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A Gender Perspective on Securing Livelihoods and Nutrition in Fish-dependent Coastal Communities

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by

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December 2012



Supported by:



Citation:

Matthews, Elizabeth, Jamie Bechtel, Easley Britton, Karl Morrison and Caleb McClennen (2012). *A Gender Perspective on Securing Livelihoods and Nutrition in Fish-dependent Coastal Communities*. Report to The Rockefeller Foundation from Wildlife Conservation Society, Bronx, NY.

Available online at:

www.wcs.org/genderfisheries

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ACKNOWLEDGEMENTS

The authors are grateful for the constructive comments provided by Eddie Allison, Carolyn Gray, Carter Ingram, Michael Painter, Susan Tressler, and David Wilkie. We would like to thank Hari Balasubramanian, Jennifer Reitz, Joanna Sylwester, Samuel Jackson and Colleen Robertson. Devon Litherland provided invaluable assistance to format the report and compile the resource list. We are especially thankful to all the WCS field staff who graciously participated in the survey, shared their expertise, and provided valuable comments that helped clarify many aspects of this report. Thank you to the WCS staff in Kenya, Madagascar and Indonesia who accommodated and facilitated assistance during site visits. Financial support for this project was generously provided by The Rockefeller Foundation.



Fish buyers/sellers (Mama Karanga) at the Mvuleni fish landing site in southern Kenya. Photo by Angela Yang

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EXECUTIVE SUMMARY

Women and men play different roles in fishing communities around the world, however in all communities the failure to engage women in management efforts results in lost opportunities to improve conservation practices and ensure secure, viable livelihoods. Through this project we have identified a portfolio of opportunities around the world where understanding gender dynamics more broadly and engaging women specifically can provide positive and long-lasting environmental change and improve coastal and fisheries management efforts. We have leveraged Wildlife Conservation Society's (WCS) global network of sites to identify a broad and relevant set of core gender-related strategies and recommend the best solutions, for both WCS and the wider conservation and fisheries community. These sites are an excellent representation of the range of conditions to be found in coastal fishing communities around the world, thus the findings presented here have wide applicability. By focusing on these sites, we were able to explore the most important issues related to gender and fisheries in the world. To place this assessment within the context of conservation and small-scale fisheries management efforts globally, we conducted a broad assessment of fisheries and livelihoods across 11 WCS sites in 9 countries (Bangladesh, Belize, Fiji, Gabon, Indonesia, Kenya, Madagascar, Nicaragua, and Papua New Guinea). Within that framework we focused specifically on gender dynamics to identify opportunities to improve fisheries management through the engagement, empowerment, and leadership of women in fisheries around the globe.

The overall goal of this project is to provide a contextualized assessment of opportunities for improving the livelihoods of people involved in small-scale fisheries and marine conservation by focusing on the impacts of gender dynamics and women's engagement. This project was guided by three objectives:

- Objective 1. Assess gender issues as they relate to improved fisheries management globally
- Objective 2. Prioritize two focal regions for in-depth assessments within the WCS network
- Objective 3. Design scalable pilot projects

The key findings from this assessment are:

Households and communities are not homogenous entities and the dynamics between and among household or community members have important implications for health, nutrition, livelihoods, and natural resource management. Although this finding has been well-documented elsewhere, we found that household and community heterogeneity is still not well incorporated into how fisheries co-management programs are implemented.

Increases in fish catch or improved market values do not always increase food security and may, in fact, reduce household nutrition. For example, increased formalization of fishing rights in Papua New Guinea has the potential to threaten the ability of women to provide for household nutrition and food security through subsistence fishing activities. In some areas,

when such rights are formalized they have become the property of an individual rather than a family or clan, thus limiting access to the wider community. In addition, in areas where land or marine tenure has become privatized (documented in the case of selling these rights to enable mining or other extractive activities) clan-based property rights that have traditionally followed matriarchal inheritance patterns have been transferred to individual men, further deteriorating women's ownership and use rights.

Marine conservation and management initiatives must consider the whole fisheries value chain. Most of the conservation and fisheries resource management efforts reviewed to date have focused on extractive processes at the start of the value chain, and, to a much lesser extent, consumer-based approaches at the end of the value chain, without complete understanding of the economic, social and cultural dynamics of those actions throughout the value chain, and/or how they could influence the rest of the system.

Women are key players throughout the fisheries value chain from extraction through consumption, but they are marginalized from decision-making and resource management processes. Women represent 47% of the fisheries workforce, mostly in the processing and trading sectors, and often in low-income, informal roles. Women also fish throughout the world, generally with basic gear and operating from non-mechanized boats. Women make over 80% of all purchases in the developed world. However, efforts to systematically engage women in coastal fisheries co-management are scarce, and their participation in decision-making processes, even those that directly impact their livelihoods, is limited. For instance, women are substantially involved in decision-making processes for resource management in only 2 of 11 sites surveyed in our study, despite the fact that women are involved in some aspect of the local fisheries value chain in all 11 sites. As an example, in Fiji, women often do the cooking for planning and management workshops held in the community, and therefore are not fully able to participate in the workshops themselves.

Fisheries management and conservation approaches tend to benefit one sector of society and can have unintended, negative consequences for poverty, livelihoods, and human well-being. When conservation or development goals are implemented that benefit a single sector of a community, this does not necessarily translate into achieving development goals or benefitting all sectors within the community. It also disrupts household dynamics and further suppresses women's ability to deliver food, water, and energy to their families. Conservation initiatives (i.e., MPA designation or fishing right allocation) have taken advantage of and often exacerbated unequal social power dynamics within communities. For example, in the Maldives, men were engaged in fishing and women in small-scale fish processing of a product called "Maldives fish" that was exported to Sri Lanka. Modernization of the fishing industry enabled fishermen to increase their catch and sell it directly to collection vessels that directly exported the fish. This seriously curtailed women's involvement in processing the fish, and their participation in the labor force dropped from 50% to 19% in 1996.

These general findings formed the basis for identifying the following opportunities and areas of dynamism for future engagement:

Gender expands our framework of possible intervention. Integrating the gendered context of household and community dynamics into conservation and development interventions increases the likelihood that they will achieve targeted outcomes of poverty alleviation and improved food security in coastal communities. In addition, understanding and incorporating gender dynamics into the design and development of fisheries related interventions ensures a more complete understanding of the local social dynamics that could impact the success of these interventions.

Value chains have investment potential. Small-scale fisheries value chains suffer from lack of investment and thus deliver far from optimal economic return and efficiency. Local elements of these value chains such as women-dominated processing and marketing activities provide a significant and scalable investment opportunity.

Returns exist in household well-being and equity. Helping women improve their bargaining power and income generation potential throughout the fisheries value chain will contribute significantly to equitable economic, social and health outcomes within the household – enhancing sustainability and impact of fishery related interventions.

Current community management investments can be leveraged. Rising donor and practitioner emphasis on strengthening community-based fishery management systems offer increased opportunities to more fully integrate and engage women in resource-management decision-making processes. In addition, understanding the gender dynamics within and among communities and how they could potentially impact community-based fishery management processes will help improve the overall likelihood of success of these processes.

Gender is a means to new and innovative partnerships. Innovative partnerships that address socioeconomic conditions of fish-dependent communities in a holistic manner create the opportunity for broader funding and implementation strategies. Using a gender lens to design and implement fisheries co-management programs requires partnerships among organizations and individuals with expertise in a myriad of arenas: conservation, fisheries, community development, maternal and child health, nutrition, and business, among others. Broadening the scope of our partnerships will lead to greater innovation through the cross-fertilization of ideas among these different sectors.

Heterogeneity demands custom interventions. WCS and partner programs in fish-dependent communities around the globe provide a representative range of socioeconomic and ecological conditions within which to test and scale appropriate interventions across multiple geographies.



Women and their flooded home in Bangladesh. Photo courtesy of Ripple Effect Images.

OVERVIEW

Recent studies indicate that over 60% of fish stocks in developed countries are depleted and require rebuilding (Worm et al. 2009). In developing countries where fisheries data is poor, there is greater uncertainty about the status of fisheries, although a new study cautions that these unassessed stocks are probably in worse shape than the assessed stocks and are in serious need of effective management actions (Costello et al 2012). Small-scale fisheries provide a source of food and income for hundreds of millions of people. Jobs that flow from these fisheries have few start-up costs and do not require specialized skills; as a result, many of the world's poor rely on this sector for survival. Paradoxically, some of the most productive fishing areas in the world also have the highest rates of poverty and malnutrition. Resulting fisheries management and conservation efforts have tended to focus on managing exploitation of fish stocks, rather than the local value chain and fishery related economy and labor market. Lost opportunities and unintended consequences of this unbalanced and inequitable approach have serious implications for the health and well-being of people and their fisheries.

A complex interplay of social, cultural and political factors influence dynamics between and among people at all levels – households, communities, states. These dynamics result in heterogeneity within and among households and communities and these differences have important implications for health, nutrition, livelihoods, and natural resource management in coastal fishing communities around the world (Weeratunge 2010). Many if not most of the dynamics that shape household and community behavior stem from gendered social constructs that dictate and influence how financial and other resources flow. Our research aimed to consider the distinct roles that men and women play across small scale fisheries to best understand and incorporate strategies and tools that consider gender, variety in local and household dynamics, and the entire fisheries value chain. As a result of this work, several opportunities to improve natural resource management and poverty outcomes emerge.

Throughout this report we refer to the terms gender, gender roles, and gender dynamics. We are specifically talking about the roles of both men and women in different societies and how those roles define who has influence, power and the ability to make decisions regarding how resources are allocated and used. Often gender roles and gender dynamics create situations that are inequitable, particularly regarding the status, standing and power of women. As a result programs aimed at incorporating or understanding “gender” issues tend to be synonymous with empowering women to engage more fully and equitably in decision-making and other processes, because that is where the real needs and gaps are. Our assessment will take this approach to some extent, since in nearshore fisheries as in other sectors, the roles and input of women have not been adequately addressed. However, we will also include the dynamics among both men and women in these processes.

This assessment of gender and coastal fisheries was conducted through four primary components:

1. Global review of gender and fisheries;
2. Survey of gender, coastal fisheries and livelihoods issues across 11 sites in 9 countries where WCS works;
3. Regional profiles through site visits in Asia (Aceh, Indonesia) and East Africa (Kenya and Madagascar); and
4. Identification of potential pilot projects.

Through this study we have found that an assessment of gender and how women are incorporated in nearshore fisheries management is a useful framework through which to determine how to approach solutions to nearshore fisheries and marine conservation problems so they have maximum benefit to the local communities that depend upon those fisheries for food and income.



Men and women participate in a management planning meeting for the Aceh-Weh Seascape, Indonesia. Photo by Effin Muttagin, WCS.

Gender in Coastal Fisheries: A Global Review



Mama karanga waiting to buy fish from fisherman in Kenya. Photo by Angela Yang.

INTRODUCTION

While researchers disagree on how to calculate poverty, there is consensus on three critical points: 1. The majority of the world's poor are women; 2. Over half of the world's poor live in rural and coastal areas and depend heavily on natural resource for survival; 3. Resource degradation is an acute problem in rural and coastal areas, with some 60% of the world's poorest people living in ecologically vulnerable areas (Angelsen, 1997). The collapse of fisheries and degradation of other natural resources not only undermines food, health, energy and water security (UNDP, 2006), it also increases the vulnerability and decreases the resiliency of rural women and their families to external forces such as rapid demographic shifts, rapid economic growth, and war and conflict (Lambrou, 2000).

It has long been recognized that women are the primary users and potential stewards of many natural resources that provide the means for basic survival (Rio Declaration, 1992; Declaration on World Food Security, 1996). In Africa, for example, women are charged with 80% of the food security (Madonsela, 2002) and 90% of the water security in rural and coastal communities (GWA, 2006). With regard to coastal communities specifically, marine species provide food for billions and jobs for hundreds of millions of people: 92% of the world's fisherfolk are small-scale fishers working to feed families and local communities. As in other communities, women are central to food security in fishing villages around the world.

In addition to providing food, women collect fuel for energy in mangroves, rely on plants and herbs for medicine from coastal forests, and use coastal resources to support the economic stability of families and communities from both agriculture and fishing activities. Because the majority of the rural poor are women and because their social roles and responsibilities require them to rely heavily on the coastal goods and services that are provided by the natural world, women are disproportionately impacted by fisheries collapse and the degradation of other coastal natural resources. Despite the vital importance of marine life to human well-being and economic development, marine species face a multitude of threats, all of which are derived from human activity.

Despite their reliance on farmland, forests and fisheries for survival and livelihoods, the unique information that women have regarding resource use and management, and the potential stewardship role that they can play, women are not systematically engaged in the planning and implementation of natural resource management and fishing activities. To ensure the sustainability of poverty alleviation and natural resource management efforts in vulnerable rural ecosystems, women must be engaged in planning and implementation and they must share the benefits of management outcomes.

The engagement of women is particularly important in coastal communities. Women represent almost 50% of the total workforce engaged in fisheries around the world, and they have generally been overlooked in marine conservation and fisheries management, particularly in developing countries. In fact, they are often omitted from the conservation and resource management process. While the omission of women from planning, implementing, and monitoring of conservation initiatives is sometimes in accordance with cultural norms, the majority of the time this omission is simple oversight. In instances where cultural norms may

appear prohibitive, research and best practices have shown that these cultural norms are usually adaptive and accommodate the needs, ideas, and support of women's engagement in natural resource management.

Mounting pressure from unsustainable resource extraction, habitat modification, and impacts from near shore development populations jeopardize the distribution and abundance of near shore fish and invertebrates. These threats are exacerbated by climate-related impacts such as coral bleaching, sea level rise, and changing patterns and intensity of storms which increasingly threaten the integrity and natural resilience of coastal ecosystems. It has become increasingly urgent to address marine conservation and management strategies more effectively. While some notable marine conservation successes have been achieved through establishing protected areas, reforming fishing laws and policies, and zoning to slow or halt the collapse of fisheries, overall these efforts are failing to protect and maintain fish stocks around the world. There is an urgent need to survey a range of small-scale fisheries cases to identify scalable solutions that have already resulted in improved fisheries, biodiversity, and livelihoods as well as to identify innovations that will generate positive impacts leading to increases in marine environmental indicators and to poverty reduction.

Successful initiatives must take into account and address the obstacles and constraints that inhibit women from managing their resources sustainably. These issues include insecure land and fisheries resource tenure, time poverty, educational/training opportunities lack of access to financing, increased exposure to health risks and other social, cultural, political, and economic barriers.

Importantly, there is overwhelming evidence indicating that when women are engaged in conservation efforts, the results can be tremendous. Conservation outcomes are improved, food security is enhanced, and the cycle of poverty and natural resource degradation is broken. In summary, there is very little risk and potentially very high reward for reexamining marine conservation strategies through a gender lens and adjusting those strategies accordingly, thereby increasing the benefits derived from marine resources for both men and women in fishing communities.

The report below details the relationships and actions of men and women in coastal fishing communities¹ and provides a starting place to explore the gendered nature of the many societies around the world that rely on marine resources for survival.

¹ While most of the examples provided are derived specifically from coastal fishing villages, in a few instances we rely on global fisheries data sets. This data sometimes combines small scale fleets from both inland and coastal fisheries. This is because the bulk of the research done in this sector is derived from food security. The marine community has consistently omitted gender as a component of data collection and information accrual and gender disaggregated data is limited for coastal fishing communities.

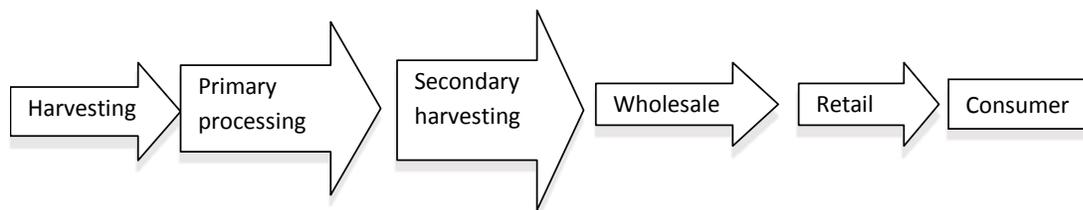
GLOBAL FISHERIES: DEPENDENCE ON A CRITICAL RESOURCE

Over 95% of the world's 200 million fisherfolk (fish catchers, processors and traders) live in Asia, Africa and Latin America where over 60% of the global fish catch originates (FAO, 2009). During the past three decades, the number of fishers has grown at a faster rate than the world's population (Coulthard et al., 2011).

Throughout the developing world the role of fisheries is a critically important, but largely overlooked aspect of development. Catches in many areas are falling, resource rents continue to be dissipated and, although some development indicators have improved, the pursuit of sustainable livelihoods in fishing communities remains elusive in many places in the world (Bennett, 2005). Problems facing fisheries in the developing world include increased pressure from growing populations, increased pressure from competition with foreign fleets and expanding export markets, climate change, coastal development and other land-based pollution (Bennett, 2005). Illegal, Unreported and Unregulated (IUU) fishing contributes to the high level of pressure already placed on global fish stocks. Present estimates place IUU catches at 11 – 26 million tons, worth 10 – 20 billion USD annually (Garcia and Rosenberg, 2010).

The fisheries sector in developing countries is recognized as one of the most economically depressed sectors in society (Williams et al., 2002). The dependence on fisheries is acute at the regional and local level and for poor and marginalized populations in particular (Béné et al., 2007; FAO, 2009; Coulthard et al., 2011). Artisanal fisheries provide fishing families with fish products for food as well as income generating strategies for survival. While the contribution of fisheries to food security and livelihoods is difficult to quantify at a global scale due to inadequate data, we do know that millions of people globally are directly dependent upon fishing for their livelihoods and many more depend on protein rich fish as a basis for their food security (Allison et al., 2009). Additionally, tens of millions of rural fishing families earn their living from fisheries and related activities. These women and men, who rely on fish for sustenance and livelihoods, are still some of the poorest and most neglected groups within the world's societies. Fishing women are especially vulnerable to poverty within these coastal communities (Williams, 2002).

GENERALIZED VALUE CHAIN IN FISHERIES



From: Asche et al. (2006)

A value chain is a chain of activities that occur in a specific industry in order to deliver something valuable (product or service). Products pass through activities of a chain in order, and at each activity the product gains some value. A chain of activities gives the product more added value than the sum of the independent activities' values. It is useful to look at fisheries as a value chain to evaluate and understand who the stakeholders are, what value contributes or income they derive from their role in the chain and where the value chain can be improved to either maximize profit or optimize resources.

Fisheries value chains have similar characteristics to value chains for agricultural products: the primary sectors receive a relatively lower share of the retail value of highly processed products and a higher share in less processed and fresh products. Developing countries control a relatively lower share of the overall value chain (for commercialized stocks) than developed countries (Hempel, 2010).

In general, men all over the world handle the high value end of the commercial fishery value chain, with the exception of few cases, while women remain in the low value end. Poor access rights to assets, credit services, markets and information on new technology, consumer performances and export trade restrict their access to modern value chains (De Silva, 2011). Below are the three basic types of value chains found in fisheries in developing countries: subsistence-based fisheries, fisheries destined for domestic markets, and the commercialized export fisheries market.

SUBSISTENCE: Catch → Consumption

↳ **Processing → Consumption**

DOMESTIC: Catch → Processing → Sale → Consumer

↳ **Transport → Wholesale → Consumer**

↳ **Transport → Retail → Consumer**

**EXPORT: Catch → Transport → Processing (Factory) → Transport → Wholesale →
Transport → Retail → Consumer**

GENDERED ROLES IN FISHERIES

In developing countries, men and women participate in almost all activities in the fisheries sector. While men's work is predominately in fish extraction, it does include processing and trading, particularly among higher valued commodities. Women also contribute throughout the value chain including the construction of fishing gears, fish sorting, fish handling, and fish processing (Lambeth et al., 2002; Medard et al., 2002; Siason et al. 2002; Williams 2002; Bennett 2005). Generally speaking, men's activities dominate extractive processes and women are often responsible for post-harvest activities, such as processing and trading, which frequently earn a

narrower profit margin than that made by fish catchers (Béné and Merten, 2008). In India, approximately 1.8 million people are employed through net mending, marketing fish, peeling, curing, preservation, trading, purchasing, handling, drying, filleting, displaying, and fish-selling activities, with women forming 48% of this total labor force (Nag et al. 2012). Despite their pervasive involvement in fisheries activities, women's invaluable contribution is often overlooked and undocumented, such that women do not benefit from adequate working conditions, facilities, training and access to information. In fact, many of the landless women in the Mekong Region are the "poorest of the poor" in global fisheries (Siason et al., 2002). Importantly, value chains are inherently economic based and therefore omit much of the unpaid work conducted by men and women in communities which can be significant especially in subsistence-oriented economies. Importantly, because men focus on the cash economy, women are disproportionately represented in the unpaid labor force².

EXTRACTION

While in many countries, men dominate the extractive aspects of fishing, women do fish. Generally, these activities involve less technology and the catch is frequently for subsistence use (which usually equates to home consumption). The more commercialized the fishery, the more likely the fishers are to be male. In the Democratic Republic of Congo (DRC), women have been reported fishing with traditional methods (*écopage*), using passive gear to collect shellfish and other species from inshore areas (Béné et al. 2009; De Silva 2011; FAO 2008; Medard et al., 2002). In a case study from Solonga National Park in the DRC, researchers found that on average, 60% of women's catch is kept for home consumption, while only 27% of men's catch is kept for home consumption (Béné et al., 2009). In parts of India, women net prawns from backwaters while in Laos, women fish in canals (Diamond et al., 2003). In Cambodia and Solomon Islands, women represent a significant portion of the fishers (CGIAR 2012). In the Philippines, women commonly gather fish and invertebrates from intertidal regions (Siason et al., 2002). This is also common in many Pacific Island nations where traditionally, fishing beyond the reef was the domain of men, while women concentrated their activities on fishing and collecting

² Excessive undercounting of women in the rural workforce largely results from confusion and ambiguity in the definitions of "productive work," "housework" and "the worker." However, the main reason that women's work is excluded in the calculation of the gross national product is that much of it is of subsistence nature and done within the family setting (APEC North-South Institute, 1999). Changes in rural economies have had a fundamental shift in the type of work performed by women, which is reflected in national employment statistics). Although statistics indicate that women play a vital role in the economies women in developing countries struggle to have a say in community fisheries management because their informal day-to-day fishing activities are not recognized as work by governments, industry and banks. As a result, they are less able to receive loans to develop small businesses, less likely to receive skills training in manufacturing positions and less likely to be reached with valuable information about conservation practices (Robinson, 2000).

For example, worsening economic conditions in Fiji, the Solomon Islands, Vanuatu and Samoa have stimulated a marked increase by women in informal trading, particularly in agricultural goods (such as crops, marine goods, livestock, handicrafts and cooked foods), which augurs well for family food security. A random sample from the Solomon Islands shows that some 66 percent of women engage in informal trade, compared to 70 percent in Samoa. The survey also underlined the importance of income from informal trading in these countries where it represents the single source of income for as much as 70 percent of some families. Many women continue as unpaid workers for family and community endeavors (Kingstone, 1995).

invertebrates within lagoons and inshore areas. While this is still practiced today, in many Pacific Island countries women can be found fishing from boats, usually with their husbands or brothers (Lambeth et al., 2002).

While in most sub-Saharan African countries women do not fish from boats, wealthy women may own boats and invest capital for gear, hiring a crew of young men and boys to do the actual fishing (De Silva 2011; FAO 2008; Luwenya and Yongo 2012). In some parts of Kenya where matriarchy is a norm, women inherit fishing equipment. After marriage, the husband lives in the woman's home and she has a right to her share of the catch, which she could dispose of as she wants (Medard et al., 2002). In addition, women in many developing countries also participate in harvesting by making and mending fishing nets and other gear (FAO 2008).

PROCESSING

Processing of fish is a female-dominated activity, with increased male involvement observed in the more commercialized value chains. Men involved in fish processing generally utilize different methods and species, such as smoking rather than sun drying. Processing methods vary partly because of taste and preference among consumers, and partly because of the level of patience demanded in the process, and the labor and capital investments required (Medard et al. 2002). In Lagos State, Nigeria, women use traditional processing techniques such as sun drying, smoking and salting to preserve harvested fish and ensure value addition. Fifty percent of women surveyed had fish processing and preservation as their sole occupation while 47.5% reported having another occupation in addition to engaging in fish processing and preserving (Kolawole et al. 2010).

Women often largely staff processing and canning factories. They generally work as processing labor and hold other less lucrative positions, whereas males mainly fill the supervisory roles (De Silva 2011). In Latin American processing companies, women are involved in filleting, selection of raw materials, classification of species, gutting, heading, labeling, packing and cleaning in general. These are all activities that require meticulous vision and require smaller hands (Pereira 2002). In Vietnam, 84% of seafood processing factory workers are women and in Malaysia, more than 80% of the workforce in the canning and prawn processing factories are women working mainly as operators in the processing lines (Siason et al. 2002). In Fiji, women make up 90% of cannery workers, and in other tuna processing establishments, they comprise between 30 and 80% of the workers (Lambeth et al., 2002). In South Africa, 62% of the workforce in fish processing plants is female and at least one third of the workforce is employed on a seasonal basis by the industry (Jeebhay et al. 2004). Studies from India demonstrate that migrant women between the ages of 15-30 are the preferred laborers in fish processing factories, which are mostly export-oriented and exploitative (Siason et al. 2002). These women are generally socioeconomically poor and have had previous work experience (Nag and Nag 2007). Globally, fish processing plants vary in technology levels, with smaller workplaces relying entirely on manual handling of fish and larger companies using modern highly automated processes. Gender equality becomes more common among the jobs that require high education levels such as quality controllers and product developers in highly commercialized fisheries.

SALE

Women commonly sell fish in both wholesale and retail markets. In Asian countries, fish selling is almost exclusively the domain of women (Siason et al. 2002). This is also common in many African countries. Women occupy a central place in the fishing sector in West African fisheries, representing 70% to 87% of fish-workers involved in the artisanal fish trade (World Bank 2011). As wholesalers, they purchase fish in bulk from fishers or from co-operative societies and sell it to retailers. As retailers, women purchase their fish from wholesalers and transport it to their selling points. Women who sell fresh fish deal in small quantities near the beach, as they have no quick transport means. Fresh fish traded at the beach is less damaged and requires less cost, time, and labor as there is no processing involved. It requires good business arrangements with the fishers. It also requires sufficient financial resources to be able to pay the same or higher prices offered by factory traders. These are challenges for women. In fisher families, the role of women can be crucial in fish marketing as they are often the sole distributors of fish, meaning the fisher is dependent on the woman to convert the fish into money to buy other food and various necessities. Very few businesswomen have engaged in the international fish trade, as men mostly dominate this section of the value chain (De Silva 2011).

KEY MESSAGES

There is tremendous opportunity to implement solutions that take gender into account to improve both conservation and social wellbeing outcomes.

Women face more production constraints than men including access to credit, severe time limitations, restrictive cultural norms, and lack of education, skills and training.

Both men and women face poor labor conditions with regard to their work in fisheries. These conditions do not meet international labor standards and result in artificially suppressed prices thereby fueling international markets.

Many market based interventions proposed for purposes of alleviating poverty and enhancing environmental conditions have the unintended consequence of displacing women from the workplace. This has the end result of driving up poverty. It also further diminishes women's bargaining and decision making power.

It is important to ensure that on the ground realities are considered when implementing gender based programs. Time and financial constraints limit different individuals in different ways.

WOMEN AS CONSUMERS

The Boston Consulting Group (BCG) released results of a global survey in August 2009 that underscore the implications of the fact that women are driving \$12 trillion in global spending today and will contribute an incremental \$5 trillion in earnings over the next five years.

Importantly, women spend over 70 percent of consumer dollars worldwide, increasingly define the entrepreneurial economy and will create 70 percent of the global growth in income at the household level over the next five years, according to BCG. They account for half of university students worldwide, and 57 percent of U.S. undergraduates.

The amount of funding that women control will continue to grow. Results of the study show that between 2002 and 2007, women's income (globally) increased by nearly \$3 trillion to \$9.8 trillion. By 2014, women's income will jump by \$5 trillion to \$15.6 trillion and by 2028, women will control nearly three-quarters (72%) of consumer spending worldwide.

Further, what is termed "women's consumption" of household goods and services is more often representative of family consumption as a whole. Women are responsible for activities such as shopping, food preparation, gift-buying, and disposal of used items. Women spend more than men on consumer goods, including in the categories of hygiene, medical care and health, clothing and shoes, books and culture. This consumption translates directly into environmental impacts.

A recent OECD report titled *Gender and sustainable development: maximizing the economic, social and environmental role of women* notes that "Surveys show that women tend to be more sustainable consumers. Women are more likely to recycle, buy organic food and eco-labeled products and place a higher value on energy-efficient transport. They make more ethical consumer choices, paying closer attention to issues including child labor and sustainable livelihoods and are more apt to buy socially labeled goods such as *Fairtrade*. For example, in Sweden, statistics indicate that the group that is most concerned about eco-labeling and green purchasing includes some of the poorest members of society: single mothers." Women – including those with low incomes, place greater emphasis than men on the ethical aspects of consumer choices, and are more inclined to give priority to factors such as child labor and environment (Chant).

Yet few conservation messages are targeted directly at women. Communication strategies that build on female consumption patterns can promote benefits to the economy and society. Women's consumption decisions regarding food, clothes, medicines, household goods, and education are key in determining the well-being of families and related ecological impacts. Such messaging also has implications for corporate engagement, best practices, and ensuring that messaging of corporate activities appeals to women generally. The return to the corporations will be higher and the effects of the conservation actions will be higher. Further, encouraging corporations to ensure that their labor practices are friendly in terms of child labor and impacts to women on the ground, in addition to environmentally friendly, will likely have added appeal for consumers and added impact with regards to conservation outcomes.

DYNAMICS BETWEEN MEN AND WOMEN IN FISHERIES

In developing countries, women in fisheries face all the same problems that men in fisheries in developing countries face: increasing costs of fishing activities (due to such issues as scarcity of catch and increasing fuel costs), increasing scarcity of fish, increasing cost of fuel (for processing), presence of middlemen (who play important roles in the value chain but who also can affect costs and benefits to fishers and processors), pollution, floods, drought, and poor sanitation conditions (Bennett, 2005). Women also face the additional issues that are more fully described below:

- Displacement
- Poor access to credit
- Limited access to education
- Limited ability to participate in management
- Poor working conditions
- Marketing problems
- Time poverty

It is important to understand the full spectrum of issues facing women so that solutions that improve conservation and development outcomes can be designed in this context. Later in the document we address some of the benefits derived from engaging women including stronger environmental legislation and improved adherence to rules, increases in food security, and decrease in the reliance on natural resources for survival among others.

MEN DISPLACE WOMEN FROM TRADITIONAL INDUSTRIES.

As prices in the marketing and processing sectors rise, men enter traditionally female fisheries and occupations, such as fish trading, and foreign-aid projects are frequently co-opted by men after they show initial success. In addition, rising demand leads to higher costs not reflected in the wages of women. In a 2003 workshop, participants from multiple African countries noted that middle men and new male traders were more likely to profit from rising markets than women (Bennett 2005). The following are some examples:

- In the Kilwa district, Tanzania, women traditionally performed octopus fishing for family consumption and to sell in local markets. However, when international firms began to buy from local fishers, prices began to rise and men entered the fishery. They began to fish for octopus in boats out on the reef (a prohibited activity for women) and ignored the traditional practice of only fishing for octopus during certain times of the year to preserve the stock. Women were quickly displaced from the industry and profits fell for the fishermen because of increased costs (boats, fuel, scuba gear, etc.), decreased catch per unit effort, and the intervening of middlemen (Porter et al. 2008).

- Seaweed farming was introduced in coastal Tanzania in the 1990s and deemed an acceptable occupation for women. Prices rose as carrageenan became a valuable international commodity, and men quickly displaced women as seaweed farmers. Eventually, a few international firms (in Denmark, UK, US) gained control of the seaweed trade and prices fell. Carrageenan sells for \$30-50/kg while seaweed farmers in Tanzania receive only about \$0.09/kg of dried seaweed (Porter et al. 2008). In the end, few community members benefitted from the seaweed market.
- With the introduction of technology and mechanization of fish production in India, women are frequently the first to lose their roles in the sector. As one community member in India noted “Motorization and mechanization of fishing vessels led to a concentration of fish landings at fewer harbors and landing sites and, in some cases, resulted in the takeover of fish trade by fish merchants who were men. This process displaced many women from the retailing of fish” (Tietze 2007).
- In the Maldives, changes in the fishery sector have reinforced the segregation of tasks between the sexes and exacerbated the inequalities between them. Traditionally, men were engaged in fishing and women in small-scale fish processing. The resulting product, known as “Maldives fish”, was recognized as a delicacy in countries like Sri Lanka and exported widely. At the time when “Maldives fish” formed the country’s main merchandise export, the participation of women in the labor force was greater than 50 percent. This was one of the highest rates in the developing world at the time. Since then, modernization of the fishing industry has enhanced opportunities for fishermen, enabling them to increase their catch and sell it directly to collection vessels, which subsequently export it in frozen form or give it to canning factories for processing. Consequently, opportunities for women to engage in fish processing were seriously curtailed, causing the female labor force participation rate to drop to 21 percent in 1985, and 19 percent in 1996 (Dayal 2001).

