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**SIERRA LEONE'S SEAS: A PROJECT TO ASSESS THE CURRENT STATUS  
AND POTENTIAL ROLE OF MARINE RESOURCES IN THE DEVELOPMENT  
AND PEACEBUILDING OF SIERRA LEONE**

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## **SUMMARY**

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The relationship between natural resources and conflict is a complex issue, and has generated a significant volume of literature from a number of academic disciplines. Though varied conclusions have been drawn regarding what that relationship is, there is a general consensus that the links between natural resources and conflict are significant, and current research suggests that since 1945, at least 40 percent of all intrastate conflicts contain a resource element.<sup>1</sup> Furthermore, a link to natural resources and environment has been found to double the likelihood for conflict relapse within the first five years of a peace agreement.<sup>2</sup> While significant research exists on the relationship between terrestrial resources and conflict, the marine realm has received far less attention. With worldwide population growth (50% of which is predicted to soon occupy coastal areas), climate change, global fisheries decline, and the new frontier of ocean law and policy, it will become increasingly important to consider this vital relationship. The Sierra Leone's Seas project was prepared for the UN Environment Program- Sierra Leone, and fulfilled a requirement for a Masters of Advanced Studies through the Center for Marine Biodiversity and Conservation. The project assesses the role of marine resources in the peacebuilding and development of post-conflict Sierra Leone. The assessment is threefold, and the objectives are:

1. To conduct an assessment of recent and current work within the marine resource sector, in order identify the major priorities, challenges, opportunities, and active organizations
2. To identify gaps and areas of overlap, in order to assist stakeholders in pursuing strategic projects and increasing collaboration
3. To assist the UNEP programme office in Sierra Leone in identifying potential projects within the marine sector

## **PROJECT BACKGROUND**

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The Sierra Leone's Seas project emerged as a practical initial step to looking at the potential role of marine resources in Sierra Leone's peacebuilding and development. Knowing that Sierra Leone relies significantly on the marine sector for food security, revenue, and employment, the government of Sierra Leone included fisheries and marine resources as a major priority in the "Agenda for Change" (Poverty Reduction Strategy Paper II).<sup>3</sup> Furthermore the United Nations (UN) Country Team requested technical assistance from the United Nations Environment Program (UNEP) in 2009 in order to strengthen UN assistance to the government of Sierra Leone around environment and peacebuilding.<sup>4</sup> The UNEP assessment, completed in 2010, found that the Sierra Leonean civil war had significant origins in, and impacts on, the environmental resources in the country, and that many of the risk factors that contributed to conflict persist today. While the UNEP assessment identified several natural resource sectors as significant for peacebuilding efforts—minerals, forests, energy, land use and agriculture, fisheries, freshwater, and biodiversity—to date, the majority of attention and resources has been directed toward the highly lucrative minerals sector.

The role of the Sierra Leone's Seas project was to assess the recent and current activities in Sierra Leone around marine resources, with the ultimate objective of determining whether or not UNEP might provide added value in the sector—either by contributing to an existing project or initiating one of its own.

## **PROJECT APPROACH AND PROCESS**

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To conduct the assessment of current marine resource efforts in Sierra Leone, fieldwork was conducted through the UNEP program office in Freetown, Sierra Leone. In addition to stakeholder engagement in Freetown, interviews and research was conducted in other areas, primarily located on the Western Peninsula of the country, over a period of five weeks in April and May 2011. Phone interviews were also conducted in February and March 2011.

Information was gathered through approximately thirty semi-structured informal interviews as well as approximately five key informants, and supplemented by several group meetings, workshops, and informal conversations in the field.

## **SIERRA LEONE'S SEAS REPORT**

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The Sierra Leone's Seas report, attached to this document, represents the primary deliverable from the Capstone to date. In addition to this report, which will be disseminated to appropriate stakeholders in Sierra Leone and the UN, a presentation of key findings was given in May 2011 at the United Nations Integrated Peacebuilding Office in Sierra Leone (UNIPSIL). Individuals who attended the presentation represented organizations from the government, non-profit, academic, non-government, and international/multinational sectors.

## **NEXT STEPS**

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In addition to the attached report and presentation at UNIPSIL headquarters, there is an ongoing dialogue with the UNEP-SL program office regarding potential projects. Furthermore, the information gathered through this Capstone Project will form the foundation for further academic research regarding the relationship between marine resource management and post-conflict societies.

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# SIERRA LEONE'S SEAS

A project to assess the current status & potential role of marine resources in the development and peacebuilding of Sierra Leone

Katy Seto



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The Sierra Leone's Seas project was prepared for the UN Environment Program- Sierra Leone, and was a partial requirement for a Masters of Advanced Studies at Scripps Institution of Oceanography, University of California, San Diego (UCSD). The project was conducted with support from the Scripps Institution of Oceanography Center for Marine Biodiversity and Conservation (CMBC), the Association of Women in Science (AWIS)- San Diego Chapter, and the UCSD Institute for International, Comparative, and Area Studies (IICAS). The views expressed are those of the author and are not necessarily those of supporting organizations.



