

*LIVELIHOODS APPROACHES AS
A CONSERVATION TOOL*

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Section 1. Background

Coastal population growth is widely recognized as a major threat to the coastal environment and to the well-being of its inhabitants. Globally 2.2 billion people or 39% of the world's population live within 100km of the coast. In coral reef countries, this level is even higher, with an average of 78% of people living within 100km of the coast, and close to a half billion people living within 100km of a coral reef (Bryant *et al.* 1998). These population levels place an increased demand on the ecosystem services that coral reef areas can provide. The pressures on reef resources in many areas are seen to have reached unsustainable levels, and the remaining benefits that can be obtained are distributed between ever increasing stakeholder numbers.

Coral reefs are fragile ecosystems that are sensitive to changes the temperature, light and acidity conditions in the environments where they exist. Some of the main threats to coral reefs are sedimentation from coastal development, nutrient waste from coastal populations and agriculture, and chemical and oil pollution from industry and shipping activities (Spalding *et al.* 2001). Coral reef fisheries can be a major source of reef degradation when the intensity and scale of resource extraction exceeds the regeneration capacity of the reef (Jackson *et al.* 2001). The dominant paradigm in response to the problem of over fishing in coral reef areas is currently the use of marine protected areas (MPAs) as a management tool. Whilst many coral reef MPAs have demonstrated success in protecting and increasing ecosystem health, they have also frequently been accompanied by social conflict (Christie *et al.* 2003). An important tool to address this conflict may be the establishment of employment activities for fishers affected by MPA regulations. This view is supported by a study carried out in the Philippines which found that the provision of alternative sources of income was a key factor in explaining the variations in success amongst MPAs (Pollnac *et al.* 2001a).

Recently, calls for the provision of alternative livelihoods in conjunction with MPAs have come from the highest levels of government and international institutions. There are several examples of major projects funded by international institutions with the creation of alternative livelihoods as a goal. A current World Bank project in the Caribbean region includes 3.55 million dollars for improving protected areas management and promoting associated alternative and new livelihoods (World Bank, 2004). The conservation movement is increasingly addressing the human impacts of conservation activities, and adopting a sympathetic approach to local communities. For instance, one of The Nature Conservancy (TNC)'s seven core values is a commitment to people: "We respect the needs of local communities by developing ways to conserve biological diversity while enabling them to live productively and sustainably." This report will examine how addressing livelihoods relates to conservation and communities, and will suggest methods and tools for gathering information to allow projects to proceed in an informed way. Whilst aimed at the tropical coral reef context, many of the principles and tools have relevance to other coastal and terrestrial conservation efforts.

Evolution of livelihood terms

Initially, many alternative livelihood projects were conceived on the basis that that the new activity should result in a complete replacement of prior livelihoods based on resource extraction. However it is now recognized that the concept that individuals, especially fishers, if provided with the opportunity will give up their livelihoods and switch entirely to a different occupation is largely inaccurate. To more closely reflect project experience, McConney suggests the term "complementary livelihoods" to denote livelihoods which are in some way similar to fishing, but recognize that "people who work by the sea often cling tenaciously

to their main lifestyle as an expression of their culture and personality” (McConney, 2003).

Much of the current focus on livelihood projects is due to the emergence of concepts such as social vulnerability and resilience, and to increasing awareness of these concepts within conservation organizations. What has perhaps not been fully appreciated is the degree to which coral reefs support millions of people in Asia, the Pacific, East Africa and the Caribbean, not necessarily for their main livelihood activity, but as a safety net that can be depended upon when returns from other activities are unavailable (Allison and Ellis 2001). Livelihood projects are suggested to have the potential to reduce vulnerability and increase the social resiliency of coastal communities (Neely 2004).

The term “sustainable livelihoods” is normally used where the project focus is development and poverty alleviation, whereas alternative livelihood remains the most frequently used term where the project or organizational focus is environmental conservation. This report will use the term “livelihood approaches” to cover all of these project types, and will discuss the relationships between poverty, human well-being and conservation inherent in livelihoods approaches in section 2.

Definition of Terms

Livelihood

A livelihood comprises people, their capabilities and their means of living, including food, income and assets. Assets may be tangible assets such as resources and stores, or intangible assets such as claims and access.

Sustainable Livelihoods

A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the

future, while not undermining the natural resource base (Chambers and Conway 1991).

Livelihood Strategy

Livelihood strategies are the range and combination of activities and choices that people make in order to achieve their livelihoods goals. Dependent on their resource base and their understanding of the options available, different categories of households develop and pursue different livelihood strategies. These strategies include short-term considerations such as ways of coping with shocks and managing risk. Livelihood strategies can be positive, helping households become more resilient, or negative when they result in the further erosion and decrease of the asset base.

Marine Protected Area (MPA)

In this report MPA refers to any marine area where regulations or conservation activities result in an alteration of resource extraction patterns. Therefore it is not restricted to MPAs which are no-take, as zoning regulations within an MPA can have the same effect.

Communities

As is frequently pointed out, there is no single definition of community (Montoya and Drews 2006). The concept of community greatly depends on who is defining the community, and from what perspective. To an outsider, a community that appears to be easily defined may in fact have many sub-sets. “The idealized concept of the local community as used in project planning often bears little resemblance to any group of people in the real world since it makes little allowance for disparities in views, capacities, influence, cultures or aspirations (Agrawal and Gibson 1999). Nonetheless it proves almost impossible to write about project implementation without using this term. In this report community mostly refers to the set of people who utilize a marine resource and have been or would be affected by resource extraction regulations.

Alternative Income Generating Activities (AIGAs)

Any activity which has the ability to provide a source of income which is not directly dependent on natural resources, or which has the ability to reduce dependency on natural resources.

Social Sustainability

A livelihood is socially sustainable when it can cope with and recover from stress and shocks, and provide for future generations.

Environmental Sustainability

A livelihood is environmentally sustainable when it maintains or enhances the local and global assets on which the livelihood depends.

Sustainable Livelihood Approaches (SLAs)

Sustainable Livelihood Approaches are centered on people and their livelihoods. They prioritize people's assets (tangible and intangible), their ability to withstand shocks (the vulnerability context), and the policies and institutions that reflect community priorities (Carney 1999).

Vulnerability

People's exposure to risks, the sensitivity of their livelihood systems to these risks, the extent of the assets available to cope with risks and adapt to them (FAO 2004).

Poverty and Wellbeing

Poverty can be measured in terms of income, for example the commonly used World Bank definition of poverty being living on less than a dollar a day (World Bank 2001). However, this exclusively economic focus ignores the wider spectrum of human needs, and the satisfaction and well-being found in a community with low absolute income levels.

