particularly in one of the towns where there are limited tourism opportunities. Developing alternatives will take considerable time, but the threat to the vaquita population is extremely urgent. Therefore the strategy chosen was to offer temporary compensation for not fishing inside the refuge (which does not require relinquishing a permit), while collaborating to develop new fishing equipment that reduces the risk of vaquita bycatch. Thus, a buyout can be used in different ways to phase out effort or change fishing practices.

Buyouts for conservation purposes appear to be a method of last resort

Perhaps because of various political and social acceptance issues and their high cost, two of the buyouts presented were implemented in a crisis situation or when all else had failed. In the Mexico case, conservation groups attempted unsuccessfully for decades to save the vaquita, and it currently faces imminent extinction. In the case of Morro Bay, a lawsuit against the National Marine Fisheries Service and the declining profitability of the fishery motivated the parties to come to the table and find a workable solution despite the costs.

The buyout approach offers a direct response to the problem of excess harvesting pressure. The incentive is financial compensation for relinquishing resource rights or harvest capacity in a conceptually straightforward transaction. However, implementation of a buyout can involve a number of challenges, ranging from high financing requirements as in the PIPA example, difficult social and political conditions as in the Mexican Gulf of California example, or complex legal and bureaucratic requirements as in the Morro Bay example. A recurring theme is that in many contexts simply removing fishing capacity through a one-time transaction will not be enough; local stakeholders demand assistance in pursuing alternatives, whether that be in new economic activities or continuation of fishing activity but with different gear or practices. This means that buyout initiatives often will share significant overlap with the alternative livelihoods approach, discussed in the following section.

V. ALTERNATIVE LIVELIHOODS

The alternative livelihoods approach seeks to change incentives to resource users by developing income generating options that can replace destructive activities. Support for alternative livelihood typically is not tied directly to conservation performance. Rather, the new options are expected to induce behavior change as people pursue activities that are more profitable than destructive resource use or realize that sustainable practices strengthen livelihoods. However, there is little recourse if such changes in behavior do not occur. Within the general approach, alternative livelihood interventions can take several forms. First, many such projects are based on extractive resource use, but seek to incorporate sustainable management of fisheries and marine resources. A second form of alternative livelihood project also is resource-based, but pursues non-extractive uses. Finally, new livelihood activities may be developed in sectors that do not rely on marine resources.

The first kind of alternative livelihood project attempts to transform destructive resource use to sustainable extraction. For example, an intervention can subsidize purchases of alternative gear that reduces unintended bycatch or habitat damage. Many projects in this category involve working with fishermen to adopt management practices such as rationalizing off-take levels or establishing no-take zones to enhance resilience of the resource base while continuing harvests. Often, such projects include investment in strengthening property rights and management capacity to improve the institutional

context for sustainable management. Thus, improved prospects for continued extraction serve as the incentive for resource users.

Instead of continuing resource extraction, the second form of alternative livelihood strategy encourages commercial activities that do not involve harvesting but rely on maintaining ecosystem quality through non-consumptive uses. For example, ecotourism requires that ecosystems or species of interest remain intact. This approach attempts to find income-generating activities that are environmentally benign and provide an ongoing impetus for conservation. The incentive for conserving biodiversity lies in the fact that ecosystem health sustains the provision of environmental goods or services essential to the income-generating activity.

The third type of alternative livelihood project encourages individuals to pursue activities that are not related or only peripherally related to the ecosystem. The intention is to redirect capital and labor away from activities that degrade the ecosystem, as in a project that encourages fishermen to become farmers or livestock keepers. Income-generating alternatives are expected to replace reliance on the resource of conservation interest; indeed, these alternatives need not be linked to conservation at all.

An attractive feature of the alternative livelihoods approach is that it directly addresses development needs of resource users, recognizing that destructive practices will not change unless income can be generated through different means. Indeed, the previous section suggested that the success of buyouts often depends on the addition of an alternative livelihoods component to overall project design. However, the approach also faces non-trivial challenges.

Although in all cases the overarching motivation is to provide an income source that motivates conservation, the alternative livelihood cases reflect a range of different goals and designs. For instance, the purpose of the Punta Abreojos cooperative in Mexico was to sustain fisheries production for its members. As the area is fairly remote and there are few income generating options, residents decided against new activities, preferring an attempt to maintain the viability of their traditional livelihood. The incentive for a long-term management perspective derives from exclusive access offered to the cooperative by the government in the form of a concession.

In contrast, the Baraulu sewing project in the Solomon Islands sought to restrict the harvest of shellfish by compensating women for reduced resource access through an alternative income source. The project faces challenges because the area is extremely remote and far from markets, without electricity, and there is little capacity for production, marketing, or business management. Rather than rely on alternative income sources, the Ayau project in Indonesia's Raja Ampat region encouraged reduced consumption of sea turtles by providing local villagers with pigs as an alternative protein source (in addition to alternative livelihood investments). Like Baraulu, Ayau is very remote, but by supporting consumption of a local alternative food the Ayau project avoids some of the challenges relating to distance from markets and limited business capacity.

In the Philippines the Cagayancillo project addresses the issue of lost fishing access to Tubbataha reef by implementing community-based livelihood projects (through a micro-credit facility) linked with sustainable resource management. Also in the Philippines, the Gilutongan Marine Sanctuary directs a portion of tourism revenues to the local village. The logic is that better protection (and less poaching) means more tourists will visit, and thus there will be more revenue to share. Finally, in the Port Honduras Marine Reserve, the program provides training within the community for alternatives through which fishermen can earn income (primarily ecotourism and production of honey from mangroves).