**IICAS**

Institute for International, Comparative,  
and Area Studies



### **List of Acronyms**

- ADB- African Development Bank
- AFDEP- African Fisheries Development Project
- CSSL- Conservation Society Sierra Leone
- EFA- Environmental Foundation for Africa
- EJF- Environmental Justice Foundation
- EPA-SL- Environment Protection Agency of Sierra Leone
- ENFORAC- Environmental Forum for Action
- EU- European Union
- FAO- Food and Agriculture Organization
- GAWA- Green Actors of West Africa
- IMATT- International Military Assistance Training Team
- IMBO- Institution of Marine Biology (Fourah Bay College)
- ISFM- Institutional Support for Fisheries Management
- JMC- Joint Maritime Committee
- MAFFS- Ministry of Agriculture, Forestry, and Food Security
- MFMR- Ministry of Fisheries and Marine Resources
- MMR- Ministry of Mineral Resources
- RDF- Revenue Development Foundation
- SLAFU- Sierra Leone Artisanal Fisherman's Union
- SLAAFU- Sierra Leone Amalgamated Artisanal Fisherman's Union
- UNDP- United Nations Development Program
- UNEP- United Nations Environment Program
- UNIDO- United Nations Industrial Development Program
- WARFP- West African Regional Fisheries Project
- WI- Wetlands International
- WWF- Worldwide Fund for Nature



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Tombo, Sierra Leone, located on the southeast side of the Western Peninsula, represents the largest fishing community in the country

# SIERRA LEONE'S SEAS

**A project to assess the current status & potential role of marine resources in the development and peacebuilding of Sierra Leone**

**Katy Seto**

In the last five decades, several West African countries have experienced civil war or armed conflict. Many of these countries' populations are also dependent on unusually high proportions of dietary fish protein, such as Senegal (47%), Gambia (62%), and Ghana (63%), as opposed to a global average of 15%.<sup>1</sup> Furthermore, while many of these states also maintain a strong economic reliance on fisheries, in many cases,

local non-monetary trading and rural markets are not adequately reflected as a percentage of Gross Domestic Product (GDP). Within West Africa, Sierra Leone represents a significant intersection of these key issues; with 75% of dietary protein dependent on fish, 11% of GDP based on marine resources, and a recent, protracted 11-year civil war, Sierra Leone presents an important case study on post-conflict

development and marine resources.<sup>2,3</sup> Furthermore, while Sierra Leone's natural resources are some of the most abundant and valuable on earth, they are badly degraded, and Sierra Leone was ranked 163<sup>rd</sup> of 163 on the 2010 Environmental Performance Index.<sup>4</sup> With these issues in mind, the government of Sierra Leone included environment and natural resources as key peace and development priorities following the



### SIERRA LEONE AT A GLANCE

- ◆ 400 km coastline
- ◆ 25,000 sq. km continental shelf
- ◆ Fisheries represent 75% dietary animal protein
- ◆ 11% GDP from fisheries
- ◆ Target fisheries: shrimp, cuttlefish, octopus, lobster, demersal, small & large pelagic species
- ◆ 2009-2010 Discovery of offshore oil & gas
- ◆ 760,000 hectares (1.9 million acres) of mangrove forest<sup>12</sup>
- ◆ Endangered species (manatee, sea turtles, etc.)
- ◆ Tourism potential

**“War-torn countries rich in natural resources face particular challenges in the stabilization and reconstruction of their societies, despite the apparent promise that natural resource wealth holds for peacebuilding and development. Where resource exploitation has driven war, or served to impede peace, improving governance capacity to control natural resources is a critical element of peacebuilding.”**

**Carolyn McAskie, Assistant Secretary-General for Peacebuilding Support, 2007**

cessation of conflict in 2002. Furthermore the United Nations (UN) Country Team requested technical assistance from the United Nations Environment Program (UNEP) in 2009 in order to strengthen UN assistance to the government of Sierra Leone around environment and peacebuilding.<sup>5</sup> The UNEP assessment, completed in 2010, found that the Sierra Leonean civil war had significant origins in, and impacts on, the

environmental resources in the country, and that many of the risk factors that contributed to conflict persist today. While the UNEP assessment identified several natural resource sectors as significant for peacebuilding efforts—minerals, forests, energy, land use and agriculture, fisheries, freshwater, and biodiversity—to date, the majority of attention and resources has been directed toward the highly lucrative minerals sector.

## NATURAL RESOURCE MANAGEMENT IN SIERRA LEONE

One of the primary drivers of the civil war in Sierra Leone emerged from the inequitable sharing of the benefits—and costs—of natural resource use. While progress in this area has been made in some sectors, the negative environmental impacts of the conflict and current unsustainable natural resource practices continue to present challenges to development and peacebuilding.<sup>6</sup> In fact, the 2010 UNEP Environment, Conflict, and Peacebuilding Assessment stated that, “despite the many positive signs of a country recovering and rebuilding after a decade of war, Sierra Leone remains a fragile state, with many conditions in the environment and natural resources sector that resemble, or are worse

was previously worth over USD 50 million and was reflected during peak catches of 230,000 metric tonnes per year during the late 1980’s.<sup>9, 10</sup> Though fisheries are not equal to the mining and agricultural sectors as sources of employment or percentage of GDP, it is specifically for that reason that they present a distinct opportunity to build institutions, promote sustainable development, increase transparency, and establish successful policies from the ground up.