Women are sometimes displaced from traditionally female occupations through indirect means as well. In a case study in the Central Visayas region of the Philippines, the removal of mangroves for conversion into aquaculture meant the loss of a source of fuel wood and lumber for villagers and eroded the fish and shell gathering activities of women. In a related study, the conversion of mangroves into fishponds has negatively affected the livelihood of women engaged in the making of nipa (palm) shingle by depleting their sources of raw materials (Caneba and Siar 1998).

WOMEN LACK ACCESS TO CREDIT.

Women in African countries commonly utilize different fish processing techniques than men due to their lack of access to credit. Since they cannot afford fuel to smoke fish, they dry them in the sun which is significantly more time consumptive and more product is lost to spoilage (Medard et al. 2002; Williams 2002). In India, women's role is primarily in the post harvest sector. Their scale of operation is limited by their low investment and risk-bearing abilities because they lack access to resources like credit, which prevents them from accessing

technological innovations like ice boxes and proper storage mechanisms (Siason et al. 2002). In Cameroon, women attributed their lack of participation in harvesting bivalves, a traditional fishery in the region, to the inability to own dugout canoes. They explained that they could not afford to purchase these canoes and that they were unable to make their own, as canoe construction is a man's job (Ajonina et al. 2005).

WOMEN HAVE LIMITED ACCESS TO EDUCATION AND TRAINING.

Women in fishing communities are often illiterate, and lack access to training and other opportunities to improve their marketable skills (Williams et al. 2002). In Malaysia, upgrading of skills is frequently made available through extension courses organized by the Government. Training courses, however, are attended mainly by men because most women may have domestic duties, which prevent them from being away from home for a period of days. There were only 18 women of a total of 952 people trained at the aquaculture courses on the culture of penaeid prawn, giant freshwater lobster, mussel and fish conducted at the National Prawn Fry Production and Research Centre in Kedah, Malaysia from 1996-2001. However, in Malaysia, more than 80% of the workforce in the canning and prawn processing factories are women (Siason et al. 2002). Cambodian women also have limited education and lack basic skills. They receive minimal assistance in terms of training and extension services compared to their contribution to the country's overall fish production, processing and marketing potential (Siason et al. 2002).

WOMEN HAVE LIMITED PARTICIPATION IN FISHERIES MANAGEMENT PROCESSES.

Williams (2002) reports that in most African countries women, in comparison to men, lack influence or significant presence in policy-making and planning for strategies to improve their livelihood (Williams, 2002). A case study in Brazil indentified similar results. In a series of interviews, women declared that the stakeholder meetings for the Marine Extractive Reserve of Corumbau (MERC), a marine protected area, have been held at times and in locations convenient to men, but not to women. Further, facilitators do not create an environment that makes it comfortable for women to speak candidly about their perceptions or concerns. Sixty-two percent of the women stated that they did not attend the meetings because they had not been invited. Women further identified childcare responsibilities as another barrier to their participation in these meetings, because if both husband and wife attended there would be no one to watch the children (Di Ciommo and Schiavetti 2012).

WOMEN HAVE POOR WORKING CONDITIONS AND LOW WAGES.

Women in fisheries are frequently described as overworked, with their contribution unrecognized, or undervalued. They are lowly paid and regularly exploited by employers and often are undernourished or sickly, leading to poor productivity (Williams et al. 2002). This is especially true in fish processing factories, where the ambient environment is cold, wet and

humid. Fish must be kept below 15°C at all times, and the temperature in some plants is kept below 10°C or workers perform their tasks in freezer rooms (Nag and Nag 2007). Employees typically work long hours and stand for the duration of their shift. Most wear no special footwear, so their feet are wet throughout the entirety of their shift (Nag et al. 2012). Work stress and health hazards have been described as considerably high due to the productivity demand and low levels of technology used (Nag and Nag 2007)

In India, factory workers are usually housed under very unhealthy conditions and made to work 12-15 hours for very low wages, between Rs.500-600 (US\$ 10-12) per month. This employment is seasonal and carries with it a large number of health hazards. While the large curing sheds along the coasts may not be as exploitative as the shrimp freezing and canning units, they pay very low wages and the working conditions are bad (Siason et al. 2002). Further studies in India documented that workers wore no personal protective devices like gloves, gumboots or respiratory masks because they were not provided and employees could not afford to purchase them. (Nag and Nag 2007)

Studies have described numerous health risks associated with working in fish processing plants, including safety risks (mechanical and electrical accidents); excessive noise levels, low temperatures; bacterial and parasitic infections; the presence of bioaerosols (which contain seafood allergens, microorganisms and toxins); and poor ergonomic practices. These commonly result in fatal or non-fatal injuries and occupational diseases such as frostbite; noise induced hearing loss; skin infection and sepsis; allergic respiratory diseases; musculoskeletal cumulative trauma disorders; and stress related health problems (Jeebhay et al. 2004; Nag and Nag 2007; Nag et al. 2012; Palsson et al, 1998).

One of the most common problems among fish factory workers is pain. Long hours of standing or awkward floor sitting postures result in musculoskeletal pain and discomfort, with the greatest prevalence localized in the lower back, followed by knees, upper back, calf, shoulder, and other areas (Nag and Nag 2007). Seventy percent of workers in a fish-processing factory in India reported a high prevalence of pain and discomfort in different regions of the body (Nag et al. 2012). Researchers in another study of fish factory workers in India discovered that despite the fact that 80% of the workers were young women between the ages of 15 and 30, there was an extremely high rate of musculoskeletal disorders reported (Nag and Nag 2007). Similar findings have also been observed in other countries around the world such as Sweden and South Africa (Jeebhay et al. 2004; Palsson et al. 1998).

Another suite of problems common among fish factory workers are those associated with cold, such as frostbite and other cold-induced skin injuries and disorders and respiratory disorders from breathing in cold air. Also common are cut and stab wounds due to the combination of loss of dexterity as temperatures decrease and the frequent use of cutting tools with poorly designed handle grips and finger guards. Secondary infections from these injuries are common since almost all positions require handling of perishable raw materials containing microorganisms (Nag and Nag 2007). These issues, and all of the health problems described above, are further exacerbated by the fact that most fish factory employees are, “grossly deprived of health care services with no obligation from their employers” (842: Nag et al. 2012).

WOMEN FACE MARKETING PROBLEMS AND WASTED RESOURCES.

Along the Atlantic coast of Nigeria, a high degree of fish spoilage occurs due to the absence of storage facilities, which experts describe as a major constraint to the development of the fishing industry in that country (Kolawole et al. 2010). Women involved in artisanal processing and fish trade in Nigeria reported facing problems such as a lack of transportation, mentioned by 39.2% of informants, and low demand for fish, mentioned by 55.8% of informants. Twenty-five percent of these informants stated that preservation techniques were necessitated either because they lacked cold storage facilities or because marketing problems made it difficult to sell fresh fish (Kolawole et al. 2010). In a traditional bivalve fishery in Cameroon, 25% of those interviewed indicated that they had poor knowledge of market conditions, which often results in an overabundance in the local market with subsequent reductions in prices, especially during the peak harvest season in March and April. Informants stated that this problem is further exacerbated by lack of storage facilities. More than 57% of respondents complained of product deterioration due to remoteness and poor road infrastructure leading to frequent vehicle breakdown (Ajonina et al. 2005). Reports of fish sellers in Indonesia selling their fish below market value to ensure sales before the product spoils (Volkman 1994) indicate that this may be a widespread problem.

TIME POVERTY

Siar and Caneba (1998) report that findings from around the world showing that women work longer hours than men, were further validated by their study in the Philippines. They established that women, particularly those engaged in fish vending, started their day as early as four in the morning and had to complete household responsibilities and child-rearing duties in addition to any other wage-earning activities that they may perform. These findings were echoed in a study of communities around Lake Victoria, where male informants claimed that, and “Women work like donkeys. We men make them do a lot of work,” and that, “[Men’s] time spent working is very little, but they can make a lot of money. Women work all day and still men have more money” (93: Geheb et al. 2008). Luwenya and Yongo (2012) report that fisherwives in the communities around Lake Victoria work for eighteen hours a day, from 5 a.m. to 10 p.m., spending approximately 12 of those hours on the processing and marketing of fish. Seventy percent of those surveyed spend five to seven days a week working on fishery-related activities. In a case study of a traditional bivalve fishery in Cameroon, investigators estimated that women spent 10 to 12 hours per day processing and marketing the products, while men only spent an average of 3 to 4 hours per day harvesting the bivalves. In addition, women are unable to invest in hired labor or labor-saving technologies because they lack access to both capital and credit (Ajonina et al. 2005).

Ajonina et al. (2005) further observed that while women performed more than two thirds of the work, their husbands controlled the income from sales. These findings were echoed by a study in Brazil, where researchers claimed that women in their case study did not have control over the means of fisheries production and did not receive the benefits of these production activities.

Instead, they were considered as assistants to their husbands and frequently not paid (Di Ciommo and Schiavetti 2012).

KEY MESSAGES

Households are not uniform economic units. Women and men have different access to money and different access to other assets.

Women and men use their money and assets differently. Women reinvest substantially more in caring for children, household nutrition and other development goals.

Women have limited bargaining power. This puts women in a weaker position and precludes them from making key decisions during times of crisis.

When conservation or development goals are implemented that benefit a single sector of a community, this does not necessarily translate into achieving development goals i.e. trickle-down economics does not work at the community level in developing countries. It also disrupts household dynamics and further suppresses women's ability to deliver food, water, and energy to their families.

Because of their lack of bargaining power, as fisheries collapse, women use a variety of means to secure food for their families. Transactional sex is increasing throughout Sub Saharan Africa, Asia and parts of Melanesia as a response to the collapse of fisheries and lost economic opportunities. This bartering is often coercive and is a public health concern.

SOCIOECONOMIC OPPORTUNITIES AND BARRIERS

Fish processing has low barriers to entry. In other words, there are few if any capital costs and it requires no special training. Women who are widowed or divorced are often forced to take up fish processing because of lack of alternatives available to support themselves or their families. Other women use fish processing and fish trading to augment incomes derived from activities such as agriculture, or other small businesses, or that which is provided by their husbands. Importantly, income generating opportunities are necessary because cash is the basis of food security within households. However, access to cash and the manner in which it is distributed in a household is the single most important aspect of securing food; food availability is the second most important (Smith 2001).

Importantly, households in many parts of the world do not operate as unified economic units. This is an important, but often overlooked aspect of conservation strategies. Household decision-making can have either a positive or negative impact on programs and, alternatively programs can alter household dynamics. Evidence suggests that while some resources are pooled, many assets are held individually by the men, women and children who comprise households. This allocation is determined by environmental and development contexts as well as inter-household dynamics. Importantly, there is a significant difference in how households that pool their resources are able to respond to crisis, changes in environment, and other

ecological shocks as compared to households that do not pool resources (Smith and Chavas 2007).

In Bangladesh, household decisions are made predominately by the males and in Cambodia, decision making tends to be jointly made (Naved et al 2011). In the Philippines, decision-making varies and may be head of household (either male or female) or joint, depending on the circumstances. (Lu 2007). In much of sub-Saharan Africa, many household economic strategies are based on 'secret and separate' basis. In this case, incomes are not pooled but rather kept separate in order to maximize bargaining positions when it comes to decision-making regarding labor and household expenditures (Holboe-Ottesen and Wandel 1991).

In some instances men do not typically reveal their incomes to women but expect women to share financial information with them. In Madagascar, fishermen report that while they share financial information with their wives and allow their wives to make some financial decisions, if the fishermen do not like the amount of money allocated for their personal expenses, they will sell fish out at sea so that their wives do not know how much income is actually generated (pers. comm. fisherman in Tulear). While women may appear to gain economic power by earning their own incomes, in some communities that results in loss of husband's contribution to household expenditures³. Consequently, many women hide their earnings from their husband lest the husband withdraw all financial assistance to the household. Despite these findings, it is possible to promote joint decision making regarding the use of income and this practice is growing in some places in the world.

In addition to less income than men, women typically have fewer assets⁴ than men and they use the ones they do have differently. This includes access to fish, fishery-based assets, and finances flowing from fish resources. Assets in fishing communities such as access to credit, training and skill development, basic education, fisheries resource rights, among others tend to favor men. For example, in Fiji and India girls literacy rate is only half that of boys (FAO 2000). The literacy gap between men and women remains wide in most developing countries around the world (UN 2011). Fisheries extension training favors men as do social welfare services and safety nets (CGIAR 2012). The proportion of women who are members or leaders of fisher organizations is significantly lower in most areas around the world (CGIAR 2012).

A growing body of evidence suggests that increasing a woman's control over assets has positive effects on important development and conservation outcomes for the household including food security, child nutrition, and education as well as individual well-being (Quisumbing 2003; Smith 2003; World Bank 2001). Studies suggest that men spend roughly 70% of their income on personal needs (as opposed to household needs), while women invest as much as 90% back into households and communities. A survey in Lake Victoria fishing villages highlighted the priority

³ Interestingly, in cases of remittance, Filipino migrant workers most frequently entrust female family members as opposed to male family members to ensure family members benefit (CGIAR 2012).

⁴ Assets refers to the range of capital available to an individual including natural resources, physical, human, financial, social and political. Assets in this context may be either tangible and intangible.

expenditures by men and women noting that “women typically identified children as their first or second greatest expense, while not a single male focus group identified children as a cost” (Geheb et al. 2008). This distinct priority can result in conflict and inter-household disagreements. Resolution of these household disagreements is determined by relative bargaining power.

Bargaining power ultimately impacts asset allocation. Bargaining power can be measured in a variety of ways; regardless of which measurement used, it almost always favors men. Surveys of over 40 countries showed that women tend to be less educated, marry younger, and receive less preventative health care all of which limit bargaining power. Preference towards sons tends to be greater in countries where women have less bargaining power. Results show that women have the least bargaining power in South Asia, followed by Sub-Saharan Africa, Latin America and the Caribbean (Quisumbing 2006).

Increasing women’s bargaining power and control of assets has important implications for food security, education, and child well-being in fishing communities as in other natural resource based economies around the world. In Bangladesh and South Africa, increasing the share of assets controlled by women translated into increases in household education. In Bangladesh, a higher proportion of pre-wedding assets held by the mother decreases the morbidity of girls (Hallman 2000).

This division of earnings, and implications for bargaining power, are important because the financial responsibility within a household is also divided. Changes to either the context or the relationships will change outcomes and in many cases, will change the bargaining power of individuals within the household as well as within the community. This is especially important to note since conservation and sustainable development goals are often designed to change the environmental context and availability and use of resources in communities with environmental outcomes in mind. These outcomes may generate short term results that change household dynamics with long-term consequences. Discounting the possibility that sustainable development interventions can be targeted to more than one person within a household potentially decreases the effectiveness of interventions (Quisumbing and Maluccio 2000).

How men and women manage money is also a distinctly gendered behavior in many places in the world. Women must often save and budget because their income is not guaranteed. Women utilize social networks to borrow and save, and they innovate in order to maintain the household. Men, alternatively, have direct access to natural capital (fisheries) and can readily catch and sell fish. Women, however, often do not have access to the fishery directly and often have intense competition for purchase of fish. As such, women rely on social capital including networks that increase trust, the ability to work together, and access to opportunities; informal safety nets; and membership to organizations (Quisumbing 2003b). As one fisherman in Kenya noted “Men get much, and they spend much. Women get little but they budget.”

It is important to note that sexual division of labor permeates gender roles and rarely allows for the contribution of one gender to the other’s workload. For example, during periods of poor weather or off fishing seasons, men do not contribute to women’s workloads. Both men and women surveyed in sub Saharan Africa noted that while men and women had total control over

their own labor, men could reap great benefits from their time. As one man noted “[men’s] time spent working is very little, but they can make a lot of money. Women work all day and still men have more money.” In order to generate enough money to provide for households, women are often forced to diversify. Livelihood diversification is far more common with women than with men. However, because women must remain relatively close to home in order to tend to domestic responsibilities, livelihood diversification options are often limited. These limitations are exacerbated by lack of education and in many instances basic illiteracy.

Importantly, community level dynamics are also changing throughout much of the world and the numbers of households that are female headed (FHH) are increasing. In Haiti, South Africa and Namibia for example, FHH is approaching 50% (Nations Encyclopedia, 2010). In Kenya and Madagascar, as in much of sub Saharan Africa, FHH are between 20 and 30%. Throughout South and Southeast Asia, FHH falls but is still significant, averaging around 15% ranging from 12.8% in Bangladesh to 30% in Thailand. FHH are often poorer than other households, lack alternative livelihoods and more vulnerable to shocks and system changes.

BARGAINING POWER IN THE CONTEXT OF DECLINING FISH CATCH

In the developing world, the roles and responsibilities of men and women are generally stratified. Occupations dominated by men, such as fishing, mining, and timber extraction tend to pay more than jobs held by women which often include marketing surplus resources, domestic housework and farming. Gendered economies with highly skewed compensation frameworks affect the economic realities of gender relationships and structure the intimate relationships of communities including the development of sexual economies (Campbell 1997; Hunter 2002). Transactional sex relationships in sub-Saharan Africa, Asia and Papua New Guinea as a bargaining strategy, are well documented. Transactional sex relationships refer to relationships where money and gifts are exchanged outside of a romantic context. These relationships are characterized by unidirectional transferences of gifts and money from men to women. This imbalance is reflective of the increased access that men have to money and resources due to the gendered nature of local economies. Transactional sexual relationships are an important public health concern because these relationships are characterized by concurrent partnerships, which are the highest risk relationships for HIV transmission. Importantly, because of women’s lack of bargaining power in the absence of money and other resources, they have a reduced ability to negotiate safe sexual practices (Halperin and Epstein 2004; Kretschmar and Morris 1995).

Fishing economies have a highly gendered structure; men fish and women process and sell the fish. However, the ways that fish move from male extractive (fishing) activities to women for processing and marketing vary considerably. For example, in Sri Lanka, husbands and wives work as a team and the resources are given from the fisherman to his wife who then sells it. In Sierra Leone, wives buy the fish from their husbands in a businesslike arrangement. In coastal Kenya communities as well as other areas throughout Africa, fishermen give preferential access to women with whom they are in a sexual relationship.

While these examples demonstrate a consensual trade relationship, sex can also be coercive whereby fishermen refuse to sell fish if the female trader does not engage in sexual relations. In a study of fish workers in Zambia by Béné (2007) it was noted that 31% of the fish traders had an institutionalized fish-for-sex relationship.

THE SPECIAL CASE OF HIV, GENDER AND FISHERIES

In developing countries across the globe, HIV rates in fishing communities are 4-14 times the national averages (Allison and Seely 2004; Entz et al. 2000). HIV/AIDS is the leading cause of death of people in the lake-shore areas of Uganda, while in Tanzania, fishermen are 5 times

more likely to die of AIDS-related illnesses than farmers (Kissling et al. 2005). Similar HIV rates have been reported in countries from South and Southeast Asia, Latin America and South America. In addition to infection rates elevated beyond the national average, women in fishing communities frequently show higher rates of infection relative to men. In fact, in many countries women's infection rates are rising at a faster pace than infection rates in men (Allison and Seely 2004). In the Pwani region of Tanzania, women are three times more likely than men to be infected, and in the Tanga region, they are two times more likely to be HIV positive (Torell et al. 2006).

Both poverty and inequality between women and men are correlated to the spread of HIV. Women and girls' lack of power and influence in sexual relations carries a special risk of infection. Either as wives, girlfriends or sex workers, women in fishing communities in developing countries are generally in a subordinate social position to men (Allison and Seely 2004). Women who are economically dependent on their husbands are less likely to be able to negotiate for safer sex. They are also more likely to exchange sex for money or favors, and they are less likely to leave a relationship that they perceive as risky (Huang 2002). In addition, cultural norms such as marrying just after a girl's first menstruation, intergenerational sexual relationships, and polygamy or partner sharing increase the likelihood of young women contracting HIV (Torell et al. 2006).

While in many cases these transactions may be voluntary, fishermen are often in stronger positions than fish traders, both socially and economically. Female fish traders often lack the bargaining power to refuse a sexual relationship, either because of blackmail ("no deal, no fish"), or because they could not afford to turn down a very favorable offer from a fisherman (Béné and Merten 2008; Luwenya and Yongo 2012; Merten and Haller 2007). For the many women who migrate during peak fishing seasons, engaging in sexual activities in exchange for money is a "poverty alleviation" strategy". Women's lack of access to household financial resources, responsibilities to provide for their family, and time constraints further incentivize them to take these sorts of risks. A fisherman from the village of Mkwaja in Tanzania explained that, "[A woman] accepts the fact that it is the "female burden" to provide for her children, so when a woman prostitutes herself, she risks dying for the sake of her children," (804: Torell et al. 2006).

KEY FINDINGS

Fishing communities around the world are hotspots for HIV/AIDS.

Rates of HIV/AIDS are higher in women than in men in fishing villages around the world. This is due, in part, because of women's diminished bargaining power, lack of income, and lack of nutritional security as well as other gendered considerations.

Increases in rates of HIV/AIDS have specific negative impacts on environmental efforts and exacerbates unsustainable fishing practices.

CLIMATE CHANGE

The degradation of natural resources both results from and contributes to global climate change. Climate change impacts everyone, regardless of gender, race, age and level of income. However, the extent to which degrading resources and increasing instability affects individuals varies depending upon several key factors, most significantly, gender and economic status. In at-risk, fisheries-dependent communities, men and women have distinct roles and responsibilities as previously noted. This role differentiation gives rise to different vulnerabilities and affects the ability of the different genders to adapt to climate change.

As natural resources decline, women must devote more and more of their time and energy to obtaining resources for both sustenance and livelihood needs. Both shifting climate patterns and major climate events increase communities' vulnerability and reduce women's ability to access key resources. Importantly, men often migrate out of fishing communities resulting in an increase of female headed households. For example, in some Kenyan fishing villages, female headed households now account for a full 40% of the community. These households are at an inherent economic disadvantage and are often among the poorest of the poor in coastal communities.

As previously noted, men and women have different access to physical, social and financial resources in fishing communities. As a result, in times of change, men and women have different options and 'safety-nets' for coping with climate based changes. Men and women also have different knowledge and skill sets,

Importantly, women and girls are also more likely to be impacted by the direct impacts of climate change. Over the past two decades, the number of weather related disasters has quadrupled and a study by the London School of Economics of 141 disasters showed decisively that there is a higher death for women due to lack of economic and human rights. Additionally, climate change also leads to increased illnesses and disease and women and girls are the primary caregivers to the sick and primary stewards of water. They are therefore at a higher risk than men of contracting diseases. For example, climate change has increased flooding in coastal communities, contributing to outbreaks of diarrhea and cholera. The impacts of climate change have increased the spread of malaria and dengue-carrying mosquitoes. Water related diseases alone kill over two million people every year, most of them women and children.

To reduce the vulnerability of communities in developing countries and increase their resiliency, it is critical to involve women in the development of natural disaster mitigation plans, relief efforts and natural resource management plans. During crisis and relief efforts, resources are targeted at men while women are systematically excluded. Their current lack of involvement in these types of activities often has catastrophic consequences. For example, in Bangladesh a cyclone struck in 1991 and killed a disproportionate number of women. While warnings about the impending cyclone were posted in public places, many women were unaware of the forecasted cyclone due to social conventions that restrict the movement of Bangladeshi women. A similar situation was documented in Peru. Women in fishing communities reported that while state officials informed fishermen of an impending El Niño

event that would reduce fish stocks, women were not informed. This left them unable to budget or save the household funds necessary to withstand the crisis (World Bank and FAO 2008).

Millennium Ecosystem Assessment reports that “the pattern of ‘winners’ and ‘losers’ associated with ecosystem change – and in particular the impact of ecosystem changes on poor people, women and indigenous peoples – has not been adequately taken into account in management decisions” (MEA 2005: 13). This is supported by data from Tanzania, which indicates that women are hardest hit by both the HIV/AIDS pandemic and by climate change impacts (Torell et al. 2012).

OPPORTUNITIES TO ENGAGE WOMEN IN CONSERVATION

There are many examples of conservation programs that have excluded women from design and implementation of programs, which has also prevented women from accruing benefits derived from these efforts. Importantly, there are also many examples of the great successes achieved when women are systematically engaged in conservation programs (see Appendix 1). Importantly, when conservation and development goals are linked, women become the single most important key to success. Highlighted below are some examples of the benefits of engaging women in conservation.

WOMEN ARE KEY FOR MEETING DUAL DEVELOPMENT AND CONSERVATION GOALS

Women are most often responsible for the well-being of children. In many developing countries, women bear the primary responsibility of making sure that children’s needs are met. Throughout Africa and in much of Asia, children are the sole responsibility of women, and given the cost of feeding, clothing and sending them to school, the necessity for an income is considerable. Without profit from fisheries activities, these needs go unmet (Medard et al. 2002). However, when these needs are met, the return on investment is outstanding. For example, in Brazil a woman’s income has a positive impact on the height of their daughters (Thomas 1990), while in India a woman’s higher earned income increases her children’s years of schooling (Luke and Munshi 2011). Studies from China indicate that increasing adult female income by 10% of the average household income increased the years of schooling for both boys and girls. In contrast, a comparable increase in male income reduced survival rates and educational attainment for girls, with no impact on boys (Qian 2008).

There have been several documented cases of successful programs that achieved both development and conservation goals through targeting women or addressing gender inequity issues. For instance, in Bangladesh, a member of parliament successfully passed a proposal under the government land distribution program for landless peasants. This proposal gave land jointly to husbands and wives, and also granted land to female-headed households. As a result, women’s status increased, land grabbing declined, and coastal women planted trees and crops (Diamond et al. 2003).

In five villages along the coast of the Gulf of Mannar in Southeastern India, women were taught adult environmental education during the winter of 2007-2008 using simple information and communication technologies as the structural basis for a campaign. Some of these women learned hygienic techniques of sun drying of fish using drying racks to enhance the quality and price of the product. These women now exclusively use the drying racks and are able to fetch a better price for the fish. In addition, less drying time is required using racks than when drying on the floor. This awareness campaign has considerably reduced damage to the nearby reefs since the use of shore seine operations, mining and anchoring near the reefs declined. New coral recruits were observed and the live coral cover area is increasing in the once heavily degraded reef areas (Patterson et al. 2008).

In another example from India, women's self-help groups adopted a mussel-farming project originally initiated by the Center for Marine Fisheries Research. A subsequent study of these women mussel farmers in Kerala, India indicated that they progressed as business owners and displayed successful managerial skills. Several farmers increased in size from 600-800 mussel ropes per farm in 2000-2001 to 2000-3000 mussel ropes per farm in 2005-2006. The survey indicated that the women farmers utilized their profits to pay off their loans and debts, their family healthcare and their children's education. Their prompt repayment of loans increased access to credit for other women in the community and facilitated their entry into the industry (Kripa and Surendrathan 2008).

Introducing cook stoves may also be another method to simultaneously address developmental and environmental concerns. In a study of a traditional bivalve fishery in Cameroon, investigators discovered that processing activities for this fishery made use of fuel wood that comes entirely from the forest. The annual fuel wood harvested for the burning of bivalve shells to produce animal feed and for the ceramic industries and smoking of bivalve meat was estimated at 50,943 cubic meters. Respondents reported health problems resulting from smoke inhalation and described decreasing availability of fuel wood, causing them to spend more time traveling further into the forest to find the desired types of wood. Respondents also complained that the fires used to process the meat and shells would sometimes burn out of control, destroying the wooden structures built for smoking in addition to destroying the shells and meat. Investigators reported that nearby mangrove vegetation had been decimated (Ajonina et al. 2005). Introducing cook stoves that would cause less pollution and required less fuel wood would benefit the health of the villagers and the health of the surrounding forest. In addition, cook stoves would prevent fires from burning out of control during processing which would further decrease use of nearby fuel wood species and prevent bivalves from being needlessly wasted.

WOMEN ARE KEY FOR CONSERVATION

For coastal households, gender-based strategies can help reduce poverty and influence family planning, thus reducing pressure on local natural resources (Diamond et al. 2003). In Tanzania, a program linking family planning with environmental concerns and issues of food security has shown some success in increasing awareness throughout the community. Many respondents

reported both that they believed that having fewer children would enable them to send their children to school, and that food insecurity was linked to “too many people and not enough fish to go around” (Torell et al. 2012). In Cameroon, a project designed to help mothers care for their children while they engaged in farming activities has also been beneficial for conservation goals. The Ntankah Village Women Common Initiative Group initially developed a ‘Mother’s Centre’ to care for children, but the centre now shares information and documentation, provides internet access and hold workshops for women. Through this center, women farmers have enhanced awareness of sustainable agriculture practices that protect the environment, natural resources and soil fertility. They reduced the use of the slash-and-burn method and taught soil management, land preparation, composting and other sustainable agricultural skills to 150 women (Goldenberg 2011).

When women are able to participate in planning activities, the outcome is impressive. In Galicia, Spain, most shellfishers are women. They self-organized to make their voices heard by the regulatory body. Through their unification, they were able to increase the value of their work, establish and promote local organizations of shellfishers, and initiate a training program to provide women with better knowledge of the sustainable shellfish industry. This program provided 152 training courses across the region attended by a total of 2888 women. As a result of the knowledge gained from this training program, the women developed a restocking system, began to look after the quality of the shore, and created a patrol system along the shore to prevent poaching. They also set guidelines for minimum size/maximum quantity of shellfish harvest and created checkpoints to carryout enforcement of these standards, which included sanctions such as fines and the loss of fishing days. These quotas are fixed with regard to carrying capacity but respond to market trends, such as decreasing harvest when less demand causes prices to drop, thus increasing the resiliency and sustainability of the shellfish trade in the area. Women shellfishers in Galicia have become empowered. They hold more positions in the regulatory body, they have increased their participation in stakeholder meetings and they make more money from the shellfish trade (Frangoudes et al. 2008).

Women often possess different knowledge about marine, coastal and estuarine biodiversity than men, and failing to include women results in lost time, money, and opportunities (Diamond et al. 2003; Di Ciommo and Schiavetti 2012). For example, in a mangrove reforestation project in the Barangay Talokgangan region of the Philippines, women’s involvement was the key to the project’s success. Women played “a significant role in most of the activities of mangrove reforestation project as compared to their male counterparts” (Bagsit and Jimenez 2006) Researchers discovered that women were involved in all aspects of planting, protection and maintenance of the mangroves. Men were involved in planning and decision making, as were women to some degree, but men lacked the multiplicity of involvement that characterized women’s engagement with this key, income generating and environment-stabilizing resource (Bagsit and Jimenez 2006), Without women’s participation, the restoration of the shoreline, as well as the additional community income, would have been impossible. This example highlights the importance of engaging women at all levels of conservation projects and the significance of understanding the multiplicity of their roles and responsibilities.

When coastal managers fully understand gendered resource use patterns, they are in a better position to predict the impacts of different coastal management and development policies and plans. For instance, women frequently collect subsistence or commercial products from mangrove areas. When these areas are used for shrimp ponds or tourism development, household food security will likely be affected. Without gender-related information, it is more likely that coastal policies will have a negative impact on women, and on households headed by women. Having a better understanding of gendered impacts and partnering with gender and population organizations, coastal managers benefit through improved governance and planning, more sustainable resource use and management and a greater capacity for coastal management innovations (Diamond et al. 2003). In a study of traditional invertebrate fisheries of the coast of Madagascar, Barnes and Rawlinson (2009) highlighted the considerable ecological knowledge of the local marine environment women acquired through gleaning and recommended that this knowledge be incorporated into management plans to improve the sustainability of these fisheries.

WOMEN AND FOOD SECURITY

Along the coasts of the world's oceans, rivers and lakes, millions of people live in communities dependent upon the productive, nourishing bounty of fisheries. In many parts of the developing world, the role of fish and other marine species for food is especially important for maintaining household food security. Full of protein and fatty acid, fish is one of the most nutritious foods easily accessible to people living in developing countries. For coastal communities, fish is also a valuable commodity that is traded and sold, providing valuable income that can be used to procure other foods, or that can be invested in healthcare, education, or business.