Poverty can also vary in its severity and timing; among those who depend on reefs it may be possible

to distinguish between the chronic poor who have too few assets to take advantage of many livelihood opportunities, who may often be heavily dependent on reef resources for subsistence, and the transient poor who can take advantage of market and income opportunities when they arise (Shepard 2004).

Montoya and Drews (2006) list ten fundamental human needs: subsistence, protection, affection and communication, liberty, understanding, creation, participation, leisure, identity and transcendence. From this broader perspective poverty can be defined as the absence of the satisfaction of these needs, and each community will have its own level of well-being based upon the degree to which these needs are satisfied.

Integrated Conservation and Development Projects (ICDP)

A project which ensures the conservation biological diversity by reconciling the management of protected areas with the social and economic needs of local people (Wells and Brandon 1992). Examples include, biosphere reserves, multiple-use areas, buffer zones on the boundaries of protected areas, and development projects incorporating biodiversity (McShane and Wells 2004). Thus ICDP projects are frequently broader than just the provision of new livelihoods, but they certainly fall within the category of ICDPs.

Resources

Solesbury W. (2003) Sustainable Livelihoods: A case study of the evolution of DFID policy. Working Paper No. 217. London: ODI.

Provides a background to the origins of the Sustainable Livelihoods approach within DFID and how the approach has grown since its inception.

Livelihoods Connect

www.livelihoods.org

An online depository of documents relating to livelihoods approaches. Also contains a toolbox which has a large number of documents useful in planning, carrying out and monitoring livelihood projects, including some documents in Spanish. Supported by the Institute of Development Studies, Brighton, UK.

DFID

www.dfid.org

Website of the UK Department For International Development, responsible for promoting development and the reduction of poverty. Their publications section contains a large searchable database of DFID documents relating to development work.

IMM Ltd

<http://www.innovation.ex.ac.uk/imm/index.htm>

An international research, development and consultancy group. Their website contains a variety of tools, particularly useful in approaching fisheries from a livelihoods perspective.

Section 2. Livelihoods, Conservation and Development

Why should conservationists care about livelihoods?

Firstly, there is the moral argument, which says that conservation measures used so far have often imposed livelihood costs, with those being harmed not those who actually do the most damage, and often those who are least able to bear the cost (Shepard 2004). This can be extended to the argument that the poorest countries require the most complex attention in the planning of protected areas and issues which affect livelihoods, with the greatest role for local people and the greatest accommodation of their needs. In more affluent countries, the issues involved in restricting human

activities to enable conservation may often be related to recreation rather than livelihood, or to fulfilling the higher levels of human needs rather than the basic needs.

Secondly, there is the argument that livelihood projects offer a useful, constructive way to engage with local communities. Rather than focusing on the enforcement of rules and regulations, livelihood approaches offer conservation organizations a way of engaging with communities that demonstrates concern for their well being. At the Fifth World Parks Congress in 2003, a position was adopted which states that conservation agencies should not increase poverty or undermine the livelihoods of the poor (Adams 2004). This is often termed the “at least do no harm principle”. Attempting to implement this principle will mean that conservation groups increasingly carry out or direct livelihood approaches in areas where they work.

	Conservation projects with development	Development projects with conservation
Target	Species, Ecosystems	Local peoples
Desired condition	Viable populations and areas	Socioeconomic development; equitable social conditions
Role of humans	Threat	Target
Principle activities	Protection; restoration; threat alleviation; stakeholder education	Enterprise development; institution building; improved livelihoods; empowerment

Table 1: Comparison of selected project parameters (Robinson and Redford, 2004)

In this context, rather than suggesting, as many early proponents did, that projects which integrate development and conservation can operate on a

“win-win” basis, it can be useful to separate mainly conservation projects with an aspect of development, from mainly development projects with an aspect of conservation (Table 1).

Some commentators have gone further and presented a typology of the relationship between the conservation of biodiversity and poverty or development work (Adams 2004). Each of the following positions outlines a stance and underlying philosophy which an organization or project holds regarding the relationship between poverty and conservation work. Deciding where a particular project falls within this range is useful, especially in understanding the position of potential partners or local NGOs in a livelihood project.

1. “Poverty and conservation are separate policy realms.”

- Conservation is a goal that can be pursued independent of any benefits in poverty reduction.
- Conservation may benefit poverty reduction indirectly, but mainly through ecosystem services. Attempting to combine conservation with poverty reduction risks misallocating conservation resources.
- Scientific criteria should be the most important factor in selecting protected areas.
- Success should be measured within biodiversity criteria, and not within social development criteria.

2. “Poverty is a critical constraint on conservation.”

- Biodiversity conservation will fail if it does not address poverty.
- Poverty reduction should be undertaken only if it enables more effective conservation.
- To achieve the goal of conservation, projects should provide contributions to poverty reduction and avoid local costs to communities.

3. “Conservation should not compromise poverty reduction.”

- Conservation projects should have conservation as their main goal, but should at the same time determine that they are not causing harm to any social group.

- Compensation for conservation activities may be necessary.

- There are moral and political obligations to take human poverty into consideration in conservation projects.

4. “Poverty reduction depends on effective conservation.”

- Conservation is a tool for achieving poverty reduction
- Sustainable harvest of resources generally the goal, any biodiversity benefits are secondary.
- The target is often improved livelihoods for communities living in an area.
- Participation and empowerment of local communities is of central importance.

An interesting implication of some of these positions is that the amount of protected area on a map is not the only way to achieve effective conservation. Increasingly conservation concepts are moving away from “the protected area approach” perhaps most closely aligned to position one above, to approaches that operate at larger scales such as eco-regions. Viewpoints such as position two above suggest that conservation may also be effectively achieved by working with local communities to encourage sustainable use of resources, rather than delineating protected areas. Measurements of success in these instances would be the reduction in harvesting pressure of vulnerable species, or a switch in the areas targeted by resource users.

Additionally, even if position one were the primary position adopted by an organization, this would not mean that livelihood approaches should not

be employed in any fashion. There are arguments that livelihoods approaches can be useful as a conservation tool in and of themselves. Firstly, there is the concept that an increase in income generated from new activities in communities around MPAs will result in enhanced biodiversity conservation behavior by the community. Secondly, moving individuals out of extractive activities would reduce harvesting pressure, resulting in conservation benefits. In this sense, in terms of conservation, livelihood activities would be most considered most effective if they did truly function as alternatives, rather than additional activities, as difficult as it may be to achieve this in practice.

Ultimately livelihood projects are based somewhere within the four broad viewpoints outlined above, often combined with specific assumptions regarding sequences of events in a project area. These assumptions will be outlined further in section 6.