There are a number of challenges to successful marine resource management in Sierra Leone, including, but not limited to: recent declines in fish catch, unsustainable fishing practices (i.e. poisons, explosives, trawling, etc.), lack of alternative livelihoods and sources of dietary protein, lack of education and communication within and between fishing communities and government, coastal pollution, habitat

loss, and significant levels of illegal, unreported, and unregulated (IUU) fishing by foreign fleets.<sup>11</sup>

In addition to these, and many other challenges, local and national actors

**“Despite the many positive signs of a country recovering and rebuilding after a decade of war, Sierra Leone remains a fragile state, with many conditions in the environment and natural resources sector that resemble, or are worse than, the circumstances that led to the fighting”**

***-UNEP Environment, Conflict, and Peacebuilding Assessment***

than, the circumstances that led to the fighting.”<sup>7</sup>

While the mining sector was likely the most significant natural resource influence on the Sierra Leone war, fisheries and marine resources represent a substantial, and likely under-emphasized factor in promoting sustainable development and reducing vulnerability. According to the Environment Protection Agency of Sierra Leone (EPA-SL), between 300,000 to 400,000 people are employed in the fisheries sector, which nets the country approximately 142,000 metric tonnes of fish annually, eighty percent of which is caught within artisanal fisheries.<sup>8</sup>

Significantly, the European Union (EU) announced in 2009 that it would soon lift a ban on Sierra Leone fish—a market that

within Sierra Leone suffer from a lack of resources and capacity for adequate monitoring and enforcement of existing policies. In the face of these challenges, UNEP has the unique opportunity to lend resources and capacity toward the marine resource efforts of local and regional partners, while simultaneously furthering the its own mandate with regard to the environmental aspects of development and peacebuilding. The Sierra Leone’s Seas project was designed as the preliminary step in addressing this opportunity, and aims to establish a clear understanding of the status of marine resource management and conservation in Sierra Leone.



**Table 1: Organizations Represented**

✦ African Development Bank (ADB)	✦ International Military Assistance Training Team (IMATT)
✦ Conservation Society Sierra Leone (CSSL)	✦ Joint Maritime Committee (JMC)
✦ Environmental Justice Foundation (EJF)	✦ Ministry of Agriculture, Forestry, and Food Security (MAFFS)
✦ Environmental Forum for Action (ENFORAC)	✦ Ministry of Fisheries and Marine Resources (MFMR)
✦ Environmental Foundation for Africa (EFA)	✦ Sierra Leone Artisanal Fisherman's Union (SLAFU)
✦ Environmental Protection Agency (EPA-SL)	✦ Sierra Leone Amalgamated Artisanal Fisherman's Union (SLAAFU)
✦ European Union (EU) Rural Development and Environment	✦ Revenue Development Foundation (RDF)
✦ Food and Agriculture Organization (FAO)	✦ UN Environment Program (UNEP)
✦ Fourah Bay College Institute of Marine Biology (IMBO)	✦ UN Development Program (UNDP)
✦ Green Actors of West Africa (GAWA)	✦ UN Industrial Development Organization (UNIDO)
✦ GOPA Consultants	✦ Wetlands International (WI)
	✦ World Wide Fund for Nature (WWF)

## The Sierra Leone's Seas Project

### OBJECTIVES OF THE PROJECT

The objectives of the current project are threefold:

- 1) To conduct an assessment of recent and current work within the marine resource sector, in order to identify the major priorities, challenges, opportunities, and active organizations
- 2) To identify gaps and areas of overlap, in order to assist stakeholders in pursuing strategic projects and increasing collaboration
- 3) To assist the UNEP programme office in Sierra Leone in identifying potential projects within the marine sector

### PROJECT APPROACH AND PROCESS

To achieve the objectives of the Sierra Leone's Seas project, a combination of key informants and interviews were used. Approximately thirty individuals were interviewed, representing approximately twenty-five organizations in the

government, nonprofit, academic, non-government, and international/multinational sectors. In addition to interviewees, several key informants were consulted during the assessment. As many of the key informants and interviewees represent multiple institutions, some organizations may be represented but not expressly identified. Interviews were informally structured, and interviewees were identified using the snowball sampling method, whereby individuals who meet the criteria for the interview (i.e. those who have recently or currently worked in the marine resource sector) identify others for inclusion through the interview process. A list of included organizations can be found in Table 1. Informal interviews were conducted in-person over a period of three weeks in April and May 2011, with the exception of four interviews which were conducted via phone conference in April 2011. Because of time and scheduling limitations, a few target organizations that were identified by stakeholders were not able to be engaged within the scope of the project.