Unfortunately, the benefits of fisheries do not accrue equally within households. Gendered division of labor and cultural views about the role of men and women's duties within households place women in a position of both increased responsibility and diminished capacity for maintaining either their own nutritional health or that of their children. Though this is not an easy position, women in fishing communities are not helpless and pursue a diverse range of livelihood activities to bring in food and money to their households. By strengthening women's livelihood pursuits through education, training, and dissemination of appropriate technologies, benefits multiply and flow to children and communities.

Drawing on case studies from academic and development literature, we recount the importance of fish for household nutrition in fishing communities. We then illustrate the gendered dynamics behind income and household food security in fishing communities. Based on these reports, we conclude by offering examples of development interventions that work with women by strengthening their livelihood pursuits.

THE NATURE OF MALNUTRITION IN FISHING COMMUNITIES

Malnutrition is a quiet crisis that affects millions of people in developing countries globally. When a country or region's hunger breaks into full blown famine the world takes notice, mobilizing masses of aid to ease suffering and fill stomachs. But much more insidious is the kind of daily hunger and food shortage that affects poor people on a daily basis. Malnutrition stunts growth, hinders brain function, and reduces the capacity of the immune system to fight infection. Malnutrition undermines the productive and adaptive capacity of communities to cope and change with an increasingly complex, interconnected world.

There are two aspects to malnutrition that affect people in different ways. The most visible is undernourishment, or an insufficient level of caloric intake, leading to stunted growth and even death. The second aspect is micronutrient deficiency, which can cause conditions such as anemia and reduced immune function. While both are serious problems, micronutrient deficiency – which is caused by poor quality of diet – in many cases affects a much greater proportion of the population. For example, the United Nations found that in 2007 the proportion of underweight children under five years old in Sub-Saharan Africa was around 28% (UN 2009). However, in the period from 1993-2005, the rate of anemia among preschool children-age children in Africa was as high as 64.6% (WHO 2008).

CONSUMPTION OF FISH IN POOR HOUSEHOLDS

For many poor communities, fish is a perfect food for combating both types of malnutrition. Fish is full of protein, which is critical for building body mass and avoiding stunted growth. At the same time, micronutrients like zinc, iron and vitamin A are found in abundance in fish. This is especially true of the smaller fish species more commonly eaten by poor households in developing countries.

Small fish species are a very common facet of poor households' nutritional intake because they are highly affordable. One study of the diets of Bangladeshi people found that there was a significant gap in animal protein intake between rich and poor households, but that this gap was much smaller for fish products (Bose and Dey 2007). Another study from Cambodia found that poor households could only afford the smallest fish species in local markets (Chanman 2009). Larger species of fish were preferred by wealthier households, as well as by international markets. Similar dynamics of fish consumption between poor and wealthy households were also reported in Uganda (Kbahenda and Husken 2009), Tanzania (Geheb et al 2008), and Zambia (Nyirenda 2009). This aspect of food security is often directly at odds with conservation goals, that usually seek to increase the size of fish caught to ensure fish are able to reach sexual maturity, and must be addressed.

Figure 1a: Fish consumption gap by household income

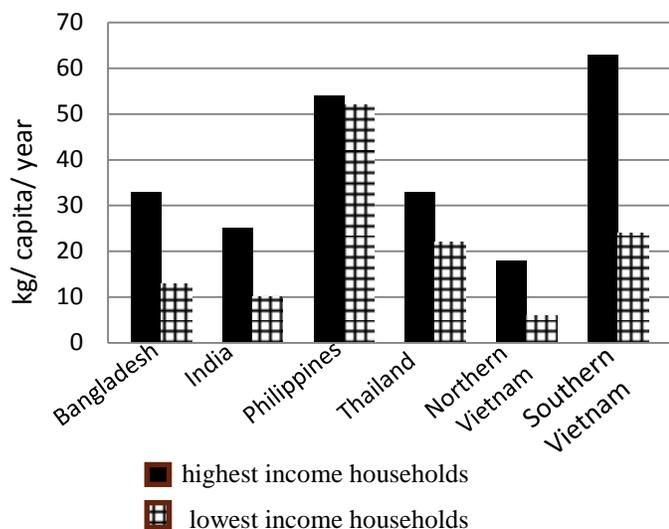
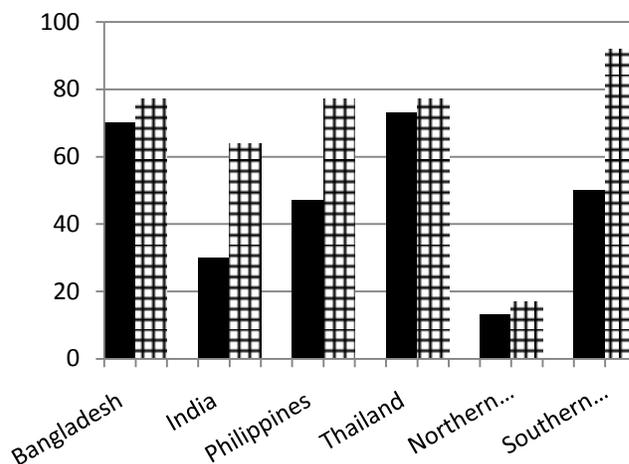


Figure 1b: Expenditure on fish as a share of total animal protein expenditure (%)



Source adapted from Dey *et al* (2005)

Clearly, fish are an important source of cheap, high quality protein and micronutrients for poor households around the world. For this reason alone, it is critical to safeguard the productive capacity of the world's oceans. The Food and Agriculture Organization of the United Nations has acknowledged fish as a key to combating malnutrition, stating:

Fisheries management should promote the maintenance of the quality, diversity and availability of fisheries resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development... (FAO 1995).

In this light, conservation efforts that boost fish populations through establishing fisheries use rights and no take zones gain importance as components of the global fight against hunger.

INCOME DERIVED FROM TRADING AND MARKETING OF FISH

It is also important to consider that along with the abundance and availability of fish, their market value is a critical determinant of consumption among poor households. As noted, poor households, limited in purchasing power, prefer to buy the smallest and cheapest fish species. This is even true of fishing households. Poor fishers that catch large fish species tend to sell their catch, often as their only form of income. In fact, studies of Bangladesh, India, Philippines, and Thailand, among others separately found poor fishers selling a greater proportion of their catch than rich households (Béné 2003; Karim 2006). Households used their income to buy staple goods such as rice, corn and root vegetables as well as to pay expenses such as clothes, school and health care. Staple foods were chosen over fish because they were cheaper and went farther

maintaining household caloric intake. Only after staple foods had been procured did fishing households use their income to buy fish in markets.

These studies demonstrate that the prevalence of fish does not necessarily translate into the consumption of fish among poor people. Income and the availability of staple foods were shown to be important factors impinging on dietary practices. To maintain household food security it is just as important to manage fisheries for income generation as it is for productive capacity. Fisheries generate income for poor households in multiple ways such as catch sales, fish processing and trading. These activities are performed separately by men and women, and this gendered division of labor has further implications for household food security.

GENDER, INCOME AND FOOD SECURITY IN FISHING COMMUNITIES

The case study presented in this section draws upon the freshwater fishery of Lake Victoria. While there are ample marine case studies, the Lake Victoria fishery is among the most widely studied and understood example of ecosystem collapse. Research has been done on the ecology, community health, socioeconomic behaviors, and economic features of the fishery making it one of the most studied fisheries in the world. Because fish biomass rose dramatically before the collapse of the Nile perch fishery, and because malnutrition rose (or at least did not decline) simultaneous to the increase in biomass, the Lake Victoria example clearly illustrates the concept that more fish does not translate into more food. Many coastal fishing fisheries are similar in context and outcomes to this inland fishery. Some of those examples are provided here, many more are available.

In 2008, Kim Geheb of the Lake Victoria Fisheries Research Project published a study of fishing communities in Uganda, Tanzania and Kenya. In that study she recounts how the fisheries of Lake Victoria were drastically changed by the introduction of Nile perch, tilapia and other commercially viable fish species. In addition to completely altering the ecology of the lake, perch and tilapia brought huge revenues to artisanal and commercial fishermen who sold their catches for export. In theory, this increase in both income and fish availability should translate into a dramatic increase in food security. However, due to unequal distribution patterns within households and a gendered division of labor that reserved the most profitable industries for men, food security did not improve and the region remained one of the most malnourished in the world despite an ample supply of fish.

In the majority of cases on Lake Victoria, men are the ones who fish, own or lease boats and gear, and retain profits from fish sales. Most men do not see it as their duty to contribute money for regular purchases like food and cooking gas, unlike women who view children as their primary expense. Even though fishing yields the greatest income of all industries on the lake, fishermen's families see very little direct benefit. Fish export factories often advance men lines of credit to allow the fishermen to buy equipment and boats. Consequently, men must sell their fish directly to the factories and not to women in the community as had historically been the case. As a result, income directly from the fishery bypasses women completely, thereby undermining the primary source of food security. Further, as more and more men enter the

fishery, they are increasingly unable to compete in the fishing directly and move into processing, further displacing women who historically focused on processing and marketing.

When income fails, food security follows suit. For example, in 1989-99 fish from Lake Victoria could not be sold to the EU because of concerns over contamination. This did not translate into increased local consumption of readily available fish, but rather men largely stopped fishing, shops and services that catered to fishermen lost business, and families found themselves unable to afford school, health care, and food. Since there was no fish catch, there was no money to be made processing and trading. For mothers, “the EU ban was disastrous... personal spending was eliminated, spending on clothes was halved, and the number of meals eaten per day declined from two to one” (Geheb et al. 2008: 96). In the fisheries of Lake Victoria, it was the loss of fishing income, not a lack of fish that affected every other industry and drastically undermined household food security.

Table 1. Gender roles in the capture fisheries value chain

Scale	Region	Investment	Catch	Processing	Sales
Small	Sub-Saharan Africa	Capital for boats and gear from processing and fish sales Community management groups invest in landing sites and refrigeration Women invest in processing and drying	Boat owners; wealthy and older women and men Crew: young men and boys Nets: young boys Mending nets: women of all ages Women collect shellfish, for example, Benin and Congo	Women smoke and dry fish and cook for sale	Fresh fish purchase by women for drying/processing and sale Fresh fish sales depend on ice plants managed by local committees and private owners (especially fishers). Sales are to long distance traders and to women for local sales. Women transport fish and act as middlemen.
Small	Asia	Savings: women China: women and men invest	Boat owners: wealthy and older men Crew: adult men and young men Women and men mend nets Women collect shellfish, for example Cambodia and Thailand	Women smoke and dry fish	women and men sell in local markets, and to contractors for international and national markets Sales are more likely to be controlled by men in “conservative” locations
Small	Latin America	Especially indigenous community fisheries	Boat owners: Women in Wayuu indigenous communities Women and men fish in Brazil and Mexico Crew: young men	Women and young men	Women and young men in local sales. Columbia: women and young men in Wayuu communities Honduras: indigenous Garifuna fish traders Supermarkets buy through contractors
Large	National/ Global	International and national capital	Industrial fishing fleets dominate in some countries in Latin America but are also significant in other locations	Factories: women clean, resize, control quality Men fillet and supervise	Large local and international buyers including supermarkets, especially in Latin America, southern Africa and parts of Asia control marketing

from FAO module 13: Gender in Fisheries and Aquaculture

INCOME DIVERSIFICATION

Fishing is a fickle enterprise of booms and busts in which the confluence of global change, population pressure, and demanding international markets has made the busts more and more common. To safeguard their households from fluctuations in fish stock, fisher women and men pursue a diverse range of livelihoods. Geheb herself chronicled livelihood diversification in an earlier study of Luo people in Kenya. Surveying fishermen on Lake Victoria, she found that 94% of their households also farmed for food and income (Geheb and Binns 1997: 86). Geheb states, “Fishing and farming represent but two components of a survival strategy designed to ensure nutritional security in Luo communities” (Geheb and Binns 1997: 91). Livelihood diversification is a critical facet of life in fishing households, especially for the women responsible for their families’ nourishment.

IMPORTANCE OF COASTAL AGRICULTURE IN FISHING COMMUNITIES

The strip of land that borders the world’s oceans, lakes and rivers produces a disproportionate share of global terrestrial food supply. Only 5% of the world’s cultivated lands lie in coastal areas, yet these lands account for 13% of global food production. At the same time, “Coastal population densities are nearly 3 times those of inland areas” (148). Coasts are home to more than two billion people and half of the world’s largest cities. Rising populations in coastal areas shift and intensify agricultural production systems toward crops grown on less land for higher profits (shrimp, coconut and palm oil). Fishing communities that traditionally practice diverse livelihood strategies – including fishing and agriculture – are at risk of being caught in the press on coastal areas, and losing access to some of the most productive land.

Source: Béné 2011

In a study of two fishing villages on Tanzania’s Indian Ocean coast, men went to sea in boats, while women gardened, raised goats and chickens, and kept beehives. They also trapped octopi on the reefs near to shore and sold them for a modest sum in local markets. That changed in the mid 1990’s when octopi became a valuable commodity in international markets and large trading companies started buying the catch for export. The price of octopus ballooned, bringing an incursion of men into this traditionally female realm. So many people started trapping that the stock of octopi on the reef dropped dramatically. The loss of this income source for women had rolling effects on the entire family as the study also found that “...income from

[men’s] fishing was not adequate to support a family, [and] most households depended on women’s food production for their survival” (Porter 2008: 195).

Fisher women in the underdeveloped Indian state of Orissa bear a similarly high household burden. “Women traditionally take care of all family and household needs by looking after children and the elderly, procuring and preparing food for all household members, managing family finances, collecting firewood, fetching water and carrying out all other essential household chores” (FAO 2007: 3). In Orissa, the establishment of large, fish-processing companies and the advent of machine made nets have deprived women of two traditional income-generating activities. Now, in addition to harvesting shellfish and seaweed, fishing on shorelines, rivers and estuaries, and maintaining household gardens and ponds, women have to seek part-time, unskilled employment in construction and agriculture.

The migrant commercial fishermen that supplanted the local women of the Kafue River represent the economic winners in the expansion of export markets for fish. Case studies show that fishermen who catch and sell fish for export have seen a marked increase in income over the last twenty years (Béné et al. 2007). Unfortunately, the losers in this new dynamic of fish export are the women who would have processed and traded fish locally and the consumers that depended on them, usually children. Béné (2007) states:

The case studies suggest that there is little evidence of significant real improvement in the overall food security of local households (both producers and consumers) that can be directly associated with harvesting or producing high priced fishery products for export. While the transformation of fish into high-value market commodities does produce benefits, unless women are incorporated into the value-chain, those benefits do not accrue locally.

RAISING THE STATUS OF WOMEN IN FISHING COMMUNITIES

The picture of fishing women that emerges from these examples is one of overworked and multifaceted entrepreneurs. Women contend with global forces beyond their control and distill from the swirl of harvest and trade a little space in the budget for their children to eat every day and go to school with clean clothes on their back. We have examined anecdotal stories to illustrate common facets of gender and food in fishing communities. The following global study ties these facets into a comprehensive trend.

In 2000, the International Food Policy Research Initiative (IFPRI) conducted an extensive review of child malnutrition data from developing countries around the world. They found that malnutrition had dropped by 15% between 1970 and 1995. They also found that the largest single factor leading to this decline was an increase in levels of education among women in developing countries (see the figure below). Taken together with rising social status for women, the report found that 63.6% of the reduction in malnutrition rates was attributed to improved conditions in the lives of women (Smith 2000). Based on what has been shown already from the academic literature, the reasons for this correlation are clear: given an increase in skill or ability to find greater income, women will direct their resources to the betterment of their own households.

Any development effort that aims to improve community livelihoods and reduce malnutrition in fishing communities must take heed of these studies and the critical role women play in maintaining household food security. There have been good results made by programs following the model of the IFPRI report, working to improve the educational, economic and social status of women within the fishing communities.

Figure 2: Estimated contributions of underlying determinant variables to reductions in developing-country child malnutrition, 1970-1995

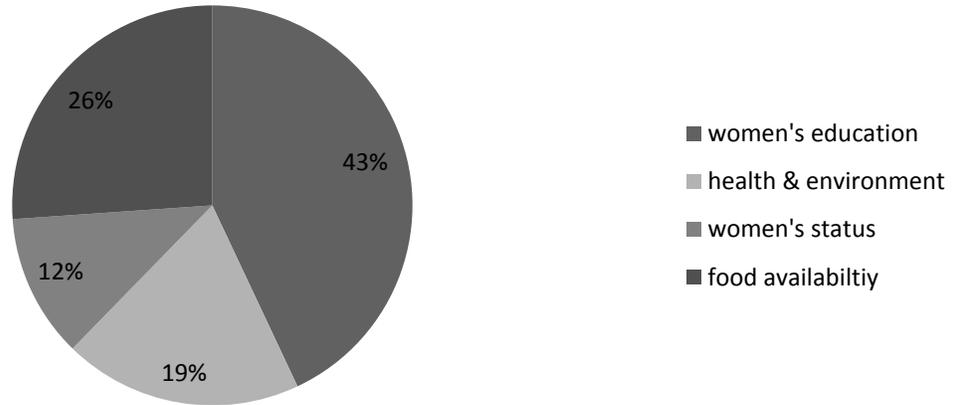
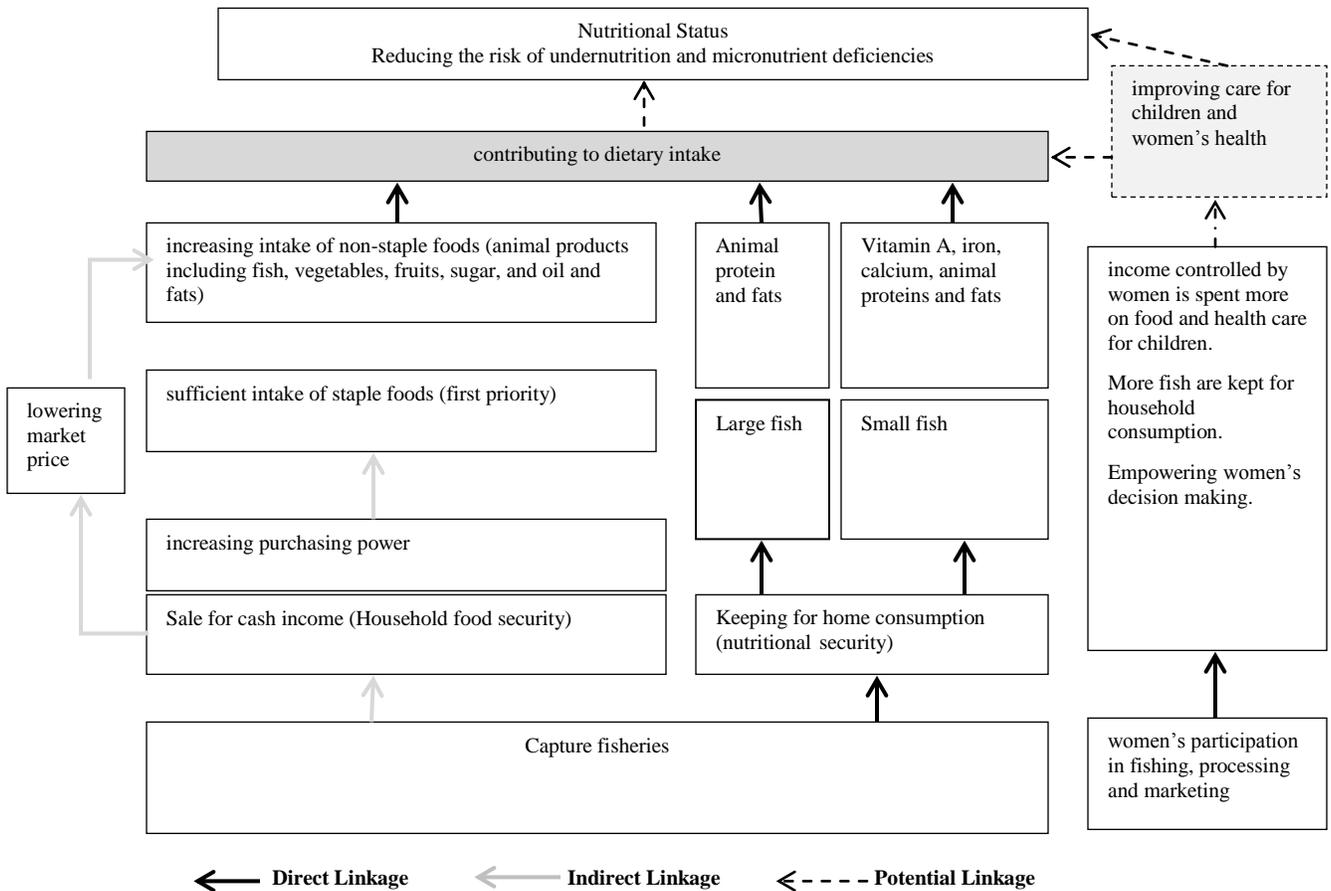


Figure 3: Pathways through which small-scale fisheries can contribute to nutritional status (from Béné and Kawarazuka, 2011)



In one such program, women learned to raise and sell chickens in Nigerian fishing villages (Lawal 2011). Another program undertaken by the governments of Ghana and The Netherlands brought more efficient, higher quality smoking ovens to women processing fish for sale in villages along Ghana's coast. When the fisher women were interviewed five years later, they all reported the ovens improved the quality of their fish, and two thirds stated they had seen their profits rise (Nti et al. 2002). "A majority of the women [interviewed] are now economically empowered by the adoption of the improved technology. Some of the women own properties such as buildings, boats and fishing nets." (Nti et al. 2002).

The figure above summarizes the relationship between women's status, fishing income and food security that we have established so far. We have seen that fish is a critical resource that can be eaten directly or sold for income. Both activities have a positive correlation with household food security, and we have also seen that benefits are greatest when women can generate stable income. Development interventions that aim to reduce household food insecurity in fishing communities should bear this in mind and work to strengthen the spectrum of women's livelihoods. The study of improved fish smokers in Ghana provides a good example of using technology to bring greater efficiency and profit to an activity that women already pursue. Based on what we saw in the IFPRI report, programs that target literacy and education among women would likely have multiplying effects for improving the capacity of women to better their own lives. Other programs could target the creation of advocacy networks to bring women's voices to the fisheries management process, or create micro-credit networks to support the enterprise of women in fishing communities. Because of the critical impact that women have on household food security, these types of programs are likely to have disproportionate impacts reducing childhood malnutrition.

These case studies and examples show the importance of gender mainstreaming into fisheries reform. Gender mainstreaming requires incorporating the different needs and experiences of women and men into the design of sustainable development programs. By understanding the dynamics of men and women in fishing communities, we can target certain areas likely to have the greatest impact from a livelihood program. Any successful program must take into account the complex dynamics of social relationships, environmental change, and international market pressures at play in every seemingly isolated fishing village. Helping women find new markets for their processed fish is not going to be successful if men are thereby encouraged to usurp the activity for their own profit. One livelihood project cannot solve all the problems of the world but it cannot be blind to them either. By incorporating women's voices into the planning and implementation of livelihood projects, fishing communities will be much closer to achieving food security. Without the contribution of women to this process, even an explosion of fish populations will not translate to more food on children's plates.

Rapid Assessment of Gender and Coastal Fisheries across Nine Countries



Men and women remove fish from a net at Antongil Bay, Madagascar. Photo by Elizabeth Matthews.

INTRODUCTION

Millions of people depend on fisheries for their income and livelihoods and these include a diversity of stakeholders from tourism operators, to fishers and fish processors. A number of studies have shown how various drivers of marine resource management and impacts of changing access to fish have affected the vulnerability of fishers that depend on them, reducing access to fish and food security. However, these studies have tended to focus on capture fisheries or extraction and few studies have examined how people in the post-harvest sector, particularly female processors and traders, which constitute an important stakeholder group in parts of the world, will be affected (Weeratunge et al. 2010). Those most vulnerable to impacts of climate change and reduced access to fish are often the world's poorest. The Millennium Ecosystem Assessment (MEA 2005) highlights that the impact of declining ecosystems are poorly understood in terms of poverty implications. In developing countries, the poorest sectors of society in coastal areas are highly dependent on fisheries for their livelihoods, increasing pressure on fragile marine ecosystems particularly susceptible to climate change and overfishing. It is women in fishing societies who often shoulder the burdens of resilience in fisheries and are most vulnerable, however this is an under-recognised area in fisheries research and the impacts for women are unknown (Harper et al. 2013).

This section presents preliminary findings from a rapid survey assessment of WCS marine sites administered to field staff across 9 program seascapes (see Map); West Africa (Gabon), Western Indian Ocean (Kenya and Madagascar), SE Asia (Bangladesh and Indonesia), Melanesia (Papua New Guinea and Fiji) and the Caribbean (Nicaragua and Belize). In total, 11 surveys were completed (one at each program country, except for Indonesia where a survey was completed at each of the four marine program sites). The survey data is supplemented by a review of secondary data sources including gender equality and governance indicators and social demographics at national level. This section begins with an outline of the methodology and an overview of each of the WCS program seascapes to help understand/embed the findings within the wider contextual environment. The main findings are discussed under the following themes; i) livelihoods and the gender division of labor, ii) gender disparities in assets, capabilities and wellbeing outcomes and iii) gendered patterns of decision-making and representation (at site-level and national level). Finally, the section concludes with opportunities and constraints for engaging women at each of the sites and key recommendations for developing a gender engagement strategy.

METHODOLOGY

This study was limited to the coastal zone in tropical developing countries where WCS works (see Map). The focus of the study was small-scale and subsistence fisheries, generally defined as fisheries carried out in close proximity to the shore, with short fishing trips (from a few hours to a couple of days) and no formal organisation of labour (Hellebrandt and Allison 2012). However, as the seascape profiles in the following sub-section reveal, fishing patterns are changing and this distinction is becoming increasingly blurred.

Table 2. Countries where surveys were administered (n=9)

Country	Seascape
Bangladesh	Sundarbans
Belize	Glovers Reef
Fiji	Vatu-i-Ra
Gabon*	Mayumba
Indonesia	Aceh-Weh
Kenya	Coastal Kenya
Madagascar	Toliara
Nicaragua	Miskitu, Caribbean coast
Papua New Guinea (PNG)	New Ireland

* Gabon and Congo are part of the Congo Basin Coast Seascape where WCS marine programs operate. WCS has recently begun a new program in Equatorial Guinea that includes an assessment of the importance of fisheries and gender in local livelihoods.

A rapid appraisal tool (see Appendix 2) was developed and used to conduct an assessment of gender issues in fisheries management at sites where WCS works. The survey included key fisheries metrics (using elements of the World Bank’s Fisheries Performance Indicators (FPIs) as a foundation) and sought to examine the role men and women play in fisheries, the impacts of socio-economic and environmental change, and the social value of different forms of participation (e.g. decision-making processes) through a mix of closed and open-ended questions. The survey identified existing gender networks, community-based or local organisations and the key opportunities and barriers to women’s full participation in fisheries management. The cross-sectoral implications of gender disparities in the fisheries sector, such as the relationship to health and education outcomes and opportunities or difficulties that may arise from demographic change, etc. were also explored in the survey and secondary data analysis. The survey was developed during a workshop with team members over a three day period in August 2012, with initial drafts reviewed externally by expert consultants. Additional revisions were made and it was piloted at a field site before being disseminated to WCS program managers at each of the seascapes (see Table 2).

The rapid appraisal tool was limited in its scope and constrained by the timeframe. The survey targeted WCS field staff at each of the sites and therefore, does not represent the perspectives of members of the fishing communities themselves but presents an overview of the situation at each site based on the observations of field staff and program leaders, supplemented by secondary data specific to each site (i.e. monitoring data, scientific studies and field reports). The nature of the assessment is exploratory and helped inform the selection of case study sites for in-depth assessments which instead provide an opportunity for fisherfolk perceptions of these issues. In order to reduce possible bias, gender and fisheries profiling were carried out for each program country, as well as an in-depth global review of gender and fisheries issues, which helped contextualise and triangulate survey findings.

SITE PROFILES

Table 3 highlights the relative importance of the fisheries sector for each country in terms of human consumption, trade and GDP. Exports surpass imports for all countries, except Fiji (which also has the highest per capita supply). Indonesia is the country with the highest production of fish for human consumption and greatest exporter of fish. The importance of employment in the secondary sector is evident, the sector in the fisheries value chain that women predominantly occupy, in particular the high proportion of post-harvest employment in Kenya (greater than in the production sector), Bangladesh, Nicaragua and Indonesia. Recent estimates of women's contribution to fisheries show that women account for 50% of the workforce globally (Harper et al. 2013).

SITE-LEVEL OVERVIEW

What follows are seascape profiles for each of the nine WCS marine program countries that participated in the survey. The profiles draw from secondary data sources and the survey findings. The profiles are by no means exhaustive but rather seek to contextualize the survey findings, briefly highlighting the WCS programs and their level of gender engagement and the key drivers of change, including relational processes and vulnerabilities to threats both direct and indirect at each seascape. Following this, the implications for food security are briefly discussed at a local and global level for the program countries. The most prevalent issues across all program sites are the high level of dependency on fisheries livelihoods and a general lack of alternatives. However, at some sites there is growing potential in the tourism sector for livelihood diversification, in particular for women. The position of women is made vulnerable by their lack of involvement in systems of governance and the high risk of political instability and conflict. Other key changes include widespread technology improvements, in particular communications technology such as mobile phones and the internet which have the potential to improve engagement within and between communities and other agencies. Advancements in technology and infrastructure at some sites can also negatively impact natural resource-use with the threat of extractive industries at a number of program countries and increasing modernization of small-scale fisheries, which has the potential to create conflict between fisheries sectors as well as overfishing if poorly managed.



Table 3. Fisheries - country profiles (from FAO, accessed 2012)

Country	Production (for human consumption, tonnes liveweight)	Imports	Exports	Per Capita supply (kg)	Primary sector employment (incl. aqua- culture)	Secondary sector	Gross value of fisheries landings (US\$ millions)	Fisheries GDP (US\$)
Kenya	12,0343	8,093	39,173	2.8	62,800	800,000	104.5	0.50%
Madagascar	142,899	17,782	34,458	7	193,370	3,000	--	160 million
Indonesia	5,671,759	37,248	935,105	21.3	2,734,090	1,164,178	3130 (capture fisheries)	--
Bangladesh	1,998,197	3,390	44353	13.3	22 million	21.4 million	2,435.37	236.48 million
PNG	228,458	28,355	14,3207	17.7	--	--	812	185 million
Fiji	38,098	41,149	25,768	36.8	6,900	1,900	103.4	56.2 million
Belize	15,353	1,467	3,195	14.2	1,672	123	53.4	5%
Nicaragua	22,331	6,562	16,154	2.6	19,801	12,235	--	1.5% (48.4)
Gabon	--	--	--	--	--	--	--	--

BANGLADESH – SUNDARBANS

Geographical and demographic background

Bangladesh is the one of the world's most densely populated countries. The population of the coastal communities in this seascape is skewed toward the very young. The local earnings of community members compared to national average earnings are not known but poverty is considered to be acute with as much as 90% of the coastal population is estimated to be living below the poverty line. A greater proportion of boys (50%) than girls (35%) attend school. However, in areas with high levels of crustacean and fish larvae fisheries, the proportion of girls enrolled in school is higher, as boys are out of school tending the nets. The dominant religions are Islam and Hinduism (minority). In the socioeconomic context, poverty, food security and access to aquatic resources are the main driving forces in these coastal communities.

WCS background

The WCS marine program in Bangladesh does engage with women and gender-related issues. Gender specific data is collected in regards to specific conservation research or educational outreach products. Although not specifically targeted, women are often involved in WCS marine programs opportunistically and some programs attract women's interest and participation.

Drivers of change

Ecological status and impacts

The Sundarbans are an important habitat for the Irrawaddy dolphins. In 2009 the largest global population of nearly 6,000 Irrawaddy dolphins was discovered in the Sundarbans mangrove forest and the adjacent coastal waters of the Bay of Bengal in Bangladesh. WCS staff are also studying a rich variety of cetaceans in a submarine canyon called the Swatch-of-No-Ground, located just 25 miles from the mangrove forest. Recent studies examining the impacts of climate change on these species indicate that the canyon's highly productive and relatively cool waters could serve as a vitally important refuge for these marine mammals. WCS staff are now working to include the Swatch as part of a protected area network for cetacean diversity in Bangladesh.

