

SUSTAINABLE LIVELIHOODS AND AN ECOSYSTEM APPROACH TO FISHERIES MANAGEMENT



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Cover photo: Seaweed farming is frequently a sustainable supplementary or alternative livelihood for fishing households in the Coral Triangle, such as this in Solomon Islands. The seaweed can be dried and exported or used locally for cosmetics, medicines, and foods. Photo: © CTSP / Catherine Plume



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I. Introduction

In 2007, the governments of Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands, and Timor-Leste came together to form the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF), a multi-government partnership aiming to safeguard the region's marine and coastal resources and the services they provide to society. The region boasts the world's most biologically diverse marine area (Figure 1). It also has an estimated population of 394.7 million, one third of which (131.5 million) are estimated to be directly dependant on marine and coastal resources for their livelihoods and wellbeing.

Under the CTI-CFF, the six Coral Triangle countries (CT6) adopted a Regional Plan of Action (RPOA) with five overarching goals: 1) strengthening management of seascapes; 2) applying an ecosystem approach to fisheries management (EAFM); 3) developing and strengthening the management of marine protected areas; 4) implementing climate change adaptation measures; and 5) protecting threatened marine species. The second target of Goal 2 reads: "Through a new, collaborative Sustainable Coastal Fisheries and Poverty Reduction Initiative ('COASTFISH') designed to apply an EAFM, a significant improvement has been achieved in the incomes, livelihoods and food security of millions of people living in targeted coastal communities." (CTI-CFF 2009). This livelihoods guide serves as a primary tool to support this nascent COASTFISH initiative. Applying an ecosystem approach to fisheries management (EAFM) is considered the preferred option and best practice for the long-term sustainability of fisheries and the services that fisheries ecosystems provide to society (e.g., food security, livelihoods, economic security, coastal protection, human health and well-being) in the Coral Triangle region.

A transition to EAFM, with its broadened attention to ecosystem effects and interactions with other economic sectors, may well have both positive and negative impacts on employment, livelihoods and regional economies. Impacts may occur to fishing operations and changes may be expected in, for example, existing livelihoods and income levels of fishery participants and their families and other resource users, the skills base of employees, and the degree of dependence on the fishery or ecosystem. Impacts may affect those in the supply chain such as boat and gear makers and post-harvest operations. There can also be major and secondary and gender-related impacts on community employment. For example, fisheries management decisions may affect postharvest processing of fish and fishery products and marketing, in which women often play a predominant role (TABFM, 2006; FAO, 2007). The implications will differ from location to location within a country depending upon the level of economic dependence of people on fisheries and the availability of supplemental and alternative livelihoods. This is a major issue when an EAFM leads to reduced levels of employment in the fisheries where a smooth transition is hindered by few employment and livelihood alternatives and/or low education levels.

Livelihoods and poverty reduction are critical and the link between healthy, well-managed and productive marine and coastal ecosystems and livelihoods is well established. This document presents guidance for including considerations of livelihoods and employment in an EAFM. This document complements the recommendations for a holistic approach to fisheries and coastal management made in several recent CTI documents including *Coral Triangle Regional Ecosystem Approach to Fisheries Management (EAFM) Guidelines* (Pomeroy et al. 2013). It is also fully aligned with the recommendations made in other recent CTI products that support the RPOA, including *Toward ecosystem-based coastal area and fisheries management in the Coral Triangle: Integrated strategies and guidance* (Flower et al. 2013); the *CTI-CFF Region-wide Early Action Plan for Climate Change Adaptation* (CTI-CFF 2011); and the *Climate Change Adaptation for Coral Triangle Communities: Guide for Vulnerability Assessment and Local Early Action Planning (LEAP Guide)* (CTI-CFF 2013).

This document aims to illustrate to all interested audiences—from the central fisheries institutions to the community and stakeholders—how each may address the issue of livelihoods within the EAFM process. It is also appropriate for a wider audience of integrated coastal planners, MPA and MPA Network management practitioners, and others working to advance in holistic and sustainable coastal natural resource management.

2. Livelihoods Defined

A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain its capabilities and assets both now and in the future, while not undermining the natural resource base (Chambers and Conway 1991).

The term “livelihoods” can have different meanings whether they are “enhanced” livelihoods, “diversified or supplemental” livelihoods, or “alternative” livelihoods.