The notion of making reductions in resource pressure a viable option for local users by providing alternative means of income generation has great intuitive appeal. Consequently, it comes as no surprise that this basic logic underlies many conservation interventions. However, the case studies suggest the following lessons regarding the alternative livelihoods approach:

Alternative livelihood projects face challenging business requirements

In addition to the capital needed to start an enterprise, alternative livelihoods projects typically face significant requirements in terms of capacity and market conditions. A study by the Biodiversity Conservation Network found that very few enterprises made any profit after several years (Salafsky et al. 1999). In many places, the basic requirement of having a profitable product or service to offer can be quite daunting; the need for capacity to deliver that product or service at consistent quality and quantity even more so. In addition, reliable markets and transportation to those markets is critical. A successful alternative income project also requires individuals within the community with an entrepreneurial disposition, managerial skills, and basic financial and business capacity – pre-requisites for operating a successful business. Without these elements, the enterprise is likely to struggle. In the case studies, alternative livelihood projects implemented in remote areas did not meet these requirements and failed due to general lack of capacity.

Alternative livelihoods require a comprehensive set of investments

Many of the alternative livelihoods projects provide assistance with one particular aspect of the livelihood development. For example, the Baraulu project provided the initial capital investment, in the form of sewing machines. However, assistance is likely needed in several areas for an alternative livelihood to succeed. Support may be required not only for initial equipment purchases, but also for such activities as business development, technical assistance, credit, transportation, and marketing. Most of the alternative livelihood projects examined were not applied in a systematic manner. This observation is consistent with the findings of a global review of livelihood approaches by Campbell (2008), which states: “When alternatives are introduced, these are often selected from a standard menu of alternatives with little consideration of capacities, aspirations, needs or historic development of the communities concerned ... Their implications across the

wider development of the communities in which they are used, for sustainable resource-use, and for the balance of access to benefits from women, the poor and other marginalized groups, are rarely considered or understood.” Campbell (2008) lists 29 elements for consideration when designing alternative livelihoods projects; most alternative livelihood projects currently implemented address one or two of these elements, rather than a complete program.

Property rights and conservation performance monitoring are not critical to alternative livelihoods success in general (but are important for sustainable resource management)

Conventional wisdom surrounding conservation holds that property rights and monitoring are important. This is not necessarily the case for alternative livelihoods. The alternative livelihood cases do not monitor conservation performance. Although this does not necessarily impede their success, it is difficult to assess impacts of these programs because of the lack of monitoring data. Monitoring of resource trends is important for sustainable resource management, as extraction rates must be calibrated with respect to stock dynamics. Similarly, sustainable management is more likely to succeed with well defined property rights. For example, the dedicated access privileges of the Punta Abrejos cooperative have allowed it to reap the rewards of sustainable management and exclude others from the area. Management regimes that lack these defined property rights and ability of exclusion (e.g. open access) make it less likely that resource users can realize gains from cooperative behavior.

Several of the alternative livelihood cases exhibited problems with monitoring impacts. The extreme case of this is Port Honduras Marine Reserve, in which the impacts appear to be negative. It is not possible to determine whether this is indeed the case, or whether the data are too poor for robust assessment. Either way, this case illustrates the need to collect adequate data to measure whether projects are achieving goals. Similarly, the Ayau project lacks a monitoring and enforcement protocol for the MPAs and the turtle commitments. Without monitoring of turtle consumption in the area, project impact cannot be assessed.

Costs

Under alternative livelihood interventions, subsidies to encourage the alternative activity are not positioned explicitly as compensation for displacing destructive activity. That said, the opportunity cost typically appears to be low at alternative livelihood sites, which might be expected given that the sites tend to be remote and a high opportunity cost could present an insurmountable hurdle for the design of competitive income-generating alternatives. However, although the benefit level needed to overcome opportunity cost may be low, alternative livelihood programs also must cover the costs of providing continued technical assistance to overcome capacity gaps; thus, the approach can entail an expensive long-term commitment.

There is a wide array of possible alternative livelihood products

Livelihood options may include products that are used locally (to avoid the need for marketing and transportation, as in the example of salt, oil, sugar, and pigs in Ayau). Alternatively, in order to increase revenue, products may be exported (e.g. tourism, virgin coconut oil, ngali nuts, handicrafts). This will generally require higher quality and consistent production levels, as well as reliable marketing and transportation. In addition, the lower risk and marketing cost of developing products with an existing market must be balanced with the possibility of market saturation and price crashes. Some of the alternative livelihood cases involve activities chosen by conservation practitioners. According to IMM (2008), “there is little evidence from the literature or from experience that just picking likely livelihood/career alternatives from a list and encouraging people to adopt them will give a reasonable success rate in terms of uptake or a lasting sense of satisfaction.” To encourage local entrepreneurship microcredit schemes may be appropriate; however, there are cases where repayment rates are very low, as in the example of Gilutongan (10%).

Distribution of benefits presents a challenge for alternative income projects

Rare is the case in which everyone in a community benefits equally from an alternative livelihood project. Generally, the distribution of benefits should in some sense reflect the distribution of costs borne by people who are expected to change resource-use patterns. However, given that successful alternative livelihood projects typically include prominent roles for individuals with particular aptitudes and skills, there is a strong tendency for benefits to accrue to those who are already advantaged. These people may then face strong social pressures that can undermine a project. Such dynamics were seen in the Solomon Islands cases where disputes and jealousies led to lack of cooperation, poaching, and disintegration of the project. Similarly, in Jamursba Medi an attempt to start up a small kiosk failed because community members expected generous credit arrangements. Thus, social expectations with respect to distribution of benefits can pose a significant challenge for the alternative income approach.

Alternative livelihood projects are more likely to succeed when part of a larger strategy

Rather than a strategy based on implementing a livelihood initiative that is then presumed to persist on its own, livelihoods may need to be part of larger set of interventions, including investment in enforcement. In the absence of enforcement, there may be little to prevent people from engaging in the new activity while also continuing with the destructive behavior it was meant to displace. Project design often appears to assume that time or income needs of resource users are constrained such that the alternative income opportunity will make the original resource use either impossible or superfluous; however, this is rarely the case. Building an enforcement component into the project is one possibility, but another option is to include alternative livelihoods in an agreement to provide funds for livelihood development in return for verified compliance with conservation requirements. This latter approach adopts the logic of incentive agreements, discussed in the next section.