Resources

Fisher RJ, Maginnis S, Jackson WJ, Burrow E, and Jeanrenaud S. (2005). *Poverty and Conservation: Landscapes, People and Power*. IUCN, Gland, Switzerland and Cambridge, UK 148pp.

A comprehensive overview of protected area conservation and its relationship to poverty reduction initiatives.

McShane TO, Wells MP (eds.) (2004) *Getting Biodiversity Projects to work: towards more effective conservation and development*. Columbia University Press, New York.

Contains a variety of views on the ICDP approach and suggestions on how integrating conservation and development might best be done in future.

Section 3. Sustainable Livelihoods Approach

The sustainable livelihoods concept is attributed to Chambers and Conway (1991), and has its origins in concepts of sustainability stemming from the Brundtland Commission report (1987). It is primarily conceived as a development orientated, poverty reduction approach, and has been developed and championed by the British Department for International Development (DFID). A diverse range of agencies have adopted the SLA since its inception. International NGOs whose focus is on poverty alleviation such as Oxfam and CARE were among the first to employ SLA in their work. International donor agencies such as the United Nations Development Programme officially adopted the approach in the 1990s. More recently, environmental NGOs such as WWF and IUCN have adopted a SLA approach as part of their conservation work (IUCN 2005).

Each of these agencies has adapted the approach to meet their own specific needs and many have added to the approach. The overall framework has been adapted to incorporate gender, power, markets and rights issues and has also been used to complement legal frameworks and codes of conduct such as FAO fisheries work (Hussein 2002). The wide up-take of SLA supports the view that its use is considered to be “best practice” in projects incorporating livelihood elements (Hussein 2002).

The scale of analysis of the SLA is usually the level of the extended household. A key feature of the SLA is its focus on the assets of the household, the livelihood activities which these assets enable, and the mediating processes such as institutions and regulations that influence which livelihoods are carried out (Allison and Ellis 2001). These elements influencing individual’s livelihoods are presented in a conceptual framework, which has evolved into numerous variations that are

Livelihood Platform	Access modified by	In context of	Resulting in	Composed of	With effects on
Assets Natural Capital Physical Capital Human Capital Financial Capital Social Capital	Social relations Gender Class Age Ethnicity Institutions Regulations Policy Customs Tenure Traditional use Organisations Associations NGOs National Agencies Local government	Trends Population Migration Ecological Changes Technological Change Macro Policy Shocks Natural Disasters Recruitment failures Disease Civil wars/Conflict	Livelihood strategies	Natural Resource based activities Fishing Cultivation Livestock Non-Natural Resource based activities Trade Services Manufacturing	Livelihood security Income level Income stability Seasonality Level of risk Environmental sustainability Water quality Fish stocks Soils quality Land quality Forests Biodiversity

Table 2. Framework for analysis of coastal livelihoods (adapted from Allison and Ellis 2001).

often more confusing than illuminating! In its simplest form it can be presented as a table (Table 2).

The most frequent method of representing the framework is as a diagram, the original of which is presented below (Figure 1). Each of the five main elements of the framework will then be elaborated.

1. Vulnerability context

This defines the conditions that determine the opportunities presented to individuals within a community. This vulnerability context consists of long-term trends such as climate, politics and economic conditions, combined with shorter-term shocks such as sudden price fluctuations or political upheaval.

2. Livelihood Assets

The capital assets are the resources that an individual or household can access. Six types of assets are differentiated:

1. Natural-land type, mangrove, reef habitat
2. Social-social networks, trading networks
3. Political-access to political power holders
4. Financial-savings, loans, credit
5. Human capital-skills, knowledge

Together, these five types of livelihood assets are termed the “asset pentagon”. Conceptually the centre point of the pentagon represents zero access, whereas maximum access is shown by the outer perimeter (Glavovic and Boonzaier 2007). Thus different shaped pentagons could be drawn which would reflect the differing asset portfolios of communities.

3. Structures and Processes

These determine the access of households to their capital assets-whether they can make use of them, and how they can make use of them. Structures consist of formal institutions such as governmental regulations and laws. Processes are the informal institutions that determine “the rules of the game”. The framework emphasizes that