- **Enhanced livelihoods** primarily focus on adding value to ongoing traditional or historical activities. Strategies that enhance livelihoods move communities and stakeholders up the value chain by improving ongoing economic activities that could, with support, provide higher and more sustainable income streams. For example, an enhanced livelihoods program could provide extension services to teach beekeepers how to process, package, and market honey and related products. Additional activities include providing financial capital to expand current production of various products; technical support to develop more effective crab fattening and marketing or more effective fish drying and marketing; connecting products to markets to increase opportunities to sell sustainably harvested or produced goods (i.e., value chain); or encouraging more ecologically sensitive use of local resources for income generating activities (e.g., creating mangrove nurseries in communities for seedling sale and replanting activities, cultivating seaweed, etc.). Communities generally take up approaches under the ‘enhanced livelihood’ category more easily because, in some way, they are already part of the community’s day-to-day economic life.
- **Supplemental and diversified livelihoods** are somewhat different, intended to reduce household dependence on a single livelihood for income and food (e.g., fishing or coral harvesting). A diversification strategy sometimes includes elements of enhancing existing livelihoods *and* adopting “supplemental” strategies (making current practices more sustainable). This strategy is less risky than alternative livelihoods (below), but it requires greater investment than simply enhancing current, ongoing livelihoods activities. Supplemental or diversified livelihoods can potentially reduce pressure on natural resources. For example, even if fishermen continue fishing, they might reduce their individual fishing effort if they are able to get some income from another livelihood. Supplemental livelihoods can also be a step towards switching to an alternative livelihood (see below). Examples may include new, non-resource dependent alternatives (e.g., mat weaving or other crafts production, introduction of seaweed production, etc.). Often, supplemental or diversified livelihoods have the added benefit of making a primary livelihood safer, healthier, more effective, more efficient, lower risk, and ultimately lead to better outcomes. Supplemental livelihoods particularly fit within the CTI approach as they provide sources of income that strengthen compliance with other CTI efforts such as improved habitat protection in new marine protected areas (MPAs), the establishment of locally-managed marine areas (LMMAs) or community-based resource management (CBRM), or expanding no-take zones in MPA and MPA networks.
- **Alternative livelihoods** require considerable extension support to set up and sustain – often involving financial, technical, and material input from government, communities, and the business sector. Because of the additional time and support needed, government roles are critical including forming and sustaining extension and outreach support. Alternative livelihood development presents the promise of reduced pressure on resources; however, it is the most extreme of options for CTI livelihoods support because it implies a switch of livelihoods. Completely changing occupations makes alternative livelihoods risky for those involved. For example, teams may attempt to persuade fishermen to exit overexploited fisheries for other occupations, thereby reducing pressure on fish resources. However, past studies demonstrated that fishers often are satisfied and enjoy the fishing occupation. Hence, fishermen often lack the aspiration to exit fishing (or such activities as coral harvesting) and the attempt to introduce completely alternative livelihoods often fails (Pomeroy et al. 2005). Fishers may experiment with an alternative but in many cases the evidence shows they eventually they end up back at what they know and love to do so well – fishing.



The women of Maliangin and Banggi islands, located within the Tun Mustapha Marine Park in Sabah, Malaysia, use their weaving skills, palm leaves, and recycled plastic bottles to make mats, bracelets, baskets, and other items to earn additional income for their livelihoods. The term “livelihood” can have different meanings depending on whether they are “enhanced”, “diversified or supplemental”, or “alternative” livelihoods. Photo: © World Wildlife Fund, Inc./Tory Read

3. A Sustainable Livelihoods Approach and EAFM

Adopting sustainable livelihoods thinking into EAFM implies that fisheries management must consider fishers and fishing fleets in the context of where fishers live and work – in households, communities and fishery-based economies – just as it deals with the fish in the context of where the fish live – the ecosystem. Fisheries management thus deals with the fishery as one of a portfolio of livelihood sources (if such alternatives exist) and as potentially linked, through livelihoods, to other economic sectors. (De Young et al. 2008).

Moving toward EAFM may require a reduction or redirection of fishing effort, making it necessary for fishers and fish workers to find alternative economic activities. Having alternatives to fishing that locally generate income and food can reduce the pressure from individual households and communities to exploit local resources. When fishers and communities have few if any economic alternatives, it will be difficult to institute effective fishery management involving constraints on fishing, since the impacts of such decisions may be unacceptably severe (FAO 2009).

Despite calls for a more holistic and integrated approach, conventional fisheries management practices have been largely unable – with some notable exceptions – to incorporate the development of livelihood alternatives into fishery policy and management practices. To some extent, this can be blamed on the over-emphasis within fisheries on the narrow “fish and fleet” perspective. However, there are often also significant jurisdictional obstacles in place. For example, the agency charged with fishery management may completely lack the mandate or capacity to consider livelihoods-focused measures, such as the support for employment alternatives outside the fisheries sector. Furthermore, the structures needed to coordinate among different sectoral agencies could be lacking, hindering the creation of, for example, community economic development plans or regional economic policies (FAO 2009).

However, it should be noted that although the existence of livelihood/employment alternatives beyond the fishery could be a crucial factor in maintaining the health of a fishery and its ecosystem, the creation of such alternatives is difficult to accomplish in practice. The introduction of new activities into a local economy could involve a difficult economic restructuring process, requiring major investments, and leading to changes of traditional practices. Furthermore, the sustainability over time of such alternatives is by no means assured. Thus, efforts to develop livelihood opportunities must not be seen as a panacea to solving fishery problems. Nevertheless, the broadened perspective inherent in EAFM requires a holistic approach to addressing the needs of individuals, households and communities and should support their development of sustainable portfolios of livelihood sources (FAO 2009).