VI. INCENTIVE AGREEMENTS

Under the incentive agreement approach conservation investors provide direct economic benefits to resource users in exchange for changes in their resource use practices. A distinction between incentive agreements and buyouts or alternative livelihood projects is that the tool explicitly involves the ongoing delivery of benefits from external sources, contingent on periodic verification of conservation performance. The key element of incentive agreements is that benefits are conditional on conservation performance, thus requiring provisions for effective monitoring.

Incentive agreements typically include a set of common components. In general, incentive agreements specify:

- *Parties and their rights and responsibilities*: the agreement typically is between two principal parties – the resource users who agree to forego destructive practices and collaborate in conservation efforts, and the conservation investor who agrees to provide compensatory benefits. Other entities may be recognized in the agreement documentation, for example defining the role of government agencies or other third parties in monitoring activities.
- *Prohibited or required activities*: these will be the responsibility of the resource users, designed to advance the conservation objectives of the project. Examples include observing no-take zones, desisting from certain practices such as dynamite fishing, conducting patrols to deter poaching by outsiders, etc.
- *Benefits provided by the conservation investor to the resource users*: in return for commitments in the form of prohibited or required activities on the part of resource users, the conservation investor agrees to supply a defined benefit package. To the extent possible, the value of benefits should be commensurate with the value of foregone resource use (e.g. reduced fish yields from not using certain destructive gear types) and, when appropriate, the cost of conservation actions required (e.g. wages for patrolling activities). A portion of benefit packages may take the form of cash payments, but in many cases benefits are defined as specific investments in social goods such as community structures, scholarships, or infrastructure development.
- *Sanctions for non-compliance*: benefits are provided in return for adherence to the conservation commitments in the agreement. In the event that these commitments are not met, benefits must be adjusted; a thorough agreement will define how benefits are reduced in response to particular types of infractions. Typically, reductions in benefits will be temporary to allow resource users an opportunity to improve compliance and thereby restore the full benefit package.
- *Performance monitoring protocol*: given that benefits are contingent on performance, compliance with the conservation commitments must be monitored to justify

continued benefit delivery or application of sanctions. This means that the conservation commitments must be defined in a way that is amenable to monitoring, and the parties to the agreement must agree to objective compliance standards and means of measuring performance with respect to those standards.

Although most incentive agreements will include the components listed above, the tool is extremely flexible and allows for adaptation to specific contexts that can vary widely. The case studies illustrate that incentive agreements can take many forms. Though rooted in the basic concept of a direct quid pro quo of benefits in return for conservation commitments, each incentive agreement is tailored to a specific context, in which cultural, economic, biological, legal, and institutional factors all shape benefit packages, conservation commitments, and implementation details. Within this collection of incentive agreement cases, provisions for monitoring, modalities for benefit distribution, and the types of conservation actions/non-actions required of resource users vary widely.

The Laguna San Ignacio project in Mexico protects grey whale habitat by prohibiting coastal development, using the legal mechanism of an easement. An easement represents one of the most formalized examples of a conservation incentive agreement, a tool that may not be available in many places as it requires a relatively sophisticated legislative and regulatory framework. In comparison, the provision of a health clinic to the village of Olive in the Solomon Islands in return for the establishment of an MPA is a very informal quid pro quo, not even being defined in a formal agreement. Yet in both cases the understanding is clear; in exchange for conservation commitments, an outside party invests in tangible benefits for the community.

In most agreement cases, resource owners commit to establishing and respecting an MPA in some form. In some cases the MPA is confirmed through legislative action, in others it is simply an agreement to observe no-take rules within a defined area even if that area does not receive formal protected status under any national or local government legislation. The case studies also illustrate how direct incentives can be structured to protect a specific species, particularly sea turtles. Several projects devised compensation formulas of varying complexity linked to numbers of nests, eggs, and hatchings, as in Mafia Island (Tanzania), Rendova (Solomon Islands), and Jamursba Medi (Indonesia). These projects demonstrate how the degree of complexity and the explicit link between conservation performance and benefits have significant implications for monitoring requirements. The more sophisticated the benefit arrangement, the more imperative it is that performance and conservation outcomes are closely monitored; such monitoring has the added benefit that the project can better demonstrate actual conservation impact.

A common challenge for incentive agreement projects is long-term financial and institutional sustainability. The Laguna San Ignacio easement is supported by an endowed fund, and a permanent third-party monitoring role for an established institution. In the Misool Eco Resort case (Raja Ampat, Indonesia) sustainability is ensured by the presence of a private sector enterprise with a long-term stake in the success of the agreement. However, in many of the other cases projects remain dependent on short-

term grant cycles, affecting both the reliability of the benefit stream and the ability of project implementers to continue fulfilling project management and monitoring roles.

Although the conservation incentive agreement approach offers great flexibility in designing benefit packages to meet locally specific needs and aspirations, there is considerable convergence in the forms that these benefit packages take. Scholarship programs frequently are featured, and benefits linked to direct employment in patrolling and monitoring components of projects also are important. In addition, despite the fact that the logic underlying the incentive agreement model is distinctly different from the alternative livelihoods approach, at least a portion of benefits often take the form of investments in enterprise development.

Collectively, the case studies of incentive agreements suggest that the basic proposition of providing benefits in return for conservation commitments resonates with resource users in many settings around the world. That said, implementation of this basic proposition can proceed in very different ways, generating the following lessons:

Clear property rights are important

In general, incentive agreements are applied in areas with clear property rights. Clarity need not denote formal, legal rights, as several cases involve customary and traditional tenure arrangements and rights of access. The important consideration is whether the resource users entering into the agreement have a defensible claim to the resources or habitat area, such that they can make commitments that will not be undermined by the behavior of others. However, in some cases strong leadership can sustain an agreement despite disputes or ambiguities concerning property rights. For example, in Laguna San Ignacio an easement was negotiated only with the *ejido* members, excluding an additional 400 people who also reside in the area. Although many of those 400 residents consider their land to have been taken illegally by the *ejido* members, the *ejido* members are more educated, prosperous and powerful and therefore are able to prevent the other residents from disrupting the conservation easement.

