Hɛn Mpoano
Our Coast, Our Future

October 2010

Building Capacity for Adapting to a Rapidly Changing Coastal Zone

This publication is made possible by the support of the American people through the United States Agency for International Development (USAID). It was prepared by the Coastal Resources Center, Graduate School of Oceanography/University of Rhode Island and SustainaMetrix.

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For more information contact:
Coastal Resources Center
University of Rhode Island
Narragansett Bay Campus
University of Rhode Island
Narragansett, RI 02882, USA
Tel: (401) 874-6224
FAX: (401) 874-6920
www: http://www.crc.uri.edu/

Coastal Resources Center - Ghana
Parks and Gardens, Adiembra, Sekondi
Post Office Box MC11
Takoradi, Western Region, Ghana
Tel: +233 31 20 41763
email: governance.wr@gmail.com

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This document was assembled by Stephen B. Olsen of the Coastal Resources Center at the University of Rhode Island (URI-CRC), and Glenn G. Page of SustainaMetrix. Community surveys on fisheries were provided principally by Ann Gordon, Cambria Finegold and David Mills of the WorldFish Center and will be presented in fuller detail in a forthcoming Fisheries Sector Review. The community survey was conducted by teams coordinated by Kyei Kwadwo Yamoah of Friends of the Nation. Mark Fenn and Kofi Agbogah of CRC Ghana provided guidance and assistance throughout the process. The local proverbs were provided and beautifully translated by Elvis Addae. The following people kindly contributed photos for the document: Glenn Page, Cambria Finegold, Phillipe Breuillot, and Aaron Rivera Bours. The layout was beautifully designed by Lisa Pupa and critical research support by Morgan Altinok of SustainaMetrix.

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Western Region of Ghana

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Coastal Resources Center

University of Rhode Island

DO THE RIGHT THING

Friends of the Nation

sustainaMETRIX

WorldFish

Letter of Transmittal

Dear Reader,

The Hɛn Mpoano (Our Coast) initiative is working to set the stage for an integrated approach to the governance of the coastal districts and inshore fishing grounds of Ghana's Western Region. Hɛn Mpoano is a partnership that draws together leaders from government, civil society and business to analyze the issues, assess the options and select courses of action that will contribute to a positive and sustainable future for the coastal zone of this region. It is the result of an initial phase of asking questions, listening, seeking out different perceptions and assembling secondary information on a wide diversity of topics. This process is grounded on the belief that a fresh approach to the governance of the coast and fisheries will take root only when it addresses issues that are perceived by the people of the place as important.

This document ends with a discussion of the actions that Hɛn Mpoano proposes to take over a three year period in which it hopes to establish and formalize a governance program for the Western Region that can serve as a model for the nation. This is an ambitious goal that will demand the collaboration and active support of many economic sectors, governmental and non-governmental institutions and the public at large. Meeting the opportunities and challenges facing the Western Region at the beginning of the 21st Century demands creativity and strong leadership as we address changes in the Western Region's abundant fisheries, the potentials of tourism, and the prospect of petroleum development. Please join with us to build the governance system that effectively links actions at the community, district and regional scales.

Mr. David Yaro
Chairman, Advisory Council

ADVISORY COMMITTEE

Mr. David Yaro
Chief Director, Western Region Coordinating Council

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Omanhene, Nsein Traditional Area, Nsein

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Mr. Alex Addo
Regional Director, Fisheries Commission, Takoradi

Mr. Ebenezer Dadzie-Paintsil
Metropolitan Planning Officer, Sekondi-Takoradi Metro. Assembly, Sekondi

Foreword

The Hɛn Mpoano Approach

The Integrated Coastal and Fisheries Governance Initiative, subsequently referred to as Hɛn Mpoano, is being designed as an expression of the ecosystem approach to coastal governance. This calls for combining bottom-up with top-down actions, and engaging stakeholders in every phase of its activities. Hɛn Mpoano is therefore working to foster active and sustained dialogue that draws together civil society, government and market leaders to address the many issues that are shaping current and future conditions in the Western Region. The emphasis is upon learning-by-doing. As the Hɛn Mpoano initiative matures it will be nourished by a program of tangible actions that, over the next several years, will help to inform all concerned on what courses of action and what adjustments to the current governance system are viable and which are most necessary.

The ecosystem approach recognizes that both the environment and the associated human population must be addressed simultaneously. It recognizes that human communities, like plant and animal communities, are interdependent and interact with their physical environment to form distinct ecological units called ecosystems. These units, that provide the basis of all life and humanity itself, typically cut across existing political and jurisdictional boundaries and are therefore subject to multiple management systems.

The Hɛn Mpoano initiative has begun by compiling an assessment of coastal conditions in the Western Region in the form of a governance baseline (Box F-1). This calls for tracing long-term trends in human well-being and environmental conditions and assessing how the governance system has responded—or failed to respond—to the issues raised by ecosystem change. Part One of a baseline is summarized in chapters 1 through 4 of this document and begins with a brief review of long term change at the scale of the coast of the Gulf of Guinea and its associated Large Marine Ecosystem (LME). Chapters 2 and 3 characterize the defining features and the issues brought by accelerating change in the landscape and the seascape that comprise the Western Region's coastal zone. The current governance system and the core issues to be confronted in coming decades are discussed in greater detail in Chapter 4. As Part Two of a baseline, Chapter 5 suggests a forward looking plan of action that builds upon the strengths of the existing governance system and works to reduce its weaknesses. Parts One and Two of a governance baseline provide the reference point against which future changes in the condition of the ecosystem (both the people and the environment), the structure and effectiveness of the governance system and the efforts of the Hɛn Mpoano initiative can be gauged. The Annex offers a fuller explanation of these methods.

Box F-1 Major Components of a Governance Baseline

Changes in Ecosystems

- Ecosystems Goods and Services
- Wellbeing of People
- Wellbeing of the Environment

Responses to Change

Part 1: Looking Back

- Trends in Key Variables
- Issues Posed by Ecosystem Change
- Case Studies of Governance

Part 2: Looking Forward

- Trend Projection and Climate Change
- Selection of Issues and Goals
- Selection of Partners
- Selection of Variables to be Monitored