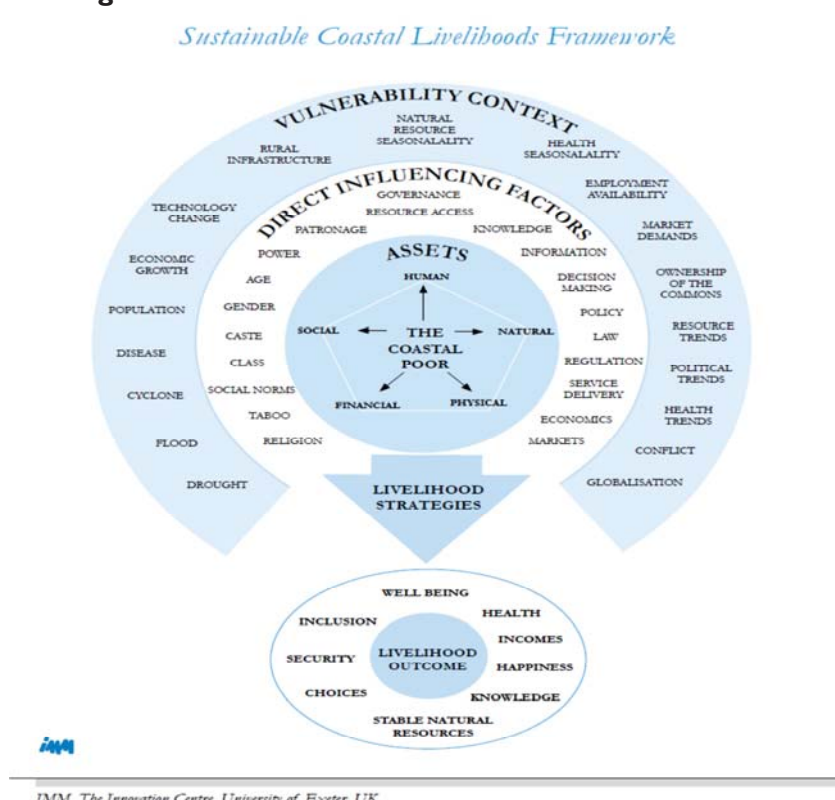
4. A Framework for Sustainable Livelihoods Analysis

Adopting a livelihoods approach requires understanding the **diversity** of coastal people and communities, especially in relation to their livelihood strategies. It also requires understanding the means by which households **adapt** to reduce their risks, the **incentives** that drive the decisions of resource users, and the sources of their **vulnerability** to stresses and shocks. This section presents a general framework for coastal livelihoods analysis and discusses the four dimensions of livelihood strategies (diversity, adaptation, incentives, vulnerability) essential to understanding the prospects for coastal livelihoods. This section describes these four dimensions and additional considerations for a Sustainable Livelihoods Framework, and recommends a process for creating one.

4.1 Sustainable Livelihoods Framework

Development organizations have adapted the United Kingdom Department for International Development's (DFID) Sustainable Livelihood Approach to suit coastal livelihoods. The DFID approach is a tool to improve our understanding of livelihoods, particularly the livelihoods of the poor (DFID 1999). Based on this approach, the Sustainable Livelihoods Framework is useful for understanding the complexity of the lives of coastal people and their livelihood strategies and outcomes (IMM Ltd (a) no date; illustrated in Figure 1).

Figure 1: Sustainable Coastal Livelihoods Framework



The Sustainable Livelihoods Framework provides a schematic of assets and activities and illustrates the interaction between them. Central to Figure 1 is the “asset pentagon” (center). This visually represents people’s assets, highlighting important interrelationships between the various asset sets. Different forms of capital from the five asset-categories (human, natural, financial, social, and physical) combine in a multitude of ways to generate livelihood outcomes. The Sustainable Livelihoods Framework also incorporates the **vulnerability context**, which frames the external environment in which people exist (DFID 1999; DFID 2004). **Vulnerability** is defined as a high degree of exposure to risks, shocks, and stresses and leads to issues and insecurity (Ellis 2000b). The vulnerability context recognizes that such shocks, trends, and seasonal shifts fundamentally affect livelihoods and the availability of and access to assets. The livelihood strategy options available to coastal people, based on the resources to which they have access, are the result of these multiple and varied influencing factors. The livelihood strategies that are adopted follow decisions best made by the coastal peoples themselves. Applying such an analytical framework helps to reveal the distinctiveness of the circumstances that coastal people and communities face, and the variety of responses that individual households adopt in response.

4.2 Four Dimensions of Sustainable Livelihoods Strategies

Sustainable livelihood strategies refer to the range and combination of activities and choices that people make in order to achieve their livelihood goals. On the basis of their personal goals, their asset base and their understanding of the options available, individuals and households develop and pursue different livelihood strategies. These strategies include short term considerations such as ways of earning a living, coping with shocks and managing risk, as well as longer-term aspirations to enable their children to marry well, to become self-supporting and to look after their parents when they become too old to earn a living. Households with plenty of assets such as land, water, livestock, equipment and money, as well as higher education and skills and better socio-political networks, generally have a wider range of livelihood options than households with fewer assets. Strategies may also differ within households. This can be beneficial if a household practices diverse activities and income-generating enterprises when possible in order to secure at least core household needs and income. However, intra-household differences can also result in tensions arising between household members if they end up competing for the use of the same scarce resources.