Marine resource dependency

Bangladesh has a high dependence on fisheries (both inland and coastal). Commercially important fisheries supply around 60% of animal protein, a cheap and rich source of animal protein. The fisheries sector contributes to the second highest foreign export (Department of Fisheries 2010). Agriculture (of which fisheries is a sub-sector) is a major employer and an estimated 10% of the country's total population are directly or indirectly involved in fisheries sector for their livelihoods. Four out of every five people in rural areas are dependent to some extent on aquatic resources. However, the sector is unable to meet the demand for jobs. Many Bangladeshis therefore seek work abroad, sometimes illegally (BBC 2012).

Vulnerabilities and threats

Bangladesh is a region prone to a high level of natural disasters and increasingly vulnerable to climate change impacts (e.g. major cyclones, flooding, and drought). Coastal fishing

communities are particularly vulnerable to increasingly frequent and strong cyclones. Decreasing freshwater supplies and rising sea levels also greatly affect these communities.

Relational context: institutions (formal and informal) and current political atmosphere

The sheer number of people dependent on marine resources creates immense pressures. The dependency on moneylenders and merchants or fish traders greatly decreases the direct benefits for fisherfolk (see also Crona et al. 2010). Fishing dependent people at the survey site are considered to be among the least respected and fishing is considered an 'employment of last resort.' The ineffective governance system for the marine environment and fishers was noted. The reasons for the poor management of fisheries and marine resources are a result of a lack of scientific data, deficient monitoring and low levels of patrolling with corruption considered a major issue within law enforcement and resource management. The exclusion of local communities from decision-making and ownership of resources further exacerbates the situation, promoting a lack of compliance and conflict. A lack of alternative sources of income amongst fisherfolk was noted as contributing to increased pressure on the marine environment.

Bangladesh spent 15 years under military rule and, although democracy was restored in 1990, the political scene remains volatile with a political coup in 2007. The dominant religion is Islam, with minorities of Hindus, Buddhists and Christians. During politically stable times peaceful coexistence prevails, but during politically difficult times the religious and ethnic minorities face discrimination.



Village girls participating in a vessel-based, traveling marine education exhibition in Bangladesh. Photo by Rubaiyat and Elisabeth Fahrni Mansur, WCS.

BELIZE – GLOVER’S REEF SEASCAPE

Geographical and demographic background

In Belize WCS works in two coral reef sites, the Glover’s Reef and South Water Caye Marine Reserves, which lie at the heart of the largest coral reef system in the Western Hemisphere and are an integral part of the Belize Barrier Reef Reserve System World Heritage Site. In 2003, the largest community was Dangriga with a population of 8,814, followed by Sartenja with 1,591, and the smallest, Hopkins with 994. The population in all communities is skewed towards the very young. The dominant religions are Catholic and Evangelical and there are a number of different cultural groups: Garifuna, Mestizo and Creole.

WCS background

WCS has a long history of marine research and conservation in Belize since the 1980s. Currently, WCS is assisting with monitoring, management and training at the two coral reef sites. Gender aggregated data is not collected and there are no specific WCS programs targeting women, however, women are often involved opportunistically. Women are employed as field staff and WCS engages women in MPA advisory committees, capacity-building for community organizations and alternative livelihoods. WCS is currently helping to revise the Fisheries Act, and engaging with partners in the revision of Fisheries Regulations.

Drivers of change

Ecological status

Glover’s Reef Marine Reserve is the southernmost of Belize’s three coral atolls, supports extraordinarily high biological diversity across 135 square miles.

Marine resource use

Important nearshore fisheries include lobster and conch. WCS is planning for the implementation of a special license program, and working towards determining the total allowable catch (TAC) for lobster and conch. Linked to this activity are support for improved enforcement, promotion of regulations to restrict use of harmful gear, and the development of special management measures to protect species vulnerable to fishing such as aggregating species (groupers) and long-lived top predators (sharks).

Vulnerabilities and threats

As well as overfishing, this region of the Caribbean is especially vulnerable to climate change impacts: coral bleaching, sea-level rise, ocean acidification, and more frequent and stronger storms. The protection to the shoreline provided by the barrier reef and mangroves is extremely valuable and therefore considered as a hazard mitigation strategy. Offshore oil and gas is at a very nascent stage in Belize but has the potential to greatly impact this seascape. Much of the offshore area of Belize has been granted as concession blocks to several oil companies, including parts of South Water Caye marine reserves.

Relational context: Institutions (formal and informal) and current political atmosphere

Existing laws and policies governing the marine environment and fisheries are considered effective. The main tenure system is traditional/customary and is legally recognized. Some fishing grounds are managed through community management regimes. Community

leadership structure is a widely recognized community leader, or group of leaders and there is a strong sense of social cohesion, although some political differences exist which may cause some conflict.

WCS is working in partnership with the Environmental Defense Fund to help change the 'open access' fishing paradigm in Belize to one of limited entry, through a program of managed access and catch shares, with Glover's Reef Marine Reserve as one of the pilot sites.



Fishers from Sarteneja village, Belize at Glover's Reef Marine Reserve. Photo by Robin Coleman, WCS.

FIJI, VATU-I-RA SEASCAPE

Geographical and demographic background

The Vatu-i-Ra seascape covers 7,500 square miles encompassing land and sea with at least four watersheds with highly preserved connectivity between terrestrial, freshwater and marine habitats. Communities within this seascape are largely indigenous Fijian. The populations are youthful with greater than 40% below 20 years of age, which may create greater pressure on resources in the coming decades as educational and employment opportunities are declining. The average earnings of the Province are less than half the national average and 47% of the population are below the poverty line (the site of Kubulau is likely to be even higher).

WCS background

WCS terrestrial program in Fiji was established in 2001, and expanded in 2005 to include a marine program. WCS's most notable achievements include: 1) the designation of Fiji's first network of marine protected areas to locally meet the Fiji Government's commitment to protect 30% of its inshore waters by 2020; 2) the endorsement by chiefs of the local district (Kubulau) of Fiji's first ridge-to-reef management plan, and 3) the publication of a handbook on ecosystem-based management tailored to conditions in the tropical Western Pacific. In 2009, WCS also developed a 10 year (2010-2019) Strategic Plan for its marine conservation program in Fiji. WCS works in close collaboration with local communities, as well as with various NGOs and government agencies. There is potential for gender-specific data collection and household survey data could be aggregated by gender. WCS does have a project in Fiji specifically targeting women – a livelihoods project (*kuta* mat weaving) focused on building a women's cooperative.

Drivers of change

Ecological status and impacts

The Vatu-i-Ra seascape has high hard coral cover (40-60%) across almost all sites surveyed in 2003 and extremely high fish species richness. It is an area of high biodiversity importance with numerous threatened species present (e.g. humphead wrasse, endangered shark species). Biological monitoring surveys since 2007 indicate that fish biomass is increasing at almost all survey sites open to fishing and within MPAs.

Marine resource dependency

Fishing accounted for 3% of GDP in 2009, however the contribution is likely much higher given that greater than 70% of artisanal catch is sold locally and unreported. Alternative livelihood projects in Fiji, such as bee-keeping and small animal husbandry, are seldom successfully implemented. Any future diversification initiatives, therefore, will have to take greater consideration of local contexts and the particular needs of communities and men and women's aspirations for their livelihoods. Traditional fishing ground has long sustained local populations but rural population growth, increased market demand, and new fishing methods are leading to overexploitation. The motivations driving fishing behavior are also changing. Increasing demand for fisheries products and access to markets across Fiji has blurred the distinction between subsistence, artisanal and commercial fishing of inshore coral reef resources as the

majority of catch landed is sold. Expanding urban populations, hotels and the export industry primarily drive this demand. Furthermore, with rising fuel prices, in order to make ends meet, fishers are turning to the highest value catch, such as shark fins and sea cucumbers (*beche de mer*).

Vulnerabilities and threats

Fiji is undoubtedly highly vulnerable to the effects of climate change and is experiencing a high frequency and increasing severity of extreme events such as flooding, drought, severe storms and coral bleaching. These events are increasing the financial burden with massive financial outlay required for disaster relief, infrastructure repairs and treatment of waterborne bacterial disease such as typhoid. Fiji's seascapes are also under threat from natural resource extraction: commercial/artisanal fishing; bauxite mining; commercial forestry; commercial agriculture and, to a lesser extent, hydroelectric plants.

Services and technology

There have been marked improvements in communication services in urban areas in Fiji in recent years. However, in rural Fiji, conservation efforts are hindered and human safety is often put at risk by ineffective communication and lack of infrastructure. This also limits the potential to create sustainable conservation finance platforms through eco-tourism initiatives.

Relational context: Institutions (formal and informal) and current political atmosphere

Marine resource management in Fiji operates through a complex system where national legal frameworks and customary processes co-exist within the same geographic space. This sometimes works in harmony and at other times, can result in conflict. For example, while the state legally recognizes traditional land tenure of indigenous clans, ownership rests with the state and the current Fisheries Act grants open access for subsistence fishing. As a consequence, WCS must work closely with both government agencies and traditional leaders. The capacity of government and communities to implement and enforce fisheries and environmental rules and policies is constrained by the lack of financial, technical and human resources and overall lack of public awareness of existing legislation. It was noted by WCS field staff that where respect for traditional authority is strong, there is often good compliance with community rules. There seems to be a link between market access and conservation compliance with customary management being undermined by high financial incentives to harvest resources. Villages with access to markets generally had lower compliance with local and national rules (based on observations by WCS field staff).

The traditional way of establishing temporary fishing closures for three months when a high chief dies facilitated the transition to more permanent fishing closures as the practice was not perceived as 'new.' However, other cultural norms or customs can have a negative impact on marine resource use such as the harvesting of certain species in large numbers during their spawning season and the commercialization of most marine resources. One of the traditional fishing methods used during the festive season is called 'yavirau' and is a type of fish drive, which is very destructive to fish and corals. A strong hierarchy can have positive benefits when the high chief is a 'good environmental steward', but devastating consequences when the high chief is not. For example, he/she decides how many fishing licenses will be issued for the

traditional fishing grounds and there are cases when the chiefs have been bought out by traders.

Fiji gained independence from the United Kingdom in 1970. Since that time, coups have become a regular feature of Fijian government. The most recent coup occurred in 2006 and which was ruled illegal in 2009. The interim government has stated that democratic elections will not take place before 2014. These actions have resulted in an economic backlash for Fiji, as well as halting the progress made to advance the role of women in political and public life, stalling the implementation gender equality legislation (CEDAW 2010).



Women fishing in Nasavu Bua, Fiji. Photo by Stacy Jupiter, WCS.

GABON – CONGO BASIN COAST (CBC) SEASCAPE

Geographical and demographic background

The Congo Basin Coast seascape is located on the west coast of Central Africa and includes the entire continental coastline of Gabon (the focus of this assessment) and Congo (Brazzaville) linearly conserving over a 1,000 km of coast, including the adjacent coastal sea, beaches, estuaries, tidal lagoons, and mangrove forest. Gabon has an estimated population of 1.5 million inhabitants, of which more than 75% live in urban areas. The population is young, with 50% under the age of 19 years of age (World Bank 2012). Main cities on the coasts are Point Noir in Congo, Libreville and Port-Gentil in Gabon. The coast has an extremely low human population density, leaving its beaches and wetlands almost completely undeveloped and natural.

WCS background

WCS has over ten years of experience of working in the area and is the leading technical assistant to the park authorities in three national parks (Conkouati-Douli in Congo, Mayumba and Loango in Gabon). Essential conservation activities for sea turtles and cetaceans also take place outside of the seascape in the waters of Equatorial Guinea and in the waters around Sao Tome et Principe. Despite the predominant role of women in the post-harvest sector in West African fisheries (Bennett 2005), there was little or no gender-specific data collected or any programs involving women. Data on the gender division of livelihood activities was also very poor for this seascape. However, a recent WCS program in neighboring Equatorial Guinea has begun to assess the gender roles and dynamics of coastal livelihoods in greater detail (see Hellebrandt and Allison 2012), which would be an important program to develop across the Congo Basin Countries.

Drivers of change

Ecological status and impacts

The Congo Basin Coast (CBC) is a region of extremely rich species and habitat biodiversity with a diversity of merging ecosystems (e.g. tropical rainforest merges and coastal lagoons). The region's relatively empty beaches are an important nesting area for the critically endangered leatherback sea turtles Witt et al. 2009). A large population of humpback whales breed here every winter in shallow and productive waters. Among the coast's rich assemblage of wildlife are the largest groups of the rare Atlantic humpback dolphin ever recorded (Collins et al. 2010). The coast's mudflats and estuaries provide a crucial staging post for tens of thousands of migratory and resident birds, and undeveloped tidal lagoons provide important habitat for the West African manatee and the region's hippos. Dense mangrove forests –are still abundant here. The forests and wetlands bordering the Congo Basin Coast are a great natural sanctuary for healthy populations of crocodiles.

Marine resource dependency

Small fishing communities dot the coast, their livelihoods dependent on the coastal ecosystem for unpolluted fresh water, protection from flooding, healthy fish stocks and access to wild meat. The most intact coastal lagoon of considerable size along the entire central African coast is

found here, within Loango National Park (Gabon). Lagoons like this one play important ecological and economic roles, supporting local communities through artisanal fisheries and as breeding and nursery grounds for marine species, which in turn supply industrial fisheries.

Both national and international fishers conduct industrial fisheries for shrimp, near shore fish and pelagic fish. However other economic opportunities exist. The continental shelf of the Congo Basin Coast also contains reserves of oil and gas providing great opportunities for the hydrocarbon industry. Coasts and coastal waters also have enormous potential as economic drivers through the development of sustainable low-impact tourism. Sport fishing, whale watching, hippo and turtle viewing are among the tourism products currently available and under development. Gabon's most important industry, however, is oil and it is the fifth largest oil producer in Sub-Saharan Africa. The oil sector has accounted for 81% of exports, 45% of gross domestic product (GDP), and 60% of the budget revenue (World Bank 2012). Despite GDP growth, the youth unemployment (less than 30 years) is 30%, the total rate accounting for 16%. This is mainly explained by the mismatch between the supply of the education system and the needs of the productive sector (World Bank 2012).

Vulnerabilities and threats

The main threats to these conservation targets in the Congo Basin Coast are: unsustainable fisheries (both industrial and artisanal), exploration and exploitation for oil and gas, unsustainable hunting and poaching, habitat destruction (coastal development, coastal erosion, litter and washed up logs) and increased shipping activities. Underlying and contributing to these direct threats are: ineffectiveness of current existing regulations, absence of protective laws, shortage of biological information and understanding to adequately contribute to conservation, weak law enforcement, lack of coastal zone management, insufficient political will and collaboration and coordination within and amongst governments, and insufficient resources, including personnel, logistics and finances.

Institutional context

Existing laws and regulations are not effective and illegal fishing activities and habitat destruction is widespread, despite the governments of Congo and Gabon having stated their commitments to the protection of their natural resources. Both nations have legislation that fully or partially protects a number of species, and they have signed several international conventions concerned with endangered species, some of which are legally binding. Currently the governments have limited capacity and experience to protect this seascape. With shared populations of wildlife between the CBC countries, international collaboration for conservation and any potential economic development initiatives that impact the environment are essential.

INDONESIA – ACEH-WEH SEASCAPE

Geographical and demographic background

The Aceh-Weh seascape, located off the northern tip of Sumatra, is 1,025 square kilometers and is home to approximately 30,000 people. The communities in which WCS works each have an average population of 700 males and 600 females, skewed towards the very young.

WCS background

WCS has successfully facilitated the establishment of conservation areas as part of the MPA network development and plays a pivotal role in building capacity of managers to support the implementation of conservation area management plans. WCS is very visible at the local community and district level and collaborates with multiple stakeholders, but has less influence at Provincial level. WCS does not collect gender-specific data or run any programs targeting women. Women are, however, often involved opportunistically in WCS programs.

Drivers of change

Ecological status and impacts

The islands and coral reefs of northern Sumatra are biogeographically and globally important (Campbell et al. 2007) and high levels of biodiversity. The seascape continues to be threatened by unsustainable fishing practices and gears often damage sensitive marine habitats. In addition, sharks are targeted for their fins. Climate change impacts include coral reef degradation from coral bleaching, mangrove loss due to sea level rise and environmental and human health concerns related to the degradation of coastal river systems.

Marine resource dependency

Forty percent of the seascape population depends on coastal resources for their livelihoods, with 10% now directly employed in diving-related tourism. On the islands, dependency on fishing, agriculture and informal economy can be more than 70%. More recently, there has been a rapid expansion of home industries, (e.g. local foods) and small agricultural ventures, which has great potential for development.

Vulnerabilities and threats

In 2004, Aceh Province gained worldwide attention following the 2004 tsunami. Since then community-based conservation has significantly improved coral reef health throughout the area (Baird et al. 2005; Campbell et al. 2007), however the region is still vulnerable to threats from climate change and future earthquakes.

Services and technology

Although housing and domestic trade has improved since the 2004 tsunami, with reliable electricity and water supplies, few to no sewage infrastructure exists. Tourism is considered an important and growing livelihood in the region, however, improved infrastructure for hospitality and tourism is required. A new port development on Weh Island off northern Aceh, planned to be one of the biggest in Western Indonesia, will open the region up to increased transport movement with potential impact on the marine environment.

Relational context: Institutions (formal and informal) and current political atmosphere

A unique customary legal system operates in Aceh, Sumatra called the *Panglima Laot* (commander of the sea) that applies to natural resources including fisheries. The traditional system of natural resource management aims to promote peace and harmony among communities and reduce conflict concerning access to natural resources. There are, however, differences in how the various fisheries sectors are managed. Generally near shore fisheries have stronger compliance with customary laws on destructive and unsustainable fisheries than offshore fisheries for pelagic fish and sharks, which predominantly lack controls by government. There is a lack of willingness and capacity in government agencies to embrace changes in natural resource management and corruption benefits from illegal poaching and destructive fishing. Livelihood activities can vary greatly depending on the geographical location of coastal communities. On mainland Aceh many people work in the services, commercial business or government sectors. Customary laws are also weaker than on the offshore islands; however the high loss of life on Aceh Islands, in particular the loss of knowledge and leadership, has weakened customary laws. People in the region have strong social values and social ties are considered quite high, with patterns of shared patterns of norms and customs and cooperation in rural areas.



Local fishers collecting ornamental reef fish at Weh Island, Indonesia. Photo by Effin Muttagin, WCS.

KENYA – COASTAL KENYA

Geographical and demographic background

The Kenyan Coast has one of the world's largest fringing reef systems and the largest single reef system in the Western Indian Ocean (WIO). The coastal population is estimated to be 3.2 million (approx. 8% of national population) and the current population growth rate for Kenya is 2.5%. High levels of disease, especially malaria and HIV/AIDS, high birth and death rates, combine to create a young age structure. Migration to the coast is very high (15% national total), leading to a skewed male to female ratio and ethnic disparities.

WCS background

WCS has a relatively long history in Kenya. Marine projects were initiated in 1986 with the establishment of the Coral Reef Conservation Project (CRCP). WCS conducts annual, long-term ecological monitoring, and socioeconomic monitoring, management preferences and community-based organization surveys are carried out on a regular basis. Fish catch data is aggregated by gender where the main primary stakeholders include the fishers, male fish traders and women fish mongers (*mama karanga*), as well as household data (e.g. age, education, religion). There are no specific programs targeting women, however, some women are involved opportunistically.

Drivers of change

Ecological status and impacts

There are four marine parks managed as no-take zones and five marine reserves managed as fisheries restricted areas adjacent to the parks. However, these only cover 3.1% of the total protected surface area of Kenya. All are legally established under the Wildlife Conservation and Management Act and all have management plans although these have not been implemented. There are some community-closed areas and the new constitution provides for strong environmental rights to communities, however there is a long way to go to build capacity and implement regulations, etc. before communities can actually manage MPAs. There are also differing levels of compliance depending on the management. Compliance in the marine parks is relatively high compared to marine reserves, with lower levels of protection, where more than 70% of fishers utilize illegal gears. Similarly, outside protected areas compliance is very low with beach seines, spear guns and small meshed nets still being used.

Vulnerabilities and threats

Direct threats include overexploitation, as well as coastal development. Indirect threats include low capacity for management, a culture of corruption, poverty of resource users and managers and a lack of viable alternative livelihoods. There are also strong links between cultural values and relationship to the natural environment, for example, the use of endangered species such as sea turtles and religious belief about affecting natural resources.

Relational context: Institutions (formal and informal) and the current political atmosphere

There is a historical sense of marginalization with the relationship between the coastal community at large and the government historically evolving in an atmosphere of victimization first from Arabs and Europeans, and later from people from the 'hinterland.' Coastal communities continue to perform poorly in many social indicators including health, education and economy. Since 1997, WCS has coordinated an Annual Fishers Forum, a venue for local fishermen to learn about and openly discuss the status and management of local fisheries. This Forum has continually expanded, and now includes fisher representatives from along the coast as well as women fish traders, and representatives of local fisheries research and management departments.



Mama karanga processing fish, Kenya. Photo by Angela Yang.

MADAGASCAR – SOUTHWEST (TOLIARA) SEASCAPE

Geographical and demographic background

Southwest (Toliara) seascape consists of one of the largest reef complexes in the world that extends 458 km between Androaka and Morombe in the southwest of Madagascar, a semi arid area with little as one-third of a meter of rain falls annually at Toliara. 400,000 inhabitants live along Toliara seascape, including 200,000 in Toliara city, distributed in around 200 villages. Across this region, home to approximately half of Madagascar's traditional fishers (Laroche and Ramananarivo 1995), the population grew by 53 % in the 15 years leading up to 2008, and is forecast to grow by the same amount in the next 13 years (INSTAT 2007). Along the coast population growth is the consequence of a high birth rate and of the migration of inland populations to the coast because of decreases in agricultural productivity following a succession of severe droughts. In the Atsimo Andrefana region women give birth to an average of 6.2 children (Harris 2011). Toliara Province is also the poorest in Madagascar, with 80% of its inhabitants living below the poverty line (World Bank 1996).

WCS and gender

WCS does not collect gender-specific data in Madagascar, however, it does have a program supporting a women's association in the development of handicraft, ecotourism, and salt exploitation.

Drivers of change

Ecological status and impacts

Toliara seascape harbors rich habitats such as coral reef covering 670 km² (11% of Madagascar coral reef total area), mangroves covering 49 km² (1.7% of Madagascar mangrove total area) and seagrass beds are found in Toliara seascape. Southwest reefs are in poor ecological condition as indicated by their low numbers of coral taxa and dominance of erect algae, and are probably among the most degraded reefs in the western Indian Ocean (McClanahan et al. 2009), with the exception of patch reefs found in deeper waters and exhibit high coral cover and high density of coral recruits. The trend for the past 40 years for the barrier reef "Grand Récif," a central feature of the predominantly fringing reef system of Toliara seascape, has been of severe degradation: hard coral cover on the fore-reef slopes has declined substantially, coral has been replaced to great extent by fleshy algae and the fore reef has been almost depleted of reef fish (Harris 2010). Laroche and Ramananarivo (1995) and Laroche et al. (1997) and Brenier et al. (2011) found that waters close from urban centers along Toliara seascape were heavily fished as indicated by the high fishing pressure and decreases in CPUE, fish size, and carnivorous species relative to increases in herbivorous fishes, and the general reduction of mesh size for seines and gill - nets and hook size for line fishing. In more remote areas of the seascape evidence of overfishing have also been published for the shark fishery (McVean et al. 2006) reef gleaning fishery (Barnes and Rawlinson 2009) and finfish fishery (Iida 2005; Davies 2009).



Fish-dependent community at Salary, Madagascar. Photo by Ambroise Brenier, WCS.

Marine resource dependency
Toliara seascape is home to the Vezo tribe, who are traditionally skilled seafarers and solely dependent on the sea for survival. The coastal people of Toliara seascape are highly dependent on the fishery, with fishing ranking as the primary source of income for around 70% of the households (Davies 2009). Agricultural productivity is low because of the semi-arid climate.

Livestock farming is limited

and declining since early seventies. Despite the high potential, tourism industry is still very limited and concentrated in a few sites (Chaboud et al. 2004). Many coastal communities have such close cultural ties to a seafaring way of life that they have no viable subsistence or economic alternatives to fishing.

Vulnerabilities and threats

Coastal zones include some of Madagascar's most isolated and economically marginalized populations, who often have no alternative to over-exploitation of fisheries resources as the sole source of income and the only perceived path out of poverty (Harris 2011).

Services and technology

Most fishing villages and camps, except those located on the outskirts of Tulear and between Tulear and Manombo, are very isolated and have little or no access to public services (health, education). There is virtually no clean water and other water sources prove insufficient during in the dry season. The tracks are impracticable during rainy season (December-March), which has important consequences on the flow of catches and on the volume and cost of the food supply of the villages.

Relational context: Institutions (formal and informal) and current political atmosphere

At a local level the seascape community is regrouped by the ancestral leader, which means the dissolution of conflict, etc. is realized by regular family meetings. The fisheries supply chain, in particular products that are most valued (such as shark fins, sea cucumbers, octopuses, lobsters), is greatly controlled by commercial networks, set up by firms from the city of Tulear. These firms rely on commercial intermediaries (independent fishmonger or sous-collecteurs) present in the villages and have real bargaining power over the supply of dispersed producers. According the EIU Global Food Security Index (2012), Madagascar is rated as one of the countries with the highest political instability (see Table 3).

NICARAGUA – MISKITU, CARIBBEAN COAST

Demographic background

The Caribbean coast of Nicaragua is inhabited by several indigenous groups that include the Miskitu, Sumu, and Rama Indians; Creole and Garifuna ethnic groups, and mestizos who originate from the central cordillera or Pacific side of the country. The population of the villages within the WCS seascape range from 75 to 1000 for men and women. Women or girls tend to have children young (although are perhaps less likely to marry in more recent years), from 13-20 years. An estimated 50% of the population is below the poverty line. The main religious groups are all Christian (Moravian, 7th day Adventist, Evangelical, Episcopal, Catholic, Protestant, Anglican, Jehovah's Witness). The agricultural frontier is rapidly progressing toward these communities from the West and is driven by Mestizos with cow pastures.

WCS background

The WCS marine program works with partner NGOs, local communities, territorial, municipal and regional government authorities to reduce conflicts over access to and use of natural resources, help secure local livelihoods and conserve important marine biodiversity on the Nicaraguan Caribbean coast. Targeting the management of a culturally and economically important species, the green turtle, while building governance capacity and developing alternative livelihood programs will provide communities with the tools and experience to manage conflict resolution related to this and other social challenges. Currently there are no programs specifically targeting women or the collection of gender-specific data.

Drivers of change

Marine resource dependency

Caribbean coastal communities depend both economically and culturally on marine resources, in particular the endangered green turtle. These animals represent a major source of protein and income to impoverished communities and towns along the Caribbean coast, particularly for the indigenous Miskitu people who have been characterized as the foremost Amerindian "turtling" society in the Caribbean (Nietschmann 1979) However, the current catch of green turtles, though at one time sustainable, is currently well beyond levels determined to be sustainable. Annual take is 11,000 turtles - about 70% higher than what is sustainable (Campbell 2003). These indigenous and afro-descendant coastal communities are also challenged by the advance of the agricultural frontier, unsustainable resource use, deforestation, erosion and degradation of most aquatic ecosystems.

Vulnerabilities and threats

Current resource use remains uncontrolled with conflicts over their use and benefits and many coastal natural resources are severely diminished, including marine turtles, near shore lobster populations and several coastal export fisheries in Pearl Lagoon (the largest lagoon in Central America). These unmanaged resource depletions leave this society vulnerable to further conflict fed by increasing poverty, diminishing critical protein and livelihood resources for coastal communities and weak governance. This region of the Caribbean is highly vulnerable to increasingly frequent cyclones and hurricanes.

Relational context: Institutions (formal and informal) and current political atmosphere

During Nicaragua's civil war in the 1980s, conflicts over land tenure, self-determination and use of natural resources drove deep divisions between indigenous, ethnic and other sectors of society. These conflicts were especially acute on the Caribbean Coast and remain so today. Despite the fact that the region is Nicaragua's main source of natural resources, such as lobster, marine turtles, shrimp and hardwoods, the distance from the centre of power in Managua has politically, economically, and culturally marginalized the communities, exacerbating the region's high levels of poverty. Since the end of the conflict, in the background of an emerging democracy, indigenous and ethnic communities have retained their traditional structure of governance through communal elders. The resulting tensions are exacerbated by the fact that Nicaragua is the second poorest country in the Western Hemisphere, unemployment is at almost 50%, and the country is still struggling to strengthen the core structures of civil society crucial to avoid new rounds of civil strife.



Priscilla Morales, a Garifuna woman from Orinoco, Nicaragua, catching sheephead for her family's meal. Photo by Kara Stevens, WCS.

PAPUA NEW GUINEA (PNG) – NEW IRELAND SEASCAPE

Demographic background

The population of New Ireland consists of approximately 150 per village with an even ratio of males to females. The population is slightly skewed towards the very young or very old but working age is also present. The earnings of the local (community) are less than half the national average. However, less than 10% are earning less than \$1 a day and most people have food because they are subsistent, but are not necessarily well nourished.

WCS background

The WCS marine project activities in PNG focus on working with communities to monitor and manage their marine resources. Some data collected by the program is aggregated by gender e.g., a mangrove crab project). Although there are no projects targeting women specifically, some program activities attract women's interest and participation. The WCS program also leads REDD projects (Reducing Emissions from Deforestation and Degradation), which are of great relevance to conservation and climate change mitigation in PNG.

Drivers of change

Marine resource dependency

Eighty-five percent of New Ireland seascape communities depend totally on their environment for their livelihoods. There are potential small-scale economic opportunities for communities, such as mud crab management, a fishery in which women are actively engaged, as well as coral farming and clamshell aquaculture. However, income-generating projects such as these lack resources to fully develop into self-sustaining projects.

Vulnerabilities and threats

Rapid change is underway in PNG. As well as increasing pressure on natural resource use/extraction, especially overfishing, the New Ireland seascape is at particular risk from other emerging commercial industries which include: the development of the world's first underwater deep-sea mine for copper-gold; a proposed tuna cannery in Kaut, West coast of New Ireland poses potential threats of sedimentation, eutrophication and general pollution to the marine environment; oil palm is currently a big and growing industry in New Ireland Province and sedimentation and eutrophication are the two major existing threats; the forest industry has resulted in soil erosion, sedimentation and social disorder.

Relational context: Institutions (formal and informal) and current political atmosphere

Clan groups have authority for decisions on land rights and land use as well as customary marine tenure practices; therefore, any development projects require the careful development of local partnerships. Some customary practices are supportive of conservation such as *Tambu Area* practices, limiting or prohibiting fishing.

Existing laws, policies and systems of governance are not considered effective in managing the marine environment or fisheries due to poor enforcement at the local level. Traditional or customary land and marine tenure is actively used and legally recognized. However, ineffective

enforcement suggests that a sound policy or the recognition and use of traditional tenure are not sufficient for effective governance alone. Some traditional customs support conservation such as the closure of the reef and restrictions on food that can or cannot be eaten (e.g., it is believed that pregnant women should not eat octopus). However local norms or customs can also have a negative impact such as the use of derris root (fish poisoning) and the use of coral for lime (betelnut chewing). Overall, certain aspects of social cohesion are strong such as common locations for gathering and meeting on a regular basis for on-fishery business, culture or commerce, the presence of shared social norms and public institutions, and the absence of differences in social status or caste that prevent interaction. However, religious differences exist, as do cultural or tribal differences that can impact trust, interaction and conflict resolution. Social cohesion and resources are vulnerable to on-going political unrest with episodes of violent conflict.



Dugout fishing canoe in New Ireland Province, Papua New Guinea. Photo by Caleb McClennen, WCS.

SURVEY RESULTS – A BRIEF OVERVIEW

FOOD SECURITY

Increasing levels of near shore overfishing. 26-50% of near shore species are estimated to be overfished at 6 sites (some level of overfishing reported for all seascapes), and conflicts with other fishers when local fishers try to move to richer fisher grounds. This mobility is also limited to men as new fishing grounds are commonly found further offshore, reducing the opportunity for women to participate.

Near shore habitat degradation evident to a greater or lesser degree at all sites. There are some successes such as Fiji where biomass is increasing at fishing sites and in MPAs.

The population is skewed toward the very young at a large proportion of these seascapes (n=4). This is likely to lead to increased pressure in natural resources in communities where there is already a high dependency on coastal natural resources.

High levels of poverty, poor infrastructure and education at all sites. This further constrains opportunities for the development of alternative livelihoods.

The majority of countries where WCS operates experience high levels of conflict and political instability, which poses an obvious threat to food security and reliable market supply as well as the physical safety of local men, women and children and field staff.