Strengths and weaknesses of the exisiting governance system

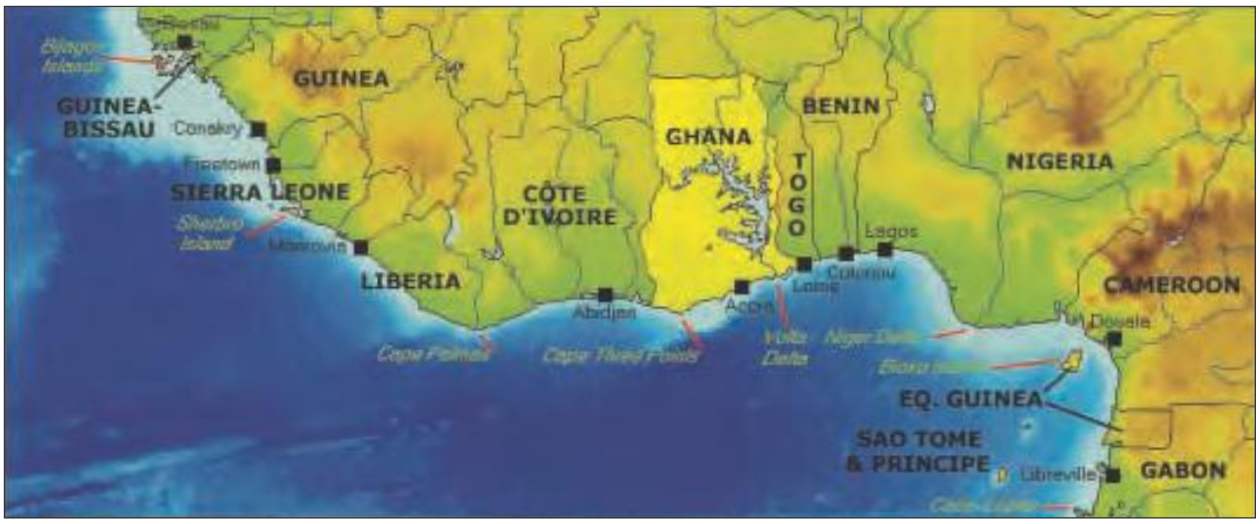
Table of Contents

CHAPTER 1

How Long Term Ecosystem Change Has Shaped Current Conditions

We begin by a brief look **at the forces that have shaped the social and environmental dimensions of the Gulf of Guinea coastline and its adjoining Large Marine Ecosystem (Figure 1.1). This is important not only as a way to gain perspective on Ghana's Western Region as one small portion of this large ecosystem but to understand the bigger context within which governance responses at the larger scale are occurring. We also consider drivers of change that are underway at the scale of the planet as a whole. These include global climate change as a driver that has the potential to bring massive change to all coastlines over this next century. Then turn to our focal area, Ghana's Western Region, to outline current conditions and the trends that have shaped them. Such consideration of change at a range of spatial scales is important when defining the issues that can be usefully addressed at the limited scale of the Western Region and require engagement at larger scales.**

Figure 1.1 The West Coast of Africa and the Guinea Current Large Marine Ecosystem Highlighting Ghana



Source: *The Gulf of Guinea Large Marine Ecosystem,* edited by McGlade et al. 2002

The Gulf of Guinea: A Coastline of Unrivaled Richness

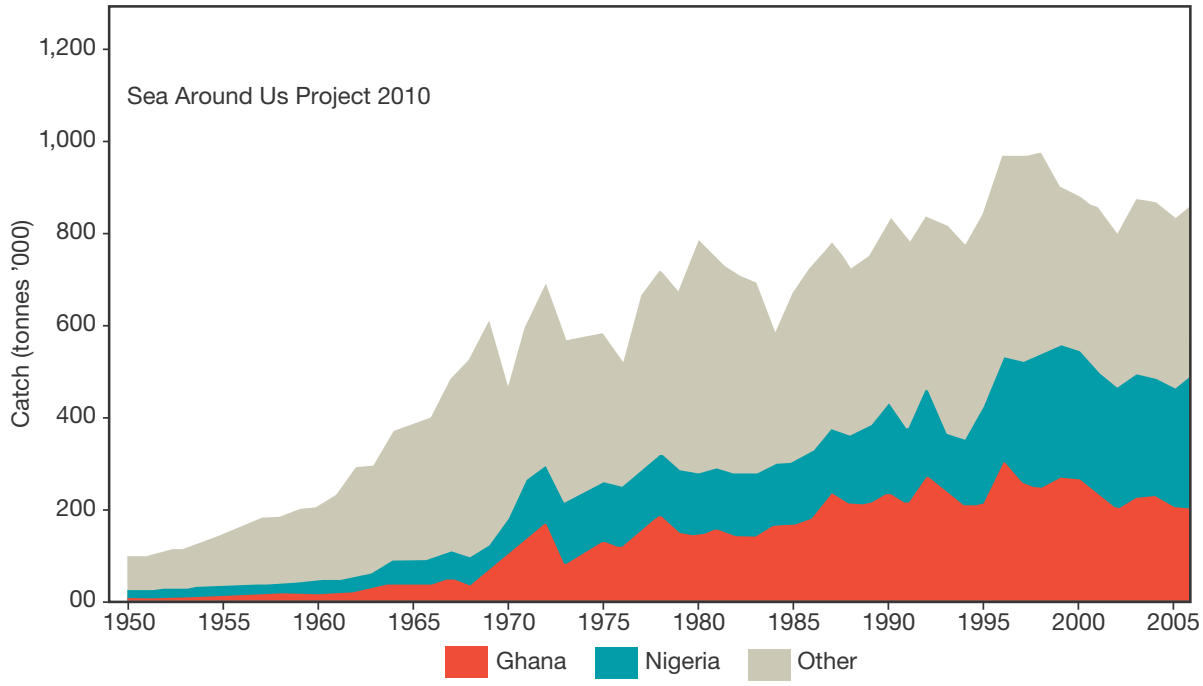
Ghana borders the highly productive Guinea Current, one of the most productive ocean up-welling systems in the world. It lies in the mid-section of a 5,318 km coastline endowed with abundant rivers and—until the 20th century—densely forested watersheds. Today the coastal forests are virtually gone and this coastline supports some of the most rapidly growing coastal cities on the planet. At the time of the arrival of the first European traders in the 15th century, many tribes, each with their distinct language and culture, had formed settlements, and in some instances large towns, along a coastline blessed by abundant fisheries, few storms, productive soils, abundant freshwater and great mineral wealth. Many of the tribes were migratory and moved great distances in search of the most productive estuaries and the up-wellings of nutrient rich waters that produce the abundance of sardine and herring-like pelagic fish that have been the mainstay of the diet of the people along the coast and inland for many centuries. The nations that today share the Gulf of Guinea coastline are the product of the competition and claims of European colonial powers that vied with each other through innumerable wars and treaties to reap the wealth that could be generated from the region's extraordinary natural resources.

For the Europeans, this was the notorious "slave coast." For three centuries, this region was the source of some 6.3 million people who were captured, sold and transported across the Atlantic where they labored on the plantations of the "New World." The slave coast was also the "gold coast" and the "ivory coast"—names that are testaments to the abundance and diversity of a region with a very great capacity to generate monetary wealth. Unfortunately, this wealth has brought few benefits to the majority of the region's people. Mineral resources, timber and unprocessed agriculture products have been extracted converting a formerly densely forested landscapes into plantations of oil palm, rubber and farm land. The region's fish populations have been reduced by sustained overfishing. Today the region's large reserves of oil and gas fuel global markets and are once again enriching a few and spawning conflict—earning petroleum its reputation as "the curse of oil." In contrast to the abundance of its natural resources, the coast of the Gulf of Guinea is known for the poverty of its people and its political instability.

The Guinea Current Large Marine Ecosystem (LME) contains some of the most productive coastal and offshore waters in the world. This productivity is based upon the seasonal upwellings off Ghana and the Cote d'Ivoire. The upwellings occur twice a year, typically from July to September and again in December and January. The upwellings vary with long term climatic changes and in the future could be strongly affected as global climate change evolves. The wealth of fisheries have been intensely exploited by foreign and local fishing fleets since the 1960s with Ghana and Nigeria claiming the largest share of the harvest (Figure 1.2). The value of the annual harvest peaked at US$ 1 billion in 1991 (in 2000 US dollars) and has more recently been in the range of $800,000. As shown by Figure 1.3, all the stocks in the LME have been classified as fully exploited since the mid 1990s. Several are overexploited and some have collapsed. Unsustainable fishing pressure is recognized as the major issue facing those working to manage the LME. The problem is most severe for the bottom dwelling species that are the target of trawlers that use small mesh nets, and in the fisheries for the small species that live in the water column (called pelagic fish stocks) that are the foundation of the food chain. Throughout the LME the pelagic stocks that are nourished by the upwellings dominate the fisheries and the harvests vary with the intensity of the upwelling. Conflicts between artisanal fishers and industrial fleets are a major concern, as is illegal, unregulated and unreported fishing.