Recent research and practice in coastal community development suggest that diversity, adaptation, incentives and vulnerability all need to be appreciated when undertaking an analysis of coastal livelihood strategies.

Diversity - Although the dominant livelihood in many coastal communities, capture fishing is not the only livelihood. Indeed, even when fishing and agriculture are accounted for, all the other livelihoods (ranging from fish processing to tourism) combined can employ an equal or greater number of people in many coastal communities. These other livelihoods are also likely to employ a wider mix of persons, including women and those from non-fishing communities that live near the coast. Coastal communities and the people who live in them are not homogeneous. Even within a single community, coastal resource users may have quite distinct economic orientations. They may be full-time, part-time, seasonal or migratory, and coastal households may have a commercial or subsistence orientation. Livelihoods may be based on a subsistence or wealth creation goal and on a diversified or specialist strategy (Smith et al. 2005).

Adaptation - Many households in coastal communities undertake a range of livelihoods in order to cope financially and reduce the risks associated with high economic dependency on natural resources (Bailey and Pomeroy 1996; Allison and Ellis 2001). Fishing itself is a diverse occupation, with most fisheries in Asia being both multispecies and multi-gear in nature. Existing livelihood strategies may be modified or new strategies adopted to meet changing conditions. It is important to focus not only on the resource user but also on the whole household and household livelihood strategy. For example, all or some of the family members may engage in different livelihood activities

and these activities may change both temporally and spatially throughout the year depending on economic, resource and environmental conditions. The household livelihood strategy may be based on relationships between the extended family or within the nuclear family. The household livelihood strategy mix will depend upon season, access to the resource (whether fishing areas or farm land), access to capital, skill base, education, and risk preference. Coastal residents may also engage in illegal activities for livelihood, such as dynamite fishing or smuggling. Rather than being specialized, and therefore vulnerable to a sudden change, many households in coastal communities are well situated to adapt to changing circumstances. The net result of this occupational diversity is that many coastal communities are best understood as dependent not on a single resource but on a whole ecosystem, marine and terrestrial.

Fishers in Southeast Asia generally like their occupation, despite the risks, and few would change to another occupation with similar income (Pollnac et al. 2001). Those most likely to leave fishing for another occupation tend to obtain less of their income from fishing and coastal activities and to have more education. If it is deemed appropriate to provide an alternative occupation that is attractive to fishers, it should, at least, have some of the same characteristics as those considered desirable in fishing. These characteristics include the relative ease of obtaining food and income, the pleasure of being at sea, and the independence of being self-employed. A common alternative livelihood considered for fishers is aquaculture. Evidence exists that fishers would consider aquaculture as an alternative source of food and income, especially if the cost of the technology was low, income was good, and other family members could be involved in the operation (Pomeroy 2004).

Incentives - The incentive structures that individuals and households face are in part of an economic nature, and in part related to other external factors, such as property rights, rules governing resource use, and levels of enforcement. Many coastal resource users exist at the subsistence level and have a short-run survival strategy of taking care of the daily needs of themselves and their family. Due to limited capital mobility and lack of alternative livelihoods, these resource users, such as fishers, will use whatever resources are available to them (technology, skill, capital) in order to harvest as much of the resource as possible. These resource users have what is called a high discount rate concerning use of the resource – they prefer profits and food now over a continual flow in perpetuity (Pomeroy 1991).

Cultivating an awareness of the problems of unsustainable resource use is therefore only a small first step. The more difficult and vital work involves shifting the incentives that resource users face. This includes efforts that build on the array of opportunities at people's disposal – so that they become less directly dependent on the local natural resources for their daily subsistence – and strengthen their security of tenure (whether private or communal) – so that users have a greater stake in a longer-term perspective.

Vulnerability - The physical isolation of some coastal communities makes them highly resource-dependent and reduces access to alternative livelihoods; this can make them especially vulnerable to any disruptions. Yet even physical isolation can be mitigated through appropriate improvements to infrastructure, health and education services, and improved access to information and markets. Some aspects of household vulnerability vary with the seasons. While occupational diversification may allow households to maintain a level of income throughout the year, there may be periods of high income (as when crops are harvested or fishing is good) and low income (as when fishing is poor or not possible due to storms). A household's ability to weather these slack periods depends also on the availability of other sources of income, including remittances from family members living outside the area, informal loans from money lenders or traders, and systems of mutual support at the community level. Other root causes of vulnerability in coastal communities are social and economic power imbalances, lack of participation in decision-making, limited asset ownership, resource dependence, and laws and regulations that influence people's ability to use assets. Once the root causes of vulnerability are recognized, interventions can be put in place to address them and to increase the resilience of the community to shocks, seasonal factors, and human and natural

changes. Building resilience means, in part, reducing reliance upon natural resources for livelihoods, strengthening community institutions, organizations and infrastructure, and diversifying livelihoods.