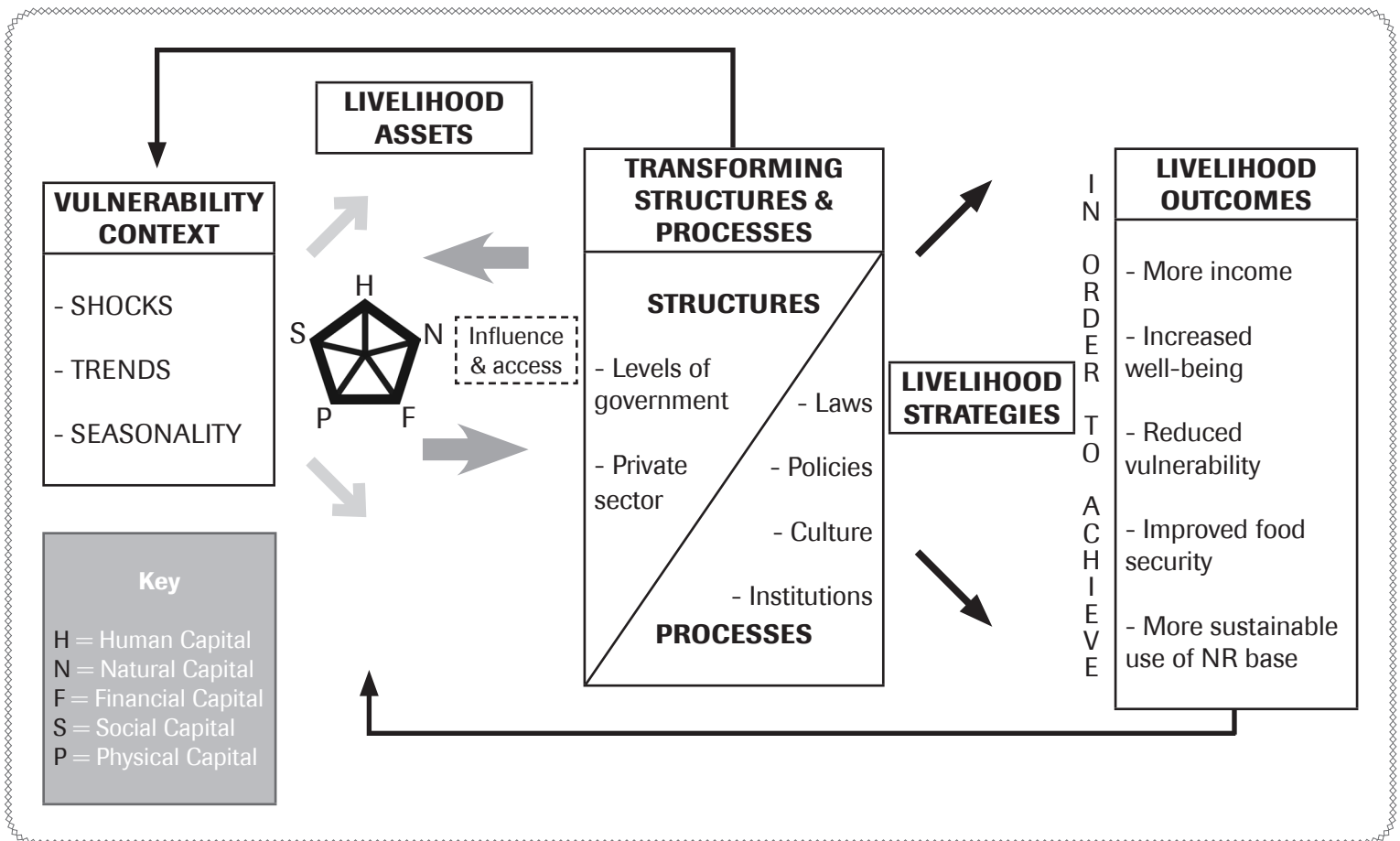


Figure 1. The sustainable livelihoods framework (adapted from DFID).

assets do not necessarily transform into livelihoods, since a vital role is played by mediating institutions, social relations and governmental processes. Therefore projects may need to focus on these mechanisms to achieve their goals (Fisher 2005).

4. Livelihood strategies

These are the group of activities that an individual or household employs. They may consist of a variety of activities, or be heavily dependent upon a single activity. The main livelihood activity may also change seasonally or dependent upon resource availability.

5. Livelihood outcomes

These are the role which the livelihood strategies employed have in fulfilling the needs of the household, and the effects which the activities have on the natural

environment. The feedback loops depicted then describe the impacts, positive or negative, of outcomes on the livelihood assets in the system.

Conservation utility

In development programs, the SLA framework is used to identify key constraints and opportunities for “livelihood intervention” with the aim of poverty reduction and development. An organization whose major focus was on conservation may not necessarily wish to utilize the SLA for development purposes, but where using livelihoods is suggested to be a way to address threats to environmental features, the SLA provides a rigorous basis for project planning. Using a livelihoods framework would help to:

1. Identify what livelihoods may be feasible based upon the assets which a community holds.
2. Determine where to direct effort to have the most influence on achieving conservation program goals.
3. Identify and prevent unintended effects of livelihood intervention.

The goals of a program would affect what actions would be taken based on the findings of a livelihoods analysis. For example, a project with development as its main focus might find that a lack of physical assets required for fishing such as nets or outboard motors was negatively affecting livelihood security and income levels, and choose to supply these items. Whilst this may have positive effects in terms of income levels it would probably not be compatible with conservation objectives. A conservation program obtaining the same findings from a livelihoods analysis, might choose to concentrate and expand upon existing activities such as handicraft manufacturing that would be identified as part of household livelihood strategies.

There is an additional onus on conservation organizations to carefully consider the environmental effects of introducing new livelihood activities or promoting existing ones. For example if handicraft manufacturing were to be supported, would this lead to an increase in extraction of forest items? If fishing effort is moved from inshore reef areas to off-shore using fish-aggregating devices, what is the condition of the fish stocks which are now targeted? What are the potential impacts of any form of aquaculture that might be introduced and supported?

A conservation organization may be familiar with the impacts of livelihoods on biodiversity in protected area, but may not be as familiar with the

influences and constraints that people face in choosing their livelihood strategies. Using a livelihood framework helps understand these from a “people perspective”, and can assist in developing strategies that fit with the social context of an area.

Resources

Carney D. *et al.* (1999) Livelihoods approaches compared. London: DFID (Available at www.livelihoods.org/info/docs/lacv3.pdf)

A paper that outlines the ways in which the sustainable livelihoods framework has been adapted by a range of NGOs.

Livelihoods Guidance Sheets

www.livelihoods.org/info/info_guidancesheets.html

A series of guidance sheets that presents the livelihoods framework in detail-the foremost source of information for livelihoods analysis.

Ireland C, Malleret D, Baker L (2004) Alternative Sustainable Livelihoods for coastal communities-a review of experience and guide to best practice. IUCN

A overview of use of the sustainable livelihoods approach in the coastal context, with case studies from Tanzania.

Section 4. Livelihood Planning Tools

Timing and context

The use of livelihood projects for conservation goals in coastal areas is usually considered in the context of a MPA. In many of instances, the livelihood project is seen almost as a form of compensation for the loss of livelihood opportunity created by the restrictions on resource extraction that can accompany MPA establishment. Opinions and perceptions of conservation organizations active in an area are likely to have been formed during the process of MPA establishment, and during on-going management. In some instances, it may be difficult for an organization that was associated with MPA establishment to move directly to the implementation of a livelihood project. Working in partnership with local NGOs may be the most effective way of introducing new livelihoods in these situations.

However, it could be considered that a more appropriate way to orchestrate projects would be to first gain an understanding of the natural and social resources of an area, then to work with the community to broaden livelihood options and reduce the dependence upon natural resources, and lastly to work for implementation of a MPA. Employing this type of approach could serve to lessen the conflict with stakeholders that can accompany MPA establishment.

Investigating existing livelihood strategies is an important first step in a livelihood project, especially where there is an intended effect on a conservation target. Whilst it may seem the introduction of an alternative livelihood activity is the answer to threat abatement, an analysis of the area using the livelihood framework should be carried to determine if this is the case. What appears to be a mainstay of household income may actually make a much smaller contribution

than expected; the most visible livelihood strategy is not always the most important. The capability of individuals and groups to exercise choices may also be constrained by social and governance factors that are not immediately obvious.

The following are broad characteristics of areas that are suggested to be most suitable to the successful implementation of livelihood projects. If at least some of these do not hold true for the area where a livelihood project is being considered, effective use for conservation may prove difficult.

- The primary threat to biodiversity is from local people living in the immediate vicinity of the protected area.
- The types and scales of pressures are relatively limited.
- Realistic opportunity exists to generate income from local development activities
- Policies exist that are conducive for dialogue among stakeholders.
- Communities are strong and intact.
- Immigration or emigration is controlled.

Table 3. Broad characteristics of areas well suited to the livelihood approach (McShane and Wells 2004).