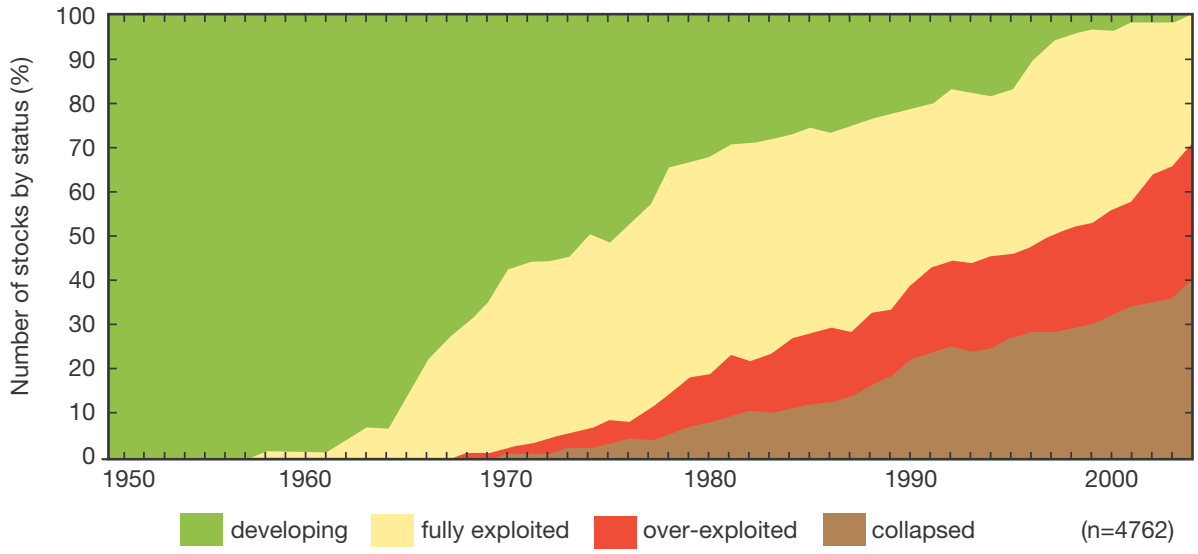
At current rates of population growth the number of people in the sixteen countries that border the Gulf of Guinea can be anticipated to double from the current 300 million in the next 20 to 25 years. As human pressures have intensified along the Gulf of Guinea coastline water pollution off coastal cities has become severe. With few exceptions, sewage and industrial discharges are untreated. Coastal lagoons, river estuaries and their associated wetlands are often severely polluted or have been filled with unestimated impacts on the many species of coastal fish and shellfish that rely on these habitats during a stage of their life cycle. The trends for ecosystem change at the scale of the Gulf of Guinea are in turn nested within changes that are underway at the scale of the planet (Figure 1.4). These expressions of global change are in many cases the primary cause of issues that are demanding attention at the scale of the Gulf and the scale of Ghana's Western Region.

Figure 1.2 Fish Landings From The Guinea Current LME by Country



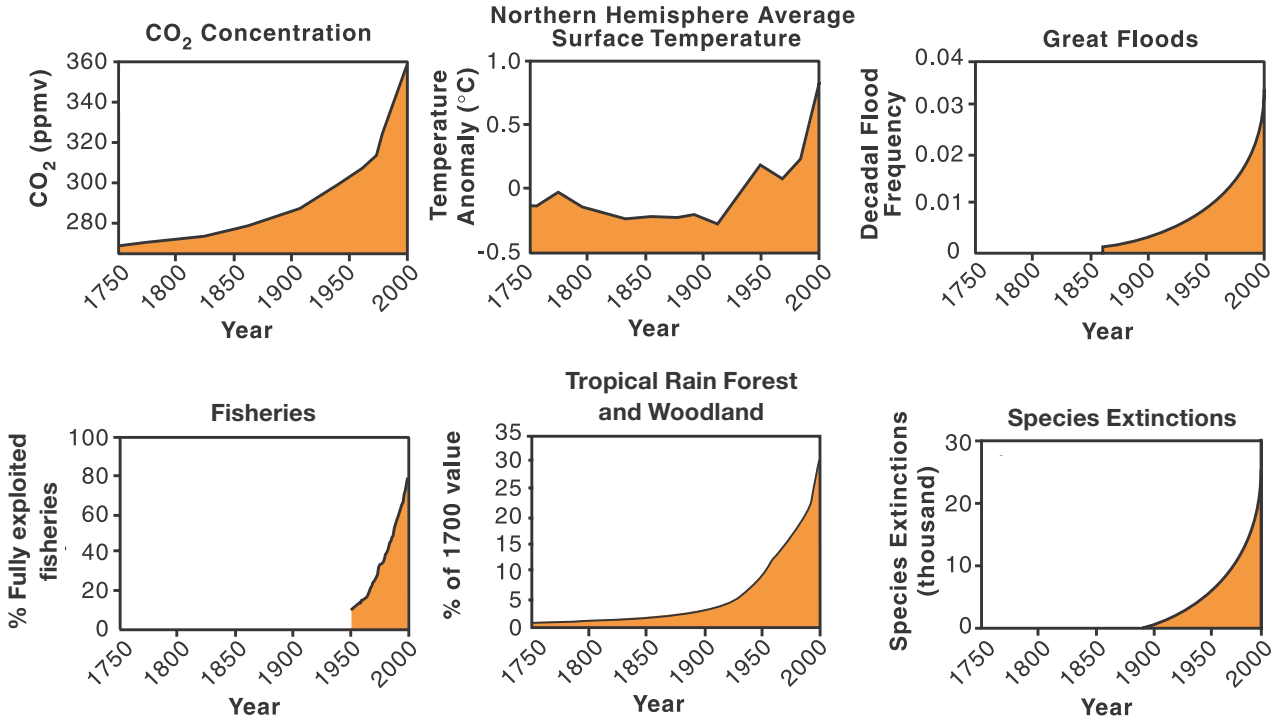
Source: http://www.seaaroundus.org/lme/28/4.aspx

Figure 1.3 The Status of Guinea Current Stocks: Fully Exploited, Overexploited and Collapsed



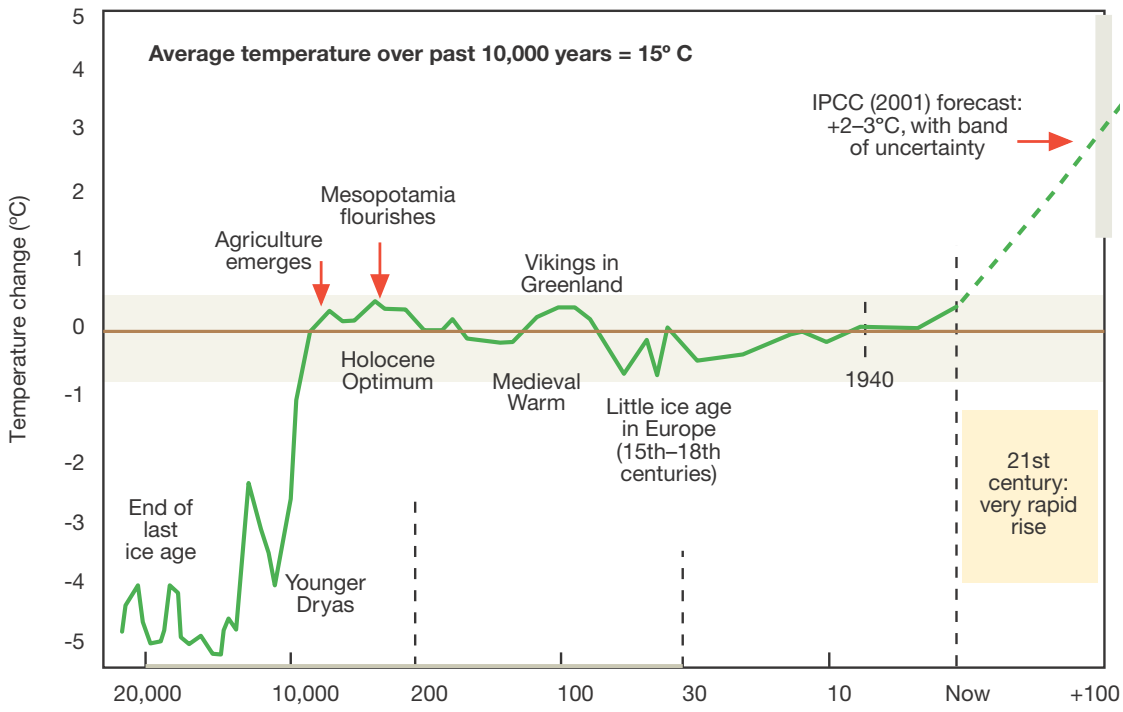
Source: http://www.lme.noaa.gov/index.php?option=com_content&view=article&id=74:lme28&catid=41:briefs&Itemid=72