Table 4: Food Security – country profiles

	Bangladesh	Indonesia	Kenya	Madagascar	Nicaragua
Overall Score ⁵ (1 ☹ - 100 ☺)	34.6	46.8	37.6	26.3	42.7
Affordability	33	42.3	34.8	16.8	44
Availability	37.6	52.6	41.7	35.8	38.8
Quality and safety	30.4	42	33.4	24	50
% HH expenditure on food	59	45	46	57	44.5
% below poverty line (\$2/day)	76	46	67	93	32
% Under-nourished	26	13	33	25	19
% Children stunted	43	40	35	49	23
EIU Democracy Index (1 ☹-10 ☺)	5.87	6.53	4.71	3.94	5.73
Political Stability Risk (0-100, 100=highest)	70	30	65	85	65

from: EIU, Global Food Security Index (2012)

⁵Global Food Security Index - lowest overall score: DRC 18.2; highest overall score: US 89.2

Table 4 presents the Global Food Security Index for each of the program countries (for which data is available). Levels of food security are generally low although there is variation between program countries. Madagascar has the lowest level of food security, scoring low across the three global indicators of food availability, affordability and quality and safety (see EIU Global Food Security Index report, July 2012). Household expenditure on household food is relative high, accounting for over half of total household expenditure. Madagascar also had the greatest proportion of its population living below the poverty line (less than \$2 a day). A quarter of the population is considered under-nourished with particular concern for children. The country also scores low for democracy and is at relatively high risk of political instability. In contrast Indonesia has the highest levels of food security out of the program countries, ranked about mid-way on the Global Security Index. However, just under half of the population is estimated to live below the poverty line (46%) although undernourishment is much lower compared to the other countries in the study. Political stability risk is the lowest of all the program countries.

GENDER, LIVELIHOODS AND THE DIVISION OF LABOR

The type and extent of involvement of women in coastal/near shore artisanal fisheries varies between the seascapes (Table 5). Despite evident gender division of labor and variation between sites, women are active throughout the fisheries value chain from extraction/production to processing and marketing at all sites. Similarly, Hellebrandt and Allison (2012) assessed the gender division of labor at two artisanal fishing communities in the WCS program country of Equatorial Guinea. Although their preliminary findings show a clear division of labor based on gender, with men predominant in fishing and women's role almost exclusively in post-harvest, *women participated in almost all fishing-related activities*. In addition, a far greater proportion of women than men were also carried out non-fisheries related activities e.g. subsistence farming and collection of firewood.

The sites where women appear most active within harvest as well as post-harvest aspects of the fisheries value chain are Fiji and PNG, followed by Kenya, Madagascar and Nicaragua. Women, however, tend to be employed in lower levels (subsistence), with less access to gear and credit, which can limit capacity to buy/trade direct from fishers (see also Weeratunge et al. 2012). Women are also subject to greater time constraints with obligations to care for the family and run the household additional to her work, often a 'women only' task. In PNG, as well as actively fishing it is mostly women who are gleaners, processors and traders and who are engaged in farming, as well as housework and childcare. Throughout the program seascapes it is more common for men to be engaged in salaried employment than women and within the tourism industry dive and tour operators are entirely male dominated livelihood activities. Informal employment⁶ on the other hand tends to be more frequently shared by men and women (offering greater flexibility of hours for women, selling of handicrafts encouraged by development agencies, etc.) The importance of illegal activities⁷ for coastal/fisheries livelihoods,

⁶ *Informal employment* includes shopkeeper, prepared food sales, handicrafts, casual labor, provision of other services.

⁷ *Illegal activities* includes drugs, smuggling, poaching.

which tends to be dominated by men, is evident which has consequences not just for conservation and fisheries sustainability but the wellbeing of the community and household (e.g. impact of drugs and alcohol within families; conflict between 'legitimate' fisheries and poachers). Certain types of fishing are exclusively male-dominated e.g. spear-fishing, night fishing and the use of explosives/cyanide.

Table 5. Gender division of labor in program seascapes

	Bangladesh	Belize	Fiji	Gabon	Indonesia	Kenya	Madagascar	Nicaragua	PNG
Fishing/ producer	S: Women & men C: Mostly men	Mostly men	S: More women than men C: women & men	Mostly men	Mostly men	S: women & men C: Mostly men	S: Women & men C: Mostly men	S: Women & men C: Mostly men	S: Women and men C: Mostly men
Subsistence: S Commercial: C									
Processors	Women and men	Mostly women	Women & men	Mostly women	Women & men	Women & men	Women & men	Women & men	Mostly women
Trader/ marketing	Mostly men	--	Women & men	Mostly women	Women and men	Women & men	Women & men	Women & men	Mostly women
Farming	S & C: Women & men	S: Women & men; C: mostly men	S: Women & men C: mostly men	NA	NA	S: Women & men C: mostly men	--	S: Mostly men	C: Mostly women
Subsistence: S Commercial: C									
Hunting	NA	Men	NA	NA	NA	Mostly men	--	Occasion-ally men	Men
Salaried work	Women & men	Women & men	NA	NA	Women & men	Mostly men	--	Women & men	Mostly men
Dive/ tour operator	NA	Mostly men	NA	NA	Mostly men	Mostly men	--	--	Mostly men
Informal employment	Women & men	Women & men	Women & men	Women & men	Women & men	Women & men	--	Mostly women	Women & men
Illegal activities	Women & men	Mostly men	Mostly men	Women & men	--	Women & men (at different levels)	--	Mostly men	Mostly men
Childcare and housework	Mostly women	Mostly women	Mostly women	Mostly women	Mostly women	Mostly women	Mostly women	Mostly women	Mostly women

from: original surveys (2012)

Figure 4 presents the most important livelihoods for local households at WCS marine sites. The importance of subsistence livelihoods is evident with subsistence fishing and farming mentioned more frequently than commercial (although, increasingly there is also some level of commercialization within subsistence fishing). Informal employment is also very important, the second most frequent livelihood activity after subsistence fishing, and considered more important than salaried employment at the majority of sites. The focus of respondents, when considering the top three most important livelihoods, tended to be directed primarily at production/extraction activities.

Figure 4. The most important livelihoods for local households in the communities where WCS works (as identified by WCS field staff)

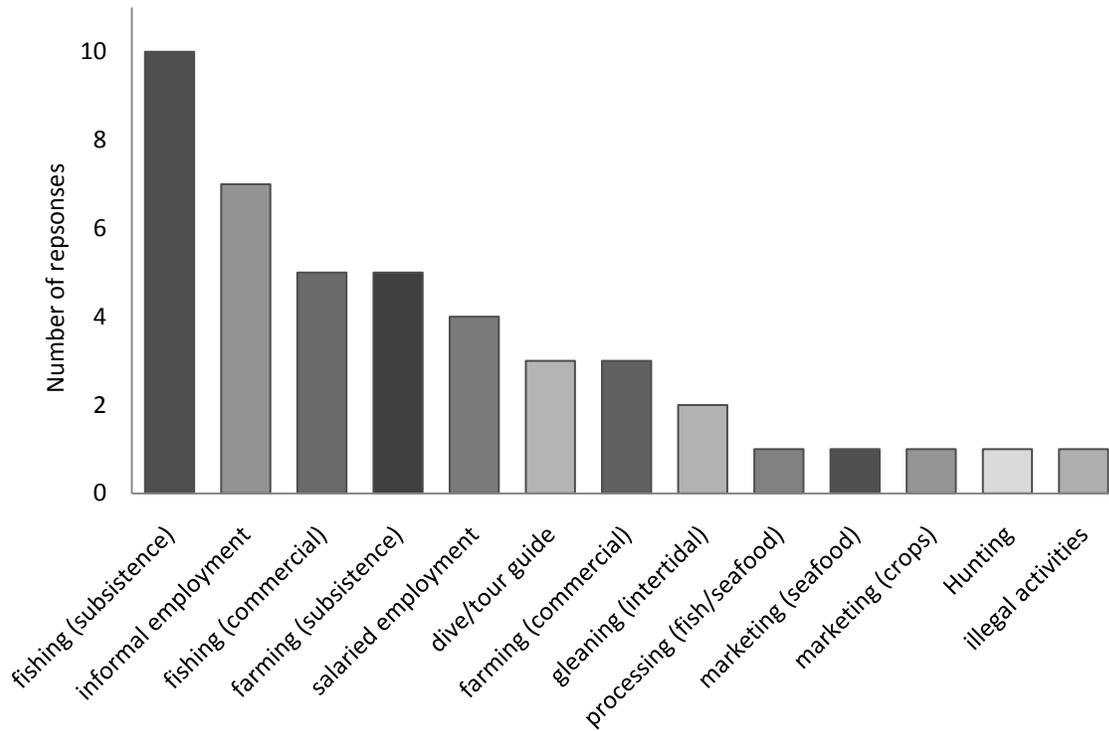
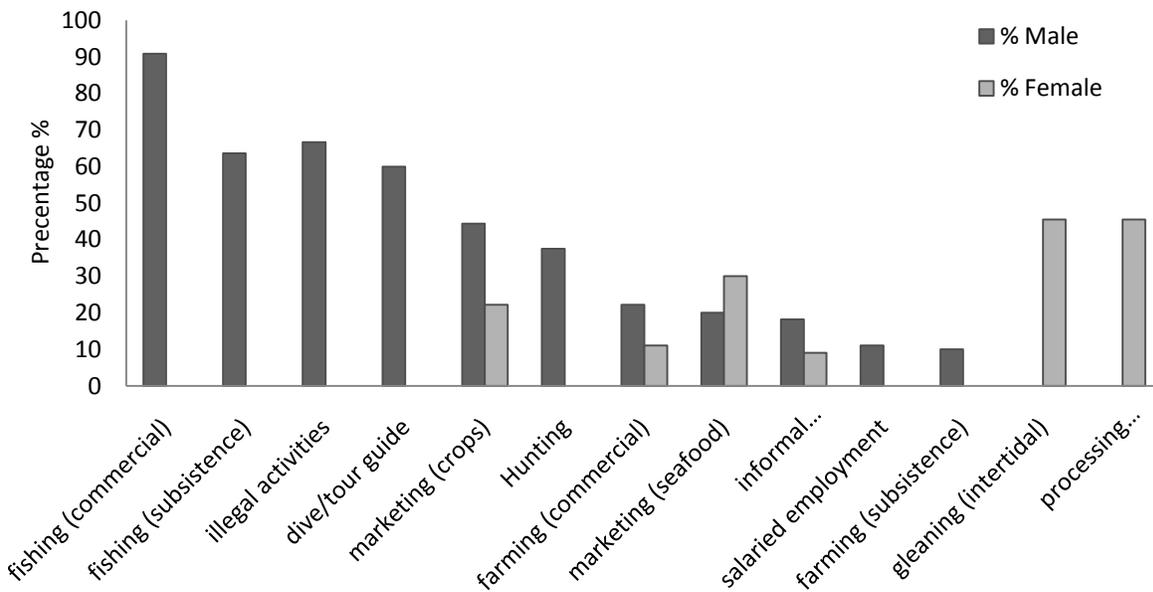


Figure 5. Comparing livelihood activities that men or women engage in exclusively across 11 sites



Traditional and cultural norms and customs can also greatly reduce equality for women at many of these seascapes. Women tend to dominate the intermediary and processing space within the fisheries sector (see Fig. 5 and Table 5), as well as being the primary purchasers of fish for household consumption. The most common fisheries livelihood activities women are engaged in are:

Harvest Sector

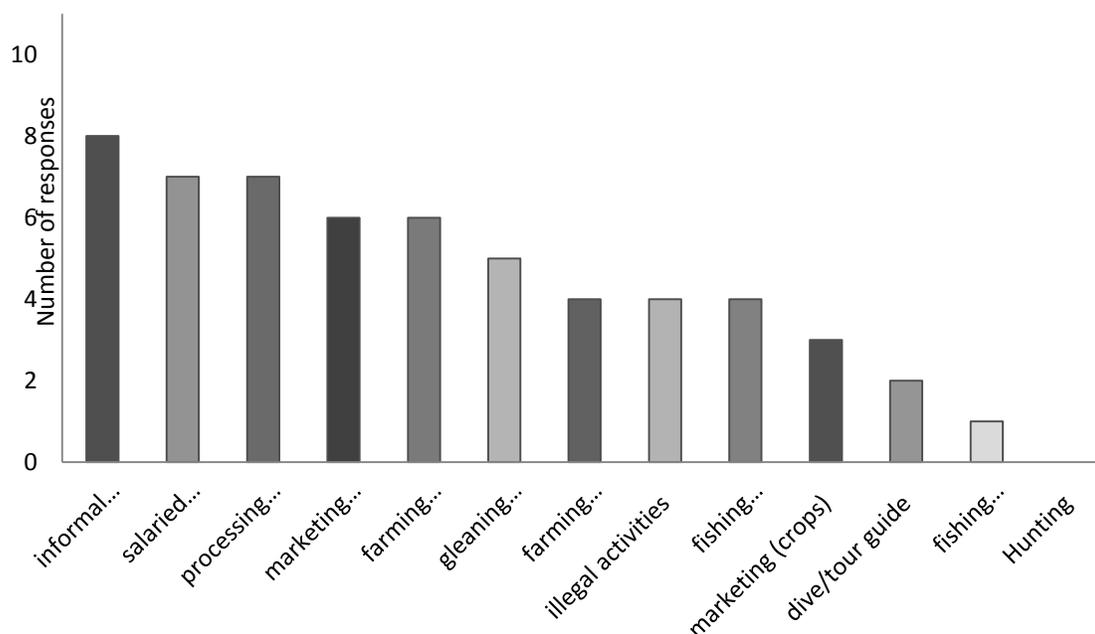
At 4 sites women were actively involved in fishing, as well as men. These sites were in Fiji, (subsistence and commercial), PNG (subsistence), Bangladesh (subsistence) and Nicaragua (subsistence). At the majority of sites (8 out of 11) women's participation in this sector was estimated to be less than 20%. However, in Fiji, Kenya and Madagascar sites an estimated 41-60% of women were actively engaged in the harvest sector. Gleaning (the collection of marine species, often done by walking along nearshore areas at low tide) was an important activity for women at 9 sites, and at 5 sites women carried out this activity exclusively.

Post-Harvest Sector

Women were involved in the post-harvest sector at all sites and their participation is generally greater than men. At 6 sites participation of women in this sector was greater than 40%, and at 2 sites over 80% of those engaged in post-harvest are women. Processing was the most common fisheries activity women engaged in at 11 sites. At 4 sites processing was an exclusively female activity. Marketing (including trade/buying) was the next most common activity women engaged in at 8 sites, 3 of which were carried out exclusively by women.

Women, therefore, play an important income-generating role and essential role in supporting household wellbeing. Women's access, however, is limited. The equipment/gear women use to fish is very basic (e.g. hook and line, spears, traps or trawls), operating from non-mechanized boats or gathering by hand. As highlighted in Table 5, women are more often engaged in low-level occupations (low-income) and their role in fisheries is more informal than men, resulting in reduced access to credit and income security. The following section considers the gendered access and ownership of gears, property, etc. in greater depth. The findings highlight site-level differences in livelihood roles between men and women. For example, at some sites there is a strong gender division of labor whereas at other sites fisheries/livelihood activities are shared by both men and women (see Fig. 6 and Table 5).

Figure 6. Livelihood activities that both men and women engage in (total number of sites = 11)



TRADE, MARKETS AND FOOD SECURITY

It is evident from the survey data that a diversity of species was commonly caught in small-scale coastal fisheries, unlike more commercialized fisheries, which can pose a challenge for fisheries management. Species for export (to urban or foreign market) differ from local market/consumption, suggesting that there are different motivations for fishing, with species for consumption lower value. ‘Fish for cash’ (rather than ‘fish for food’) is becoming increasingly important in a growing cash economy. At the majority of sites over 30% of catch is exported (n=5), only one site had virtually no export (Table 6).

Table 6. Estimated proportion of catch exported from sites (from surveys)

Country	Fisheries export (urban/foreign markets)
Bangladesh	Unknown
Belize	High
Fiji	Medium
Gabon	Medium
Indonesia (Aceh)	Low
Kenya	Unknown
Madagascar	Medium
Nicaragua	High
PNG	Low

Low <30%; medium= 30-60%; high >60%

High value (and highly vulnerable) species are being targeted for export e.g. shark fins. The high by-catch rates and targeted removal of top-predators is highly lucrative and frequently unregulated, with unsustainable and negative ecosystem impacts. The fishery often requires a change in fishing behavior, such as fishing further offshore. Sea cucumber is a highly lucrative near shore harvest with little or no fuel costs and easy access. As a result it is becoming increasingly over-exploited. As well as ecological impacts this economy of cash has implications for household wellbeing (food security) as the household and local economy moves from one where women are the intermediaries to men. In PNG, for example, this 'cash economy' has impacted women's position in the value chain, with women displaced by changing values and the breakdown of social structures and by larger players who are attracted by the high market value. (Kinch and Bagita 2003:33). Evidence shows men are less likely to re-invest capital in the household (Ernst and Young 2009), which can lead to a re-negotiation of intra-household power roles contributing to greater gender inequalities and reduced autonomy for women. The cash economy also encourages the buying of cheap foreign imports rather than food (crops/seafood) direct from female traders (Kinch and Bagita 2003).

GENDER DISPARITIES IN ASSETS, CAPABILITIES AND WELLBEING OUTCOMES

Table 6 highlights some important areas for gender equality and how well met the needs of women are across aspects of education (literacy) and female health. Most countries have made great progress towards achieving parity between male and female literacy rates with Fiji having the highest literacy rates for women (92%). Progress has been made towards gender parity in primary and secondary schools in most program countries. However, in almost all program countries, with the exception of Nicaragua and Belize, women's literacy lags behind that of men, highlighting the gendered access to education. In Bangladesh and PNG literacy rates for women are barely more than 50% (although, in Bangladesh, the female literacy rate has grown from 46% in 2004 to 58% in 2008). Furthermore, improved education for women does not necessarily mean greater economic empowerment. In Indonesia for example, 53% of women are in the labor market compared to 87% of men (World Economic Forum 2011), suggesting that social attitudes and cultural norms limit women's autonomy. Some improvements have been made for women within family planning and maternal health for some countries. Maternal mortality rates are still very high in all African countries, Madagascar, Indonesia, Bangladesh and PNG. The greatest need for family planning was Gabon (28%), where there is a high rate of early pregnancy⁸ and the minimum age of marriage for women is still very low (15 years) (UNICEF 2009). The lack of access to family planning was also identified in Madagascar (19%) and Kenya (15%, although this was before the Kenyan government introduced a policy for free access to contraception in 2008-2009). In Indonesia, just 9.7% of women reported an unmet need for family planning (SIGI online, accessed 2012).

⁸According to UNICEF (2009), 52% of women aged 15-19 who are in a union had one or two children

Table 7. Gender capability gaps and wellbeing outcomes

Country	Life Expectancy		Adult literacy (CIA 2010)		Family and Health		
	M	F	M	F	Fertility rate (World Bank 2010)	Maternal mortality/ 100,000 births*	Unmet need for family planning (%)
Bangladesh	63	65	61.3	52.2	2.24	240	--
Belize	73	70	76.7	77.1	3	53	--
Fiji	66	71	95.5	91.9	2.67	26	--
Gabon**	52	54	91.9	84.9	3.25	230	28
Indonesia	69	74	94.0	86.8	2.12	220	9.7
Kenya	52	55	90.6	84.2	4.72	360	15.8
Madagascar	57	61	67.4	61.67	5.02	240	19
Nicaragua	73	68	67.2	67.8	3.6	95	--
PNG	55	60	63.4	50.9	4	230	--

*Source WHO 2010; ** Source: CIA World Fact Sheet 2010; *** Female literacy up from 53.3% in 1995 est.

Table 7 highlights the variation across different global measures of gender equality (gender composite indicators), although in no cases were gender equality indicators high or well met (except perhaps for Nicaragua in the Global Gender Gap Index, ranked 30/134 and Madagascar in the SIGI, ranked 30/86). According to the 2009 Global Equality Index (GEI), which ranks 157 countries by measuring women's relative economic activity, education and empowerment, in no country do women enjoy the same opportunities as men, irrespective of a country's income level. Despite some improvements made towards meeting the Millennium Development Goals (MDGs) for women in education and health, economic opportunity and equality for women remains consistently low across the program countries (Table 8). This raises the question of how to take advantage of improving education, literacy and health and translate that into economic opportunity and empowerment for women? Weeratunge et al. (2012) state that an important area for further research is the need to understand which assets are most valued and important for men and women to meet their livelihood security needs and women's empowerment. More importantly, Weeratunge et al. (2012) stress the need to move beyond identifying gender differences to address what the drivers are for these gender gaps in the first place, which they argue requires a greater understanding of norms and customs influence men and women's access to assets. Table 8 also highlights where data gaps for global gender assessments exist. Countries often neglected from these global indicator assessments are often small island nations, such as Fiji. There has also been little assessment of gender equality indicators in PNG,

a country with a very high prevalence of violence against women and lack of recognition of women's rights, as previously noted.

Table 8. Global gender indicators

Country	GGGI ⁹ Rank (# countries = 134)	GEI ¹⁰ Rank (# countries = 157)	SIGI ¹¹ Rank (# countries = 86)	GII ¹² Rank (# countries = 146)	EIU Women Economic Opportunity ¹³ (score ☹ 1 – 100 ☺)
Bangladesh	82	115	63	112	39.2
Belize	93	77	--	--	--
Fiji	108	--	--	--	--
Gabon	--	111	77	99	--
Indonesia	87	103	32	100	47.5
Kenya	86	92	46	130	47.5
Madagascar	80	--	30	--	32.7
Nicaragua	30	--	37	101	47.8
PNG	--	--	--	140	--

Additional gender disparities are presented in Table 8. As outlined in the previous section (Global Gender Review), access to resources is highly gendered. Evidence for gender differences in access to and control of various resources including land, credit and social capital (e.g. networks, information, welfare) is well documented in the literature (see Deere and Doss 2006; Weeratunge et al. 2012). Within WCS program countries it is evident that these gender gaps can have negative consequences for women's wellbeing outcomes. For example, in all program countries women's access to formal credit is limited with women dependent on more informal forms of credit such as micro-credit schemes. A lack of credit means women are less able to invest in property or start-up capital for entrepreneurial initiatives or to trade direct from fishers. For example, the open-border policy in fish trade in Cambodia has marginalized small-scale fish traders who had previously dominated the market (Kusakabe et al. 2008).

For almost all program countries access to credit and management skills was identified by CEDAW (2010) as key issues for women. Despite women's rights and entitlements to land ownership being enshrined in statutory law, in practice, social and cultural practices exclude or limit women from direct access to land and credit. This disparity between statutory law and

⁹ **Global Gender Gap Index** – The Forum's report measures the gender gap across education, health, economic participation, empowerment.

¹⁰ **Global Equity Index** (source: Social Watch, launched in 2004) – includes three dimensions of education, empowerment and economic activity.

¹¹ **Social Institutions Gender Index** (OECD, launched in 2009) – a measure of the underlying drivers of gender inequality e.g. discriminatory family code, restricted physical integrity, son bias, restricted resource entitlements, restricted civil liberties.

¹² **Global Inequality Index** (a component of the HDI which includes maternal mortality, adolescent fertility, participation in parliament, education and employment)

¹³ **EIU Women Economic Opportunity** (a component of the Global Food Security Index).

customary law is evident to a greater or lesser degree in all program countries. For example, in Fiji, women have legal inheritance rights but no customary inheritance rights. In PNG, where land ownership is customary and inheritance is matrilineal, decisions on land usage are typically made by men. In Gabon, Married women and/or widows have no right or access to land or property. As highlighted in the previous sub-section, gender disparities also exist in access to fisheries. Findings from the survey data highlight that women’s access to fishing gear tends to be limited to the more basic, primitive gear types or collection by hand only (Table 9). Women’s access to fisheries information, social capital and decision-making rights are discussed further in the following section.

Table 9. Inheritance patterns, gendered access to/ownership of productive of assets in sites surveyed
(source: survey and secondary data)

Description	Bangladesh	Belize	Fiji	Gabon	Indonesia	Kenya	Madagascar	Nicaragua	PNG
Inheritance patterns	Patrilineal	Patrilineal, Bilineal	Patrilineal, Bilineal	Patrilineal	Patrilineal	Patrilineal	Patrilineal	Patrilineal, Bilineal	Matrilineal
Land tenure	Men: social practices exclude/ limit women’s access to land	Men and women	Mostly men ¹⁴	Men: married women/ widows no right to land	Mostly men ¹⁵	Men ¹⁶	Mostly men: Strongly dependent on customs (widespread inequalities)	Men and women	Customary: decisions on land use dominated by men
Marine tenure, reefs	Common property	Common property	Customary & common property	Common property	Customary & common property	Mostly common property, some customary	Mostly customary	Common property	Customary (tribal-clan groups)
Fishing gear	Men	Men	Men & women	Men	Men	Men; Both: spears/ harpoon	Men; Both: trawls	Men; Both: traps, hook & line	Men & women
Access to credit	Men: banks; Women: micro-credit	Men: banks; Women: micro-credit	Women: micro-credit	Men: banks; Women: micro-credit	Men: banks; Women: micro-credit	Men: banks; Women: micro-credit	Men: banks; Women: micro-credit	Men: banks; Women: mostly micro-credit	Men: banks; Women: micro-credit

PHYSICAL INTEGRITY AND SAFETY

Freedom from violence is an important capability and indicator of wellbeing (Weeratunge et al. 2012). Unfortunately, a review of SIGI’s global assessment of physical integrity for women revealed that violence against women is widespread and, in some cases normalized, in the program countries. Alarming there is a significant proportion of women in these program

¹⁴ Fiji: women have legal inheritance rights but no customary inheritance rights.

¹⁵ Aceh: During the post 2004 tsunami reconstruction period, a policy of co-ownership for land was introduced and Indonesia’s Civil Code states that men and women have equal ownership rights.

¹⁶ Bangladesh: Women guaranteed ownership rights under statutory law but in practice customary law restricts women’s access to land and property.

countries who perceive violence as justified, further indicating the pervasive influence of gender norms and the socialization of gender inequalities (see also Weeratunge et al. 2012). In Bangladesh, more than a third of women believe a husband is justified in beating his wife (DHS 2007). CEDAW (2010) argue that deep-rooted stereotypes contribute to the normalization of violence against women in Nicaragua, and according to the US Department (2011), 70% of women are victims of domestic violence. Any statutory protection is weakly enforced and high levels of political instability and conflict in some program countries has further increased the threat of gender-based violence. Violence against women is particularly prevalent at the PNG seascape. In PNG polygamy is practiced and early marriage (as young as 13 and 14) is common as well as violent 'witch hunts' and the practice of 'bride price', which contributes to the prevalence of domestic violence. On-going political instability and chronic law and order issues further threaten women's safety. The outcomes are a high rate of HIV/AIDS, high rates of early pregnancy and one of the highest global rates of maternal mortality. Poverty and malnutrition are widespread with poor access to potable water and healthcare services. Worryingly, UNICEF identified evidence of female 'infanticide by neglect and concern for missing women in PNG. In Fiji, the impact of conflict is poorly understood but is linked to a high prevalence rate of suicide, (women in Fiji, along with Samoa, have the highest suicide rate in the world), gender-based violence and harassment (UNIFEM n.d.).

SHOCKS AND VULNERABILITIES

As illustrated in Table 10, all sites have experienced a high level, and increasingly frequent number of 'shocks', in particular those related to natural hazards or climate change such as cyclones/hurricanes (n=5) and coral bleaching events (n=5), which impact fishing communities' ability to cope, decreasing resilience as natural disasters increase. The impact of 'upstream' impacts is strongly evident such as mining threats (e.g. PNG), deforestation (e.g. Madagascar) and water management (e.g. Fiji) and the implications not just for ecosystem health but also food security and human health. Therefore, the need for strategic, inter-disciplinary and cross-sector fisheries management plans, such as addressing business and health as well as the environment and fisheries.

Political instability and conflict (i.e. political coup and warfare, n=6) is another major factor to consider for gender equality and food security. There is widespread evidence of the serious impacts on women's safety and physical integrity in conflict areas or periods of political instability as well as the adjustment of gender norms during conflict and post-conflict or post 'shock'. In some cases this can have a more positive impact on women's rights. For example, in Aceh, after the 2004 tsunami women's access to property and land ownership rights improved (co-ownership legislation, as a result of the high male mortality). Gender in the governance and policy environment is discussed next.

Table 10. Vulnerabilities and shocks experienced in countries in which WCS works (from: original survey, 2012)

Site	'Shocks'
Bangladesh	<p>Climate change: Coastal fishing communities are particularly vulnerable to increasing climate change impacts (e.g. major cyclones, flooding, decreasing freshwater supplies and rising sea levels) As a result, resilience is decreasing as the frequency of natural disasters increases.</p> <p>Political instability: Political coup in 2007.</p>
Belize	<p>Climate change: Vulnerable to an increasingly frequent and powerful hurricanes and cyclones (e.g. Keith in 2000, Ivan in 2004, Dean 2007). In 2007, many fishermen losing gear and boats and fishing grounds were also affected by run-off and damage caused to the seagrass beds. Many households also lost their crops. Coral bleaching in 1998.</p>
Fiji	<p>Climate change: Site of Kubulau recently experienced a major cyclone in 2010, severely damaging houses. Mass coral bleaching (2000, 2002).</p> <p>Pollution: Fish and coral kill from mining run-off in 1998.</p> <p>Political instability: Most recent political coup in 2006.</p>
Gabon	<p>The vulnerability of the community to unexpected events or shocks, etc. in the last 10 years is not known/not recorded. However, West African countries are also vulnerable to climate change impacts and suffer political instability.</p> <p>Extractive, commercial industries: Intense, industrial fisheries exploitation of local waters by foreign and EU vessels have also been identified as a major threat to resilience. Other extractive industries such as the offshore oil industry may also have an impact. (Pisano 2008).</p>
Indonesia (Aceh)	<p>Aceh has experienced some of the highest levels of 'shocks' (e.g. 2004 earthquake and tsunami, coral bleaching incidents and warfare).</p>
Kenya	<p>Climate change: vulnerable to flooding caused by El Nino which affected tourism and fishing; major drought which meant no crops to sell or buy. Political instability: Likoni violence in 2000 led to people losing homes and temporary displacement; Political unrest and violence (1982 and 2007). Civil and political unrest rarely starts from the communities at WCS marine sites therefore life returns to normal as soon as the incident ends</p> <p>Mass coral bleaching in 1998</p>
Madagascar	<p>Climate change: Major cyclone in 2006 destroyed natural habitat and damaged the coral reef reducing ecosystem services. Fisherfolk were also not able to fish during this period and due to the high dependency on marine resources for nutrition/food security there was no food for families.</p> <p>Political instability: On-going political unrest since 2009 negatively impacting economic growth, development and conservation efforts (Ploch and Cook 2012).</p>
Nicaragua	<p>Climate change: Region was affected locally by hurricane Felix in 2007.</p> <p>Political instability: The civil war (1981 to 1992) caused a lot of disruption on the Atlantic Coast. It resulted in mass movements of people, casualties and deaths, and massive economic disruptions. However, as a result, there was little farming or fishing during this time and forest cover increased in many areas and fish stocks recovered. People of a certain age remember the post-war abundance of resources that resulted after the conflict was over.</p>
PNG	<p>Climate change: High number of natural disasters recorded for the area - Major drought occurred in 1997 and again in 2010 which affected the food and water supply; major cyclones in 2003 and 2011; king tide in 2008 where houses were washed away and the shoreline changed; major flooding in 2011.</p> <p>Pollution: A cyanide spill in 2010, from the mine of Simberi, had a widespread and devastating impact on the food chain, killing fish and killing the pigs that ate the fish. Local people were also not aware of the danger of eating the fish.</p> <p>Other environmental impacts: A <i>Crown of Thorns</i> outbreak in 2008.</p> <p>Other: Ship groundings occurred in 2007 and 2010.</p> <p>Although not mentioned in the survey, the region also experiences widespread political unrest.</p>

GENDER, PARTICIPATION AND THE POLICY ENVIRONMENT

As Table 11 illustrates, policies support gender equality and gender mainstreaming at the national level in the program countries. Have been recently introduced Gender disparities are still prevalent, however, despite progress made nationally. This is mainly due to disconnect between national and customary laws. Take for example, Aceh, where secular laws (Islamic principles) are predominant making implementation of gender reforms a challenge. A recent report by UN Women (2011) assessed the progress for the world's women, including an assessment of household autonomy which found that more than half of women reported having no say in household decisions (18 out of 30 countries). In Bangladesh, which has perhaps made some of the most significant steps towards gender mainstreaming policy, and of all the program countries, has the greatest share of women in politics (33%), women's autonomy within the household and community is still greatly limited. Only 30.5% of women who earned a living had any decision-making power over how that money was used (DHS 2007), further evidence that improving income earning capacity alone does not necessarily mean improved opportunities for women. Weeratunge et al. (2012) argue that the value of women's work is dependent on the quality of that work, for example 43% of women are employed in the agriculture sector in Bangladesh, but this is primarily in unpaid family labor. At a national level, women's participation in parliament is relatively low across all program countries, with the exception of Bangladesh, primarily as a result of the introduction of gender quotas and reserving seats for women at local, municipal and national level. In the case of PNG, participation of women in parliament is virtually non-existent (0.9%). Within the New Ireland seascape, women in artisanal fisheries have little or no representation or voice in fisheries decision-making (Table 11).