With these considerations in mind, this section will introduce some of the tools which are commonly used in livelihood analysis. It will concentrate on tools that have relevance from a conservation perspective, and will provide resources for obtaining more in depth information. A suggested general framework for using livelihoods as a conservation tool in a coastal area is as follows (Table 4):

Step 1. Collate secondary data from any previous socio-economic or household studies and any other research or literature that is available for the area in question.
Step 2. Identify key stakeholder contacts within the community and organizations and interests who have an influence over the coastal community-local community leaders, government officials, local NGOs, etc.
Step 3. Employ livelihoods analysis tools to gather information relevant to the “sustainable livelihoods framework”. Aim to build a better understanding of the assets, capabilities, needs, and strategies that are present within the community, what the constraints on the system are, and how the system might be most effectively influenced.
Step 4. Undertake an environmental assessment of the activities and strategies identified. From information gathered by livelihoods analysis tools consider desired changes to the livelihood strategies in the area and the activities, either new or existing, which could achieve these.
Step 5. Present and discuss the concepts for new livelihood activities, or supporting existing activities with stakeholders. Agree on a “livelihood vision” with relevant stakeholders with common goals to aim for.
Step 6. If a new livelihood activity is proposed, create plan for feasibility assessment of the new activity. If an existing activity is being supported and expanded, develop a business plan for the development of the activity.
Step 7. Make assumptions involved in how the activity will affect the community and the environment clear. Agree on the monitoring that would be the required to track these changes, the specific social and environmental indicators to be monitored, and who shall carry out the monitoring.
Step 8. Implement feasibility plan or carry out business plan. Adaptively manage the livelihood activities based upon the results of the monitoring program.

Table 4. General framework for using livelihoods as a conservation tool.

Livelihoods analysis tools & information sources

Secondary Data Analysis

Secondary data-information and statistics that are already available can form a useful part of livelihoods

analysis. Sources may be reports by NGOs and government agencies, the results of previous research that has been conducted in an area, and relevant national or regional assessments. The limitations involved with secondary data sources are that the area of coverage may not be relevant, and even though data exists, it may be difficult to obtain from those holding the data, or the data may be unreliable.

Key informant interviews

Key informant interviews are structured or semi-structured interviews carried out with key members of a community who are likely to have relevant information concerning the topic of interest. However, in terms of a livelihoods analysis, care should be taken that individuals chosen are from a range of backgrounds-community leaders, traders, fishers, government officials, farmers, etc. Dangers in the use of key informants are the possible dominance of certain groups or interests in providing information. To avoid this, efforts must be taken to include as diverse a range of individuals as possible, to not just talk to the “usual suspects” and to pay special attention to groups who may not have a strong voice.

Individual and household studies

These typically consist of semi-structured interviews of individuals and households who have been selected to represent a range of “case studies” of the livelihood strategies in an area. The method can provide detailed insights into the choices that people make in carrying out their livelihoods, but there is a danger that it can result in a pre-occupation with the livelihood stories of particular individuals in a community.

Participatory Methods

These methods aim to gather information which is expressed by the communities and stakeholders themselves but often gathered with the use of facilitators. The degree to which these methods are employed with community empowerment as a goal varies according to

Participatory Method	Brief Description	Useful for information on
Resource Maps	Maps identifying natural and other resources	Existence of natural capital and access to capital
Livelihood Discussions	Open-ended discussions held with different groups in a community	Livelihood strategies, relations between social groups
Seasonal Calendars	Graphical depiction of seasonal events and trends	Vulnerability context, assets, strategies
Preference Ranking	Ordinal ranking based on pairwise comparisons	Livelihood strategies, assets, access to services
Matrix Ranking	Preference ranking based on defined criteria with scoring	Access to infrastructure, livelihood strategies, investment choices

Table 5. Participatory Methods commonly used in the livelihood approach (adapted from DFID 2000).

the group carrying out the techniques. They provide a “bottom up” perspective that can differ from the “top down” perspective commonly found in the policy arena (DFID 2000). There are a range of participatory methods of gathering information which are commonly employed in the livelihood approach (Table 5).

Environmental Assessment

In this context, an environmental assessment is used to obtain an understanding of the relationship between livelihoods and the environment. It helps focus thinking on how current livelihoods are affecting the environment, and what effect new livelihoods will have. For example:

- How are environmental resources involved in the livelihood activities of the community?
- How might any negative environmental effects of the livelihoods be addressed through better planning or management practice?
- What could the environmental effect of a new livelihood activity be? How might this be tested?
- What capacity do local institutions have to manage the livelihood activities carried out in an area?

Sample Surveys

Surveys can be useful in capturing detailed data for analysis, and can reveal differences in the income strategies between groups that can be analyzed in a statistically rigorous fashion. They can be used effectively in conjunction with participatory methods; surveys can yield a broad understanding of livelihoods in an area, and highlight specific issues and questions to focus participatory methods upon.

Surveys have been criticized for the fact that they are generally purely extractive in nature, with the data gathered by researchers generally being taken back to their home institution overseas for analysis. In some well known and heavily researched MPAs, so many surveys may have been carried out at different points in time by university groups and others, that community members can suffer from “survey fatigue” as yet more questions are asked. The extractive nature of most surveys contributes to this feeling.

Surveys requesting information regarding income levels and sources of income are often sensitive information, and a degree of trust should be in place in order that individuals are comfortable giving such information.

Triangulation of Data

This social science research principle states that different data collection methods should be used and compared to gain a more accurate understanding. Any data source or type on its own may give biased data, for instance if only secondary sources of data and governmental data were used to build up a picture of an area this could result in a picture which missed many aspects of the on-the-ground situation or was out of date. Equally using only interviews and participatory techniques could result in biased data, as individuals may over or underestimate the answers they give interviewers and researchers.

Identifying and evaluating livelihood activities

An understanding of attitude to risk is important when considering livelihood initiatives. Livelihood projects that are introduced may fail because they try to move too fast, in the sense that their ultimate goal may be to replace existing activities to the greatest possible extent. Replacing traditional sources of income with alternative untested strategies is risky from a personal or household perspective. Individuals in high poverty areas may be unwilling to switch to an alternative source of income, as they may be unable to tolerate the level of risk that this change represents (Ireland 2004).

However, diversification of income sources is a common strategy employed by coastal communities to address the risk of the failure of any one activity. Over the long term the introduction of alternative livelihoods may decrease the risk to which communities are exposed.