## THE ASSESSMENT

Several issues emerged during the interview process as major themes in the current state of marine resource management and conservation in Sierra Leone. The five themes that were most emphasized by stakeholders are discussed below, and both challenges and current efforts are described.

### THEME #1: IMPROVING GOVERNANCE OF MARINE RESOURCES

The theme that emerged the most often during the assessment was that of improving the governance in the marine resource sector. This issue was stressed by most stakeholders, and was articulated in two separate ways:

1. Management Framework
2. Administration

#### **Challenges**

With regard to the management framework, a major issue was the challenge of *overlapping jurisdiction and mandate confusion*. For example, in the

management of mangrove forests, there is a lack of clarity around the roles of the Ministry of Agriculture, Forestry, and Food Security (MAFFS), as opposed to the Ministry of Fisheries and Marine Resources (MFMR). Similar mandate confusion exists in other areas between the Ministry of Fisheries and Marine Resources and the Ministry of Mineral Resources (MMR), the Ministry of Health and Sanitation (MHS), and the Environment Protection Agency (EPA-SL). The management framework was repeatedly described as *disjointed, fragmented, and donor-driven*, creating individual projects that are based on donor objectives rather than the defined needs of the country. The projects, which are sometimes implemented in advance of an appropriate legislative and regulatory framework, often work in silos, with *little communication and coordination with stakeholders or other similar projects*.

Several other challenges emerged in relation to the governance administration of marine resources. The



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**“Constructive, collective actions, taken now, become the foundation and the building blocks to catapult this great nation on the path to a developed country”**

**Madame Haddijatou Jallow, Executive Chairman, Environmental Protection Agency-Sierra Leone**



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## Table 2: Five Major Themes in the Current Management of Sierra Leone's Marine Resources

### 1. Improving Governance of Marine Resources

Clarifying the legislative and institutional framework to create comprehensive, strategic management that engages all stakeholders. Increasing the capacity and transparency of resource managers to promote efficacy and confidence in the management process.

### 2. Educating & Empowering Local Communities

Educating, training, and empowering local communities and user groups to sustainably manage marine resources.

### 3. Understanding the Resources

Increasing the scientific understanding of the resources and the environment in order to establish best practices for sustainable management.

### 4. Addressing Illegal Fishing

Addressing illegal fishing practices in both the international/industrial and local/artisanal sectors through technology, infrastructure, and cooperation.

### 5. Improving Health & Sanitation

Establishing robust health and sanitation practices and standards in order to access valuable international markets and increase revenue without depleting the resource.

challenge that was most emphasized was the *lack of transparency and the vulnerability to corruption* created by the very low wages available in the civil service. Since the processes behind the financial aspects of marine resource management (i.e. fisheries licensing, contract negotiations for construction of ports, etc.) are not clear and transparent to stakeholders, there is a significant perception of pervasive corruption and graft. This perception is bolstered by other accounts which claim that although some enforcement efforts have been successful, and arrests have been made, there is little procedural follow up, and arrests rarely lead to prosecutions or penalties.

Another administrative challenge is the *limited staff and resources within the Ministry*. There is a lack of basic equipment and facilities which present a major challenge to the successful management of the resources; examples include two or three Ministry officials sharing small cramped offices, as well as insufficient equipment to conduct basic operations. Understaffing is also a major concern, as the current number of employees is not sufficient to accomplish the existing workload, much less

respond to the demand for new initiatives in marine resource management and conservation.

Another challenge in the administration of marine resource governance is that of *brain drain* and technical capacity building. To date, very few Sierra Leoneans have been trained in cutting edge approaches to marine resource management, and those that have received significant training face an enormous incentive to pursue more lucrative employment abroad. The problem of brain drain is ubiquitous throughout Sierra Leone, but particularly challenging in sectors such as marine resources, where the required technical training is both extensive and ongoing.

### Current Efforts

In the last several years, agencies and organizations in Sierra Leone have dedicated a tremendous amount of effort toward the issue of improving governance in the marine resource sector. Though a number of efforts have provided input, at least three projects-- the Institutional Support for Fisheries Management Project (ISFM), the FAO Technical Cooperation Program (TCP), and the West African Regional Fisheries Project (WARFP)-- have

dedicated significant time and resources toward reforming the management framework of marine resources. One of the major outcomes of these efforts is the new ***Fisheries Policy and Operational Framework***, which was passed by Cabinet in June 2010. Additionally, new ***Fisheries Regulations*** were validated in September 2010 and await Cabinet review, new ***Fisheries Product Regulations*** are under review, and the new ***Fisheries Act*** is currently being drafted for validation in July 2011. Since this new legislation was created through stakeholder engagement and designed to reflect the current needs of the country, there is a strong hope and potential for these documents to clarify some of the currently disjointed framework around marine resource management. Furthermore, if the legislation can be translated into guidelines for potential donor involvement, the opportunity exists to coordinate efforts, minimize overlap, and strategically implement projects toward Sierra Leone's ultimate objectives.