Fig 1.4 Trends of Ecosystem Change at the Scale of the Planet



Source: "Global Change and the Earth System: A Planet Under Pressure" (2004), W. Steffen, A. Sanderson, P.D. Tyson, J. Jäger, P.A. Matson, B. Moore III, F. Oldfield, K. Richardson, H.J. Schellnhuber, B.L. Turner, R.J. Wasson, published by Springer-Verlag Berlin Heidelberg New York. ISBN 3-540-40800-2.

Figure 1.5 Average Global Temperature over Past 20,000 Years



Variations in the average temperature of planet earth over the past 20,000 years (semi-log scale) and projected into the 21st Century. Source: *Climate Change and Human Health: Risks and Responses,* World Health Organization 2003

The Anthropocene

Our planet has entered into a new era that has been named the Anthropocene. It is a time when human activities are generating impacts that equal or surpass those of nature in modulating the behavior of the planet. The expressions of change that are now operating at the global scale are driven by population growth, the burning of fossil fuels and economies based on consumption that consume natural resources and generate volumes of waste products at massive scales. One expression of the consequences of these forces is the accumulation of carbon dioxide and other greenhouse gasses in the atmosphere. This is changing the chemistry of the atmosphere and is bringing to an end an era of climate stability that has persisted over the past 10,000 years (Figure 1.5). Global change is much more than climate change—it is real, it is happening now and in many ways it is accelerating. The earth's dynamics are characterized by critical thresholds and abrupt changes and human activities could inadvertently trigger changes with catastrophic consequences (IGBP 2002). The consequences are enormous in terms of patterns of precipitation, food production, droughts, flooding and rising sea level.

The Defining Features of Ghana's Western Region

The focal point of Hɛn Mpoano, the Western Region of Ghana, shares its western boundary with the Cote D' Ivoire and is bordered to the east by Ghana's Central Region. For the past several decades the coastline west of the twin cities of Takoradi-Sekondi has been the most tranquil and rural of Ghana's four coastal Districts. This is a beautiful shoreline of sandy beaches interspersed with stretches of rocky coast backed by vegetated bluffs. Inland a gently rolling landscape drained by a mosaic of streams and rivers was for millennia cloaked by rainforests. As the production of oil and gas from offshore fields gets underway the twin cities and the entire 192 km coastline of the Western Region is at the threshold of a surge of development. The issues brought by this new driver of change are compounded by the region's potential for tourism and by major changes in the fisheries that are the primary source of livelihood for many shorefront communities.

It has been argued (see, for example, the Ghana Statistical Service, 2005) that the natural resources of Western Region, if effectively harnessed and managed, hold the key to Ghana's future breakthrough to becoming a middle income nation. As of 2000, this region was the largest producer of cocoa and timber. As Ghana's second highest producer of gold, the Western Region holds the greatest proven but as yet unexploited reserves of this precious metal. There are also large deposits of iron ore and bauxite. These mineral resources on the land are matched by the petroleum reserves offshore and are expected to annually contribute as much as US $1.0 billion/year for the next 10 years to the nations economy for decades to come. In terms of potentially renewable resources, the Western Region contains the largest rubber plantation in the country and is a leading producer of vegetable oils made from oil palm and coconuts. The region lands approximately one third of the nation's fish harvest. It is also seen as having a major potential as a tourism destination with the second largest concentration of forts and castles in the country and potentially major opportunities for eco-tourism and beach tourism west of the twin cities. In 2000 the port of Takoradi handled 75% of Ghana's exports of timber, cocoa, manganese and bauxite. These features, while making the Western Region an extraordinarily well endowed portion of the Gulf of Guinea coastline, have generated a pattern of long term trends similar to those along the Gulf as a whole. They show a pattern of long-term over-exploitation and mis-use, that has mined the natural wealth of a richly endowed ecosystem in a period when the human population has grown more rapidly than at any other time in the past.

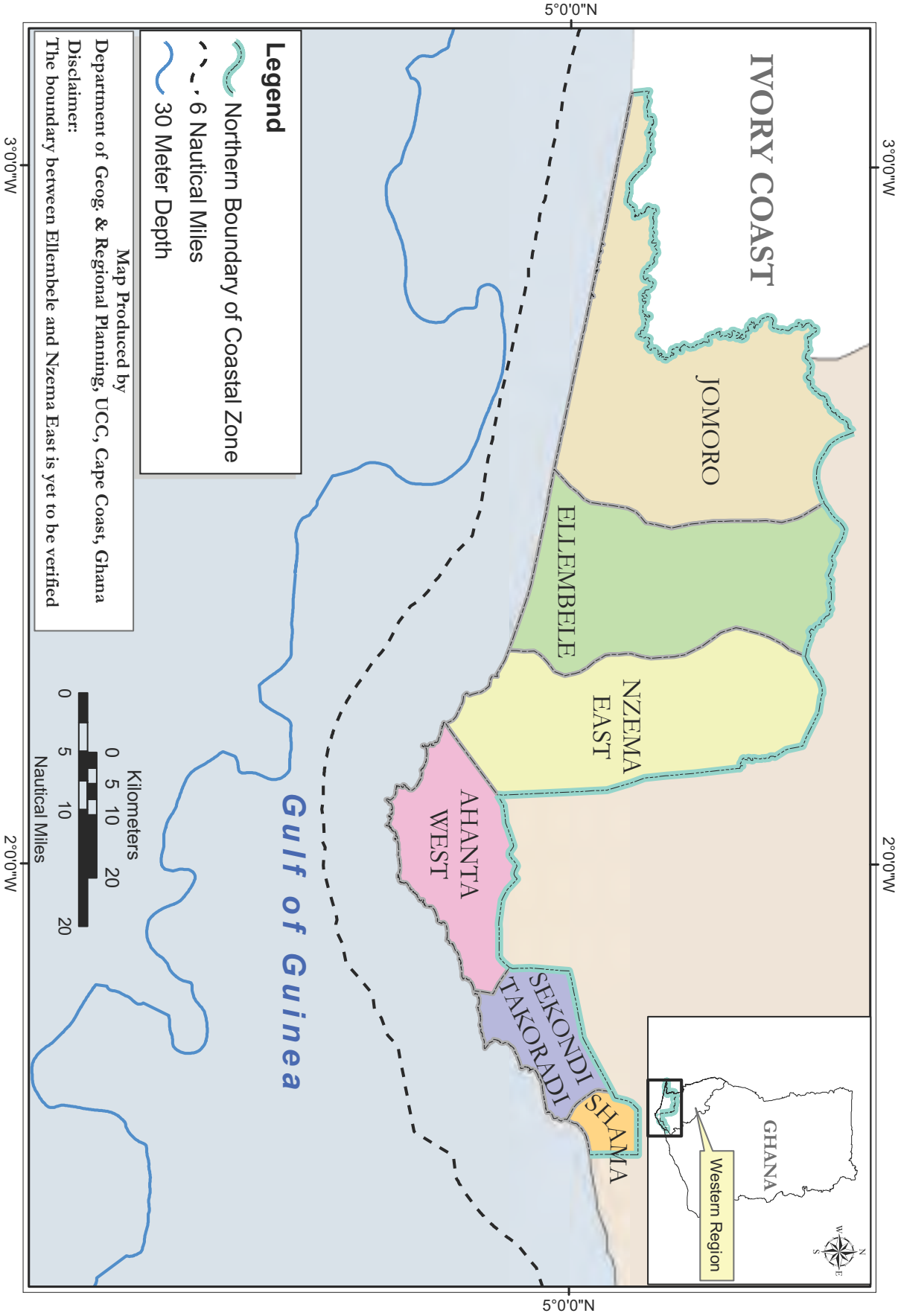
The result in many instances has been a rising tide of poverty in which for many it is increasingly difficult to make a living from fishing or agriculture, there are few alternative means of livelihood and conditions of squalor generate resignation, anger and despair. **But the potential of the Western Region as an ecosystem—its people and its natural resources—to restore degraded environments and wisely invest the revenues generated by oil and gas, is tremendous.** The fishing grounds off the Western Region have the potential to produce abundant harvests for many generations if fishing effort is reduced and the natural processes of reproduction and growth are allowed