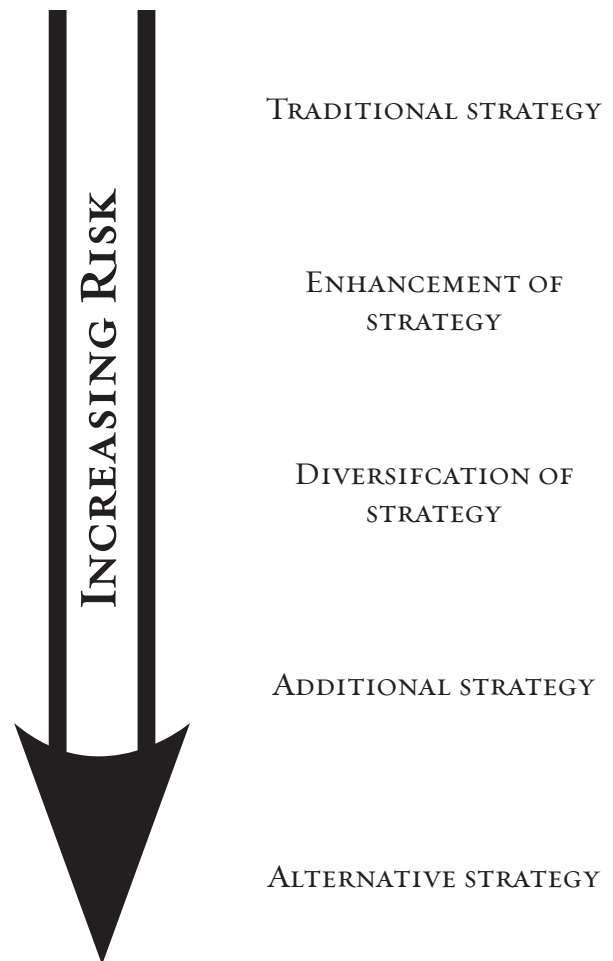


Figure 2. Risk levels in altering livelihoods (adapted from Ireland 2004).

Reports from alternative livelihood projects suggest that the success of a particular activity lies in the motivation and capacity of the individuals involved and in the context within which the activity is developed. The type of activity is less important, although it is suggested that an activity may be more likely to succeed if the community itself has identified it. The following is a list of questions that should be addressed when evaluating a specific potential livelihood activity largely in terms of its social impact (Table 6).

1. Does the alternative relate to the needs and aspirations of the community in question?
2. Is the alternative viable and suitable (from an economic, environmental, institutional, social and cultural perspective)?
3. Can the alternative accommodate the number of people concerned in line with markets for the level of goods and services to be produced?
4. Does the alternative have acceptable levels of risk to individuals in the community whilst not increasing their vulnerability?
5. Does the alternative build on existing strengths and assets of the community?
6. Is the alternative in harmony with existing livelihood strategies and does it fully accommodate gender and socio-economic differences?
7. Does the alternative complement existing strategies of other people in the community?
8. Does the alternative conform to national or regional policies and legislation?
9. Does the alternative enhance the independence and rights of those in the community?
10. Can the alternative enhance the innovative capacity, vision and adaptability of the community to cope with future changes in their livelihoods?

Table 6. Checklist of questions for a proposed alternative livelihood (from IMM 2003).

Resources

World Bank

<http://www.worldbank.org/wbi/sourcebook/sbhome.htm>

A World Bank online handbook on participatory methods.

Participatory Methods

[http://www.enterprise-impact.org.uk/pdf/](http://www.enterprise-impact.org.uk/pdf/ParticMethods.pdf)

[ParticMethods.pdf](http://www.enterprise-impact.org.uk/pdf/ParticMethods.pdf)

A useful overview of current practice in participatory methods.

Section 5. Goal setting and success monitoring

Setting Goals

Many commentators have stated the need for livelihood projects to be designed with clear objectives in order to provide benefits to local communities, and mitigate threats to protected areas (Ireland 2004; Montoya and Drews 2006). Given that the success of a project can best be measured in relation to the goals and objectives of that project, these should be clearly defined at the start of a project. There may be:

- Conservation Goals. In terms of ecosystem effects, the broader goal of alternative livelihood projects could be to have a positive impact on the patterns of resource use in an area.

- Social Goals. Livelihood projects may seek to increase income levels within a community, or to increase measures of community well-being. The introduction of additional sources of income can be seen as a method for increasing the social resilience of an area (Abesamis *et al.* 2006).

- Goals to reduce destructive harvesting practices. The concept behind this is that if there is a greater diversity of income sources to draw from, it will be less likely that individuals will resort to destructive fishing practices as a last resort.

Monitoring long term success

Many “alternative livelihood” activities have been implemented only relatively recently in most parts of the world. This makes it difficult to assess the long-term sustainability of many introduced activities. However, it is essential to identify indicators that can be monitored to determine what the effects a livelihood project are at the level of the protected area and the community associated with the area. The following are examples of indicators that could be measured for this purpose:

Economic Viability	Can an effect on economic activity be seen?	Change in average value of household income
Environmental Soundness	What environmental effects did the activity have?	Increase/decrease in destructive harvest practices
Social Compatibility	What social effects did the activity have? Were social networks strengthened or established?	Increased/decreased participation in local organizations or committees.
Behavioral Patterns	What behavioral changes in livelihood strategy have been observed within the community?	Number of people working outside of community/ emigration to large cities.
Participation	How many individuals participated in the project? How many remained at the end of the project? What numbers altered livelihood activities or took up a new livelihood activity?	Number of individuals participating in alternative livelihood activities.

Table 7. On-going monitoring of effects of livelihood activities

Section 6. Issues concerning livelihoods as a conservation tool

Scale

In order to be effective in reducing threats to conservation features, livelihood projects need to operate on a relevant scale. There is a tendency for protected area managers to focus on threat of local small-scale extractive activities. However, in many instances the major threats from fishing are from boats that originate in communities, or countries, external to the protected area. These operations may be large scale, and may be operating illegally. It is often very difficult to exclude such operations. This situation is reported in the Wakatobi Park, Indonesia where foreign fish-buying companies provide equipment and boats to exploit reef resources (Elliott *et al.* 2001).

If this were the case, and fishing were identified as a threat, finding ways to influence the political/enforcement scenario would be more effective in addressing the threat rather than establishing an alternative livelihood project for small scale fishers in the local community. Site threats should be identified at all spatial scales, and where livelihoods are planned as a conservation tool, the fit with the scale of the threat should be considered.

Open access status of marine resources

User rights and the status of resource ownership are often unclear on the coastline. The general scenario is that much of the coast is a common property resource. This will mean that if individuals are engaged to a lesser extent in extractive activities due to the introduction of new livelihood activities, that other individuals or groups may move in to “fill the vacuum created”. Therefore, to achieve conservation livelihood activities should ideally be carried out as part of an integrated

management plan for an area, which includes means to prevent the pressure being reintroduced.