About 5,000 coastal people in Timor-Leste rely on marine resources for their subsistence livelihoods. These fishermen sell their day's catch on the streets of Dili, the young nation's capital city. Photo: © World Wildlife Fund, Inc. /Tory Read



Weaving is a supplemental livelihood in Malaysia. Photo: © World Wildlife Fund, Inc. /Tory Read

4.3 Considerations in Sustainable Livelihoods Development

The development of sustainable coastal livelihoods should focus on **building the economic basis of livelihoods** by giving coastal people the skills that address the roots causes of vulnerability and build resilience to cope with the future. The development of sustainable coastal livelihoods should be undertaken through a process of change that will address the recurrent factors that make people vulnerable. Some of these factors (illustrated in Figure 2) can be addressed more immediately, while others, such as equity, power relations, access to resources and markets, asset ownership and sustainability of resource use, are more fundamental and difficult to alter. Social development (empowerment, organizations, education, training), economic development (job creation, private sector investment, market access, microfinance) and ecological interventions (rehabilitating coastal habitats, coastal resource management) that address these fundamental issues must be integrated. Both the public and private sectors need to be actively involved in livelihood efforts, seeking out and creating opportunities for both economic and social development.

Figure 2: Sustainable Livelihoods Development should focus on the Economic Basis of Livelihoods. However, there are many additional important considerations, illustrated in this figure described in Section 4.3.



Although heavily advocated as a solution to the many problems facing coastal residents and fishers, the provision of supplemental and alternative livelihoods has had only limited success in most cases. It is assumed that people only fish as an occupation of last resort, and that people would give up fishing if a more economically viable option as available. These assumptions rarely hold true because they often fail to consider people’s strong attachment to the fishing lifestyle (**cultural and personal identity**) and the important role of economic diversification in household livelihood strategies. The reason is that most rural economies only have a limited number of employment opportunities available. In most cases, excess labor already exists in these rural economies. A resource such as land is not readily available or is too costly to purchase; credit is difficult to obtain and skills training in order to find other employment is not readily available, if at all. The rural economy may have weak **links to the regional and national economy** and is not growing enough to absorb the growing rural labor force. Additional reasons for the limited success with supplemental and alternative livelihoods that have been identified in the past include lack of social and technical feasibility (see below); lack of **supporting infrastructure and policy environment** (see below);

lack of **markets**; predetermination of **livelihood options**; cessation of **grants or subsidies**; and unfulfilled **expectations**.

It is necessary to give fishers and their families a broad range of **livelihood options**, both supplemental and alternative, to choose from in order to both support exit from the fishery and to reduce the household's economic dependence on the fishery. Livelihoods are almost always multiple and it is critical to understand the mix of livelihood options that a household and individual may select. Families tend to have a certain household income need. If a household livelihood strategy is taken, rather than just focusing on the fisher, it is possible to provide this broader range of livelihood options. A focus on all members of the family allows them to be trained in new livelihoods and better address the income and other needs of the household. This will allow, for example, for management measures to be put in place with more limited economic disruption to the household. It will be necessary to go beyond the commonly used solution of giving fishers 'pigs and chickens' as a supplemental livelihood to more innovative livelihood approaches involving micro-enterprise development, skills development and training, and the use of information technology.

A **gender-sensitive** approach to livelihoods involves understanding the different roles, needs, vulnerabilities and aspirations of women and men, girls and boys. Gender inequality means that women and men often do not have equal access to the assets they need to pursue or sustain their livelihoods and those of their families. Women are key players throughout the fisheries value chain from extraction through consumption, but they are often marginalized from decision-making and access to assets. Gender analysis is a critical aspect of livelihoods as it recognizes that the realities of women's and men's lives are different. It sets out to understand the underlying reasons for, and implications of, differences between women and men in their roles and workloads, their access to and control over resources and benefits, their participation in decision-making, and their needs and priorities. It also assesses the differential impact of policies, programs, projects and legislation on women and men.

A gender approach is especially important when transitioning to EAFM as there can be major interactions of gender and livelihoods and employment that influence the nature of EAFM-related impacts. Women often play a predominant role in "downstream" activities such as postharvest processing and marketing of fish and fishery products (TABFM, 2006; FAO, 2007b). Impacts of implementing EAFM on the downstream activities, e.g. by a reduction in employment opportunities for women caused by a change in the fishery management regime, may thus affect food security *indirectly*. Women tend to spend more of their income on feeding their families than men, so a reduction in their income often has a disproportionately large effect on the food availability for their household. Women also tend to be less educated, and less able to migrate for work due to social/cultural/traditional/religious reasons, thus further reducing their mobility and adaptability in terms of labor.

Social diversity has important implications for livelihoods because there are strong correlations between livelihoods, poverty and diversity. Social diversity refers to differences between different categories of people and households in their access and control over livelihood assets, in their relative wealth, livelihood security, and social status, in their sense of belonging to different social groups and in cultural norms and beliefs. Every community has ways of categorizing households according to differences in wealth, livelihood security, and social status. Households classified by local people as "well off" usually have more assets than households classified as poor or very poor. Patterns of asset ownership and political voice also vary between women and men, between youths and elders, able-bodied and disabled, between dominant and subordinate ethnic groups, social classes or castes, between different occupational groups such as farmers and herders, and between landowners, tenants or sharecroppers and landless laborers. Social diversity also refers to intra-household differences based on sex, age, marital status and disability. As a rule, women tend to be disadvantaged relative to men, and female-headed households are disadvantaged relative to male-headed households.