Although the administrative challenges to successful marine resource governance are more complex and likely more intractable than those having to do with the management framework, a couple of efforts included in the assessment have been designed to address these issues. The first of these is the current effort on the part of the Joint Maritime Committee (JMC) to ***decentralize monitoring, control, and surveillance (MCS) efforts*** to local communities via the Forward Operating Bases (FOBs). By decentralizing this aspect of management, and engaging local communities and civil society groups such as the Sierra Leone Artisanal Fisherman's Union (SLAFU), the potential exists for increased accountability and process transparency. Furthermore, utilizing civil society groups in the monitoring, control, and surveillance efforts may help supplement the work of the understaffed Ministry. The second project addressing this administrative aspect targets the joint

challenges of transparency and accountability, and aims to supplement the staff and resource deficit through the use of technology. The Fisheries Information Management Project (FIMP), proposed by the Revenue Development Foundation (RDF), is designed to ***use information technology to streamline licensing within fisheries*** and clarify the chain of custody and paper trail throughout the process. Similar projects have been successfully implemented with the MMR and MAFFS, and although this project is in the proposal stages, the marine resource sector stands to gain significantly from the increased availability of this information.

## **THEME #2: EDUCATING AND EMPOWERING LOCAL COMMUNITIES**

The second theme that emerged very strongly from the assessment was that of educating, training, and empowering local fishing communities. Local fishing culture, while providing benefits to management in some aspects, also provides a number of unique challenges.

**“To have successful management, you have to change the culture to think of the resource differently, to care about how it works, and change does not come easily. Capacity building and training of the resource users and managers is key”**

***-Ministry of Fisheries & Marine Resources Official***

### **Challenges**

In Sierra Leone, one of these challenges comes in the form of a ***multi-generational fishing culture and relatively isolated fishing communities***. Since fishers and fishmongers oftentimes live in small coastal villages, fishing skills are handed down from generation to generation, and few other occupations may be available. In cases where detrimental fishing practices are prevalent, or there is a local or regional overcapacity in the fishery, these cultural characteristics may provide a significant barrier to effective management.

Another potential challenge is the ***lack of conservation culture and scientific knowledge of the resource***. According to a number of

stakeholders, the idea of conservation does not have a strong historical presence in Sierra Leone's fishing communities, and fish tend to be utilized through short-sighted approaches, similar to non-living resources. Since a significant proportion of the population of Sierra Leone-- especially older generations-- did not receive advanced scientific education, management practices that rely on complex biological or ecological principles may be at odds with traditional fishing practices.

The third challenge is that of *high illiteracy in the fishing communities and the resulting lack of engagement* with policymakers and regulations. Since most of the population in these areas relies more heavily on oral than written communication, and mass media technology can be few and far between, communication between policymakers and fishing



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The fishing community in Bonthe, one of the largest fishing villages, is comprised of a multi-generational group of resource users.

communities can present a tremendous barrier to effective management. Since stakeholder engagement and consensus-building are critical elements to successful marine resource management, particular attention may need to be given in order to achieve the necessary two-way communication between the resource users and managers.

#### **Current Efforts**

There is currently a great deal of momentum behind efforts to educate and empower fishing communities, and *a significant number of initiatives included in the assessment had some element of training, educating, and sensitizing resource users*. While various projects stress different priorities, each of them emphasizes the need for local community buy-in. Some examples include: the PRCM Pilot Project for Sustainable Coastal Zone Management and education

on the benefits of Marine Protected Areas (MPAs), the Environmental Forum for Action (ENFORAC) efforts to educate communities on the ecosystem roles of mangroves, the Environmental Justice Foundation's (EJF) work to empower fishing villages with regard to IUU fishing, and the Worldwide Fund for Nature (WWF) effort to increase health and sanitation practices through Hazard Analysis Critical Control Point (HACCP) training. Although the need for education and training will likely be ongoing, notably, one representative from the fishing communities stated that, "We have had a lot of training from the Ministry, and now we want to implement that training... we have a lot of knowledge and capability at this point, and have an important role to play."



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The Sierra Leone Artisanal Fishermen's Union (SLAFU) is a major civil society organization active in the sector

### THEME #3: UNDERSTANDING THE RESOURCES

The third major theme that emerged from the assessment process is the need to gain a greater understanding of the existing marine resources and the environment as a whole. In order to successfully manage a living resource, it is necessary to understand not only its current status, but also its status through time, its environment, and the interactions which impact its growth and reproduction.

#### Challenges

One of the greatest challenges to gaining this solid understanding is the *prohibitive cost of marine science research, equipment, and facilities*. Since lab equipment, chemicals, survey vessels, and other technology and infrastructure present a significant capital, as well as maintenance cost, the task of conducting this research presents a major challenge for countries such as Sierra Leone, with low GDP and low tax base. Furthermore, the *high level of education and training* required in order to conduct marine research also acts as an added barrier. While research, equipment, and facilities represent an ongoing challenge, there is a specific need for strong baseline data, as development continues in other other sectors. *Environmental changes such as mangrove destruction, coastal pollution, waste management, and coastal erosion*, especially in connection with upstream activities and other anthropogenic sources, create a context of fluctuation, which can render it difficult to determine the optimal conditions for the resource.