Benefits

A major problem is that the benefits generated by livelihood projects may not provide enough incentive to discourage activities that cause threats to conservation features (McShane and Wells 2004). In some cases the financial reward from destructive activities such as dynamite fishing may be very much higher than any comparable income which would be obtained from alternative activities. (Pet-Soede *et al.* 1999). In these instances it is unlikely that alternative livelihood projects could expect to offer a comparable level of remuneration. The impetus to stop destructive fishing practices in these instances may have to come from a moral or social pressure dimension.

Fishing

There is a perception is that fishing is always the most important livelihood in a coastal region. Because of this alternative livelihoods are generally conceived to address pressure on resources from fishing activities. Certainly fishing often forms an important part of livelihood strategies in coastal areas, and in some areas is undoubtedly the dominant livelihood, however there are numerous activities that are not based on fishing.

The list in Table 8 is presented to give an indication of the huge variety of ways that people may make their living in tropical coastal areas. Depending on the area, or the individual household, any combination of these activities may be employed. Activities related directly to fishing and directly to tourism were omitted from this list, to suggest that the common conceptual dichotomy between fishing as the primary extractive activity in coastal areas, and tourism as the main alternative is not necessarily accurate.

Having said this, communities where incomes and livelihoods strategies are heavily dominated by fishing are likely to have certain characteristic that require special consideration in livelihood projects. Fishers have a tendency to tenaciously adhere to their occupation even in the face of falling catches and income. Job satisfaction amongst fishers is often high, and many cite non-income related factors for their desire to remain engaged in fishing (Pollnac *et al.* 2001). For example, in a sample from the Philippines, an average of 95% of fishers said that they would go into fishing again if they could live their life over, and only 16% said that they would change their occupation if an alternative with the same or better pay were available (Pollnac *et al.* 2001).

Natural Resource Based Coastal Livelihood Activities	Non-Natural Resource Based Coastal Livelihood Activities
Agriculture Aquaculture Bee keeping Boat building and repair Carpentry Charcoal making Flower collecting Fuel wood collection Gum collection Handicrafts Harvesting coconut Palm wine making Poultry farming Salt Panning Seaweed collection Shell collection Stone quarrying Thatching Traditional Medicine Waste recycling Weaving with natural fibers	Beautician/Hairdressing Bicycle repair Blacksmith Boat Crew Construction work Dressmaking Guest Houses Local government work Mechanic Housekeeping Restaurant Shop keeping Trading Taxi Driving Tricycle Driving

Table 8. Non-fishery related livelihood activities (adapted from Asong *et al* 2000, and Ireland *et al* 2004).

Common features of fishers and fishing communities	Implications for livelihood projects
Income status of fishers is often highly variable within communities. For example boat and gear owners, or large traders can be among the wealthier members of a community. Working as crew on fishing boats can often provide better financial returns than land based employment, but this income is irregular and seasonally variable.	Fishers are not a homogenous group in terms of income levels. It is likely to be unrealistic to expect that livelihood activities will function as true full time alternatives to fishing. However, part-time fishing is common and alternative livelihoods may mean that less time is spent engaged in the fishery.
Fisheries can be extremely important in providing a financial network within communities. For instance captains may loan money to crewmembers or fish processors, to enable them to finance days to day needs, but also items such as children’s school expenses, or medical expenses. Additionally captains may themselves receive loans for fish that have yet to be caught to finance fishing equipment and the cost of a trip.	Alternative livelihood projects may fail to provide a substitute for fishing because they have not appreciated the financial role which fishing provides in many communities. Livelihood projects combined with micro-finance initiatives aimed at fishers have potential to address this.
Fishing communities are often socially excluded and marginalized, and frequently live in marginal or remote areas poorly served by roads, markets and other infrastructure.	If products produced by alternative livelihood projects require transportation to distant markets, there may be frequent difficulties and expenses involved.
Vulnerability is high in fishing communities: fish production is uncertain, and the process of fishing often risky. Fishing communities frequently have weak political representation, and insecure rights of access to resources.	The introduction of additional livelihoods may have beneficial effects in a fishing community in terms of increasing resilience, but may not necessarily decrease fishing pressure.

Table 9. Features of fishing communities and implications for livelihood projects.

Fishing can be a lucrative activity, however the income levels generated from fishing vary greatly depending on the country involved. Fishing frequently gives a sense of identity to those involved, an identity that they may not want to lose by participating in land based economic activities. It has been suggested that livelihoods that fishers would be likely to engage with should share the characteristics of fishing in being “on the water activities”, and activities where there is a degree of control over working arrangements (Pollnac pers comm). In this respect, projects such as those in Belize where fishermen have been trained to work as fly-fishing guides are well suited to being an “alternative” activity to fishing.

The following aspects of fishing communities are likely to be true in many parts of the world, and can help in understanding how livelihoods might best be implemented in fishing communities (Table 9).

Microcredit

It has been suggested that microcredit is important in enabling people to invest in the start up phase of a new livelihood project, as without it people may be unable to take a new activity forward. However, it is also often the case that monies obtained from microcredit schemes are used to finance existing activities such as fishing through the purchase of new nets, or other fishing

equipment (Crawford pers comm). Whilst frustrating from a conservation standpoint, when examined from a risk standpoint, this makes sense. When newly responsible for repaying a loan, it is less risky to turn to an existing “tried and true” activity, than to attempt to ensure repayments from a new, more risky activity.

The obvious solution here would be to restrict what money obtained from a microcredit scheme can be spent upon, however if money is provided directly to individuals it may be difficult to influence what it is ultimately spent upon. Where items are bought by a project and then provided to communities there is a lack of ownership, and participants frequently have no idea how much items cost.

Assumptions within Livelihood projects

1. Provision of new livelihood activity = Higher household income = Decreased use of destructive practices = increase in biodiversity at site

The provision of a new activity may not result in a higher household income. The activity may turn out not be economically viable. A higher household income may not necessarily lead to decreased use of destructive practices. Increased income may be used to fund investment in extractive activities. Conceivably a higher income could even be used to fund the equipment required to carry out destructive practices. Additionally, should activities become highly successful, in-migration from other areas may occur, which would likely decrease biodiversity at the site.

2. Provision of new livelihood activity = Time is spent engaged in new activity = Decreased time spent engaged in traditional extractive activity = decreased utilization of resources = increase in biodiversity/conservation

The introduction of a new livelihood activity may not result in less time spent in traditional activities. The amount of time spent engaged in traditional activities may remain constant, with time that was previously “spare” now spent engaged in the new activity.

Division of labor between genders may also complicate this picture. Frequently women may be more involved in introduced livelihood activities. Thus at the household level, the amount of time spent by men in extractive activities may remain the same, with women carrying out the new livelihood activity in addition to previous activities.