Women in Lopahan on Manus Island in Papua New Guinea collect clams they are stewarding to address food security issues arising from climate change. Photo: © World Wildlife Fund, Inc./Tory Read

In addition to livelihoods, there is a need to improve the basic **public services** provided to coastal households and communities. Social and community development efforts can help to ensure the expansion of opportunities in communities by integrating population, health, education, welfare and infrastructure (roads, communication, water) programs into the approach. Education, extension and skills training can support supplemental and alternative livelihood programs. A formal social security mechanism can help to make fishers and their families feel more secure about change and more willing to transition to a new fishing management strategy or livelihood.

It is unlikely that the rural economy in most countries will grow fast enough to absorb excess labor and capital from the fishery sector. It will be necessary to understand **regional and national economic development** trends, projections and policies to determine future employment and investment opportunities and constraints. Working with economic development experts, an analysis of trends and projections in both the regional and national economies and in future occupational demands can provide direction for skills training and micro-enterprise development. Economic base studies can provide information useful for identifying economic linkages between the community economy and the regional and national economies.



Commercial fishermen tend their live reef food fish cages in Biton village in Taytay Municipality in Palawan, Philippines. The Live Reef Food Fish Trade in the Coral Triangle is a US\$1 billion per year industry. Photo: © World Wildlife Fund, Inc./Tory Read

4.4 A Process for Livelihoods Development

A number of different processes can be followed to develop coastal livelihoods, and it is important to stress that there is no blueprint or single correct approach. However, it is vital that the process be well planned at the operational level and be participatory, involving consultation and collaboration with the community. Recognizing that short-term, uncoordinated action can be detrimental to sustainable long-term livelihood development, it is also vital that any process be grounded in a longer-term strategic plan.



Ecotourism in Lemongan, Bali, can serve as an alternative or supplemental livelihood for fishers. Photo: © Coral Triangle Center

For any livelihoods program, the following must be considered:

- A person must learn about and understand the benefits of the new livelihood(s).
- He/she must assess whether or not the livelihood(s) is a good opportunity and worth the time.
- He/she needs to decide to try the livelihood(s).
- Once a decision has been made, the person has to acquire the necessary knowledge, skills and inputs to actually implement the livelihood(s) (Rogers 1995).

A process for development of coastal livelihoods may involve the following eight steps (Figure 3):

Figure 3. Suggested process for development of coastal livelihoods



1. **Target area definition.** A decision needs to be made early on about whether a geographic area, a community or a specific type or group of people will be the target of the intervention. It will usually be a mix of these. Care should be taken not to assume that a community (whether defined geographically or socially) is a homogeneous unit. There will be different interests in a community, based on gender, class, ethnic, and economic variations, and different capacities to adapt and change.
2. **Community entry and integration.** In most cases, an organization or group (whether government or non-government) composed primarily of people from outside the community will undertake the livelihoods process. The organization or group will have established a team to undertake the livelihoods process. The team leader and team members should identify the main stakeholders (for example, formal and informal community leaders) in the community and initiate a series of meetings with individuals and groups to introduce themselves, their organization, their purpose, what assistance they can provide, and how they will provide the assistance. It will be important for the team to spend time in the community in order to establish initial relationships and credibility with community members.
3. **Assessments of resources, needs and opportunities.** In order to ensure that livelihoods are developed in a way that reflects the needs and capacities of the community, the team may undertake, preferably in a participatory manner, a number of assessments to provide information for planning. The assessments can also serve to support community education and involvement. The assessments are used to understand why and how people make livelihood decisions, diversify their livelihood strategies, and to identify livelihood opportunities and options. The assessment process may include a “visioning” exercise where people are encouraged to think broadly about quality of life and factors in their lives that influence it (Newkirk et al. 2006). The manner in which

the assessments are carried out, especially those that require input from the affected people, should recognize their current situation. Assessments must be participatory, ongoing and timely. Methods such as participatory rural appraisal (PRA) can be used. A number of assessments, such as analyses of the following, can be undertaken (ITDG 2004):

- stakeholders
- gender
- household demographics
- community organizations, belief systems, authority/power structures
- livelihood diagnostics and patterns
- marketing system and linkages
- natural resources
- institutional structures
- community/social support structures
- community strengths, weaknesses, opportunities and threats (SWOT)
- hazards
- risks
- vulnerability and capacity
- community coping mechanisms.

As no community is homogeneous, where possible, it will be useful to work with individuals and households to identify their goals, attitudes and preferences in order to identify options for livelihood change.