to recover. Despite two centuries of logging, the Western Region contains more biodiversity rich areas today than any other Ghanaian Region. These are primarily within the remnants of the rainforests in protected areas (Ankasa and Cape Three Points). The abundant rainfall, many streams and rivers and fertile soils of the Western Region could in the future, support a greater diversity of livelihoods, attract tourists while removing or reducing the threats to the remaining biodiversity.

The Sources and Scales of Ecosystem Change in the Western Region

Before the era of European colonization began, ecosystem change was primarily a local matter and the impacts of people on the landscape and the seascape was specific to the place. This has gradually changed as markets have expanded from migrations and trading within the Gulf, to include exchanges of people and goods with Europe, then with the Americas and now in a global economy, the planet as a whole. Today fresh fish landed in Sekondi Harbor may be served a few days later in a restaurant in Madrid, Tokyo or New York. The price of cocoa, an important Ghanaian export, is set by the size and quality of cocoa crops on three continents and fluctuations consumer demand worldwide. Similarly, the scale and source of the impacts of human activities have increased dramatically and now operate at a range of scales. For example, the over-fertilization of coastal waters, seen as blooms of algae that turn the water green (known locally as green-green) off Jomoro District and across the border to the Ivory Coast may be a consequence of the volumes of untreated wastes flowing into Abidjan lagoon. The dramatic shorefront erosion and flooding recently seen in Shama is probably due to the combined impacts of sand winning (sand mining) and shifts in the longshore currents caused by the construction of nearby harbors. In contrast to such local scale changes and pressures, the profound impacts brought by climate change is a phenomena seen around the globe requiring collaborative action by the world community as a whole. The fact that the causes and solutions to issues in the Western Region play out at different scales (local, regional, national and global) increase the complexity of responding to the multiple expressions of change that are the subject of ecosystem governance.

Figure 1.6 Map Showing the Coastal Zone of the Western Region



Definition of the Coastal Zone of the Western Region

A crucial decision for any ecosystem governance initiative is to define the boundaries of the area that will be its primary focus. Such decisions are invariably a compromise that considers both the margins of the natural systems involved (such as watersheds, wetlands, and coastal features) and the administrative boundaries (municipalities, districts, regions, nations) that have been defined by governments. In practice, boundaries should be set by the issues that an initiative chooses to address. In this case, Hɛn Mpoano intends to address the interplay and interdependencies between the coast of the Western Region and its fisheries. The focus of the initiative is upon the governance of these resources. The boundaries of the coastal zone of the Western Region have therefore been set pragmatically to include the six coastal Districts that front upon the Gulf in their entirety and the Inshore Exclusion Zone reserved for artisanal fisheries that extends from the shore to the 30 meter depth contour or 6 miles, whichever is greater. So defined, the inland boundary encompasses the administrative units with responsibilities for the decision making and enforcement that provides governmental services (including transportation infrastructure, schools, water supply and sanitation), land use planning and the regulation of the on-land development process. The seaward boundary takes in a portion of the most productive fishing grounds and a potential framework for a form of fisheries and maritime governance that is designed to favor the small-scale fisheries that have long been the foundation of the coastal economy and primary source of livelihoods.

Box 1.1: The Reflections of an Elderly Fisherman of the Western Region

I have fished for 60 years and seen many changes. There are now far fewer fish, they are smaller and the canoes have to go further offshore to catch them. Eight years ago the decline became faster. One of my big canoes got a license and fished off Nigeria this past year. There are more fish there—but not a lot more. I've spoken to fishermen from here who have gone to the Ivory Coast by car and they came back with the same story. I see a total collapse of the fisheries in this region within 10 years.

Why is this? Years ago we made our own nets and this took time and skill. Now we buy pre-made nets that catch very small fish. The old hand-made nets were about six to eight inches stretched mesh. Some of the new ones are less than one inch. There are more and more fishermen—and the demand for fish is high. So people keep fishing. Another change is that if a fisherman needed a loan for gear or a boat he used to go to the lead fishmonger. She would decide if he was a good risk and set the terms. Now men who know that they won't get a loan from that source go to a bank or elsewhere. Often they can't make the payments… but their canoes keep fishing.

What do I think should be done? That is easy to answer. Ban the small mesh nets, ban light fishing and keep the China-China boats out of the near-shore grounds. If this was done the fish would come back.

CHAPTER 2

Our Coast Today: The Issues in the Coastal Districts

At the Threshold of a New Era

Today the Western Region may be at the threshold of its greatest transformation since independence fueled by a development boom triggered by a global demand for its many resources. Will the region's governance system (Box 2.1) have the capacity to raise to the challenges of accelerating ecosystem change and demonstrate that the Western Region can take the steps that steer a course to a positive future? The answer lies in being clear and honest about the issues that must be addressed and the choices that must be made. If events are permitted to follow any course the outcomes will be very uneven and will likely only benefit a few, potentially leaving the majority disappointed, angry and unfulfilled. These challenges are the subject of this chapter. The central challenge lies in how the governance system will shape how the land, the sea, and the resources they contain are utilized and sustained. This translates into how effective the governance system will be in influencing the behavior of the people and the institutions of the coastal zone of the Western Region. Such governance must combine top-down policies and actions from Accra and beyond with grassroot efforts.

Box 2.1 Governance Defined

Governance is defined as the product of the values, policies, laws and institutions by which a set of issues is addressed (Juda, 1999; Juda and Hennessey, 2001). Governance calls for a re-examination of the formal and informal arrangements, institutions, and mores that structure and influence:

> How resources or an environment are utilized,

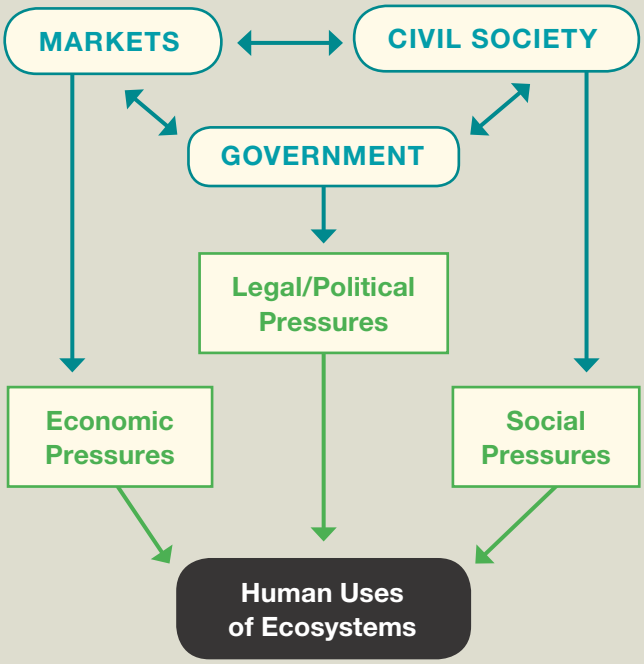
> How problems and opportunities are evaluated and analyzed,

> What behavior is deemed acceptable or forbidden, and

> What rules and sanctions are applied to affect natural resources distribution and use.