#### Current Efforts

Several recent or current initiatives have contributed to the understanding of Sierra Leone's marine resources. Specifically, the ISFM project and the WARFP project, as well as the Artisanal Fisheries Development Project (AFDEP), the Development Partnerships in Higher Education programme (DelPHE), and the Pilot Project for Sustainable Coastal Zone Management have all added valuable information to the current understanding of marine resources. *Data contributions* have included stock

assessments of target species, studies of non-target species such as plankton and other invertebrates, abiotic benthos and basic water quality studies, and hydrological and ecological baseline studies of proposed MPAs. In addition to the data, two small *research vessels* were acquired through the AFDEP project, *computers and other equipment* were provided through AFDEP and ISFM, and the DelPHE program created a *research partnership* between the University of Sierra Leone, the University of Portsmouth (UK) and Wageningen University (Holland) toward the goal of reducing poverty and enhancing equity in the artisanal fisheries sector. Although proper management requires consistent and ongoing updates of scientific information, recent activities have provided a basic understanding of the resource, and the opportunity now exists to apply this knowledge toward sustainable management policies.

### THEME #4: ADDRESSING ILLEGAL FISHING

A number of organizations have considered the task of addressing illegal fishing as one of their top priorities. This issue was stressed in some way by the majority of stakeholders, and can be divided into two major elements:

1. Illegal, Unregulated, and Unreported (IUU) Fishing (international/industrial)
2. Poaching (local/artisanal)

#### Challenges

One of the major challenges with regard to IUU fishing is the *high cost of monitoring, control and surveillance* (MCS). In the case of international and industrial fleets, much of the illegal activity is conducted beyond the line of sight from the shore. Some of this activity may occur within the two hundred nautical mile Exclusive Economic Zone (EEZ), but much of the illegal international trawling in Sierra Leone is reported to occur within the six-mile Inshore Exclusive Zone (IEZ) reserved for artisanal fisheries. With this in mind, MCS and enforcement at sea are significantly more expensive than similar efforts on land, considering the high cost of patrol staff, vessels, fuel, and the labor-intensive methods currently used in the sector.



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“The biggest priority right now is illegal fishing. We are most concerned with how we can develop through the fishing sector, and illegal fishing takes our fish and impacts our markets. There are about 9000 boats in the fishery and only about 1000 have truly legal mesh sized nets.”

Artisanal Fisher Stakeholder



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Where satellite imagery and other technical approaches may be applied to terrestrial resource issues such as deforestation, to date, deterring illegal activity in the marine realm relies heavily on realtime information and vessel interception. Considering the relatively low levels of government funding available for marine resource management, the low levels of tax revenue in Sierra Leone, and the lack of industry and private investment, these high costs present a significant challenge, and have historically been borne by temporary and fragmented projects.

***The extent and magnitude of international and industrial IUU fishing*** is another significant challenge. According to a report by the Marine Resources Assessment Group (MRAG) in 2005, the estimated amount of revenue lost to IUU fishing annually in Sierra Leone is approximately \$29 million USD.<sup>13,14</sup> This amount classifies Sierra Leone as one of the countries with the highest IUU fishing levels on the African continent, with IUU fishing representing an estimated 25-50 percent of total reported catch.

With regard to poaching and illegal practices in the local and artisanal sector, a different combination of challenges emerges. The first is the issue of ***overcapacity in the artisanal fishery***. According to the 2009 Frame Survey conducted by the Ministry of Fisheries and Marine Resources, approximately 9500 boats are currently active in the artisanal fishery, 40% over the capacity that the fishery can sustain.<sup>15</sup> Stakeholders expressed the belief that this overcapacity had its roots not only in the previously-mentioned cultural aspects of the fishing communities, but also in the fact that the artisanal fishery in Sierra Leone is an open access resource. Since access is not closely controlled, fishers make little money in times of poor catch and in times of good catch, fishers flood the market, further perpetuating the cycle of poverty and overexploitation.

***Illegal fishing practices in the artisanal sector*** present another significant challenge. Currently, a variety of unsustainable fishing methods are practiced within the artisanal sector, including but not limited to: channel fishing, use of poisons,

explosives, and illegal mesh size and monofilament nets.<sup>16</sup> These fishing methods may damage habitat, produce a high level of bycatch, and target juvenile fish, preventing recovery of the fishery and the ecosystem.

### **Current Efforts**

Several initiatives have focused on addressing illegal fishing, both in the international and local arenas. In response to IUU fishing, improvements have been made in technology, infrastructure, and coordination.

*Three cutters and one long-range vessel* were acquired to assist in patrol efforts, and there is currently an *agreement with the United States Embassy to assist in surveillance* efforts. Notably, a number of technological advances have been made in Sierra Leone's capacity for MCS-- a *coastal radar* system and *Automatic Identification System (AIS)* are now operational, and a *Vessel Monitoring System (VMS)* is currently being implemented. As part of increasing coordination, the *Joint Maritime Committee* was created in July 2009, establishing a forum where diverse government agencies could collaborate to increase MCS activities at sea.