4. **Education and capacity development.** The issues associated with coastal livelihoods are generally complex, and there is a need to promote awareness in the community and to develop people's capacity to participate actively in the livelihoods process. The purpose of education and capacity development is to provide people with knowledge and skills so that they are empowered to participate effectively in the livelihoods process, begin to take greater control over resource and economic and social problems and needs, increase their awareness and understanding of the factors affecting livelihood vulnerability, and be able to evaluate the livelihood options. It is important to start the education and capacity development activities as soon as possible in the process.
5. **Livelihood Options Plan.** A number of different options exist for coastal livelihoods. These include (a) maintaining the existing livelihood strategy, (b) improving the existing strategy, (c) diversifying or supplementing livelihoods, and (d) adopting alternative livelihood strategies (IMM Ltd (b) no date). A range of options with different levels of risk, financial requirements, and skill level can be developed. The plan should be prepared in consultation with the target group, and identify the direction in which they would like to go and the opportunities and constraints that exist. Both the government and private sector need to be partners with the community in preparing and implementing the plan. Whatever option or combination of options are selected, the process should be guided by a plan that is based on information provided by the assessments and by ideas generated both by the community and from outside, and that specifies:
 - the goal and objective to be achieved
 - the specific activity for achieving the objective
 - the expected output (what will be produced or changed)
 - the timeframe (over what period will the plan be implemented)
 - the participants (those whose cooperation is needed to carry out this action effectively)
 - the lead person or organization (who is responsible for implementation)
 - the funding needs and sources



Villagers in Com, Timor-Leste, collect and sell seashells to tourists who visit their community in Nino Konis Santana National Park. Photo: ©World Wildlife Fund, Inc./Tory Read

6. **Livelihoods Implementation.** The individual or household should be provided assistance in assessing each livelihood option. Key criteria for assessing livelihood options (illustrated in Figure 4) include:

Social feasibility - It is fundamental that any process of rehabilitating coastal livelihoods be 'socially feasible', that is, that the livelihood options be compatible with the needs and aspirations, existing work ethic and livelihood strategies, organization, economic and social structure, gender differences, and culture of the affected community and households. Various livelihood options need to be made available because individual and household goals, attitudes and preferences will differ (Pomeroy 2004). The livelihood options should improve the independence, innovative capacity, and adaptability of the community and not increase the vulnerability of the coastal people (IMM Ltd (b) no date). Livelihoods that are sustainable tend to evolve in response to local skills, market demand, comparative advantage, and available resources.

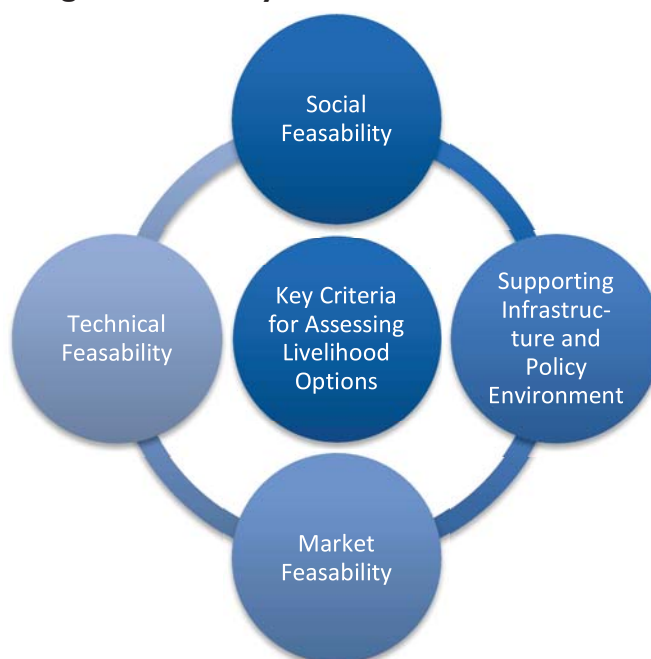
Technical feasibility - The choice of livelihood options, and specifically the technology associated with the livelihood options, will be dependent upon four factors: its associated management intensity, technological complexity, risk level and economics. Simple livelihoods that require low levels of capitalization and extensive, rather than intensive, levels of management are often preferable for many coastal communities. A labor-intensive operation is better suited for communities where labor is abundant, wage rates low, and capital relatively scarce. A livelihood with a low gain, low-risk strategy, in which the burden of risk is shared by others, is likely to be more attractive to the target group than one which offers high gain and high risk. The long-term benefits of introducing a livelihood that may be simple but can guarantee early success with low risk may outweigh a livelihood that offers high profits but has greater complexity and expense. The livelihood must be at a level that can be maintained and operated by the target group and that can generate cash flow over the long term (Pomeroy 2004).

Supporting infrastructure and policy environment - The sustainability, and therefore choice, of a livelihood option will depend on the availability of supporting infrastructure and the enabling environment, including credit, inputs, and technical assistance. Available credit at

reasonable rates, training in business and financial management, and credit supervision will be required. Policy reform may be needed to create an enabling environment for the livelihood options. The supply of necessary inputs to support the livelihood option must be identified and secured. Effective technical assistance, such as extension services, should be in place to provide specialized training and technical assistance on a continuing basis. Private sector support can also provide, or help provide, credit, markets and technical assistance. One of the most pervasive problems for many livelihood options using natural resources is the lack of legal property rights to land, water and species. The strength of property rights will influence the nature of use and management of the resources, and the economic returns from the resource.