An incentive agreement requires parties that can enter into binding agreements

The resource owners must be in a position to understand the agreement and negotiate and enter the agreement as a unified party. This can be an obstacle in establishing an incentive agreement, requiring extensive consultation and often an investment in creating community decision-making mechanisms. For instance, in Tetepare (Solomon Islands), the resource owners have formed the Tetepare Descendants Association. In some cases, investment in institutional capacity building at the community level can generate wider benefits, as in the case of Jamursba Medi where an academic committee established to administer scholarships now serves a broader community coordination role. At the same time, project implementers entering into the agreement as the conservation investors need considerable capacity, particularly with respect to benefit delivery. Dependence on short-term funding poses a challenge to ensuring that this capacity endures.

Ability to monitor conservation performance is essential

The incentive agreement model hinges on the contingency of benefits on conservation performance. It thus follows that conservation performance must be measured. Again, the Laguna San Ignacio easement is a model agreement in which a third party monitors and reports on compliance on an annual basis and funds are released based on this reporting. Other sites are less structured about monitoring, which may weaken the impact of incentives if the link between benefits and compliance is not sufficiently strong.

Capacity for enforcing contract terms is essential

Not only must it be possible to monitor conservation performance, but the ability to apply and enforce sanctions also is critical. This depends on the legal environment and it must be possible to take recourse in that context. In some contracts, sanctions may simply take the form of withholding funds completely or reducing benefits by some prescribed amount. Losing eligibility for scholarship funds if caught poaching is a good example, as in Jamursba Medi or the Port Honduras case in Belize. In this case, government or third party enforcement is unlikely to be necessary. However, in cases such as Laguna San Ignacio, legal action may be required to halt construction or development that is contrary to the terms of the contract.

Long-term funding is required to maintain ongoing incentives

A critical aspect of the incentive agreement approach is the guarantee of a long-term, sustained flow of benefits to the communities. This requires a secure funding mechanism for the long-term. This can be met through the establishment of a dedicated endowment, capitalized to a level sufficient to support ongoing community benefits and management of the site. Most of the incentive agreements studied in this research effort do not currently have a long-term funding source. Exceptions are Laguna San Ignacio, which has trust funds capitalized to fund the benefits, monitoring, and enforcement in perpetuity, and the Misool EcoResort, which will use tourism revenues to sustain its commitments to conservation.

Cost

Low opportunity costs are favorable since opportunity cost forms the basis for determining compensation levels in this approach. Many incentive agreements are implemented in remote places where there are few alternatives and costs are generally low, as in the Melanesia cases. On the other hand, areas with high opportunity costs may be those in which an agreement is most needed to induce resource owners to embrace conservation, as in the case of Laguna San Ignacio.

Incentive agreements can succeed in the absence of alternative income options

Many of the areas in which incentive agreements have been implemented are remote and undeveloped. These tend to be sites where there are no obvious alternative livelihood

options that are likely to be successful. Given the remoteness of these areas, marketing and transportation costs of products that could be produced are likely to be prohibitive. These contexts tend to be better-suited to incentive agreements, since a direct benefit can be provided in exchange for conservation that does not require the conditions necessary for promoting alternative livelihoods.

There is a broad choice of benefit options

The cases illustrate that the benefit package can be tailored to the needs of the site. From individual cash payments to funds for community development projects to scholarships, a wide range of options can create individual or community incentives. Which is preferable will depend on the context. Importantly, benefit packages must respond to resource user's needs and priorities, typically identified through a participatory consultation process. For instance, if destructive resource use is driven by the need for cash to pay school fees, a benefit package that includes scholarships may be appropriate.

One of the greatest obstacles to incentive agreements is misunderstanding

Scaling up the application of incentive agreements has met with resistance from conservationists that are skeptical about the approach. Most of this skepticism is based on an incomplete understanding of how incentive agreements can be adapted to different contexts. For example, there are concerns about an influx of incentive payments (cash) into a small, remote community. For many of these cases, the benefit package can include in-kind benefits or funds for community development, as in the Solomon Islands cases. Another source of misunderstanding is the impression that local stakeholders lose their resource rights. However, under incentive agreements stakeholders retain their rights and simply agree to exercise these rights in particular ways in return for compensation; should the agreement no longer be acceptable to the resource owners, they can withdraw from the arrangement and dispose of their resources as they see fit. The case of Laguna San Ignacio is an exception, in which the agreement was signed in perpetuity. A different kind of misunderstanding relates to the design and implementation of incentive agreements, in terms of the essential components. For example, many of the agreements provide benefits that are not truly contingent on performance, and in fact performance is not monitored. In these weaker agreements the cash or in-kind benefits are provided as compensation for committing to conservation, for example declaration of a protected area, but the benefits are delivered irrespective of compliance. There is implicit conditionality in this case, but no recourse if the terms of the agreement are not met. Some agreements that do not follow the model may be destined for failure.

VII. DISCUSSION

The preceding sections synthesized analysis of three incentive-based approaches for marine conservation – buyouts, alternative livelihoods, and incentive agreements. The various experiences surveyed illustrate how these cases have met the challenges of designing incentives for conservation, and how they have performed in different settings.

Thus, the case studies inform reflections on which factors contribute to the probability of success for a given approach, illustrate issues associated with different approaches in different contexts, and also offer lessons that can strengthen project design.