*Forward Operating Bases (FOBs)* have also been created, in order to decentralize MCS activities and further involve local communities. The efforts of the International Military Assistance Training Team (IMATT) and the JMC have been pivotal in advancing this capacity for Sierra Leone to manage its resources.

Furthermore, a number of efforts have taken strides to curb the use of illegal fishing practices within the artisanal sector. Civil society groups such as the Sierra Leone Artisanal Fisherman's Union (SLAFU), and the Sierra Leone Amalgamated Artisanal Fisherman's Union (SLAAFU) have conducted *outreach programs and enforcement activities* to try to reduce the number of local fishers fishing illegally. A number of MFMR efforts have also focused on outreach around fishing practices, and the Ecosystem Approach to Fisheries (EAF) project is specifically designed to address these issues within the small-scale artisanal fishery.

### **THEME #5: IMPROVE HEALTH & SANITATION CONDITIONS**

The fifth major theme that emerged from the assessment was the need to improve health and sanitation practices. One of the biggest drivers behind this improvement is the potential for Sierra Leonean fisheries to access valuable markets in the European Union (EU) and United States. According to the EUbusiness website, at one point, the fish exports from Sierra Leone to the EU averaged over 50 million dollars a year. These lucrative western markets present the opportunity for the fisheries to increase revenues through added value, rather than overexploitation.

### **Challenges**

There are a few challenges to establishing robust health and sanitation practices in Sierra Leone's



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“Right now, Sierra Leoneans have access to the resource as day laborers, net menders, and that's mostly all. At the industrial level of fish operations, Sierra Leoneans aren't able to engage—they don't have that technical expertise. One hundred percent of the high-level processing and technical aspects of the fishery are conducted by non-Sierra Leoneans”

**-Multinational Agency Stakeholder**





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In Tombo, the new landing facility constructed under the AFDEP Project (above right, below right) sits unused approximately 150 meters from the current landing site, where fish are offloaded and cleaned in sub-standard conditions (left).

fishery. Historically, a *lack of infrastructure and technology* prevented adequate processing and testing. In order to process, store, and test fish for potential contaminants, certain labs and facilities must be available. In addition to the infrastructure, the appropriate *management skills and institutions* have not been fostered to respond to the need for higher standards in health and sanitation. One respondent stated that “Right now, Sierra Leoneans have access to the resource as day laborers, net menders, etc. and that’s mostly all. At the industrial level of fish operations, Sierra Leoneans aren’t able to engage-- they don’t have that technical expertise. One hundred percent of the high-level processing and technical aspects of the fishery are conducted by non-Sierra Leoneans.” The *unreliable business environment* is also a major challenge to promoting health and sanitation and accessing valuable foreign markets. In order to respond to the demand from large overseas markets, quality control and consistency are necessary. Although improving, there are still significant challenges in Sierra Leone with reliable infrastructure-- i.e. consistent power for

refrigeration, access to roads, access to fuel, and reliable sources of sanitary fresh water.

### **Current Efforts**

Health and sanitation has been an enormous topic for donor-funded projects in the last ten years. The AFDEP project, which concluded in 2010, resulted in the construction of two fish receiving and handling stations in Tombo and Goderich, as well as partial completion of two additional facilities in Shenge and Bonthe. The project also trained approximately 6000 individuals in “management, business, and fisheries techniques.”<sup>17</sup> Two UNIDO projects are also heavily invested in improving health and sanitation: the West African Quality Program (WAQP) and the Technical Capacity Building in Fishing and Seafood Processing Technology in Sierra Leone project. The WAQP project has focused on building capacity in five main technical areas: accreditation, conformity assessment, standardization, inspection, and quality promotion. To date, outcomes include the establishment of three labs--a metrology lab, meteorology lab, and microbiology lab--which

are owned by the Sierra Leone Standards Bureau. Additionally, these labs have been outfitted with a variety of equipment for standards testing within the fishery. The Technical Capacity Building in Fishing and Seafood Processing Technology in Sierra Leone project addresses the need to improve health and sanitation through education and training. The three stated goals of the project are to 1) establish a Fishery Training Institute, 2) develop a curriculum to train high-level occupations in the sector, and 3) assess the economic components that lead to successful commercialization. Although this project is currently in the start-up phase, it has the potential to supplement other technical and infrastructural initiatives in accomplishing the health and sanitation standards targeted in Sierra Leone.

## RECOMMENDATIONS

The assessment process was able to reveal a number of potential synergies and areas of targeted effort within the marine resource sector. While many of these opportunities are specific to individual organizations or projects, there are also a number of general recommendations that can be drawn from the assessment.