Market feasibility - The marketing system should be examined to identify opportunities and constraints, such as product requirements, price, physical infrastructure improvements, marketing channels, and the role of market intermediaries. The value chain should be examined to identify the full range of activities required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers and final disposal after use (Kaplinsky and Morris, 2001). Government support and intervention, such as the establishment of production cooperatives, may be necessary to support the marketing system.

Figure 4. The individual or household should be provided assistance in assessing each livelihood option using these four key criteria.



7. **Long-term sustainability plan.** The best approaches to coastal livelihoods are those that can be sustained by the beneficiaries after the external organization, with its human, technical and financial resources, leaves the community. Efforts to enhance existing livelihoods, diversify, or adopt alternative livelihoods will hopefully have been conducted in a manner that was participatory and provided the capacity and incentives for coastal people to employ the livelihood strategy. Rarely are livelihoods that are imposed from outside the community sustained. While livelihoods can be suggested and facilitated from outside, they must evolve on the basis of local skills, resources and market demand. In the long-term, conditions in a dynamic coastal environment will change, and coastal people will need to be provided with the skills and ability to innovate new strategies and adapt to change. Approaches to coastal livelihoods must acknowledge that change on the coast is an ongoing process. A viable livelihood today will only be sustainable if it incorporates the capacity to evolve with the changes around it (IMM Ltd (b) no date).

To develop coastal livelihoods in a manner that will be effective and sustainable requires addressing the factors that have led to vulnerability – unsustainable livelihoods, high levels of poverty and a declining quality of life in coastal communities. Development of coastal livelihoods will involve not just giving a person a job but, much more importantly, addressing fundamental social, economic and environmental reforms that affect coastal communities and livelihoods. When addressed, they effectively change the boundaries of what is feasible and possible, improving the chances that communities can build resilience to cope with future threats and opportunities. These include:

- Securing resource tenure and access
- Building equitable market access
- Protecting coastal ecosystems
- Empowerment
- Strengthening community organizations
- Integrating coastal communities into regional and national economic development
- Investing in education and training



Seaweed farming in Indonesia serves as a household alternative livelihood. Photo: © World Wildlife Fund, Inc. /Tory Read

- 8. Adaptive learning through monitoring and evaluation.** Monitoring and evaluation consists of reviewing the results of actions taken, and assessing whether or not they have produced the desired outcomes – this helps necessary adaptation and improvement. The livelihoods plan should be monitored if it is to be kept on track, and evaluated if there is to be learning from successes and failures. The planning cycle includes the process of monitoring and evaluation. Effective monitoring and evaluation involves several steps – (1) preliminary appraisal, (2) baseline assessment, (3) monitoring, and (4) evaluation. Information for each of these steps is essential if the plan is to be effective and learning is to be ongoing and adaptive.

It will be necessary to repeatedly evaluate a range of livelihood options. In practice, assessing more immediate options inevitably points to underlying constraints in the local livelihood context as well as opportunities to address these over different time periods and at various scales.

5. Moving Forward

Attention to livelihoods is of crucial importance in moving to an EAFM, and more generally to changing towards more sustainable fishery practices, by reducing the number of people dependent on fishing as their sole income and thus reducing barriers to change. This is critical not only for the management of fisheries, but for the sustainable, holistic, or ecosystem-based management of all coastal natural resources that are under pressure by certain cultural practices or livelihoods.

However, there is no easy answer to the challenge of introducing supplemental and alternative livelihoods, especially in situations of fishery dependency. Barriers such as limited labor mobility and low levels of education among the fishing population have to be acknowledged, as does the reality that no single solution will work in all circumstances. Undoubtedly, a customized approach must be adopted (FAO 2009).

The development of coastal livelihoods should seek to address the root causes of vulnerability of coastal people and communities and to build their resilience to future threats and capacity to exploit opportunities. Development of coastal livelihoods is not merely about giving people jobs; it requires addressing fundamental social, economic and environmental reforms that affect coastal communities and livelihoods. Achieving progress in this direction means those providing assistance must engage coastal communities in a dialogue about the future they envision, the steps needed to get there, and the lessons learned along the way. At the same time it requires engaging a much broader array of actors across government, civil society and the private sector to build both understanding of the reforms needed and the commitment to undertake them.



Thousands of people buy fish each day from vendors at the public market in Kota Kinabalu. Photo: ©World Wildlife Fund, Inc./Tory Read

As stated in the CTI-CFF (2009): Regional Plan of Action “*Through a new, collaborative Sustainable Coastal Fisheries and Poverty Reduction Initiative (“COASTFISH”)*” designed to apply an EAFM; a significant improvement has been achieved in the incomes, livelihoods and food security of millions of people living in targeted coastal communities... The overall goal of this Initiative will be to enhance food security, income, and sustainable livelihoods of targeted coastal communities, through application of an EAFM. As such, COASTFISH has the potential to contribute significantly to achievement of the Millennium Development Goals (MDGs) in all six CT countries.”

To achieve the COASTFISH target will require well-informed, customized, and sophisticated livelihood strategies and programs, supported by large-scale levels of investments in targeted coastal regions particularly dependent on coastal fisheries. Such investments will need to include both domestic and external sources of funding and involve public-private partnerships.

Other Livelihoods Resources

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