There are three principal sources of governance and each expresses its influence on how ecosystems are utilized through distinct mechanisms

The Principle Sources and Mechanisms of Governance



Adapted from Olsen et. al 2009

Because of its many assets, the coastal zone of the Western Region faces a complex combination of problems and opportunities that will challenge the resilience of its environment and its people.

Its people (Box 2.3) have adapted to rapidly changing conditions and have shifted their strategies for making a livelihood as new fishing technologies, plantation agro-forestry, tourism and urbanization—and most recently petroleum—generate new challenges and opportunities. The issues on the landscape generated by these changes can be grouped into five distinct bundles:

> Educating an expanding population with a high proportion in poverty and unemployed

> Sustaining, where feasible restoring, the flows of environmental goods and services that people want and need

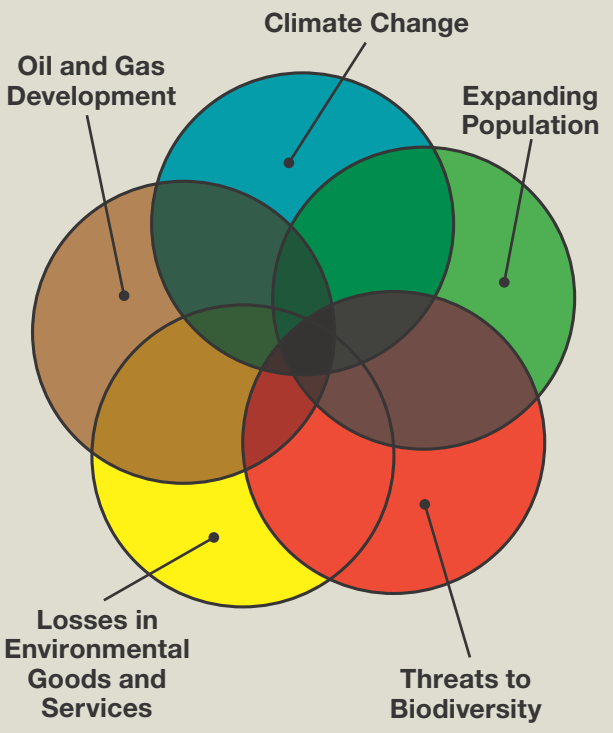
> Overcoming threats to ecosystem resilience and biodiversity

> Managing the potential benefits and threats of oil and gas development

> Responding to the mounting impacts of climate change

There are inter-relationships and inter-dependencies among the issues within each bundle as well as among the five (see box 2.2).

Box 2.2 Major Issues in the Landscape



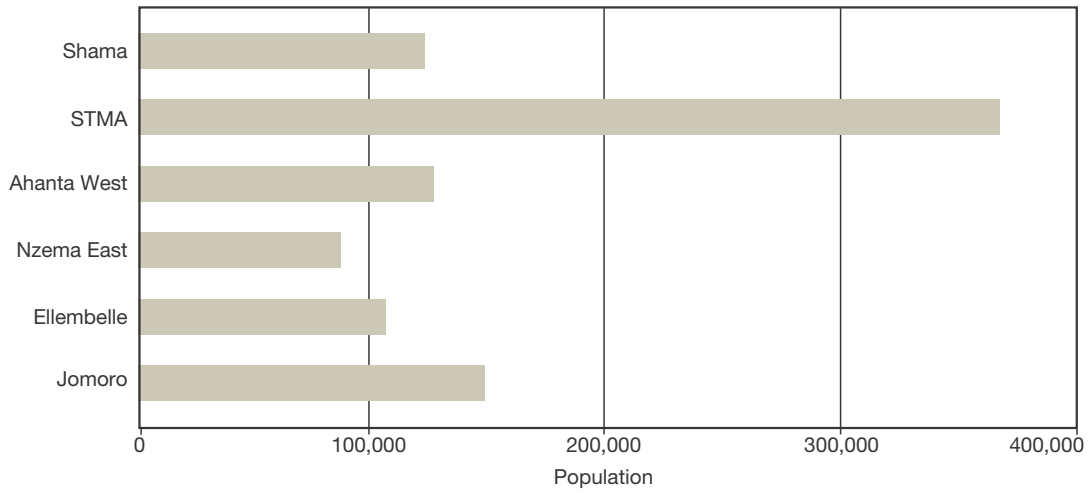
An Expanding Population

At the national scale the condition of the population is improving. The population growth rate is declining and indicators of quality of life are trending upward. These are major accomplishments. Nonetheless, in the Western Region the population growth rate in the first decade of the 21st century has been between two to three percent. If sustained, this translates into a population twice as big as today's by 2030 or 2040. In many coastal communities almost half of the current population is under age 15 and the incidence of teen pregnancy is high. The challenges posed by a growing population are compounded by the increasing difficulty for many of extracting a livelihood from the sea or land. Unfortunately, a high proportion of today's children are not going to school, or attend sporadically and only complete the primary grades. If tomorrow's workforce is poorly educated they will find it difficult to take advantage of the new employment opportunities that may be provided by tourism and the oil and gas industries. It is widely perceived in the coastal communities of the Western Region that both the quality of life and the quality of governmental services are declining.

Box 2.3 People of the Coastal Districts of the Western Region

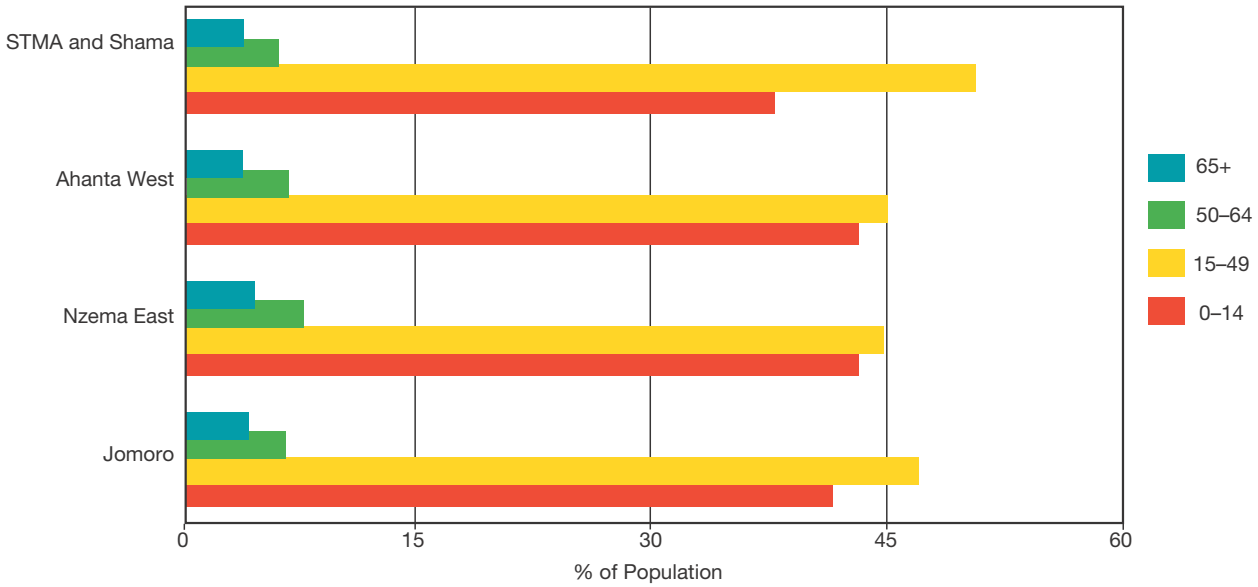
The people of the coastal districts are primarily Ahantas and Nzemas and are known collectively as Akans. They speak six local dialects and have traditionally engaged in small scale agriculture, artisanal fisheries and mining. Many other ethnic groups are migrating to the Western Region seeking employment. Among these the Ewes and the Fantes are prominent. These migrants usually do not own land and earn a living fishing or working on plantations. There are, however, Ewe communities in such coastal settlements as Anlo village in Shama who arrived nearly a century ago and have acquired permanent residency status. The principal religions are Christianity, African Traditional Religion, and Islam.