### RECOMMENDATION #1: COMMUNICATION & COLLABORATION

One of the biggest opportunities that was revealed by the Sierra Leone's Seas project is the sheer magnitude of what has already been accomplished. Although Sierra Leone still sits in the some of the lowest percentiles of the Environmental Performance Index, the Governance Effectiveness Index, and the Human Development Index, a tremendous amount has been accomplished in the last decade since the end of the civil war. The initiatives included in the assessment have contributed much needed infrastructure, training, technology, and institutions, and Sierra Leone is now poised to make great strides in optimally managing its marine resources.

However, in addition to these accomplishments, the stakeholders in Sierra Leone must also increase communication and collaboration in order to achieve sustainable marine resource management. The challenges of overlapping efforts and fragmentation can only be addressed through consistent

communication between projects and initiatives. Furthermore, stakeholder engagement with all levels of resource users and managers is an essential part of creating buy-in and ensuring implementation for management policies and regulations.

### RECOMMENDATION #2: TRANSPARENCY

Another immediate recommendation that emerged from the assessment was the need for increased transparency and accountability in all levels of management. With the major advances recently made in the technical, capital, and human resource aspects of the sector, there now exists the opportunity to clarify the processes around marine resource management, increase accountability from civil society and industry, and maximize the resource management for the greatest number of stakeholders. Regardless of the management framework laid out by various policies and regulations, there is currently a lack of confidence in the administrative process to accomplish management objectives. In order to maintain buy-in from critical stakeholders, transparency and accountability structures will be key.

### RECOMMENDATION #3: DECENTRALIZE MANAGEMENT APPROACHES

The third immediate recommendation that emerged from the assessment is the potential to decentralize management approaches. The limited capacity and resources of the Ministry, including severe understaffing, was a major challenge noted by some respondents, while frustration at the lack of articulated role for civil society and industry stakeholders was also repeatedly mentioned. In decentralizing some aspects of marine resource management to non-government groups, there is the potential to strategically supplement Ministry resources with outside assistance. In addition to the added resources, there is the opportunity to provide a positive role for various stakeholders and resource users within the management framework. The third reason to decentralize some management tasks is the potential benefit to the resource itself. In establishing a strong management presence in dispersed areas, there is the potential for greater monitoring, control, and surveillance of the resource as well as increased awareness of best practices within the communities.

## NEXT STEPS

There are a number of next steps to follow up on the Sierra Leone's Seas Project. The first objective laid out-- to conduct an assessment of recent and current work within the marine resource sector-- has been completed, and several major priorities, challenges, and opportunities have been identified. Furthermore, organizations that are actively involved in the sector have been identified, as well as their current efforts. Of note, during the assessment process, one insight that became clear was that many of the projects addressing marine resource management in Sierra Leone have either terminated recently or are set to close by the end of 2011. With this in mind, it is increasingly important to understand the sector and strategically apply programs which will assist the country optimize its resources in a sustainable way.

The second objective of identifying gaps and areas of overlap, as well as increasing collaboration, is currently ongoing.

Consultations are underway with a number of stakeholder groups and interviewees, and this assessment will be incorporated into upcoming workshops on marine resource management in Sierra Leone.

The third objective of assisting the UN Environment Program in identifying potential projects within the marine sector is also underway. An initial meeting was conducted with members of the UNEP-SL Programme Office as well as the UNEP Post Conflict and Disaster Management Branch (PCDMB) in May 2011, and discussions about a potential project are ongoing.

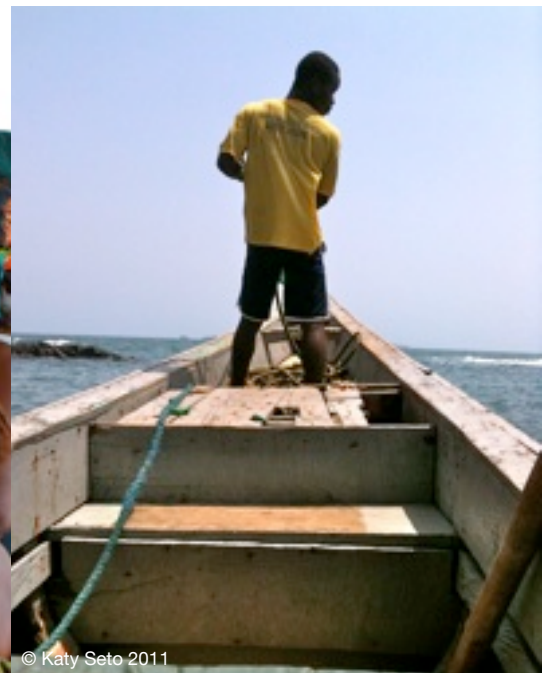
## CONCLUSION

The Sierra Leone's Seas project was designed to take a snapshot of the marine resources sector at a critical time in the country's peacebuilding and development. The information included in the assessment is not meant to stand on its own, but rather to act as a tool for the various stakeholders invested in the marine sector. While many aspects of marine management in Sierra Leone are surrounded by uncertainty, there is also extraordinary potential to manage the resources sustainably for the people of Sierra Leone, for generations to come.

A tremendous amount has been accomplished in the last decade, and Sierra Leone is now poised to make great strides in the sustainable management of its marine resources



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