Although an important step forward, simply increasing the number of women in politics and decision-making processes does not necessarily relate to a true representation of women's interests. Women may still lack the power to meaningfully participate or influence decisions. Kabeer (2000:28-29) considered 'power' in terms of the 'ability to make choices', which is dependent on three interrelated dimensions; i) the resources men and women have access to, ii) agency (that is the processes or relationships which drive wellbeing outcomes) and iii) achievements (wellbeing outcomes). Sen (2000) identified two key challenges for addressing gender equality and poverty at the local level; firstly, the importance of gender power relations, not just within the household but also in the community, local market and with local government officials. The second major challenge, according to Sen (2000), is access to information, which strengthens the capacity of women. There is a need to strengthen gender-focused policies 'on the ground', i.e. strengthening linkages vertically as well as horizontally by building the capacity of women's groups locally, improving access to information, in particular with regards to fisheries livelihoods and management and better understanding the influence of local institutions and sociocultural norms and customs in shaping women's capacity to engage. Currently, participation and decision-making in fisheries management and marine resource allocation is dominated by men at all sites, with the exception perhaps of Madagascar (Table 11).

Table 11. Women’s participation and decision-making and representation in policy

Country	Participation or influence in fisheries decision-making (at site-level)	Share of women in Parliament (%) (OECD 2009)	Global gender treaties signed	National gender mainstreaming or women-focused policies*
Bangladesh*	Mostly men	33	CEDAW, BPA, MDG	National policy for achievement of women 1997; Women Development Policy 2011
Belize	Mostly men: fisheries; women and men: CBM	9	CEDAW, MDG	Improved laws protecting women against violence; Formal recognition of common union laws (and women’s entitlements in marriage and divorce)
Fiji	Men and women (although women informal only)	(no parliament since the 2006 coup)	CEDAW, MDG	Women’s Plan of Action recognises 5 priority areas for gender equality (employment, participation in decision-making, elimination of violence against women and children, access to basic services, women and the law).
Gabon	Mostly men	9.2	CEDAW, MDG	Constitutional rights and equality for men and women; The law prohibits domestic violence; Women can participate freely in the political process and political activism.***
Indonesia (Aceh)	Mostly men	11.3	CEDAW, MDG	Recent reforms to improve gender equality, such as violence against women legislation (ref); Women’s equality is recognised in the law for marriage and family.
Kenya	Mostly men, except in women’s association	7.3	CEDAW, MDG	New Constitution (2010) defines discrimination and includes bills to protect women’s rights (e.g. family, marriage, property, equal opportunity as well as addressing domestic violence)
Madagascar	Men and women	6.9	CEDAW, MDG	Gender equality is enshrined in the constitution; The law was amended raising the minimum age for marriage for women from 14 to 18 years.
Nicaragua	Mostly men	21	CEDAW, MDG	Improved ownership rights – 1/5 of agricultural land is owned by women.
PNG	Mostly men	0.9	CEDAW, MDG (failure to meet minimum targets).	Limited progress. Any progress made at the national level or within national legislation is poorly implemented and enforced as a result of the dominance and persistence of discriminatory customary laws and practices, e.g. ‘Big Man’ leadership.

from: *SIGI 2011; **Weeratunge et al. 2012; ***US State Department

At all sites it was noted that the greatest constraint on women’s participation was time-use and the lack of ‘free’ time women have as result of their role in running the household and looking after family, as well as providing a valuable source of (secondary) income, which becomes especially important when considering the increasing vulnerability of fisheries livelihoods as a result of increasing natural hazard events and shocks. It is not simply gendered roles that limit

women's ability to participate but gender relations. Women's involvement in fisheries management and decision-making is also constrained by social and cultural norms and rules at sites (e.g. religion, in particular Islam, the 'big man' leadership in PNG, etc.). However, there appears to be greater engagement of women at some sites more than others, such as Fiji and Madagascar. At both sites women also fish.

FISHERIES GOVERNANCE

As Table 12 highlights, governance effectiveness in the program countries is poor with relatively high levels of corruption, political instability and low levels of voice and accountability. This poses an obvious challenge for the sustainability fisheries and the wellbeing of coastal, artisanal fishing communities. It is perhaps not surprising, therefore, that widespread dissatisfaction with the current governance regime, was reported in the surveys. In particular, poor enforcement of regulations is eroding commitment and responsibility to protect marine resources. This may also be related to disempowerment of communities and unwillingness to comply with the 'rules' as a result, especially if they are not perceived as legitimate. Keller (2008) argues that people's vision for the future differs and may not align with the goals of the conservation NGOs. Perceptions of the drivers and causes of environmental change (such as overfishing versus other poorly understood external factors such as species mobility, sea temperature rise, offshore industrial fishing etc.) may also differ between actors.

Table 12. Percentile rank of countries surveyed relative to the rest of the world in key governance indicators (includes gender participation indicators) (0 lowest - 100 highest)

Country	Government effectiveness	Control of corruption	Political stability	Voice and accountability
<i>West Africa</i>				
Gabon	19	24	60	24
<i>WIO</i>				
Kenya	36	18	10	40
Madagascar	19	49	20	26
<i>SE Asia</i>				
Indonesia (Aceh)	47	27	21	47
Bangladesh	20	16	7	37
<i>Melanesia</i>				
PNG	26	11	19	48
Fiji	27	38	48	19
<i>Caribbean</i>				
Nicaragua	18	25	35	30
Belize	43	51	35	68

from: World Bank/WGI 2011

Community-based organizations are active at all sites and play a very important role across a diversity of aspects of community life. Women’s groups are also common, however they are rarely involved in ‘dispute resolution’ (the exception is PNG), and at only 3 sites (Madagascar, Fiji and Belize) did women have any involvement in fisheries and/or environmental management. The most common functions of women’s groups were, income generating (n=7), community events (n=7), health (n=5) and education (n=4). The degree of influence women have in fisheries/marine management decision-making processes was very low. At the majority of seascapes women had no capacity to influence decisions (n=7) and in no cases were women able to effectively determine the allocation of resources. There is some scope, however, to build capacity for women’s participation and learn from women’s involvement at other sites. For example, at the seascape of Toliara (Madagascar) it was reported that women have a significant role in influencing decisions and at the Fiji seascape, women were reported to have some level social or informal influence over the monitoring and allocation of resources.

At 100% of the sites community leadership was a widely recognized individual or small group of leaders, although not always considered effective. The survey findings indicate that the seascapes have relatively high levels of social cohesion, in particular the presence of shared norms and values (i.e. the fishing way of life and fisher identity); however, religious, ethnic or tribal tension and conflicts do exist between some groups. Traditional or customary land and marine tenure is the most common type of tenure, although this is not always recognized within legal frameworks, or in some cases can be in conflict with national law. Table 13 presents some of the main types of customary tenure at each site. According to the experience of WCS field staff, the majority of communities exhibit some element of a conservation ethic (n=9).

Table 13: Customary tenure types for each country surveyed

Country	Customary tenure type
Bangladesh	--
Belize	--
Fiji	Both national legal frameworks and customary tenure exists; traditional fisheries management areas
Gabon	--
Indonesia (Aceh)	<i>Panglima Laot</i> ('commander of the sea') – aims to promote peace and resolve conflicts in relation to access and use of resources
Kenya	Community-based closed areas (<i>tengefu</i>) within Beach Management Units where communities have resource management authority
Madagascar	The <i>Vezo</i> tribe of western Madagascar have strong cultural ties to the fishing way of life <i>Dina</i> (social rules) and LMMAS (locally managed marine areas)
Nicaragua	--
PNG	<i>Tambu</i> areas and clan-based areas; LMMAS

source: original surveys (2012).

OPPORTUNITIES AND CONSTRAINTS FOR WOMEN: IDENTIFYING SCALABLE SOLUTIONS

There is great potential to learn from good ways of ‘doing gender’ between different sites within the countries where WCS marine program works. Despite the obvious challenges, opportunities do exist for capacity building and improved gender mainstreaming of livelihood and conservation initiatives. Some program sites have already made progress with engaging women in their projects (Table 14). WCS is well positioned to improve capacity building and engage stakeholders through its vertical and horizontal linkages with various partners across sectors (e.g. community-based, NGO, government). Where community organizations are not included there should be a plan to do so, in particular the need to co-ordinate with women’s groups (who are engaged in various other aspects of life that should be integrated into any successful, sustainable fisheries livelihoods initiative). Given women’s key role throughout the fisheries value chain failure to gender mainstream fisheries management and marine conservation will have a negative impact on sustainable resource use and livelihood security for those dependent on small-scale, artisanal fisheries.

Figure 7 highlights the ‘gendered spaces’ men and women occupy at each of the seascapes. The contrast between the livelihood roles and level of participation of women compared to men is striking. Although women, as well as men, also participate in capture fisheries at the majority of sites and men also participate in post-harvest activities, women predominate the post-harvest sector. However, women’s involvement in decision-making related to fisheries management or allocation and access to marine resource is limited, an arena clearly dominated by men within these seascapes. That said, however, in some seascapes fishing is considered ‘a last resort’ and associated with those in extreme poverty or already on the margins of society. For example, Bangladesh artisanal fisherfolk are generally least respected and therefore any power or influence is low for both men and women. In other cases women may appear to participate but their level of influence or involvement is limited, such as in Fiji where women often cook and provide during meetings and so their input is limited. Britton (in press) emphasized the need to recognize women in fisheries as a heterogeneous group with factors other than gender constraining participation and position in society such as social status, religion, husband’s occupation (e.g. crew member or boat owner), which need to be accounted for in programs targeting women. The study also emphasized how the capability to act (i.e. agency) was very dependent on the use of social relations.

Figure 7. The spaces men and women occupy in fisheries livelihoods and participation in decision-making (from original surveys)



EVIDENCE-BASED KEY MESSAGES

The findings of this assessment highlight some key points to improve gender considerations and gender mainstreaming in marine conservation programs and fisheries management:

- i) The prevalence of gender disparities and the importance of understanding the causes of these ‘gender gaps’ in participation and benefits from the fisheries value chain and conservation programs as well as the outcomes/consequences. In most seascapes these gender divisions are driven primarily by socio-cultural norms, beliefs and practices.
- ii) Considering the global scope of WCS programs, when addressing gender disparities it is necessary to carefully consider the local context and tailor solutions accordingly. Similar to findings by Weeratunge et al. (2012), there were both differences and similarities in the gender division of labour at the site-level and at some sites this division of labour is more flexible (e.g. Nicaragua, Fiji) than others (e.g. Gabon, Aceh). In order to aid the development and implementation of gender-responsive projects, Figure 7 attempt to better identify site-specific ‘gender spaces’ to assess what works in different contexts and conditions and how to categorise sites for scalable solutions/future pilot projects (see Table 14). For any project it is important to recognize that interventions are not static or passive, they shape the institutional

and ecological landscape and can both cause and change wellbeing and poverty heterogeneities (Clements et al. in press).

- iii) With the increasing vulnerability of artisanal fisherfolk to a growing number of threats, in particular ‘upstream’ events e.g. land-use change and mining, resulting in increased flooding, sedimentation and pollution of waterways and nearshore ecosystems, there is a greater need for a more holistic approach to fisheries management and marine conservation. The discussion of fisheries management is beginning to move out of fisheries to encompass multiple stakeholders and (Aansen et al. 2012) and has developed into a societal discussion with multiple motivations (e.g. political, welfare, development, rights-based, ecosystem-based). As Raakjaer et al. (2012:5) note, there is ‘on-going refocusing of management towards a more holistic approach both in fisheries and also in the context of marine management at large.’ For example in the Vatu-i-Ra Seascape in Fiji, the identification of causal linkages between waterborne bacterial disease and the loss of ecosystem services, both impacting human and environmental health, has led to a WCS partnership with health and environment experts, bringing these two sectors together. Values motivating fishing behavior are also changing, resulting in an increasingly market-driven industry which can weaken women’s position in the fisheries value chain. The authors of this study argue that it is critical that women are considered central actors in decision-making and to better understand what their needs and aspirations for a productive fisheries, sustainable livelihoods and family wellbeing. The findings also highlight the often competing needs at the household and community level between men and women as well as between micro and macro scales and the differing access to resources men and women have to meet their needs.

Table 14. Scalable solutions along the value chain to enhance women’s engagement in marine conservation and fisheries management strategies (based on survey findings)

Country	Opportunity	Constraint	Comments
Bangladesh, Sundarbans	<p>Gender specific data is collected in regards to specific conservation research or educational outreach projects.</p> <p>Although not specifically targeted, women are often involved in WCS marine programs opportunistically and some programs attract women’s interest and participation.</p> <p>Women’s groups are actively engaged through WCS educational outreach program (Educational Outreach Network Partner NGO) and the majority of facilitators trained are female. Women are responsible for sharing</p>	<p>Women in Bangladesh are considerably constrained by religious and social restrictions. For example, women are discouraged to engage in conservation work by their families, despite the opportunity available, especially when fieldwork is involved.</p> <p>It was noted that often women themselves lack self-confidence or positive experiences to get involved in conservation related projects (see also Kabeer 2000).</p>	<p>There are plans to involve women specifically when developing a protected area management plan in collaboration with the government and local communities (e.g. Sundarbans).</p> <p>Through an internship program interested female students are supported and encouraged to engage in research and conservation work.</p>

	information with other communities.		
Belize, Glover's Reef	<p>Gender aggregated data is not collected.</p> <p>Women are employed as field staff and WCS programs engage women in MPA advisory committees, capacity-building for community organisations and alternative livelihoods.</p>	The opportunities for women to engage in marine conservation and livelihood strategies are constrained by the lack of women who fish and their primary role as mothers and running the household, which limits the time available to participate in activities.	Engage more with youth, specifically targeting girls and young women.
Fiji, Vatu-i-Ra	<p>Of all the sites surveyed, the WCS-Fiji program appears to engage the most with gender issues.</p> <p>Household survey data is collected that could be aggregated by gender.</p> <p>Livelihoods project (kuta mat weaving) has a specific gender focus building a women's co-operative.</p> <p>Women's groups are engaged in fishing-related activities as well as issues relating to the environment. Women also have some role in fishery/marine management decision-making, although their level of influence is limited to a social or informal level of monitoring, participation and allocation of resources.</p>	Despite a certain level of engagement with women, at planning/management workshops women often do the cooking and therefore do not fully participate. Also, decision-making happens through traditional, male-dominated hierarchies.	Potential to target awareness for fishing activities that women are primarily engaged in (e.g. gleaning) to create greater awareness amongst women about MPA boundaries and sustainable yield.
Gabon, CBC	<p>This site was the most data poor of all sites surveyed, and little information was available about gender or local livelihoods.</p> <p>Over 80% of women are engaged in the post-harvest sector.</p>	Gender roles in nearshore fisheries livelihoods activities are well defined. Women are not directly involved in fishing, although some glean in nearshore areas for fish and invertebrates.	Women are very involved in post-harvest activities, exclusively processing the majority of species (e.g. smoking and salting), marketing and other post-landing operations.
Indonesia, Aceh	<p><i>Aceh</i> is the only site surveyed (of four sites in Indonesia) with specific activities targeting women and women were also involved opportunistically in various programs.</p> <p>Secondary income/alternative livelihood strategies, in particular ecotourism.</p> <p>Livelihood program specifically targeting women,</p>	Cultural constraint – 'taboo' for women to participate in fishing activities or to be involved in decision-making at the village level.	<p>There is extensive involvement of women in running home-stays and restaurants. They make decisions about fish and other products bought for the burgeoning tourism market.</p> <p>Some women do participate in fishing, although in low numbers</p>

	as well as the opportunistic involvement of women in income-generating activities.		
Kenya	<p>WCS - Long-term project operation (since 1980s), well established presence and network (local, national and international, with a mostly fisheries/environment focus).</p> <p>Gender aggregated data is collected (households and fish traders, including 'mama karangas').</p> <p>Women are particularly interested in programs related to fish trade research.</p> <p>Opportunities exist to involve women in:</p> <p>Meetings on the establishment of <i>tengefu</i></p> <p>During awareness activities such as the <i>Fishers forum</i>.</p> <p>When conducting research, especially on fish vendors.</p>	<p>Lack of active involvement of women in fisheries and conservation at coral reef sites.</p> <p>At some sites there is a higher involvement of women outside the home but in general, women are rarely involved in fishing and other outdoor activities, especially where Islam is the dominant religion.</p>	<p>Social and cultural norms restricting women's engagement in marine conservation strategies and gender equality are beginning to change.</p> <p>For example, the participation of women in ecotourism, seaweed farming and fish processing and trade to urban areas</p>
Madagascar, Toliara	<p>Gender specific data or data aggregated by gender is not collected, however, this seascape is one of only two WCS marine programs surveyed with specific programs targeting women. These programs support alternative livelihood strategies by working with a women's association to develop handicraft enterprises, ecotourism and salt exploitation.</p> <p>Women are included in the resources and environmental management structure, one of very few WCS programs surveyed where women are involved at a natural resource management level; Women have full opportunity to participate in discussions in the resource management and development program and women have also set up their own association, which supports the development of solidarity and also builds on their management capacities.</p>	<p>Women are still constrained by their time-use, i.e. having to spend more time running the household and looking after family. This limits capacity to engage with and benefit from study tours to other sites.</p>	<p>Greater autonomy and engagement with women's groups)</p>

<p>Nicaragua</p>	<p>No gender specific data is collected or programs targeting women.</p> <p>The impression is that women are very influential in determining how the household makes money and what livelihood choices their sons, daughters and husbands engage in at the site level.</p>	<p>There are no cultural factors that would prevent women from working or participating in conservation activities.</p> <p>Time constraints and child-care obligations.</p>	<p>Expansion of the program to focus more on alternative livelihoods for turtle fishers requires a better understanding and awareness of women's roles in the household decision-making.</p>
<p>PNG, New Ireland</p>	<p>Gender specific/gender aggregated data is collected at New Ireland seascape in relation to a <i>mud-crab market survey</i> and a <i>socio-economic survey</i> conducted in 2011.</p> <p>A crab management project and survey at Kavieng market being conducted by WCS, attracts women's interest and participation. The project is also connected to the mangrove survey.</p> <p>Women are targeted in projects related to reef management and women's involvement in gleaning, in particular the harvest of octopus.</p>	<p>Women are still constrained in their ability to engage in these conservation strategies as a result of their time-use and commitment to caring for the family and household (reproductive versus productive role); Traditional family relationships and expected roles (social norms) also constrain women; husbands will sometimes not allow their wives to participate because of customs; When women marry (often very young) they may move to another place.</p> <p>Education is also a driver of women's participation with the ratio of people who have been to school is greater for men than women.</p>	<p>Support for sustainable livelihood activities such as participation of women in crab management and improved mechanisms for marketing.</p> <p>Include the employment of women as program staff and participation of women in LMMA committees.</p> <p>Improve gender mainstreaming of ecological and socio-economic assessments (e.g. mud crab).</p>

Poverty Profiles and Gender Analysis for Indonesia, Kenya and Madagascar



Vevo women in a fishing village at Salary, Madagascar. Photo by Ambroise Brenier, WCS.

DEFINING POVERTY AND VULNERABILITY

Poverty is not a static concept; it is a dynamic and complex social condition. Poverty isn't just used to define a group of chronically poor, low-income people. Poverty incorporates many turbulent conditions that cause a group to be vulnerable in the first place, and then perpetuate that vulnerability (Béné 2009). The definition of economic, or "absolute poverty" employed by the World Bank compares two poverty lines: US\$ 1 income per capita per day (characterized as "extreme poverty") and US\$ 2 income per capita per day (termed "near poverty") (Sari 2012). However, poverty is characterized by more than just income. "Besides basic income and resources, the freedoms to enjoy basic health, basic education, shelter, physical safety, and access to clean water and clean air are vitally important." (United Nations, Commission on Human Security 2003). This deprivation of basic capabilities is acknowledged by an analysis of "capability poverty." Households face both economic, "absolute" poverty, and socioeconomic, "capability" poverty (Sari 2012). These two concepts are not isolated. Deprivation of one can lead to or perpetuate deprivation of the other (Sari 2012). The lack of economic and non-economic resources are the risks that households face.

Households are vulnerable to risks such as changing economic, social, political, and environmental conditions. This vulnerability has "two dimensions – exposure to risk, and susceptibility". Exposure refers to conditions that can impact a given group (such as drought, flood) and susceptibility measures an individual's inability to recover from or cope with risk. How susceptible a person is to these risks will be determined by that person's income, but also the types of social conditions in place that will determine an individual's ability to recover when there is a disaster, change in government, economic fluctuation or other events that upset the system (Béné 2009).

Women in fishing communities exemplify this vulnerability distinction. In many cases, women have greater exposure to risk (such as adverse impacts of climate on their economic activities, social obstacles to employment, gendered impact of poor health services). Identifying where women are vulnerable, helps to determine how they can insulate themselves from changes. It also helps find examples of the skills and assets women are using successfully to manage their risk exposure.

Surveys were conducted by New Course in October 2012, in the south east coastal area of Kenya, the southwest region of Madagascar (Tulear region) and the Banda Aceh region of Indonesia. The surveys were designed to gain a more in-depth understanding of the existing challenges facing communities that depend on near shore fisheries for their livelihood needs.

Particular attention was given to the existing gender relationships within households, support networks, institutional structures and barriers to economic opportunities that impact the vulnerability of coastal households and women. Other sectors (offshore fisheries, infrastructure development, agriculture, tourism, etc.) were examined to evaluate their impacts on near shore fisheries and the food security and poverty levels of coastal households and communities.

Site visits consisted of meetings with WCS staff, partner NGOs, government departments and ministry representatives, representatives of the private sector. In Kenya, New Course met with

WCS staff and partner organizations that provided detailed background on the issues facing communities and on the households that depend on near shore fisheries. Meetings took place at landing sites south of Mombasa with WCS and fisheries department staff. Fishermen, traders and Mama Karanga's gave detailed information about the challenges they face. In Madagascar, WCS staff arranged meetings with fisheries department staff, fisheries researchers and one of the major fish processing companies in the region. This was complemented by meetings in four villages with women's groups, marine management units, fishermen and fish collectors. In the Banda Aceh region WCS staff provided background information while meetings in the field provided further insights about the challenges that households and women face in coastal communities.

These initial field studies reinforced the importance of issues such as declining fish catches, lack of livelihood diversification, lack of alternative income opportunities, lack of credit services, low levels of education, and economic and political marginalization as key challenges facing women and households in fishing communities. These challenges are amplified by cultural constraints and traditional structures and mindsets that limit women's participation in decision making and, more generally, limit their ability to participate in alternative livelihood activities.

INDONESIA

NOTES FROM THE FIELD: INDONESIA

One field visit was made to Indonesia to collect more specific information about gender, poverty, vulnerability in fish-dependent coastal communities. WCS field offices in Bogor and Sabang were visited to explore existing WCS work on incorporating gender into marine conservation and fisheries projects, and to explore opportunities to address food security and poverty in fish-dependent communities. This assessment focused particularly on WCS programs in Aceh and Weh Islands of Sumatra.

These sites are quite different, with variations in primary livelihood activities, reliance on fishing and fish resources as a source of livelihood and food, the extent of influence of cultural or religious institutions, and general socioeconomic health. This variation creates a range of conditions that could be utilized for a variety of community engagement. It also gives a structure in which programs can be scaled for greatest impact. While the sites differ in the attributes mentioned above, similarities do exist and many can be extrapolated to additional locations in Indonesia and beyond. Particularly important in Indonesia in the context of this assessment are issues related to Islamic culture, and those related to processing and supply chain development for marine resources.

Women typically do not participate directly in fishing activities, though in many parts of the country they collect marine species by gleaning nearshore areas. In all cases, they are involved with processing activities (for household, local market and export as the situation dictates). A few WCS programs include alternative livelihood projects. However, these projects focus on activities such as duck farming, not specifically within the fisheries supply chain.

Sabang, located on Weh Island of northwest Sumatra, is the capital of a district and with the availability of public sector jobs, the socio-economic status here is markedly higher than other, similar coastal areas. The island relies less on fisheries than many other coastal areas since agriculture is highly developed on the island. Estimates of the number of people working in fisheries related activities are just under 20%. Sabang was also largely spared from the 2004 tsunami, although other locations where WCS works, sadly, were not. Women were disproportionately killed in the disaster, particularly on Aceh Island and northern Sumatra, and it will take a few generations to reestablish the community gender balance.

In Aceh, women are not allowed to participate in any way in fishing activities because of local taboos. Women, instead, are responsible for household management. There are some women's groups focused on education and religious activities. Acehnese communities still adhere to a centuries old fishing code, led by *Panglima Laot* (commanders of the sea). Each fishing village has an appointed leader who primarily resolves conflict related to marine issues, but who also guides management for marine resources.

Most fish resources are used for local consumption. Any export is typically done through Medan (the capital of North Sumatra), with one-sided terms. Shark fishing is increasingly an issue in Aceh. Shark meat is processed locally into fried fish balls, and fins are sold through exporters in Medan. Credit is available, but mostly through informal local (or regional) money-lenders. Rates are prohibitively high and many fishers are essentially bonded into their relationships with the lenders.

In Aceh, there is a clear issue with donor dependence and grant-based support is thought of (and used) as a substitute for other gainful economic activities. This resulted in, and is also the result of, the significant influx of donor resources into the region after the devastating tsunami in 2004. This economic situation is unsustainable over the long term, as many of the large bilateral and multilateral programs currently operating with significant resources are closing. Future programming in the Aceh region must address sustainable, long-term economic development.

POVERTY AND GENDER ANALYSIS

Indonesia was a particularly hard-hit victim in the Asian financial crisis between 1997 and 1998. In that one year, the number of households living below the national poverty line more than doubled, and the number of people facing extreme poverty soared from 22.5 million to 49.5 million (Sari 2012). The Indonesian government responded to the crisis by implementing a poverty reduction program, part of which included gender mainstreaming components (Schech and Mustafa 2010). The Indonesian government has taken affirmative steps in their attempt to alleviate poverty, however, about half the population still lives just above the national poverty line (IFAD 2010). These "near poor households," often those in rural areas where aquaculture is the main economic activity, is particularly vulnerable to any social, environmental, or economic fluctuation (IFAD 2010).

POVERTY AND VULNERABILITY

The Indonesian government's poverty reduction programs appear to be working. Economic conditions are gradually improving and Indonesia is on track to achieve several of its Millennium Development Goals (MDG). For example the portion of the population living on \$1 per day is well under the goal of 10.3% (UNDP 2010). However, in the government's attempt to strengthen the economy, the disparity between groups in Indonesia widened.

Many Indonesians are teetering on the edge. As mentioned before, the elimination of "extreme poverty" does not translate into stability. In fact, to achieve this, the government's poverty reduction program focused on economic growth in hopes of creating "new job opportunities [that have] trickle down effects to lift more people out of poverty" (Sari 2012).

This trickle-down effect, while improving the economy generally, has had the adverse effect of also increasing disparity (UNDP 2010). This disparity is particularly apparent in the fishing industry. Almost 40 million people, 36% of the population, worked for the fishing industry in 2011 (Government of Indonesia, Central Bureau of Statistics). However, despite the reliance on fish as an export of the country, and despite the percentage of the workforce that relies on the fishing industry, "Coastal fishers in Indonesia and Malaysia practicing traditional fisheries rank among the poorest in society" (Siason et al 2010). These fisheries are economically vulnerable themselves. In rural areas, where aquaculture and agriculture are the main sources of income, poverty hovers at 16.6 percent compared to 9.9 percent in urban areas (IFAD 2010). Because of policies narrowly targeted to job opportunities, many households focus on income and neglect diversification of subsistence

THE ROLE OF CREDIT FOR WOMEN IN PROMOTING RESILIENCE IN FISH-DEPENDENT COMMUNITIES

The challenge: Fisheries in many places suffer from volatility, seasonality, competition and lack of regulation and enforcement. Fishing activities in Indonesia and elsewhere, are often carried out by men. Many management systems can be implemented to address supply side and sourcing issues (e.g., closures over time and space, enforcement of control and access, catch limits, gear restrictions, etc.). Once out of the water, marine products go through local and/or broader supply chains where a variety of factors result in diminished quantities or quality of products (poor processing facilities, lack of cold storage, spoilage, unfair pricing, access to markets and finance, etc). Finance may be available in fish-dependent communities but when credit is available, it tends to be expensive and constraining. Both source and supply chain issues need to be addressed in order for fish dependent communities to subsist sustainably. In addition, many instances of donor supported programs result in the reliance on grant based resourcing at the cost of sustained entrepreneurial solutions. The challenges can be summarized as: 1) fish food and related resource availability and volatility; 2) supply chain inefficiencies; and 3) finding sustainable solutions.

The opportunity: Provide credit in form and structure that is appropriate for women to obtain, manage and repay. In Indonesia and many other parts of the world, women are responsible for household decision-making and financial management. They are also responsible for processing of fisheries products and compensating for times of lower resource yields. This experience means that they are likely better able to perform such activities as accounting and saving that are critical for credit systems to work. They are also usually able to engage in alternative land-based activities to diversify revenue and other resource streams (e.g., food). A fair and local credit system managed to capitalize on local systems, knowledge and production is lacking in many places. Such a system would provide a backbone to support not only fisheries supply chains (and address existing inefficiencies as well as unfair financing through money-lenders) but alternative revenue generating activities (which supply broader resilience for the community). Where these systems do not yet exist or need support, grant based solutions (business development, technical, management support, scientific support for better decision making, etc.) are essential for their viability. The upside is that grant-based support in these instances, if oriented appropriately, will not only address the challenges highlighted above, but also be self-financing, which addresses the third challenge. Clearly, building a credit system alone is not enough. Technical issues in the fisheries and non-fisheries spaces need to be well understood and supported. However, a credit structure provides resilience and longevity that enable the rest to thrive.

activities (IFAD 1994). This leaves “near poor households vulnerable to shocks such as food price increases and ill health, which can easily drive them into poverty” (IFAD 1994).

Fishing communities hovering below and just above the poverty line are not free from vulnerability. “Individual households’ exposure to risks over time is captured through the heterogeneity of the group’s income” (Béné 2009). For example, Jawa Tengah Jawa Timur, the communities responsible for the highest fishing yield, still remain below the poverty line (UNDP 2010). In other words, households with a single-activity of cash income (fishing centric wage-labor) are more vulnerable than households that engage in other subsistence activities because, they have greater exposure to risk (such as changes in the economy or fishing industry) and, are unable to react to risk (such by providing other means of home-consumption) (Béné 2009).

A CLOSER LOOK AT RISKS IN INDONESIAN FISHERIES

The disparity and instability mentioned above is particularly prevalent in Indonesian fisheries. The seafood processing industries in Indonesia can be divided into four categories, mainly the traditional, small, medium and commercial scale (Siason et al 2010). Within fishing communities, “exposures to health risks (for example, waterborne disease, HIV/AIDS) or climate change are as disabling, or perhaps, even more disabling, factors for individual or community well-being and human development than economic vulnerability” (Béné 2009). The “near poor,” are much more vulnerable to climate changes and health risks. As general income and education statistics improve, access to health and food security, needs that can easily affect a household’s vulnerability, do not follow a similar trend. On the coast of Indonesia, over 90% of residents are homeowners, (Zein 2006) but of these homes, only about 40% have a toilet facility (Sari 2012). Those that don’t own a facility either use the public toilet outside of the mosque or just defecate along the coastline (Zein 2006).

The Indonesian government’s poverty reduction program has not been able to greatly reduce poor nutritional levels. More than a quarter of the population doesn’t have access to clean water (Sari 2012), and the portion of the population consuming below 2000 kcal/day hovers at 61% with dietary patterns dominated by cereals and rice (UNDP 2010). Though the lack of access to protein is common throughout Indonesia, fish consumption patterns vary with locality. Some attribute this to cultural preferences; the per capita consumption of fish in the eastern part of the country (where the export of fish is minimal) is 40 kg/year, as opposed to the per capita consumption in the western part of the country (Java, where the large production facilities are located) is 10 kg/year (UNDP 2012).