3. Provision of new livelihood activity = Decreased time spent in traditional extractive activity = increased time spent engaging with participatory process = increase in support for protected area or project

Again, the introduction of a new livelihood activity may not result in less time spent in traditional activities. If decreased time is spent in extractive activities this may be spent on leisure, rather than engaging with a participatory process in the area. Lastly even if increased time is spent engaged in the participatory process, this may not necessarily led to increased levels of support for the protected area or project.

Local participation and consultation have become integral parts to marine protected area planning. They are generally presented in a normative fashion, together with the assumption that power to manage resources should be transferred to the community level. However, government bureaucracies in countries are generally highly resistant to the devolution of natural resource management responsibilities to communities. In other words, “having local interests manage ecologically valuable resources in legally protected areas may not be compatible with protecting or sustainably using the

components of biodiversity that national governments are committed to conserving and that the international community is interested in supporting” (Brandon and Heron 2004).

The purpose of this section is not to suggest that livelihood approaches “will not work”, but to point out to point out the numerous assumptions inherent in projects, so that they can be made explicit and can be addressed and examined within projects. The factors that determine whether these assumptions hold will be context specific and highlight the need for gaining a thorough understanding of the existing livelihood strategies present in an area before implementing new activities.

Resources

Sievanen L, Crawford B, Pollnac R, Lowe C (2005) Weeding through assumptions of livelihood approaches in ICM: Seaweed farming in the Philippines and Indonesia. *Ocean & Coastal Management* 48:297-313
A look at assumptions involved in alternative livelihood projects geared towards fishers in South East Asia.

Sustainable Fisheries Livelihoods Program
<http://www.sflp.org/briefs/eng/policybriefs.html>
A series of FAO briefing papers on fisheries and livelihoods issues within the West African context.

Section 7. Conclusions and Lessons learned in Livelihood Projects

There is a surprising degree of congruence in the lessons learned reported from the implementation of livelihood projects, which suggests a set of principles for working based on previous experience:

Principle 1. Specify a livelihood vision, goals and objectives

There is a need for a clear vision, goals and objectives in a livelihood project. This holds true whether the main goals of the project are focused on development, or on conservation aspects. Making goals specific and measurable allows for progress to be tracked, and the process of working towards agreement on a vision and goals for an area with communities helps generate the local commitment and “buy-in” to a project which is important for success (Drumm and Moore 2002).

Principle 2. Carry out relevant research before introducing livelihood projects.

Prior to implementation of an alternative livelihood project, gaining a better understanding of the social dynamics of the community and the livelihood strategies present in the community is critical to enable the design of a successful project. A proper understanding of existing livelihood strategies helps to ensure that novel activities introduced do not have unintended adverse affects along gender or ethnic lines. There is a need to understand the drivers of unsustainable resource use before identifying alternative livelihood projects as an intervention. Addressing the processes, institutions and politics in an area may have greater overall effectiveness in generating the desired effects on resource utilization patterns than the introduction of an additional income activity on its own.

Principle 3. Employ a business approach to livelihood projects.

For long-term project sustainability a business approach should be taken in livelihood projects. Consideration should be given to the effects of external funding as a form of subsidy, and to the sustainability of livelihood activities when high levels of external funding are no

longer available. The existence of a market for a particular product, or issues of reliable access to markets should be examined for any proposed livelihood activity. There has often been a failure to examine the issue of access to markets and market demand before implementing a new activity (Ireland 2004). Where new skills and knowledge are required, training opportunities and technical guidance should be provided, not just at the start of the project or activity, but over the long term.

Principle 4. Use adaptive management

There are numerous assumptions inherent in attempting to bring about change through influencing livelihoods. These range from how individuals in the community will behave towards novel livelihoods, to factors affecting the success of livelihoods and the mechanisms by which altering livelihoods might influence biodiversity. In order to assess the affects a livelihood project is having it is necessary to unpack all these assumptions, making them explicit so that they can be monitored effectively. This enables adaptive management to be carried out based on the results of social and environmental monitoring. Adaptive management is required because the feasibility of a particular livelihood activity is likely to change in response to environmental conditions, and threats to conservation features may arise which require implementing new activities.

The empirical evidence from around the world for whether alternative livelihood projects are successful in reducing pressure on resources is scarce and often shows mixed impacts. A study of coastal villages in Tanzania found that in villages where alternative income generating activities had been introduced, the use of destructive fishing gear decreased (Silva 2006). A World Bank study carried out in 31 coastal communities in Pacific island countries found that the introduction of alternative livelihood projects was not successful in reducing harvesting pressure on resources (World

Bank, 1999). An analysis of the effects of seaweed farming in the Philippines and Indonesia concluded that whilst there was evidence that additional income was being successfully generated from seaweed farming, this was not necessarily being translated into reduced fishing pressure (Sievanen *et al.* 2005).

This does not mean that the livelihood approach is not an important tool. Whatever the actual affects on natural resource exploitation, there are strong moral reasons to integrate planning for alternative livelihoods with conservation projects. As stated in a recent IUCN report “it is unacceptable to carry out conservation activities in areas of high or endemic poverty while turning a blind eye to the needs of the people who live there and depend on the same biological resources that are often those that we wish to conserve.” There is a growing recognition that conservation is unlikely to be effective if it attempts to conserve biodiversity without considering local people’s needs and aspirations. “To be effective, conservation needs must be combined with activities aimed at meeting socio-economic needs” (World Bank, 2004).

For many conservation-based organizations there is a fear that strategies that tend more towards promoting community development and participation will mean that work on conservation objectives will suffer. However, working to assess the potential for alternative income generating activities in an area will involve the creation and strengthening of working partnerships with local NGOs, communities, and governmental interests, who are valuable in enabling all types of conservation work.

Despite the being widely recommended, there are relatively few pieces of work which contain suggestions on how livelihoods projects may best be developed and implemented. Frequently, the impression is that there is an ever-growing list of “alternative livelihood

ideas” that can be “picked from” by a particular project, and that if the right activity can just be found, the project will work. However, experiences reported from projects around the world suggest that it is not the type of alternative activity that is the most important factor influencing success, but rather researching and understanding existing community livelihood systems, and their influences and constraints.

The process and implications of altering the income generating activities of coastal communities are highly complex. Based on the limited success of previous projects, combined with the frequency that they are recommended, it would seem there is a danger that the results from livelihood projects may not meet expectations. The introduction of alternative livelihoods should not be seen as a “blue-print” solution for problems of coastal resource exploitation, but rather as a method that enables partnership work with local communities and organizations, towards a more sustainable resource utilization goal. In the face of mounting population pressure, especially in coastal regions, conservation strategies must be able cope with an increasing influence from human population. Working to create sustainable livelihood solutions in areas of high biodiversity value can only become more important in allowing human and ecological communities to co-exist in the future.

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