Figure 2.1 Population of the Coastal Districts of the Western Region in 2000



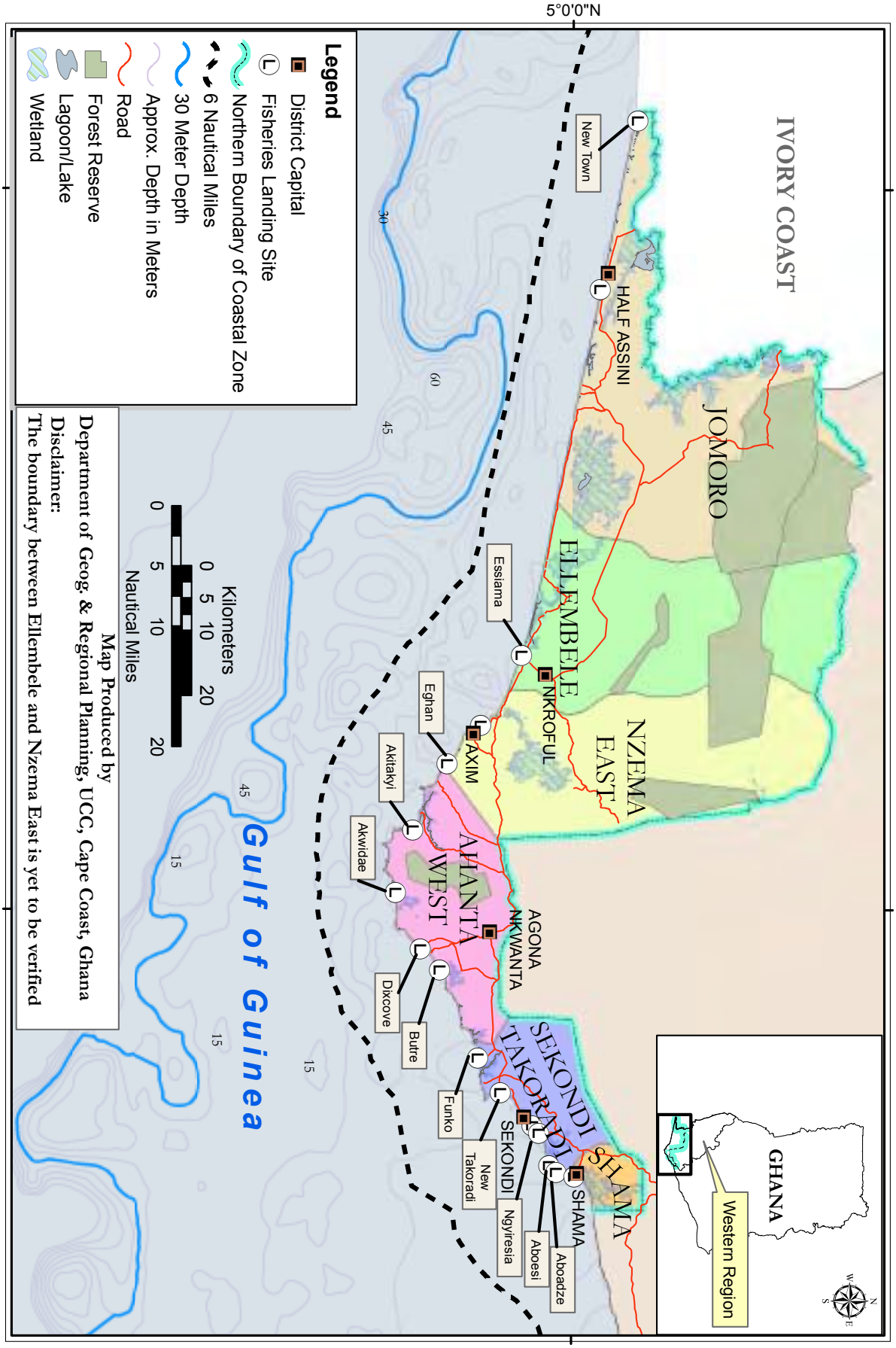
Source: Ghana Health Service

Figure 2.2 Age Distribution of People in the Coastal Districts of the Western Region



Nzema East = Nzema East and Ellembelle. In 2008, Nzema East and SAEMA were divided into two districts each increasing the number of coastal districts in the Western Region to six.
Source: 2000 Ghana Population and Housing Census

Figure 2.3 Map Showing Forest Reserves, Road Network, Large Communities and Landing Beaches



Sustaining the Ability of Coastal Ecosystems to Produce the Goods and Services People Want and Need

The second bundle of issues is composed of the many mounting pressures on the landscape and seascape—a landscape and seascape that have for centuries produced in abundance the goods and services that have been the source of livelihoods and quality of life in the coastal zone. The increasing pressure on fisheries requires greater effort and greater investments in boats, engines and gear to catch the same amount of fish. The threat of greater reductions or even the collapse of some stocks increase as time progresses unless actions are taken to relieve the pressure and allow the fish populations to rebound. Even though upwelling systems are some of the most productive and resilient marine systems in the world, they can collapse—as occurred in the sardine fishery off the California Coast in the 1930s and Peru's anchovy fishery in the 1960s. While Peru's fishery recovered, California's did not. As discussed in greater detail in Chapter 3, it is not intuitively obvious that the way to increase catches is to reduce fishing effort. The experience of Ghanaian fishermen over the past several decades, like those in many countries, is that they can maintain or increase their catches by ever greater effort. Indeed, the increases in effort by Ghanaian fishermen is likely the reason for only a modest decline in official estimates of the total volumes of fish landed in Ghana.

The situation on the land is similar. The remaining timber resources of the interior are under great pressure. Neither the plantations nor the mining industry appear to offer major new opportunities for employment. Nonetheless, there may be opportunities to increase the benefits flowing to the people of the coastal Districts if improved methods of agriculture and timber production are found and implemented. There may be opportunities for the practice of aquaculture. As in fisheries, such positive changes will require significant alterations in how people relate to their environment. This in turn will require a governance system has the capacity to promote and sustain such changes.

Threats to Ecosystem Resilience and Biodiversity

Despite decades of intensifying human activities and losses in the condition of its ecosystems the Western Region still contains a wealth of natural assets and greater biodiversity than any other region in the country.

Box 2.4 Definition of Resilience

Resilience may be defined as the capacity of a system to experience shocks while retaining essentially the same function, structure, feedbacks, and therefore identity. From a community perspective, resilience may be described as the ability of groups or communities to cope with external stresses and disturbances as a result of social, political, and environmental change without losing the capacity to allocate resources efficiently (Brand and Jax, 2007).