Even with resources at their disposal, “vulnerable fishing households can initially be above the ‘welfare threshold’ (for example, poverty line) but face risks or shocks that could drive them below that threshold almost instantaneously (for example, loss of boat, fishing gear or even loss of life)” (Béné 2009). This vulnerability is quantified on a household’s probability of attaining a certain level of welfare in terms of income, food security, education, or health (Béné 2009).

WOMEN AS RESILIENT ACTORS

By reducing income dependence on fishing, and diversifying livelihoods, women in fishing communities are the social safety net against many of the risks and uncertainties that affect households. Women's and men's economic activities in the fishery sector are divided in many ways: in their actual activities, in the relationship between women and men in society, and in the interdependency between fishermen and women traders (Fitriana and Stacey 2012).

"General statements concerning the role of women in the fishery overlook the great variation of women's contributions (Upton 1991)." However, one trait is common: women in Indonesian fishing communities are involved in all three phases of the fishing process: pre-production, production, and processing (Fitriana and Stacey 2012). The variety of ways women contribute to their communities varies between those areas with traditional or small-scale production, small-to medium-scale production, and large-scale production.

Small- to traditional-scale operations

In small and traditional scale production around the world, women's roles vary greatly, between the gear used, the type of fish caught, where women fish, the effect of weather on their production, and what they do with fish caught. Concerning production, the methods women use varies. For example in some areas of Africa, "almost all women ...used fish traps (*ker*) which were not used by men... During low tide in all seasons, women collected shells, sea urchins and trapping and catching fish using *ker*." The time spent varies, "women spent on average at least 3 hours per day gleaning for shells and catching fish using fish traps during low tide in almost all seasons, depending on weather conditions and when they were not preparing fish to be taken to market (Fitriana and Stacey 2012). Because of these differences, women are exposed to different risks than men in their communities; their catch is impacted differently by changes in weather, and because women fish closer to home and for shorter periods, they are aware of and can respond to health, nutritional, and even social concerns as they arise.

Furthermore, in the post-production phase, women in small or traditional scale operations used their catch for consumption primarily and secondly for trade with mountain communities (Fitriana and Stacey 2012). Such use contributes to nutritional diversity of their household, and helps alleviate many nutritional problems that arise. Through these methods, women are similarly exposed to risks but, they are also in a better position to respond to these risks specifically because of their awareness and contributions to the improvement of nutritional diversity.

Medium- and large-scale operations

Many of the medium scale operations are located close to fish landing sites where women are employed as manual workers, processing the catch (Siason 2010). However, as large scale operations and aquaculture replace these medium scale operations and as these operations become "more intensified and more commercialized, there is a corresponding decrease in the

involvement of women” The result of this is that there is a discrepancy between the activities that men take on, and the routine, non-technical activities passed on to women by family members (Siason et al 2010). Many women lack the highly technical skills and understanding of ecological and biological requirements of commercial systems; these skills and this knowledge are crucial, in many cases, to the success of commercial farms. When increased commercialization is not paired with increased educational opportunities, the result is fewer employment opportunities and even lower wages for women (Arif et al. 2010).

The increase in fish production doesn’t necessarily parallel the provision of a community’s needs. This is also true for women in communities with large-scale fishing operations. Of the major MDGs Indonesia has failed to reach, many of them specifically adversely affect women. “In relation to food insecurity, it is most commonly women and children who suffer from malnutrition: evidence indicates that, despite Indonesia’s growth during the most recent food and financial crises, child malnutrition cases have been rising. Among these cases, 28% of children are underweight and more than 44% are stunted” (Arif et al. 2010).

Women are the targets of poor socioeconomic conditions. “The deprivation girls face is more readily checked by looking at capability deprivation (in term of greater mortality, morbidity, undernourishment, medical neglect, and so on) than can be found on the basis of income analyses (Sari 2012).” Because of maternal health problems, they suffer the greatest from poor nutrition and a lack of health infrastructure. However, the contributions of women in the fisheries sector are targeted toward eliminating the risk that exists in fisheries and addressing the capability deficits that exist. Their roles change as the commercialization of fishing changes and their roles are diverse.

WOMEN AS THE SOLUTION

Women target their activities to minimize their susceptibility to economic and socioeconomic risks they face. As commercialization alters the economic landscape of Indonesia, women’s roles have shifted and in many cases disappeared. However, harnessing the time and skill investments that women already demonstrate will combat food insecurity and help insulate households and communities in this changing economy.

LAWS, POLICIES AND OBSTACLES

Fishing laws have collateral consequences on women. Policies that regulate and promote economic development in large scale fisheries indirectly neglect communities with small-scale fishing, which disparately effect women. These regulations which promote certain economic activities over others, or that provide stability through regulation, directly and indirectly impact women. More notably, the absence of laws that regulate women’s fishing activities and the absence of those that target informal wage labor obstruct the efficacy of women in their community.

FISHERIES LAWS AND POLICIES

Since the economic crisis in 1998, the Indonesian government has worked to implement a “four track strategy,” namely that development must be pro-growth, pro-job, pro-poverty reduction, and pro-environment (Sari 2012). To do so, the government focused on a trickle-down system of economic growth, investing and regulating large scale operations. This is particularly evident in the fishing industry. The resulting economic growth is not necessarily synonymous with poverty reduction, however, and the collateral consequences of such policies may create more problems than they solve.¹⁷

The Indonesian government determined that fish production, with the exception of tuna and shrimp (commodities that bring a high export value), should be used to meet domestic consumption needs first (Worldfishing and Aquaculture 2012). On its face, this regulation might appear to be an attempt to address issues of food scarcity. However, the government has chosen to invest in and regulate large scale operations of tuna and shrimp production and processing, while leaving smaller operations to bear the consequences of this investment. As a result, over-fished coastal stocks become depleted and large scale productions go further and further from shore. They are able to do this with the help of the Indonesian government. The Fisheries Minister has called for “fisheries to be developed on a modern industrial footing with improved technology to be more widely used in aquaculture” (Siason et al. 2010). This in turn has prompted investment in large fishing boats enabling them to fish further offshore. Additionally, the further from shore fisherman are required to go, the most manpower that is needed to police the licensing and practices of their fishing practices relative to foreign fishing practices (Siason et al. 2010, Worldfishing and Aquaculture 2012).

When financial resources are poured into large scale fishing operations, small-scale fishing operations (and women) feel the effects. Though the Indonesian Fisheries Minister has suggested that “small, medium and big fishing operations can grow together, (Siason et al. 2010), in practice this has not occurred. Fishing grounds along both the north coast of Java and the east coast of Sumatra (the location of the largest commercial operations) currently are over-fished (Worldfishing and Aquaculture 2012). Instead of maintaining current practices, those operating small scale fishing operations for domestic purposes are encouraged to take up different activities such as seaweed production or fish process. Because most fishermen in Indonesia are small-scale operators, who use fishing primarily for consumption purposes (Worldfishing and Aquaculture 2012), their ability to provide for these consumption needs is altered by these policies.

In addition to having collateral effects on the means and methods of small-scale production, investment in such large operations doesn't have the trickle-down effect that the government

¹⁷ The government's trickle-down approach to economic development has included investment into and regulation of large scale fisheries. However, investing in large fishing operations has left those working in traditional, small, or medium scale operations vulnerable. Furthermore, even in communities where the large fishing operations occur, households suffer from the non-economic collateral consequences of this investment.

would suppose. In terms of employment, “a one million dollar investment in large scale fisheries would employ 5 to 30 people while investment in a small-scale fishery may employ 500 – 4,000 people” (Upton 1991).

Regulation of these fisheries also poses a serious threat to small-scale operations. The success of coastal planning “typically depends upon good information, broad-based partnerships, transparency, expanded citizen access to information, and coastal decision-making bodies” (Diamond 2003). However, this systematic planning has not occurred in part because of government decentralization over fisheries regulations. Some people question a decentralized government’s ability to both manage preemptive concerns such as licensing as well as post-facto enforcement of needed regulations. With decentralization, under article 18 the law no 32/2004, local government has the authority over the management of marine and coastal resources except for the sea bed which is remain under the central government control. (UNDP 2009). In the absence of a strong regulatory body, many fishermen “have seen their resource base depleted and their labor marginalized by the expansion of commercial fishing” (Gaynor 2010).

WOMEN

Part of the Indonesian government’s reaction to the Asian Economic Crisis of 1997-1998, was the adoption of gender mainstreaming policies as a component of addressing surges in poverty levels (Schech and Mustafa 2010). Doing so reflected standards set up in the 1945 Indonesian Constitution that articulates economic and gender rights by “acknowledge[ing] every citizen’s right to work and to a decent life, and it is the government’s duty to ‘respect, protect and fulfill this right for both women and men” (Schech and Mustafa 2010). The focus of these efforts, however, was not gender equality, but rather poverty reduction. As a result, the efficacy of the gender mainstreaming policies was questionable and women face two major collateral problems: major obstacles in data collection, and governance problems.

INADEQUATE DIRECT AND INDIRECT ECONOMIC REGULATION

Though the Indonesian government made attempts to incorporate gender mainstreaming into their poverty reduction program, the economic policies failed to incorporate women’s complex roles. “Women have their own socio-economic positions and operate subcultures, networks, and knowledge systems of their own” (Shinji 2011). Women’s work, often labeled as subsistence, ignores the knowledge and expertise that women have which could be useful in both formal and informal economic activities, such as the different sized fisheries. The institutionalization of these norms combined with increasing market integration effectively makes women’s constitutions invisible and neglects and powerful source of knowledge (Shinji 2011).

The duty imposed on the government by the Constitution to protect gender equality was only “carried out by playing a ‘minimum role’ in the gaps left by the free market forces and creating opportunities for poor people in partnership with local government and international

institutions" (Schech and Mustafa 2010). The result was two-fold: first, inadequate legal protections for women's work product in Indonesia and second, a deficit in ample data highlighting gender differences.

An emphasis on regulating formal large-scale fishing operations paralleled an absence of law in the informal sectors. In spite of Law No. 13/2003 which claims that all wage laborers are supposed to be provided with social security protections, "because they do not work within enterprises that adhere to legal and regulatory frameworks, it is a logical consequence that they have little or no legal and social protection" (Wijaya 2008).

Women in fisheries have not only failed to receive benefits such as insurance and social security from these government programs, but their access to the fisheries industry in itself is limited. The governance issues that plague fisheries have a disproportionately larger negative impact on women. For example, in the Alor Conservation Area, a decentralized government didn't include women in a coastal management plan even though "the rights of women in Alor District to access fisheries and marine resources were low" (FAO 2004). Even the language of fisheries laws is gendered by disparate definitions of "fisherman" and "fishery;" "fisherman" is defined specifically in the law as "a person whose way of living is catching fish," while the work conducted by women in the fisheries is "an activity related with the management and utilization of fish resources" (FAO 2004).

OBSTACLES IN DATA COLLECTION

One of the major issues that stand in the way of domestic and international regulation of labor is the lack of sufficiently detailed gender disaggregated data. Indonesia, for example, does not differentiate by gender their labor data on type of labor, amount of labor, level of training or wage. This leads to assumptions and gender stereotypes in data collection which "tend to obscure the potential plurality of men's and women's roles played" (Diamond et al. 2003). Many of the gender segregated statistics promulgated by Indonesia's Central Bureau of Statistics focus on stereotypical labor divisions such by gender; however, those divisions related to paid and unpaid labor are gender blind. The resulting absence of information "conflates[s] female and male knowledge and practices and thus over-look[s] important distinctions in expertise." In coastal planning, coastal managers need accurate information about the complexity of women's knowledge and roles across various economic sectors and especially across the fishing industry (Shinji 2007).

In the absence of direct integration into fisheries production, regulation to include or insulate women in the economic sector, and without informal insurance programs such as credit or insurance, women have reacted to insulate themselves by forming informal marketing organizations and creating semi-permanent relationships with suppliers. What categorized women within these communities is the "primacy of risk and uncertainty." Programs that provide such insulation is the first step in encouraging an increase formally recognized contribution of women in this important enterprise.

KENYA AND MADAGASCAR

NOTES FROM THE FIELD: KENYA

As part of this study, four fish landing sites were visited south of Mombasa where fishermen, women who buy fish (Mama Karangas) and traders gather to buy and sell fish.

Fishing is an important income generating activity for over 45% of households on the Kenyan coast, and over 60,000 people depend on fishing for income (UNEP 2007). Although very few coastal households depend solely on fishing for their livelihood, many depend only on fisheries resources for income. However, for some of the poorest of the poor buying small fish, frying them and selling them in their communities is one of the very few ways they can support their families.

There is virtually no motorized fishing on the coast of Kenya just south of Mombasa. Fishermen use dugout outrigger canoes with and without sails and a variety of fishing gear, including nets, lines and spear guns. They fish between the coastline and the coral reef a few kilometers off shore, not willing to venture further because of more dangerous waters. When they return to shore with their catch they are usually greeted by a group of Mama Karanga's waiting to buy their fish.

In Kenya, Mama Karanga is the name given to women who buy fish from fishermen, deep fry the fish and sell it in their own communities or those nearby. When asked, the women usually say they do this because they do not have any other income-earning options. This work does not require much education and the barriers to entry are low. Becoming a Mama Karanga seems to be a choice of last resort for the poorest women, regardless of religion (Muslim or Christian). The work is hard, income is variable and often the pay is very low. A large proportion of Mama Karangas are the heads of their households (single, widowed or divorced mothers) and for most, this is the main source of support for their families.

People directly involved in the small-scale fisheries can be divided into boat owners, fishers, traders and Mama Karangas. Fishers are almost exclusively men and the traders are mostly men with a few women. The traders buy fish from the fishermen and sell to hotels, restaurants and higher end markets. They buy the larger, higher quality fish and have bigger margins, which makes them much better off than the Mama Karangas. The fishermen prefer selling to these traders because they receive higher prices, though they often complain that the prices offered by the traders are still too low. The traders are perceived as the people who make the most money.

Mama Karangas are last in line for the fish. If catch is low, they often are left without any fish, and in the low season Mama Karangas suffer. Even during the high season, if tourism increases and the demand for fish goes up, the traders can buy all the fish and again, the Mama Karangas suffer. Some Mama Karangas have established relationships with specific fishermen; some try to buy from any of the fishermen. Such strategies vary among women and across time.

Women identified declining fish catches and a lack of access to other income generating options as their greatest challenges. The main barrier identified to expanding livelihood options was a

lack of access to credit. While micro-credit institutions do exist in Kenya, the interest is high and the requirements for loans are obstacles. Women have traditionally engaged in 'merry-go-rounds' where they join together to create a pool of savings which can be used as small loans and services for the group members in times of need. Women talked about expanding what they sold to include other food products and possibly other items. Some also identified making and repairing clothes as other options. Providing micro-savings and microfinance services to Mama Karangas (as well as to fishermen) is an alternative that could increase opportunities for diversifying livelihoods and food security of Mama Karangas, fishermen and their families in the coastal fisheries sector. However, rates would have to be affordable and these efforts need to be combined with micro-business and management training.

NOTES FROM THE FIELD: MADAGASCAR

In Southwest Madagascar, four coastal communities were visited and community members graciously shared information about their lives and the challenges and opportunities they face. We talked to men and women, community leaders and members of fisheries management committees.

On the southwest coast of Madagascar (Tulear region) the majority of families depend primarily on fish for food security and income generation. These are communities where many families have been fishing for generations. Men typically fish in pirogues (dugout canoes) with and without sails. We were told that during low tide many women accompany the men to the reef, between 3 and 5 km from the coast, where they practice 'pêche à pied' (fishing on foot, i.e., gleaning), by walking over the reef looking for octopus and small fish that they can catch. Men fish from the dugout canoes in the lagoon between the reef and the coast. Women take care of the household and when the fishermen return, the women take the fish, set aside what they can for the family and sell the rest. Women said they often divide the money for household needs and give money to their husbands so they can buy cigarettes and something to drink.

Women and men from all four villages spoke of the same difficulties. Fish catches are much lower than they were ten years ago. Estimates of the drop range from consistent catches of 10-30 kilos ten years ago to sporadic catches of 2-5 kilos now, or more often catches of a kilo or less. They also said that the weather has become more unpredictable and harder to anticipate, making some of their traditional knowledge of weather patterns obsolete. The welcome north winds have been less consistent, replaced by the less predictable, strong gusty south winds which prohibit most fishing efforts. They talked of increased migration of people from 5-10 km inland, where families are giving up farming because of droughts and scarcity of arable land, and moving to the coasts to become fishers. Low availability of fish is driving fishermen outside the reef to fish, where the water is rough and dangerous in the small dugout canoes.

Most of the fish that are sold are bought by sub-collectors for two fishing companies based in Tulear (a 4-6 hr drive away, depending on the condition of the road). Women used to be 'mareilleurs' or sub-collectors, but with the drops in catch and little money, the fixed costs of transportation and registration have made it unviable economically for them to continue.

Households and communities are becoming increasingly vulnerable and food is less secure due to decreases in fish catches. The decline in average catches, together with the more unpredictable and severe weather patterns, and droughts that have affected inland farming are resulting in serious food security issues along the southwest coast. Reduced catches have resulted in reduced incomes for households and this has affected their ability to provide adequate food, education and health services to family members. Alternative livelihood options were consistently mentioned as needed for these communities to increase food and income security. However, community members and WCS field staff identified a number of constraints to the adoption of alternative livelihoods:

- Literacy and education levels are very low - most community members cannot read or speak French and have not attended school past primary school;
- There is a 'day to day' mentality of the coastal (Vezu) fishers and their families - i.e., the fish that are caught and the income generated today are consumed and spent today. There is little tradition of saving for future needs;
- Vezu are not accustomed to waiting for results. For instance, their culture is not based on agricultural cycles where they would have to wait months to see usable benefits of their work;

ONE WOMAN'S STORY

Marcellia is the president of the women's association in the village of Salary on the southwest coast of Madagascar. She has a small compound in the middle of Salary, with a small house where the walls are made of wood and reeds and the roof of thatched grass. The house has two rooms separated by a curtain. Marcellia has seven children, two of whom have moved out of the compound. She talks of the decreases in catch and income and how she used to be able to send her children to the private Catholic primary school, instead of the public school here in Salary that often has no teacher, too many students and no books. The private school costs around \$US 0.25 per month, while the private school charges around US\$ 1.25. Her 12-year old daughter Lanto graduated from primary school last year and Marcellia hoped to send her to secondary school. However she can no longer afford the fees. The high school is 50 km away. The school fees are around US\$5.00, which does not include the costs of uniforms, workbooks, rent and food (around US\$8 per month). Instead Lanto has returned to her primary school and will stay in the school despite having already completed the classes.

Marcellia is trying to diversify her income opportunities. She realizes that fishing is not improving and that she needs to diversify. As part of the Salary women's association she took classes in weaving offered by an NGO and has made bags and purses. However there are few tourists and some have complained that the quality of the bags are better elsewhere. Another NGO-supported project focused on agriculture and helped the women's association prepare an enclosure for a vegetable garden. However, there was no follow up by the NGO. Agriculture, raising small livestock, aquaculture were all mentioned as alternatives, but Marcellia does not have the skills or the access to the financing to begin any of these activities.

So Marcellia continues to live with the hope that her husband will sometimes be able to bring home a big catch.

- There is a lack of trust of outside individuals and groups. Many development projects have failed in the region because of corruption, poor design and bad management; the region has been called a 'project cemetery.'
- There is a lack of viable livelihood options and isolation of fishing villages from markets;
- There is a lack of access to credit and microfinance.

Despite these constraints and challenges some options look promising. Some households in the region practice animal husbandry (chickens, turkeys, goats and pigs) and a few have successfully adopted small-scale agriculture. Small-scale animal husbandry seems to be a viable option that some families are adopting to stabilize access to food and income to counter the increasing unpredictability and lower catches from fisheries activities. If small animal husbandry was to be developed as a program in this region it would have to be adapted and designed in the local context, with appropriate management capacity building, participation from the community and a long term iterative approach.

POVERTY AND GENDER ANALYSIS

The fishing industry and coastal livelihoods along the Indian Ocean corridor between Kenya and Madagascar consist of dynamic communities and economies. Kenya in particular has seen a surge of tourism to the coast, and both countries are trying to accommodate an influx of people moving from other parts of their respective countries. In Madagascar, the coastal regions are facing a flood of urbanization and migration, but without the infrastructure or resources to support such an influx. As a result, fishermen on both the coast of Kenya and on the west coast of Madagascar (home to most of the country's fishers) are under extreme economic and social pressure (Manach et al. 2012).

ECONOMIC LANDSCAPE

Both Kenya and Madagascar have economically vulnerable populations. In Madagascar, about 70% of the population lives under the poverty threshold and over half depend on the use of natural resources for subsistence (Manach et al. 2012). Coastal species such as shrimp and to a minor extent lobster and crab are caught by Malagasy fisherman for export while tuna is targeted by illegal foreign industries (Manach et al. 2012). Populations in both areas along the Indian Ocean are concentrated along the coast and growing. "In Madagascar, growth of coastal populations is taking place more rapidly than across the country as a whole, with population doubling times of approximately 10–15 years" (Manach et al. 2012). Similarly, in parts of Kenya where fishing is the most important activity in the community, "competing use of coral reefs and coastal areas including near-shore waters between various resource users often results in conflict among various stakeholders, most notably between the tourism industry and the local community" (Cinner et al 2011). Such rapid urbanization and migration to coastal areas created conflict between communities and individuals over both natural resources and public services

(Oluoko-Odingo 2009). The local demand coupled with international demand for fish have served as a catalyst for economic pressures and hardships among coastal communities.

International demand for shrimp, tuna, and shark has led to overfishing and in many ways illegal fishing in the West Indian Ocean. "Total catches of sharks taken by foreign vessels based on by-catch rates from the tuna fisheries suggested that total catches increased steeply since 1950, and are currently estimated at 4,300 tons per year" (Manach et al. 2012). The demand for shrimp however, has seriously impacted the fishing economy in both Kenya and Madagascar. With the introduction of commercial operations, shrimp production went from 300-400 tons per year in the 1960s to a peak of 13,000 tons per year in 2003. Since then, it has leveled to 7900 tons per year but the impact remains. Large commercial shrimping operations are prevalent and a predominant form of employment, especially in Madagascar.

In Madagascar, domestic fisheries catch accounts for over 70% of the total catch. "Although marginalized and poorly monitored," these small scale artisanal and subsistence fisheries are incredibly important to domestic markets in Madagascar. And although catch from small scale fisheries is increasing its rate of increase is declining. Given the current patterns and trends of small-scale catches we can expect to see, within the next 10-20, decreased outcomes, which in turn will threaten the security of coastal communities, particularly in regards to consumption patterns (Manach et al. 2012). "Madagascar relies heavily on marine resources provided by small-scale fisheries to combat issues of food security...[they]supply the majority of local seafood demand, as most of the catches are sold and consumed locally."

Similarly, Kenya has demonstrated a "positive fish trade balance" meaning that in regards to production and trade, fisheries exports have increased substantially. This positive trend in production suggests that these fisheries may not yet have reached full capacity and could continue to grow, even if moderately (Manach et al. 2012). However when this overall quantity is broken down between high-value fish (used for export) and low-value fish (used for consumption), there is a widening gap (Manach et al. 2012). The catch of high value fish is predicted to remain stagnant while low-value fish is expected to plunge drastically (Béné et al. 2010). This has an effect both in terms of altering the employment landscape and socioeconomic relationships in coastal communities.

COLLATERAL IMPACTS OF THE GROWING ECONOMY

The tumultuous conditions the result from economic change in the region perpetuates poor socioeconomic conditions and increased coastal communities' inability to access basic needs. These communities are characterized by the threat of impoverishment because of factors outside of their immediate control (changing climate conditions or political situations) (Oluoko-Odingo 2009). In the face of urbanization, there are consistent changes to produce "sufficient food, fuel, fiber and shelter to satisfy the burgeoning human populations, despite the existing strains on most of the natural resources such as fresh water, cropland, fisheries and forests, among others" (Oluoko-Odingo 2009). The situation is aggravated by depleting resources and adverse weather conditions that "lead[s] to conflicts between communities and individuals" (Oluoko-Odingo 2009).

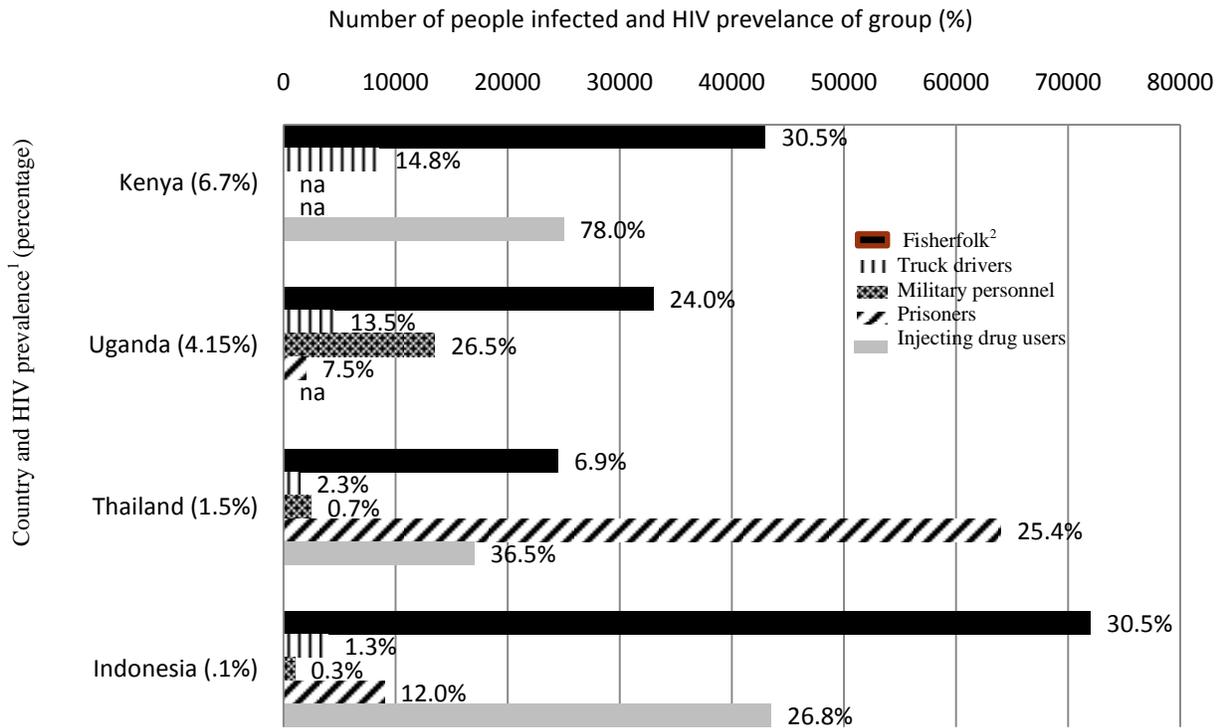
In many ways, relative poverty can be tied to infrastructure and the access people have to public resources. In many coastal communities, food poverty and absolute poverty decreases with accessibility to water resources, electricity, infrastructure, medical facilities, and educational facilities (Oluoko-Odingo 2009). Infrastructure becomes important certainly to facilitate trade and transport, but also in can determine how vulnerable a population is to react to changing conditions. In the coastal regions along the West Indian Ocean, these conditions include most radically the prevalence of HIV and AIDS.

The existence of HIV/AIDS has an immediate impact on the household. The prevalence of HIV/AIDS have severe economic and social effects such as high cost of health or medical care, and increased expenditure on treatment and transport for treatment, households. Economically, communities suffer because few fishermen live long enough to invest in the capital sector to encourage growth within fisheries. In Africa, fishermen are among the most 'at risk' mobile occupational groups, with a higher level of HIV rates recorded than for truck drivers and miners (Figure 8). However, the vulnerability of fishing communities to HIV/AIDS has been widely overlooked in national and international fisheries policies, and in health guidelines. Prevention and mitigation programs are few, and the lack of social structures and support for fishing communities means that they are unable to cope with the impact of AIDS. They are also least likely to benefit from anti-retroviral therapies.

Some initiatives have been tested among fishing communities in some countries. In Namibia, workplace-based prevention measures have been established in seafood companies. In Benin, peer group education has been successful in raising awareness of HIV/AIDS and in changing behavior in fishing villages. Saving schemes have been established in Congo for vulnerable women and girls in fishing communities, to mitigate the need for casual sex and prostitution. In Tanzania and Congo, primary health services are now being provided to mobile and migrant fishers; and in Uganda, with assistance from The AIDS Support Agency (TASO), nutritional and positive support is being provided to orphans and people living with HIV/AIDS.

While these initiatives are important, they are small scale and unlikely to have a major impact given the scale of the epidemic across sub-Saharan Africa. Some government ministries are beginning to develop impact-reduction strategies for their fisheries sector, but these are still at a very early stage. If the problem of HIV/AIDS among fisherfolk is really to be addressed, much more needs to be done in terms of prevention in particular and at all levels from within and between communities, fishery and health agencies, as well as international agencies and donors.

Figure 8. Estimated HIV prevalence and number of people infected among subpopulations considered at higher than average risk for HIV in 2 African and 2 Asian countries



Notes:

1 Average national prevalence rates for sexually active adults

2 For fisherfolk, the estimated number of people infected is calculated using HIV prevalence data from epidemiological surveys of either fishing villages or individual fishers, multiplied by the estimated number of fisherfolk (fishery sector workers) according to national or FAO statistics. Details of methods used and data for six other countries are available in E. Kissling,, E.H. Allison, J.A. Seeley, S. Russell, M. Bachmann, S.D. Musgrave, and S. Heck 2005. Fisherfolk are among groups most at risk of HIV: cross-country analysis of prevalence and numbers infected. *AIDS* 19(17): 1939-1946.

WOMEN’S ROLES IN THE CHANGING PARADIGM

Women, while a particularly vulnerable population to changing economic conditions and rising HIV/AIDS in fishing communities, are also in a good place to provide solutions to the conflict that coastal fishing communities face.

For many women in fishing communities, vulnerability is both a driver and a result of poverty and is related to the inability of women to avoid, cope with, or recover from the harmful impacts of elements outside of their control (Oluoko-Odingo 2010). Women suffer disproportionately for increasing HIV/AIDS rates largely because of their insubordinate social position compared to men and associated reduced bargaining power. “A typical coping strategy is to spend savings and income and to sell productive household assets; thereby increasing vulnerability. This cycle spells a descent into deeper poverty, exacerbated by social and economic stigma” (Allison and Seeley 2004).

However, in many of these communities, women are more capable than men at socially and economically insulating themselves. Socially, women as heads-of-household in these regions dominate non-cash related decisions.¹⁸ Although the mobility of fishermen, especially those involved in large-scale operations, contributes to prevalence of HIV/AIDS, the absence of men can also be empowering for many female-headed households. “The de facto female household heads are mainly rural women whose conjugal role ...as ‘full-time farmers and weekend wives.’ The analysis showed that ‘female-married’ headed households had lower prevalence of poverty than ‘female-other’ households (single, separated, divorced).”¹⁹ These female headed households along the Kenyan coast in particular, had greater decision-making power and were often in direct control of the household’s financial situation, as well as care giving, nutrition, and healthcare. Additionally, such HIV/AIDS has the effect of limiting the labor women can perform. These illnesses prevent women from contributing to the subsistence of the family through fishing and supplemental agriculture activities, and it also limits their abilities to address childcare and household maintenance. (Allison and Seeley 2004). This in turn contributes to a number of other factors, such as food insecurity and child malnutrition.

Economically, women provide economic insulation and contribute to the sustainability of threatened resources even though “their contribution is seldom visible, and rarely features in a country's GNP” (Juma 1998). Women dominate non-cash related decisions. But their role is also effective in their economic choices. We see these effects in rural areas where household food expenditure levels are about 25% lower in female-headed households (UNDP 2010). Additionally, those female headed households spend significantly less on non-food items, when compared to comparable male-headed households (UNDP 2010).

Malagasy and Kenyan women are disproportionately vulnerable to changes in the economy as well as to the effects of HIV/AIDS. However, these women insulate themselves economically (having been demonstrated to save funds and spend less in case health needs arise) and non-economically (by utilizing resources that are increasingly neglected by men, and perpetuating the knowledge about these resources). These actions demonstrate a reaction to the commercialization of fisheries and migration to coastal communities that should be harnessed and affirmed to effectively preserve knowledge about low-value fishing practices and minimize the impact of this vulnerability.