Reflections on tool selection and project design

Earlier discussions have highlighted how various factors in the case studies of buyouts, conservation incentive agreements, and alternative livelihood projects appear to relate to success in achieving desired conservation outcomes and securing stakeholder support. With respect to project design, case studies of all three approaches suggest that addressing the opportunity cost of conservation – ensuring that potential loss of income and access to resources is offset such that local stakeholders are not forced to bear an undue economic burden – is essential, but strategies to do so can vary widely. Buyouts are predicated on the notion that fair compensation can be transferred in an upfront transaction. Incentive agreements seek to provide a stream of benefits over time that offset opportunity costs. Alternative livelihood projects strive to develop new economic options that remove the need for destructive resource use. The case studies offer a number of insights relevant to deciding which approach is suitable in a given context.

Degree of market integration

The extent to which markets drive unsustainable resource use varies widely among the cases surveyed. Along the central California coast, fishermen are responding directly to local, national, and indeed global consumer demand for fish. Similarly, the sale of licenses to foreign fleets in Kiribati is driven by global demand for desirable species. In contrast, excessive consumption of sea turtle meat and eggs in the Ayau, Jamursba Medi, and Rendova cases results from local demand, as does overharvesting of various species in the Solomon Islands cases. Interestingly, in remote sites where resource behavior primarily is shaped by local subsistence demand, conservation actors have gravitated to alternative livelihood efforts – in precisely the contexts where cultivating new enterprises faces the greatest challenges due to remoteness and absence of business skills and entrepreneurial capacity. One of the most important considerations in tool selection must be whether the enabling conditions for alternative livelihoods are in place, and, if not, to what degree conservation investment can strengthen these conditions. While an NGO may be able to provide training and start-up capital for new enterprises, the basic requirement of cost competitiveness often will be difficult to meet due to high communication and transportation costs imposed by remoteness. One solution proposed in Ayau is to train the community to produce goods for local consumption, to avoid the need for transportation and marketing. This can overcome some obstacles to the alternative livelihood approach, but is unlikely to substitute for cash-generating livelihoods. Rigorous feasibility studies for new products are an essential – but all too often missed – step in evaluating alternative livelihood potential; if products will not be competitive, a more direct incentive approach will offer a greater probability of success.

Local capacity

The cases represent varying degrees of local capacity for management, enforcement, and business. Alternative livelihoods are the most demanding type of project in terms of the required skill set for local partners; therefore one would expect this approach to be implemented mostly in areas with high local capacity. Buyouts require the least local capacity, as resource users essentially relinquish ownership or rights in exchange for compensation, and therefore are no longer involved in management or enforcement activities. Many of the case studies are in areas with low capacity. The Baraulu case illustrates how alternative livelihoods projects fail when they are implemented in a context of inadequate local capacity. On the other hand, although Laguna San Ignacio is an incentive agreement, it does incorporate funds for community development or business opportunities. The very high local capacity for organization and entrepreneurship has made this a successful venture in terms of conservation results and successful enterprise development. For areas with low local capacity, training and skills building may be a worthwhile investment if other conditions are amenable to the livelihoods approach, but in many cases an approach with less demanding local capacity requirements may be more suitable.

Community size/complexity

The number of resource users may influence tool selection in several ways. If the resource user group is very large and diverse, it likely will be difficult to construct an alternative livelihood strategy that addresses opportunity cost for each user. Also, larger resource user groups will present greater challenges with respect to coordination, which affects any conservation intervention but is perhaps a greater vulnerability for alternative livelihoods. Transparently negotiated agreements such as buyouts and incentive agreements in a sense de-personalize the transaction, leaving less room for jealousies and rivalries that can undermine projects as seen in the Baraulu project in the Solomon Islands. That said, contexts with numerous and heterogeneous resource users certainly can complicate the negotiation process leading to a buyout or incentive agreement; however, this is largely an upfront cost and less of an ongoing implementation challenge once the terms of the agreement are set and mechanisms are in place, compared to most alternative livelihood projects in similar circumstances. Many of the incentive agreements were implemented in contexts of small, reasonably homogeneous communities. This scenario is likely to make any intervention easier, and certainly helps to negotiate and comply with an agreement.

Source of threat

Nearly all the projects involve providing some kind of benefit to local resource users whose activities pose a threat to biodiversity or resource sustainability. Some cases also face non-local threats, such as fishers from other regions or countries who are active in the Phoenix Islands, Helen Reef, Cagayancillo and Galera. In addition to presenting difficulties with respect to competitive production of alternative goods, remoteness also impacts the degree of threat from locals, and the ability of locals to counter external

threats. In the most remote case study sites (i.e. cases in which the closest community is some distance away), the main threat is major foreign illegal fishing operations. The capacity of the local communities to deal with this large-scale threat is limited, particularly due to their distance from the area. In these cases, any approach not only needs to provide incentives for local resource users to change practices, but also must assist them with enforcement. Several projects support community efforts to enforce conservation measures against outside threats, enhancing security of property rights while also providing employment opportunities. In general, the source (or sources) of threats to the resource base should determine the balance of incentives and enforcement in project design; more significant non-local threats imply a need for greater emphasis on enforcement, while local threats may be more responsive to incentives.

Urgency/degree of threat

The urgency of conservation action greatly impacts the suitability of a given tool. If sufficient funding is available and legal mechanisms are clear, a buyout may be the quickest way to reduce pressure. The northern Gulf of California initiative in Mexico is a case where the imminence of extinction prompted a buyout. In the Morro Bay case, the urgency of the context derived from legal action brought against the government marine management agency. The incentive agreement approach can be deployed relatively quickly, as seen in cases where an initial short-term agreement is concluded as a stepping-stone toward a more comprehensive long-term arrangement, as in the Galera example. Alternative livelihood projects are less likely to result in near-term benefits, as new enterprises usually require an incubation period and the results of improved resource management systems typically will not be seen for some time. Thus, as a rule one can conclude that the greater the urgency of conservation action, the more direct the incentive will need to be to elicit behavior change within the necessary time-frame.