LAWS, POLICIES AND OBSTACLES

Kenya and Madagascar share the challenge of coastal governance in the context of unstable political histories. Additionally, both counties have struggled in their adoption of international fisheries treaties and regulations that would protect their local fishers and economies. Contemporary coastal governance is a messy, dynamic system in which “institutional, socio-cultural, and political factors, past and present, that influence each phase of both local and state

¹⁸ Vulnerability and Adaptation 8

¹⁹ World Bank

decision making” (Evans et al. 2011). Both Kenya and Madagascar suffer from unstable political histories that have affected the economies. In Kenya, violence after the recent elections hit the western coast particularly hard. This political turbulence has adversely impacted the fishing industry. In Madagascar, violent coups have disrupted the legal structure, implementation of laws and policies, and enforcement capacities of the legal system. Environmental laws have been particularly disrupted in both forestry and fishing sectors. Governments of both Kenya and Madagascar have been criticized for policies that promote commercial fishing practices over small-scale operations, and then fail to effectively control it.

INTERNATIONAL DEMAND, ILLEGAL FISHING, AND GOVERNMENTAL ACTIONS

Both Kenya and Madagascar have made efforts to subscribe to treaties and regulatory bodies that regulate international fishing practices, including FAO’s Code of Conduct for Responsible Fisheries and through adoption of the UN Convention on the Law of the Sea. However, both countries are under extreme pressure because of the international demand for high-value fish, and local competition with illegal fishing by foreign fleets. Both countries have designed policies to address these two concerns, but have done so ineffectively, and in a way that neglects small-scale contributions to domestic markets.

Attempts to increase production to meet international demand or compete with foreign fleets must be met with equal regulation. However, this is not often the case. In Madagascar, the government has issued more fishing licenses than existing authority to effectively control (Manach et al. 2012). Failure to monitor vessels has led to skewed statistics about actual levels of production. One report suggested that fish catches in the Mozambique Channel are actually double the official, reported numbers between 1950 and 2008. “This would suggest that resolving conflicts between the commercial and artisanal fleets and aggressively dealing with the predominantly illegal foreign fisheries should become a priority topic at both the national and international levels” (Manach et al. 2012). As of 2010, fisheries regulations in Madagascar were under review but “no major modifications regarding small-scale fisheries or IUU regulations will be included” (Manach et al. 2012).

Ironically, Kenya, deriving less national income from coastal fishing practices than Madagascar, has developed several regulatory efforts to combat illegal fishing. Within Kenya’s Exclusive Economic Zone and the coastal inland waters, the government has acquired monitoring and surveillance equipment in addition to encouraging growth in offshore fishing (IMF 2010). “Adequate attention has been directed towards the promotion of aquaculture (fish farming) in order to ease fishing pressure in major water bodies.” These actions are one step in a long progression of efforts needed to fight coastal poverty. And, as demonstrated in the following section, the efficacy of these efforts in coastal communities is limited.

DOMESTIC FISHERIES POLICIES AND THEIR IMPACT ON POVERTY

Poor or near poor households in fishing communities that have specialized and particularized earning patterns “are likely to be disproportionately affected by trade liberalization.” Those that

are diversified, however, are “less vulnerable to sector-specific commodity price changes” (IMF 2010). Policies that encourage single-income labor and neglect diversified labor practices leave the population more vulnerable to economic and non-economic risks. Many of Kenya’s policies regarding fishing regulation exemplify this neglect.

In Madagascar, coastal fishing is vital to the country’s economy (Manach et al. 2012); however, Kenya’s coastal fishery exports only comprise 10% of the national GDP due to the larger contribution of the fishing industry in Lake Victoria (IMF 2010). In both regions, however, coastal environments are the primary source of income, security, and socioeconomic stability for households in coastal communities. Small-scale fisheries in Madagascar are vital to domestic markets and contribute to food security (Manach et al. 2012). However, because they are often marginalized and poorly monitored, they are not protected from larger fishing or shrimping operations. “Given the heavy reliance on marine resources for fundamental food security, mainly through small-scale fisheries, in a country with few if any livelihood alternatives, it is suggested that sustainable small-scale fisheries can be viewed as a human-rights issue and should be given precedence over export-oriented commercial or foreign access fisheries” (Manach et al. 2012).

A study on welfare dynamics in rural Kenya and Madagascar showed that most poverty in coastal communities is not transitory; the median time in poverty is one or more lifetimes due to low exit rates (Mukui 2005). “Poverty that persists for such long periods of time gives particular salience to the concept of a poverty trap.” Chronic poverty in these regions “depends mainly on ... the difficulty of asset accumulation and the central role of asset losses in explaining patterns of mobility” (Mukui 2005). Institutional stability lies in systems of credit, insurance, and labor organizations.

Tailoring governance reform to coastal communities, however, is particularly challenging. For example, “Kenya’s coastal zone is a patchwork of approaches” (Evans et al. 2011). Decision-making at the state level “remains highly centralized in Kenya. Institutional and policy reform occur, but are not necessarily tailored to needs at the coastal scale.” However, at the local level, policies that target resources accesses and fishing efforts are limited in efficacy and practically challenging (Evans et al. 2011).

Most of Kenya’s fishing policies, such as efforts to inspect and document fish exports, and establish the Kenya Fish Processors and Exporters Association, were implemented to improve the competitiveness of Kenya’s commercial fisheries in the international economy. It is doing so, however, with inadequate knowledge of ocean processes and resource, or capacity to deal with coastal management of marine resources.

GENDER POLICIES IN KENYA

Research on Kenya and Madagascar demonstrates an absence of laws regarding the integration of women and the economic development of fisheries. Though, “few policies have gender-neutral impacts,” the absence of policies addressing women’s roles in fishing communities reflects their institutional invisibility in these areas. “Despite the data limitations...there are

gender gaps in virtually all the core dimensions of poverty—opportunities, capabilities, empowerment and security” (Mukui 2005). Without adequate gender specific information, data collection, and policy analysis, “it is more likely that coastal policies will have a negative impact on women in general, and on those households headed by women” (Mukui 2005).

In Madagascar, women’s invisibility in these communities has permeated multiple levels. There are no special government offices to ensure the legal rights of women (US State Department 2011). Even when NGOs focused on civic education of women and girls, “due to illiteracy, cultural traditions, societal intimidation, and a lack of knowledge of their rights, few women lodged official complaints or sought redress when their legal rights were violated or ignored.” Furthermore, women are systematically discriminated against in the labor market (US State Department 2010). According to labor and social protection codes, women are not permitted to work in positions that might endanger their health, safety, or morals. These laws mirror entrenched, traditional social structures common in rural areas (US State Department 2010).

In Kenya, the new Constitution has attempted to rectify much of the legal and cultural inequality that women face. However, the problem of gender-specific law in Kenya is a double-sided coin. On one side, there is an absence of gender specific data influencing policies. On the other, gendered policies addressing the legal rights of women (such as employment and property laws) do not exist. Even where gender is acknowledged in poverty reduction strategies, “there is no detailed cognizance of gender dimensions of the proposed policies, or anticipation of gender implications of the outcomes...a gap [that] might have been occasioned by inadequate exposition of gender issues or lack of a comprehensive disaggregated database to start with” (US State Department 2010). This invisibility of women in data and policy influences each other. The consequences of this cycle are dramatic. According to Human Rights Watch, women’s property rights are unequal to men’s. “Their rights to own, inherit, manage, and dispose of property are under constant attack from customs, laws, and individuals (US State Department 2010).” Death and illness caused by HIV/AIDS which is prevalent in coastal communities threatens women in these areas and serves as a greater threat because of the threat to loss of home. This devastation is magnified as immigration to coastal centers continues to increase with ocean-dependant economic opportunities (UN 2002).

There are minimal legal protections for women in Kenya and Madagascar. This is highlighted by the fluctuating conditions that women face in coastal communities. Women are harmed in the non-economic sector by governmental inaction to develop property and health policies that protect women. Furthermore, women are economically hampered by government focus on promotion and regulation of commercial fisheries that neglect small-scale fisheries that are vital to the stability of coastal communities.

Conclusion



Women and children of Patitab village, Papua New Guinea. Photo by Elizabeth Matthews, WCS.

CONCLUSION

This report provides ample evidence for the need of a balanced gender approach to secure the livelihoods and nutritional needs of fish dependent communities. Given the current allocation of resources towards the male dominated harvest, management and global trade components of the fishery value chain, major opportunities are being missed. The report has detailed the pathways in which programs that support women in fishery dependent coastal communities provide increased food and income security. As well, micro-economic processes suggest a more resource, food and income secure population will better manage its primary resources. To change the global development path and ensure the sustainable use of natural resources, the fisheries management community must recognize that environmental instability is directly linked to social instability, and social instability flows from inequities in societies. One of the primary inequities that exist in societies throughout the world today is gender inequity.

Although much has been done over the past several decades to raise the profile of the importance of gender issues and dynamics as they relate to coastal fisheries, the topic remains marginalized and specialized among the broader set of fisheries management approaches. While women's participation in many aspects of fisheries management has improved throughout the world, progress has been uneven regionally. For instance it became obvious over the course of this assessment that there are significant geographical gaps in knowledge and action (i.e., the Caribbean, marine areas of Asia, coastal east Africa). Women's fishing activities have been relatively well-studied in the Pacific Islands region, and regional organizations and some national fisheries departments have long-standing, though small programs for women in fisheries. However, there is still a need for wide-spread and significant changes in how fisheries are managed throughout the region to ensure that women are fully incorporated in resource management decision making processes, particularly with regards to the fisheries and areas of the fisheries value chain in which they are most invested. In addition, links between gender, coastal fisheries and human well-being (particularly health and nutrition) are still poorly documented and understood.

The fisheries management community must understand, address, and respond to the specific needs of women as they pertain to issues such as food security, water security, health security and global change, among others. Women must be engaged at all scales of operation and we must empower women to have a presence in the conversation, a role in implementation, as well as a voice in decision-making. However, these changes must come as an additive benefit to communities and not at the expense of men or other community sectors.

Through the course of our assessment at the global, regional and site-specific levels, four recurring themes became apparent. These themes provide the basis upon which to build a gender strategy that will help secure the livelihoods and nutritional needs for fish-dependent coastal communities.

1. **Households and communities are not homogenous** entities and the dynamics between and among household or community members have important implications for health, nutrition, livelihoods, and natural resource management.

2. **Increases in fish catch or improved market values do not always equal increase food security** and may, in fact, reduce household nutrition.
3. **Marine conservation and management initiatives must consider the whole fisheries value chain.** Most conservation and fisheries resource management efforts reviewed have focused on extractive processes and, to a much lesser extent, consumer-based approaches, without complete understanding of the economic, social and cultural dynamics of those actions, or how they could influence the rest of the system.
4. **Fisheries management and conservation approaches tend to benefit one sector of society** and can have unintended, negative consequences for poverty, livelihoods, and human well-being. Conservation initiatives (i.e., MPA designation or fishing right allocation) have taken advantage of and often exacerbated unequal social power dynamics within communities.

Programs that understand and are customized to the gendered context of household and community dynamics provide increased likelihood that conservation and development interventions will achieve targeted outcomes of poverty alleviation and improved food security in coastal communities. In addition, understanding and incorporating gender dynamics into design and development of fisheries related interventions ensures a more complete understanding of the local social dynamics that could impact the success of these interventions.

Small-scale fisheries value chains are underinvested in and deliver far from optimal economic return and efficiency. Local elements of these value chains such as women-dominated processing and marketing activities provide a significant and scalable investment opportunity.

Helping women improve their bargaining power and income generation potential throughout the fisheries value chain will contribute significantly to equitable economic, social and health outcomes—enhancing sustainability and impact of fishery related interventions.

Rising donor and practitioner emphasis on strengthening community-based fishery co-management systems offer increased opportunities to more fully integrate and engage women in resource-management decision-making processes. In addition, understanding the gender dynamics within and among communities and how they could potentially impact community-based fishery co-management processes will help improve the overall likelihood of success of these processes.

Innovative partnerships that address the socioeconomic condition in a holistic manner create the opportunity for broader funding and implementation strategies.

This assessment has demonstrated that heterogeneity demands custom interventions; fishery value chains have significant investment potential; returns exist in household well-being and equity; current fisheries co-management investments can be leveraged; and gender is a means to new and innovative partnerships. In sum, gender expands the coastal fisheries co-management intervention framework and creates an effective means of improving community well-being.

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APPENDIX 1: GENDER AND FISHERIES RESOURCES

The following is a preliminary sampling of online resources on gender and coastal fisheries

FAO http://www.fao.org/index_en.htm

“The State of World Fisheries and Aquaculture 2012 Report”

“How gender counts in small-scale fisheries”

World Bank <http://www.worldbank.org/>

Gender in Fisheries and Aquaculture

Gender-Responsive Institutions for Accessing and Managing Resources

Family-based Systems for Aquaculture Development in Asia

Associations for Protecting the Livelihoods of Fishers, Processors, and Traders

Gender and Alternative Livelihoods for Fishing Communities

Indonesia: Coral Reef Rehabilitation and Management Program

Bangladesh: CARE's Family Approaches in Integrated Aquaculture

Gabon: Strengthening the Participation of Fisheries Communities in New Marketing Opportunities

Latin America and the Caribbean: Improving the Domestic Market for Seafood Products (INFOPECSA)

USAID <http://www.usaid.gov/>

“Gender Assessment for USAID/Guyana”

“Collaborative Management of Sustainable Fisheries in Senegal”

UNEP <http://www.unep.ch/etb/areas/index.php>

“Gender and the Environment”

CGIAR <http://www.cgiar.org/our-research/research-on-gender-and-agriculture/>

Research on Gender and Agriculture

“Gender and equity strategy: Background proposals for the CGIAR Research Program on Livestock and Fish”

IUCN http://www.iucn.org/news_homepage/all_news_by_theme/gender_news/

“Fisheries and Aquaculture in Coastal Zones: Gender Makes the difference”

WWF http://www.wwf.org.uk/what_we_do/making_the_links/women_and_conservation/

“Natural resource management and gender”

“Fisheries management and gender”

CORDIO <http://cordioea.net/cordio-ea-staff/>

“Empowering women self help groups in Kenya through ICT for better education and alternative livelihood opportunities”

ICSF (International Collective in Support of Fishworkers) <http://www.icsf.net/>

Pierri, Naina. 2011. Recasting the Net: Defining a gender agenda for sustaining life and livelihoods in fishing communities

Nayak, Nalini. 2010. Recasting the net: Defining a gender agenda for sustaining life and livelihoods in fishing communities

Sea safety programmes for small-scale fishing communities: Role of Gender, Chandrika Sharma

World Fish <http://www.worldfishcenter.org/>

“From Women in Fisheries to Gender and Fisheries”

“Gender and Equity”

Asian Fisheries Society <http://www.afsjournal.asianfisheriessociety.org/>

“Gender in Aquaculture and Fisheries”

SPC (Secretariat for the Pacific Community) <http://www.spc.int/>

Coastal Fisheries Programme

Newsletter on Women in Fisheries

“Gender in Oceanic and Fisheries Science and Management”

International Fund for Agricultural Dev (IFAD) <http://www.ifad.org/>

Gender and water: Securing water for improved rural livelihoods: The multiple-uses system approach

Republic of Yemen Fisheries Investment Project

The State of Eritrea Fisheries Development Project

International Water Management Institute <http://www.iwmi.cgiar.org/>

“Women and natural resource management: Illustrations from India and Nepal”

University of East Anglia <https://www.uea.ac.uk/>

Edward Allison “Livelihood diversification and natural resource access”

University of British Columbia <http://www.ubc.ca/>

IDRN Debriefs: Danika Kleiber – Gender and Small-Scale Fisheries in Central Philippines

UBC Fisheries Centre: “Women and fisheries: Contribution to food security and local economies”

University of Rhode Island <http://ww2.uri.edu/>

Donald Underwood “Evolving institutions in the Ghanaian canoe fishery: melding traditional and contemporary management”

University of Prince Edward Island <http://home.upei.ca/>

“Constructing Realities: Documenting Women’s Fisheries in the Pacific Islands”

IDDRA Ltd, Portsmouth, UK <http://www.iddra.org/>
Elizabeth Bennett "Gender, Fisheries and Development"

Heifer <http://www.heifer.org/>
Tanzania - Community Based Natural Resource Management
Heifer International Online Catalog – Fish

Women's Fisheries Network <http://www.fis.com/wfn/>

Latin American Network of Women Working in Fisheries <http://mujeres.infopesca.org/>

APPENDIX 2: SURVEY TOOL

GENDER, FISHERIES AND LIVELIHOODS IN WCS MARINE PROGRAM SITES

COUNTRY PROGRAM: _____

NAME (OPTIONAL): _____

OVERVIEW

1) DO YOU COLLECT GENDER SPECIFIC DATA OR DATA AGGREGATED BY GENDER? IF YES, PLEASE DESCRIBE.

Yes

If yes:

No

Don't know

2) DO YOU HAVE SPECIFIC PROGRAMS TARGETING WOMEN OR WITH A GENDER FOCUS? IF YES, PLEASE DESCRIBE.

Yes

If yes:

No

Don't know

3) HOW DO YOU CURRENTLY INVOLVE WOMEN IN YOUR PROGRAMS?

Specific activities are targeted at women

Women are often involved opportunistically

Some activities attract women's interest or participation

Most activities do not attract women's interest or participation

Women are not involved in any activities

Don't know

4) WHO ARE THE PARTNERS THAT YOU WORK WITH ON A REGULAR BASIS?

National environmental NGO

International environmental NGO

National development NGO

International development NGO

National government (environment)

National government (fisheries)

National government (gender)

- Local government (environment)
- Local government (fisheries)
- Local government (gender)
- Traditional/customary leadership
- Community-based organization (general)
- Community-based organization (environment)
- Community-based organization (gender)
- Other:

5) DESCRIBE ANY OPPORTUNITIES WHERE YOU COULD ENGAGE WOMEN IN YOUR CONSERVATION STRATEGY. PLEASE SPECIFY WHETHER THESE OPPORTUNITIES ARE WITHIN YOUR PROGRAM, AT THE SITE OR IN THE COUNTRY.

6) DESCRIBE ANY CONSTRAINTS THAT COULD PREVENT OR IMPEDE ENGAGEMENT WITH WOMEN IN YOUR CONSERVATION STRATEGY. PLEASE SPECIFY WHETHER THESE RESTRAINTS EXIST WITHIN YOUR PROGRAM, AT THE SITE OR IN THE COUNTRY.

NEARSHORE FISHERIES AND LOCAL LIVELIHOODS

7) LIVELIHOOD ACTIVITIES COMMON IN THE COMMUNITIES IN WHICH YOU WORK

	Male	Female	Both
Fishing (subsistence)			
Fishing (commercial)			
Gleaning (from intertidal areas)			
Fish/seafood processing			
Marketing (seafood)			
Marketing (crops)			
Farming (subsistence)			
Farming (commercial crops)			
Hunting			

Salaried employment			
Dive/tour guide			
Informal employment (shopkeeper, prepared food sales, handicrafts, casual work, provide services)			
Illegal activities (drugs, smuggling, poaching)			

8) WHAT ARE THE 3 MOST IMPORTANT LIVELIHOOD ACTIVITIES FOR LOCAL HOUSEHOLDS IN THE COMMUNITIES IN WHICH YOU WORK?

	Male	Female	Both
Fishing (subsistence)			
Fishing (commercial)			
Gleaning (from intertidal areas)			
Fish/seafood processing			
Marketing (seafood)			
Marketing (crops)			
Farming (subsistence)			
Farming (commercial crops)			
Hunting			
Salaried employment			
Dive/tour guide			
Informal employment (shopkeeper, prepared food sales, handicrafts, casual work, provide services)			
Illegal activities (drugs, smuggling, poaching)			

9) FOR THE 2 QUESTIONS ABOVE, PLEASE INDICATED IF YOUR ANSWER IS BASED ON:

survey or other data

estimate or perception

10) WHAT DO YOU THINK ARE THE TOP 3 ROLES OR ACTIVITIES THAT ARE GENERALLY EXPECTED OF OR ACCEPTED FOR MEN?

11) WHAT DO YOU THINK ARE THE TOP 3 ROLES OR ACTIVITIES THAT ARE GENERALLY EXPECTED OF OR ACCEPTED FOR WOMEN?

12) WHAT ARE THE GOODS OR SERVICES THAT YOU BELIEVE A LOCAL COMMUNITY MEMBER WOULD CONSIDER TO BE BASIC NECESSITIES?

13) DO YOU THINK THIS LIST WOULD BE DIFFERENT IF ANSWERED FOR WOMEN ONLY?

- Yes
- No
- Don't know
- If yes, how?

14) WHAT ARE THE MAIN TARGET SPECIES IN NEARSHORE FISHERIES FOR EACH OF THE CATEGORIES LISTED?

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Sold in urban and export markets										
Sold in local markets and consumed locally										
Consumed at home or exchanged locally										

15) WHAT ARE THE MOST COMMON GEAR TYPES USED?

	Male	Female	Both
Spears			
Spear guns			
Traps			
Hook and line			
Cast nets			
Seine nets			
Trawls			
Night fishing			
None (i.e., collected by hand)			
Explosives, cyanide, etc.			
Other			

16) IF YOU MARKED "OTHER" TO QUESTION ABOVE, PLEASE SPECIFY:

17) WHAT IS THE PERCENTAGE OF NEARSHORE STOCKS OVERFISHED?

- None overfished
- 1-25% of stocks overfished
- 26-50% overfished
- 51-75% overfished
- 76-100% overfished
- Don't know

18) FOR THE QUESTION ABOVE, PLEASE INDICATE IF YOUR ANSWER IS BASED ON:

- data or other statistics (i.e., relative to MSY)
- estimated

19) PERCENTAGE OF NEARSHORE CATCH EXPORTED

- 90-100% exported
- 61-90% exported
- 31-60% exported
- 2-30% exported
- Virtually none exported
- Don't know

20) OF THE SPECIES THAT YOU LISTED IN QUESTION 14, WHICH ARE MOST IMPORTANT IN LOCAL DIETS AND NUTRITION IN THE COMMUNITIES IN WHICH YOU WORK?

21) ARE THERE OTHER SPECIES NOT LISTED ABOVE THAT ARE ALSO IMPORTANT IN LOCAL DIETS AND NUTRITION? PLEASE LIST THEM HERE.

22) FOR THE MOST COMMONLY CAUGHT SPECIES IDENTIFIED IN QUESTION 14, PLEASE LIST THOSE THAT WOMEN CATCH, PROCESS OR SELL, INDICATING THE EXTENT OF WOMEN'S ROLE IN THE USE OF EACH OF THESE SPECIES USING THIS CODE: "EXCLUSIVELY" = E "COMMONLY" = C "OCCASIONALLY" = O "RARELY" = R

	Species	Catch	Process	Sell
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

23) FOR THE ADDITIONAL SPECIES IDENTIFIED IN QUESTION 21, PLEASE LIST THOSE THAT WOMEN CATCH, PROCESS OR SELL, INDICATING THE EXTENT OF WOMEN'S ROLE IN THE USE OF EACH OF THESE SPECIES USING THIS CODE: "EXCLUSIVELY" = E "COMMONLY" = C "OCCASIONALLY" = O "RARELY" = R

	Species	Catch	Process	Sell
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

24) PLEASE ESTIMATE WOMEN'S PARTICIPATION IN THE NEARSHORE FISHERIES HARVEST SECTOR

- 81–100% are women
- 61–80%
- 41–60%
- 20–40%
- Less than 20% are women
- Don't know

25) PLEASE ESTIMATE WOMEN'S PARTICIPATION IN NEARSHORE FISHERIES POST-HARVEST SECTOR.

- 81–100% are women
- 61–80%
- 41–60%
- 20–40%
- Less than 20% are women
- Don't know

26) WHAT TYPES OF POST-HARVEST ACTIVITIES ARE MEN ENGAGED IN?

- Independent trader/processor
- Employed in processing facility
- Don't know
- Other:

27) IN GENERAL, WHAT IS THE SOCIAL STANDING OF PEOPLE WHO FISH?

- Among the most respected in the community, comparable with civic and religious leaders and professionals
- Comparable to management and white-collar jobs
- Comparable to skilled labor jobs
- Comparable to unskilled blue-collar or service jobs
- Among the least respected (comparable to slaves or indentured servants) or "employment of last resort"
- Don't know

28) IN GENERAL, WHAT IS THE SOCIAL STANDING OF WOMEN IN POST-HARVEST SECTOR?

- Among the most respected in the community, comparable with civic and religious leaders and professionals
- Comparable to management and white-collar jobs
- Comparable to skilled labor jobs
- Comparable to unskilled blue-collar or service jobs
- Among the least respected (comparable to slaves or indentured servants) or "employment of last resort"
- Don't know

GOVERNANCE

29) DO YOU THINK EXISTING LAWS, POLICIES AND SYSTEMS GOVERNING MARINE ENVIRONMENT/FISHERIES ARE EFFECTIVE?

- Yes
- No
- If you answered no, please explain:
- Don't know

30) WHICH STATEMENTS BEST DESCRIBES THE LAND AND/OR MARINE TENURE SYSTEM(S) IN THE PLACES YOU WORK (CHECK ALL THAT APPLY)

- Traditional or customary land tenure exists and is actively used
- Traditional or customary marine tenure exists and is actively used
- Traditional or customary tenure recognized in constitution and/or statutory law
- Traditional or customary land tenure exists but is not actively or commonly used
- Traditional or customary marine tenure exists but is not actively or commonly used
- No traditional or customary tenure systems exist
- Coastal population is disenfranchised from land and/or marine tenure and/or resource control

Don't know

31) PROPORTION OF MARINE AREA DESIGNATED AS NO-TAKE ZONES

Almost all

71–95%

36–70%

5–35%

Almost none

Don't know

32) FOR THE QUESTION ABOVE, PLEASE INDICATE IF YOUR ANSWER IS BASED ON:

GIS or other measured data

estimated

33) PROPORTION OF FISHING GROUND MANAGED THROUGH COMMUNITY MANAGEMENT REGIMES

Almost all

71–95%

36–70%

5–35%

Almost none

Don't know

34) FOR THE QUESTION ABOVE, PLEASE INDICATE IF YOUR ANSWER IS BASED ON:

GIS or other measured data

estimated

35) OVERALL ENFORCEMENT IS ...

Very effective

Somewhat effective

Not effective

Non-existent

Don't know

36) ARE THERE ACTIVE COMMUNITY-BASED ORGANIZATIONS AT THE SITE WHERE YOU ARE WORKING?

- Yes
- No
- Don't know

37) IF YES, WHAT TYPES OF ACTIVITIES ARE THESE ORGANIZATIONS ACTIVELY ENGAGED IN? (CHECK ALL THAT APPLY)

- Income generating activities
- Dispute resolution
- Community events
- Health
- Education
- Youth group activities
- Environment
- Fishing
- Other:

38) LEVEL OF PARTICIPATION OF WOMEN IN THESE COMMUNITY-BASED ORGANIZATIONS

- Participation in community organizations is dominated by women
- Participation is balanced between men and women
- Participation is dominated by men
- Don't know

39) ARE THERE WOMEN'S GROUPS THAT MEMBERS OF THE COMMUNITY ARE ENGAGED IN?

- Yes
- No
- Don't know

40) IF YES, WHAT TYPES OF ACTIVITIES ARE THE WOMEN'S GROUPS ENGAGED IN? (CHECK ALL THAT APPLY)

- Income generating activities
- Dispute resolution
- Community events
- Health
- Education
- Youth group activities
- Environment

Fishing

Other:

41) TO WHAT DEGREE DO WOMEN'S GROUPS INFLUENCE DECISIONS ON FISHERY/MARINE MANAGEMENT AND ACCESS?

- Effectively determine allocation of resources
- Have significant influence in determining allocation
- Are politically active, but not controlling
- Social or informal monitoring participation and allocation
- No active effort or capacity to influence management
- Don't know

42) WHAT IS THE COMMUNITY LEADERSHIP STRUCTURE?

- Widely recognized individual leader or small group of leaders who provide(s) vision for the community and has/have community's support
- Leadership is maintained in abstentia (i.e., leader(s) lives outside community)
- Ineffective leadership due to local conflict and/or disputes
- No recognized leader provides guidance and vision for the community
- Don't know

43) TO CHARACTERIZE SOCIAL COHESION, PLEASE CHECK ALL THAT APPLY

- Common locations for gathering and meeting on a regular basis for non-fishery business, culture, or commerce
- Presence of shared social norms that facilitate transactional trust
- Presence of shared public institutions (government, schools, markets)
- Absence of differences in social status or caste that prevent interaction
- Absence of religious differences and/or conflict
- Absence of cultural, ethnic, or tribal differences that obstruct interaction

44) PLEASE CHOOSE WHICH BEST DESCRIBES THE COMMUNITIES IN WHICH YOU WORK

- Community has strong environmental ethic in place
- Community has some elements of a conservation ethic in place
- There is little to no environmental ethic evident in the community
- Don't know

45) DESCRIBE ANY ADDITIONAL NORMS AND/OR CUSTOMS THAT POSITIVELY IMPACT MARINE RESOURCE USE AND/OR MANAGEMENT

46) DESCRIBE ANY ADDITIONAL NORMS AND/OR CUSTOMS THAT NEGATIVELY IMPACT MARINE RESOURCE USE AND/OR MANAGEMENT

SOCIAL AND CULTURAL CONTEXT

47) AVERAGE POPULATION OF THE COMMUNITIES (I.E., VILLAGES) IN WHICH YOU WORK

Male: _____

Female: _____

48) AGE STRUCTURE OF THE VILLAGE(S)

Skewed toward very young

Skewed toward very old

Skewed toward very young and very old

Slightly skewed toward very young or very old, but working age also present

All ages are well represented

Don't know

49) TYPICAL AGE WOMEN IN THE COMMUNITY MARRY: _____

50) DIVORCE OR SEPARATION IS ...

Acceptable, common

Acceptable, occasional

Generally unacceptable, but not punished

Completely unacceptable; banned; punished

Don't know

51) PLEASE ESTIMATE THE LOCAL (COMMUNITY) EARNINGS COMPARED TO NATIONAL AVERAGE EARNINGS

More than 50% above the average

- Between 10% and 50% above average
- Within 10% above the average
- Between 50% and 90% of the average
- Less than half of the average
- Don't know

52) IN THE COMMUNITIES IN WHICH YOU WORK, WHAT % OF THE POPULATION IS BELOW THE POVERTY LINE?

53) IN THE QUESTION ABOVE, PLEASE INDICATE IF YOUR ANSWER IS BASED ON:

- census or other statistics
- estimate

54) LEVEL OF SCHOOL ATTENDANCE: RATIO OF GIRLS/BOYS: _____

55) NUMBER OF TEACHERS PER DISTRICT OR PROVINCE: _____

56) WHAT ARE THE DOMINANT RELIGIONS?

57) WHAT ARE THE MAJOR CULTURAL GROUPS AND DESCRIBE ANY SIGNIFICANT ALLIANCES OR CONFLICTS AMONG THEM

58) THE DOMINANT CULTURAL GROUP(S) ARE:

- Matrilineal
- Patrilineal
- Other:

ENVIRONMENTAL VULNERABILITY

59) STATUS OF CRITICAL NEARSHORE HABITATS

- Critical habitat is healthy and not threatened

- Less than 25% is degraded or dysfunctional
- 25–75% is degraded or dysfunctional
- More than 75% of critical habitat is destroyed
- Nearly all critical habitat is damaged or dysfunctional
- Don't know

60) PLEASE INDICATE IF YOUR ANSWER TO THE QUESTION ABOVE IS BASED ON:

- surveys or other data
- estimate or perception

61) PLEASE INDICATE WHICH OF THESE UNEXPECTED SHOCKS OR EVENTS, IF ANY, IMPACTED THE COMMUNITY SINCE 1992 AND INDICATE THE YEAR THESE OCCURRED (LIST ALL THAT APPLY).

	Year(s)
Major cyclone or hurricane	
Major flood	
Major drought	
Tsunami	
Earthquake	
Volcanic eruption	
Mass coral bleaching	
Political coup	
Warfare	
Oil or chemical spill	
Other	

62) WHICH OF THESE SHOCKS, IF ANY, WERE THE COMMUNITIES PARTICULARLY VULNERABLE TO AND WHY?

63) WHICH OF THESE SHOCKS, IF ANY, WERE THE COMMUNITIES PARTICULARLY RESILIENT TO AND WHY?

THANK YOU FOR TAKING THE TIME TO FILL OUT THIS SURVEY. WE WILL BE FOLLOWING UP OVER THE NEXT FEW WEEKS WITH PHONE CALLS TO CLARIFY AND EXPAND OUR UNDERSTANDING OF THE PLACES IN WHICH YOU ARE WORKING. IF YOU HAVE ANY QUESTIONS AT ALL, PLEASE LET US KNOW. THANK YOU AGAIN!