Opportunity cost/resource dependence

Having acknowledged that offsetting opportunity cost is a necessary condition for project success, the key question to answer obviously is: what is the opportunity cost? In scenarios where destructive resource use is commercially driven, the opportunity cost will be a reflection of market prices – the income generated by resource exploitation sets the bar for offsetting benefits that the project must deliver. In subsistence contexts, the degree of resource dependence reflects the opportunity costs, as in the Ayau example where protein from turtle consumption proved amenable to being offset by supplying pigs as a substitute. In situations where the opportunity cost is high, it will be difficult to develop alternative livelihoods that generate sufficient income to replace foregone resource use; such a situation was seen in the Port Honduras case where local fishermen expressed the need to continue fishing despite the availability of alternative jobs linked to tourism and conservation. High opportunity cost also presents a challenge to more direct incentive strategies, as buyouts and incentive agreements will involve a substantial fundraising burden. Alternative livelihood approaches may be more feasible in low opportunity cost settings, but so will the other approaches. Thus, low opportunity cost is conducive to any approach, while high opportunity cost is likely to preclude alternative

livelihoods. If the opportunity cost is extremely high – for instance, if offshore oil resources are present – then incentive-based approaches may become unaffordable, necessitating other strategies centered on regulatory reform and policy advocacy. In general, opportunity cost and resource dependence are correlated, though high dependence can accompany low opportunity cost, as in situations characterized by poverty and dependence on small-scale fishing. In these cases, it should be relatively inexpensive to offset the loss of a livelihood source through a buyout or a direct payment, even if there is a high dependence on the activity.

Legal options/property rights

An analysis of the legal context and property rights is essential to inform the selection of conservation approach in a given situation. In many places, outright purchase of an area (as in the Palmyra case) or a formal easement (as in the Laguna San Ignacio) will not be possible due to the lack of essential enabling legislation that enables parties to enter into such a transaction – whether because certain types of property cannot be bought and sold, or because there is no legal recourse in the event of transgressions. Similarly, a conservation investor must be confident that, by entering into a transaction with resource owners, pressure on the resource actually will be reduced rather than simply create an opportunity for third parties to replace the previous resource users. Thus, buyouts and formal legal mechanisms will only be feasible in places that are subject to relatively sophisticated legislative and regulatory frameworks. Incentive agreements are more flexible, as they simply require that conservation investors and resource users come to mutually agreeable terms, but they do require that property rights – whether formal, informal, or customary – are reasonably well-defined. Alternative livelihoods projects can be attempted almost irrespective of the legal and property rights context, but their conservation impact does depend on who has resource access, particularly in the case of sustainable resource management schemes.

Rules and regulations

Most sites include a formal protected area of some kind. Many of the areas also have formal laws, but require additional incentives because of weak enforcement; for example, most of the turtle incentive projects are implemented in countries that have laws prohibiting harvesting turtles and their eggs. However, these areas (Rendova, Jamursba Medi, Mafia Island) are remote and not regularly frequented by enforcement officers. Under an incentive agreement, enforcement typically is executed by a third party (i.e. through a private contract with another organization, or, in some cases, through partnership with the government). In alternative livelihoods, enforcement may not be a focus if the new activity fully replaces the threatening one. However, as this is rarely the case, enforcement typically remains a necessary component of overall strategy. Similarly, in buyout cases, government enforcement generally remains necessary, while the benefits serve to achieve equitable reductions in capacity through compensation and thereby improve acceptance of conservation measures and strengthened regulation. The vaquita case illustrates how initial reliance on regulation and enforcement failed to thwart the risk of extension, and then the buyout was hoped to ease the enforcement burden –

ultimately, a combined investment in the buyout and enforcement proved necessary. Thus enforcement of protected areas and other laws generally complements all three methods of addressing opportunity cost. Collectively, the case studies strongly suggest that both positive incentives from any of the three approaches and negative incentives in the form of enforcing laws are necessary for conservation success.

Enforcement

One principle underlying any incentive-based approach is that given the right incentives, resource users will find it in their interest to comply with conservation requirements and will therefore do so voluntarily. Nevertheless, enforcement remains an important component of successful conservation in most contexts. First, the threat of outsiders encroaching on the resource base must be addressed, and often the resource owners are not in a position to do so on their own. The ranger presence on Helen Reef is an effective deterrent against illegal foreign fishing boats, but periodically they require support from the national patrol force. Similarly, the Galera fishing community needs support from the Ecuadorean navy to protect their marine area from incursions by fishing vessels from elsewhere along the coast. Regardless of approach, enforcement is needed to establish a limited entry resource situation, such that the intervention is not undermined by outsiders. Second, enforcement is needed in most contexts to ensure compliance by project beneficiaries, even in the presence of appropriate incentives. Buyouts are designed such that the use of the vessel or permit or gear becomes illegal, so fines or other penalties can be imposed if these rules are broken. Depending on the context, this may or may not be well enforced; areas that are already well-enforced, such as Morro Bay, are better-positioned for a successful buyout. The incentive agreement cases generally rely on withholding benefits as the sanction against poor conservation performance (rather than strict enforcement through legal penalties), as in the Mafia Island turtle project. The alternative livelihood approach typically places less emphasis on enforcement, but even if a fisherman is the beneficiary of an alternative income-generating opportunity, he may still be able to increase total income by also continuing to fish. Without provisions for monitoring resource use and consequences for resource exploitation that contravenes the conservation effort, the incentives offered by buyouts, incentive agreements, or alternative livelihood projects will be weakened. Therefore, with respect to project design enforcement is important for any approach.

Ability to monitor performance

Monitoring compliance with agreement terms is essential to the incentive agreement approach. Therefore this tool should be selected only if the desired behavior change is amenable to performance monitoring and project implementers have the capacity to ensure that such monitoring is conducted. Similarly, a buyout will have no impact if the purchased vessels or gear are replaced by other fishing capacity, or if retiring licenses or permits does not reduce the total level of harvesting effort. Therefore a successful buyout also requires monitoring and ability to enforce the terms of the buyout. The alternative livelihood approach does not depend in the same way on the ability to monitor performance, as the investment is not predicated on an explicit, negotiated quid pro quo.

However, alternative livelihood interventions do benefit from monitoring to demonstrate biological as well as socioeconomic impacts, as do the other two approaches.

Monitoring generally is inadequate in most projects, including monitoring of conservation outcomes, socioeconomic impacts, and performance of resource users with respect to conservation requirements. Given the necessity of monitoring in incentive agreements, one might expect these cases to exhibit better monitoring provisions, but even among these projects monitoring leaves much room for improvement. The incentive agreements that involve direct payments for sea turtle nest protection probably are the best-monitored since payments are made only when nesting and hatching is verified. The Mafia Island turtle conservation project also involves per-hatchling payments, which means that each hatchling from each nest is counted. This provides valuable information not only regarding conservation performance of villagers, but also on the hatching success rate, which may be low for a variety of reasons. The Jamursba Medi project did not monitor hatching success, and only recently found that the rates are very low due to high sand temperatures and nest inundation. The project now relocates many nests, a task it could have performed much earlier had it been conducting better monitoring.

Type of benefit

There are a great variety of benefits that can serve as incentives for conservation. Individual cash payments are not very common in the cases. This is the form of benefit that most people probably associate with direct incentive programs due to literature on conservation payments and payments for environmental services. However, project proponents often are concerned with how individual cash payments would be used. A system that pools individual payments to fund public goods can achieve much greater positive impact than small individual cash payments. The ejido members in Laguna San Ignacio recognized this and chose to pool payments to fund community projects rather than divide them amongst households. However, in other areas, the coordination needed for this kind of system may be prohibitive (e.g. areas with large, heterogeneous populations). Buyouts have traditionally involved direct payments to vessel or permit owners, but the examples in this study mostly involve loans or alternative livelihood support. The cases in which individual cash payments are provided usually also include some other form of benefit such as employment or community development funds.

In addition to the alternative livelihoods projects, six other cases include alternative livelihoods support as a component of the benefit package. Two others did so in the past, but the projects failed and the approach abandoned. A few of the projects provide scholarships. In remote areas, school fees represent a major expenditure for households and lack of cash is the primary obstacle that prevents parents from sending their children to school. For conservationists, paying for school fees can be relatively inexpensive (for instance, approximately \$10,000 per year would cover the expenses for all schoolchildren in Jamursba Medi), and is a benefit that is likely to reach every household.

Distribution of benefits

Another design consideration is who should receive benefits from a conservation intervention. In general, incentives should be targeted towards legitimate stakeholders whose behavior or resource-use decisions the project seeks to influence, as they face an opportunity cost of conservation. For example, in the Phoenix Islands, benefits are provided to the government to compensate for lost revenues from license fees. In addition, incentives may be needed to secure buy-in from additional stakeholders, and often also cover at least a portion of enforcement costs (technically also a component of the opportunity cost of conservation).

This targeting must be balanced with a need to avoid the perception that “negative” behavior is being rewarded. It is often easier and more equitable to provide benefits to the entire community rather than a subset, and this does not necessarily involve substantially higher costs. Many of the incentive agreements include a fund for community benefits. The alternative livelihoods approach is often promoted with the expectation that the community as a whole will benefit. However, one of the problems with past reliance on employment through conservation activities or ecotourism is that the benefits generally are not distributed broadly throughout the community. There is usually a limited need for workers and jobs tend to be offered to those who are most skilled (for example in English) or to those who are among the elite. In some sense, this can be deemed irrelevant as long as benefits are provided to those who are most important for ensuring that conservation occurs, but this can lead to tensions within the community and threats to the project, as occurred in Jamursba Medi when only a few community members were paid as patrollers. Buyouts are generally quite targeted, as they only provide compensation to fishermen who agree to give up their licenses or vessels.

Contingency of benefits (incentives created)

Among the cases surveyed, the three approaches are comparable in terms of the kinds of benefits offered. The principal difference is how benefit provision is structured to create incentives. In a typical buyout, the benefit offered is a one-time incentive to cease an activity, and then enforcement is required to prevent reentry. However, the buyout cases examined in this study structured benefits to also provide ongoing incentives. In most alternative livelihood projects, the benefit is financial support for training and starting up alternative income generating activities; the incentive to reduce the threatening activity may or may not be ongoing, but in general the benefits are obtained regardless of whether the threatening activity is reduced. Incentive agreements deliberately structure benefits as ongoing incentives that depend on reducing the threatening activity.

Most of the projects surveyed are attempting to provide ongoing incentives for conservation. Only a few provide purely one-time benefits and those that do, for example the Mafia Island buyout, also include an alternative livelihood component. Alternative livelihood projects are based on the premise that incentives will be ongoing as the new enterprise takes hold and offers an attractive alternative to destructive resource use. Thus, whether the incentive truly is ongoing depends on whether the enterprise is successful,

and whether people forgo the destructive activity as a result. Importantly, most contexts are dynamic and an incentive that is adequate today may become irrelevant tomorrow. Incentive agreements can adapt to such changes by periodically adjusting or renegotiating benefit packages to account for economic or other changes.

Both buyouts and alternative livelihoods can be integrated into an incentive agreement project structure. For example, the vaquita buyout may incorporate provisions to compensate permit holders annually for not fishing in the closed area. The Laguna San Ignacio easement involves funds to be used for community development and alternative livelihoods training. The difference between the Laguna San Ignacio livelihood investments and a traditional alternative livelihoods project is that the funds are only provided conditional on conservation performance and they can be used each year as the community decides, i.e. the conservation organization is not responsible for creating or maintaining the livelihood projects.

Funding availability

Tool selection may be constrained by funding availability. A typical buyout requires a large upfront payment. Incentive agreements spread the opportunity cost offset over time, such that reliance on short-term grants may be viable for a period, but ultimately the objective is a secure long-term financing mechanism such as the endowment that supports the Laguna San Ignacio easement. The alternative livelihood approach reflects a model in which an initial investment is intended to result in self-sustaining enterprises or changes in resource management, thereby dispensing with the need for long-term financing. Each approach faces fundraising challenges. The large upfront payment for a buyout can be difficult to raise. While most incentive agreements seek to use short-term grants to sustain benefits for a window of time during which long-term financing is secured, actually capitalizing trust funds for the long term is a non-trivial task. Although alternative livelihood projects aim to become self-financing, there are very few examples of projects that succeed in this aim and thus most continue to rely on series of short-term grants. Consequently, tool selection must be informed by a careful evaluation of fundraising potential; the greater the potential (as in the vaquita example due to presence of charismatic species, recognition of the site as a priority by government, pre-existing interest from specific donors, etc.), the more feasible will be a direct incentive approach. Most of the cases examined do not have a source of long term funding. The exceptions are Laguna San Ignacio, which has a trust fund capitalized to cover all its recurrent costs, including the cost of benefit provision, and several projects that depend on tourism revenue generation (though they do not currently cover all the costs).

Outcomes

In general, performance of many of these interventions cannot readily be assessed. In some cases, project objectives are not explicitly identified. Project monitoring often consists of general progress reports rather than tracking of specific outcomes or verification of compliance or performance. Currently, for many projects it is unclear

exactly what they are achieving in terms of impacts on target species or habitat, at what cost, or which project activities are most important for achieving these impacts.

Ideally, one would like to answer the question of which approach is best, or assuming there is no unique intervention that works best in all settings, how should one design a project given the conditions of a site? Given that 1) the case study approach constrains the research to a small sample size, and 2) most projects do not collect adequate measures of biological and socioeconomic outcomes, these questions cannot reasonably be answered. To better inform future tool selection and project design based on quantitative analysis, the conservation community must consistently incorporate meaningful monitoring frameworks into their endeavors.

Conclusion

The various considerations discussed above intersect in numerous ways, such that a simple decision-tool for selection of project design is impossible to construct. Greater need for enforcement will usually accompany high opportunity cost. Weaker market integration often implies greater resource dependence. A larger and more complex resource user group amplifies the need for performance monitoring. Although one wishes that greater urgency and degree of threat would be positively correlated with availability of funding, this is not necessarily the case. Taking together these factors and the dynamics among them the conservation implementer with a project design task that requires careful, informed judgment.

Some contextual factors make any conservation effort difficult, such as lack of enforcement capacity, lack of clear property rights, or a large number of heterogeneous stakeholders. Other conditions are particularly challenging for a specific approach; for example, lack of transportation and limited access to markets makes alternative livelihoods unlikely to succeed in remote areas. In general, it appears that alternative livelihoods are implemented in some of the more difficult contexts, for example, where the local capacity for management is lowest. This is a context in which any conservation approach may be challenging, but perhaps most so for alternative livelihoods. Buyouts for conservation purposes often appear to be a method of last resort. Perhaps because of various political and social acceptance issues and their high cost, buyouts among the cases have been implemented when all else has failed or in a crisis situation.

One might be tempted to conclude that the more direct the incentive, the more likely that the intervention will be to succeed; then tool selection first should consider whether a buyout is possible, if not then consider the potential for an incentive agreement, and finally, if neither of these approaches are feasible, settle for an alternative livelihood strategy. However, the case studies reviewed do not necessarily support such a clear-cut conclusion. Instead, successful interventions appear to combine elements of all three approaches. The direct incentive offered by buyouts can produce a quick, measurable reduction in harvesting pressure, thereby addressing the principal threat to biodiversity and ecosystem values. The conservation incentive agreement model is built on a stream of benefits over time, such that the incentive for resource users to support conservation is

sustained. Given that most projects – regardless of approach – involve the termination or reduction of certain activities by resource users, other economic opportunities are needed to drive socioeconomic development, indicating that an alternative livelihoods component often must be part of overall strategy.

One reason that so many of the case studies appear to be combinations of approaches is that projects evolved over time to incorporate additional elements. Some of the buyout projects described changed over time, principally by increasing emphasis on alternative livelihoods in response to demands from resource users who sold their licenses or equipment. Many alternative livelihoods projects, following disappointing results, later integrated more direct incentives. For example, in the Jamursba Medi initial investments in alternative income generating activities proved fruitless, so a more direct incentive in the form of the scholarship program was added to the project. The TIDE program in Port Honduras, Belize also added scholarships to the benefit package, as alternative livelihoods do not appear to present adequate incentives for conservation to local resource users. A similar evolution in project structure can be seen in the Western Solomon Islands Program projects, in which attempts to promote sewing as an alternative income option failed in Baraulu, leading to a more direct approach in Olive.

Although some of the alternative livelihood projects were adapted to include more direct incentives, they do not necessarily then conform to the incentive agreement approach. The incentive agreement model includes monitoring of conservation performance and reductions in benefits in the event of failure to comply with conservation requirements – otherwise, the benefit is not an incentive but merely a handout. However, this explicit contingency of benefits on conservation performance does not consistently accompany the addition of direct benefits to most alternative livelihood projects, which dilutes the strength of the incentive.

In sum, although the complexity of successful marine conservation interventions precludes a definitive generic determination of best approach or project design, the case studies collectively do suggest that the directness of incentives is a key consideration. Economic incentives drive behavior with respect to resource use, therefore project impacts on incentives are crucial to eliciting change in that behavior. Direct incentives that reward conservation and sustainable practices offer unambiguous choices to resource users if conservation performance is measured and used to calibrate benefit packages. Thus, direct incentives present resource users with distinct decisions regarding how to extract value from their resources, and force implementers to consider important factors of monitoring, enforcement, and coordination mechanisms for resource-use decisions.