The coastal Districts contain several expanses of relatively pristine vegetation particularly in the least developed Jomoro and Nzema East Districts. Particularly critical to the protection of biodiversity and with high potential for ecotourism are the Ankasa National Park and Cape Three Points Forest Reserve. Ankasa National Park boasts Ghana's highest recorded terrestrial biodiversity while Cape Three Points Reserve is the last protected remnant of the primary coastal forest that once extended along the major segments of the coastline of the Gulf of Guinea. Today these two protected areas are relatively inaccessible and have few facilities for visitors. The coastal landscape features nine major rivers, several of which are fringed with swamp forests and estuarine wetlands and linked to lagoons. The seasonally flooded Amansuri wetland has been proposed as an internationally significant Ramsar site. It is the largest freshwater marsh in the Western Region and a popular destination for many Ghanaian and international visitors who come to see the stilt village of Nzulezo. Another major wetland is an extension of the Tano, Aby and Ehy lagoons on the south-western border with the Ivory Coast.

The rich biodiversity of the coastal landscape is matched by the richness of the adjoining seascape. At the boundary of the two, the many miles of sandy beaches are used by nesting marine turtles. This important feature of the shoreline has only re-

cently been recognized. Tourist lodges that began by featuring beautiful scenery and bathing beaches now see the protection of nesting turtles and eco-tourism as important assets. The Green Turtle Lodge, Fanta's Folley and Beyin Beach Resort, for example, are together working to protect 14 km of beach that are thought to host five species of sea turtles. Migrating whales, dolphins, sharks and other large marine animals are reported off the coast of the Western Region and could serve to attract a growing ecotourism demand.

At the Threshold of an Oil Boom?

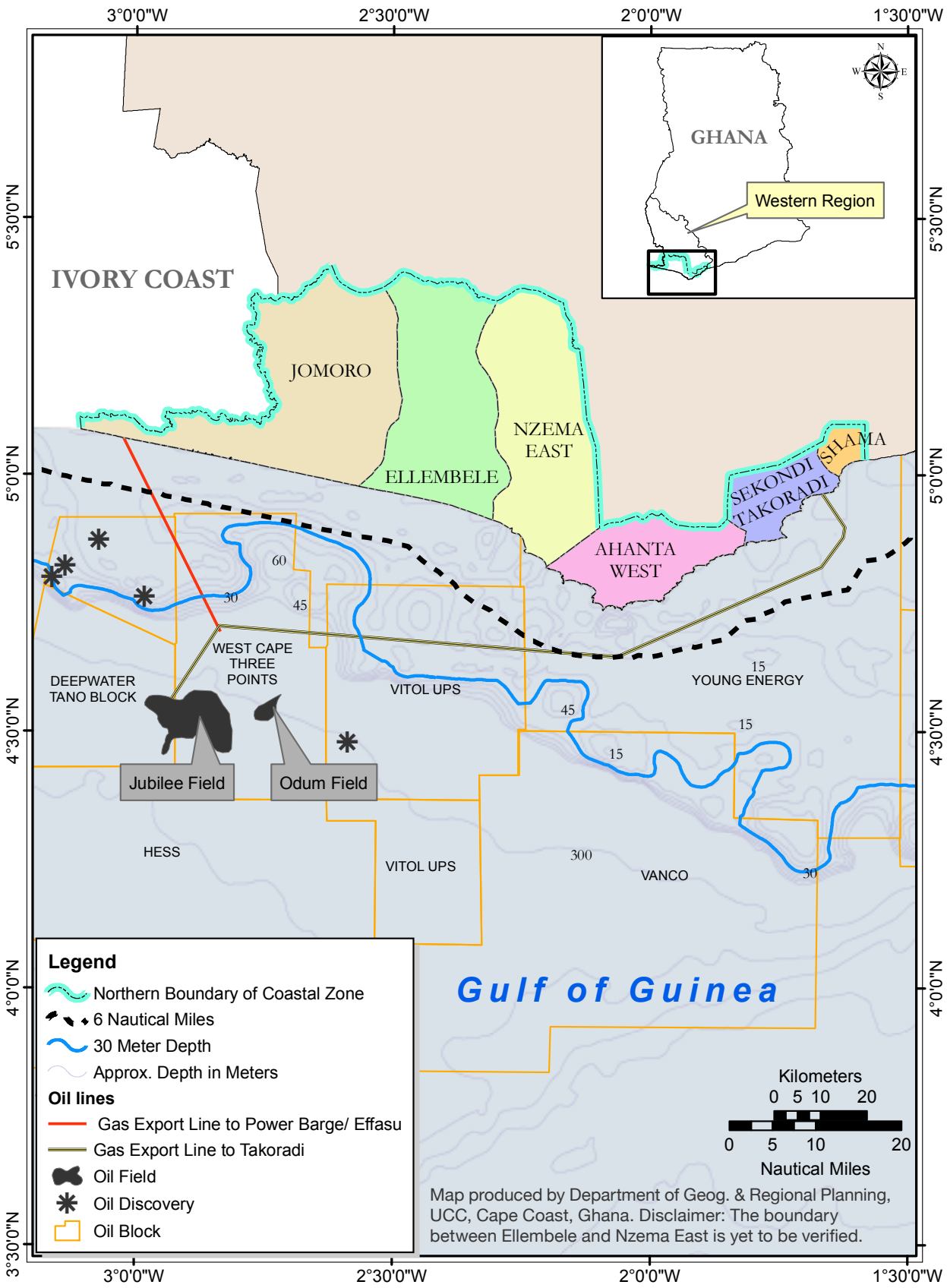
Today in the Western Region the multiple causes and consequences of ecosystem change are overshadowed by the prospect of oil and gas development. How the exploitation of this new source of wealth, employment and development pressures is managed will determine whether the result will be a new and generous source of national income, with employment and business opportunities that benefit both the Western Region or yet another example of the curse of oil. How will the jobs and the wealth produced be distributed? Will local Ghanaian companies be formed to provide the services required by new industries? Will the local labor force be trained to fill new employment opportunities or will skilled labor be imported and the earnings flow overseas? Who will benefit and who will lose? Will new schools, new hospitals, and all the other infrastructure demanded by a bigger population keep pace with a rush of development? There are many concerns raised by the prospect of oil spills and the impacts of offshore and onshore construction and operations on both the marine and terrestrial environments.

At the threshold of a major economic boom, rumors abound. According to local and international newspaper reports, a large property west of Takoradi is slated for construction of an oil refinery by investors from the Persian Gulf. Chinese and western companies are jockeying for ownership of the Jubilee Field. Other news reports claim that Korean investors are planning to build 20,000 housing units for the flood of anticipated new residents that will move in to service the new industry. The Metropolitan District, with funds from the central government, is planning to build a sewage treatment plant, expand the water supply system and upgrade the roads. Rents for houses and apartments, it is said, are already so high that some civil servants are being forced to look for housing elsewhere. A visitor looking out of the window of the commuter plane from Accra as it approaches the Takoradi airport sees yard after yard of pipe waiting to be taken offshore. There it will gather the black gold from a growing number of wells to a central point from which it will be loaded onto tankers or brought by an undersea pipeline to the future refinery. Is all this action a brief bubble of activity, the first signs of yet another expression of the curse of oil, or is it the dawn of an era of prosperity and well being for the Western Region?

Box 2.5 Prospects for Oil and Gas in the Western Region

After more than two decades of exploration, commercially viable oil reserves were discovered in the Jubilee Field in deep water off the Western Region in 2007. This has raised expectations that oil revenues and new opportunities for employment will boost the nation's economy, reduce poverty and bring other benefits to the country as a whole. The reality is that the proven petroleum reserves are small. The World Bank has projected that the known reserves will contribute 5% to Ghana's GDP and generate average annual additional government revenues of US$1.0 billion from 2011 to 2029.

Figure 2.4 Oil Fields, Discoveries, Lease Blocks, and Gas Export Lines in the Offshore of the Western Region



Climate Change

Climate change promises erratic weather with anticipated increases in the intensity of rainfall matched by longer periods of drought. Such shifts in the climate have major implications for agriculture, for upwelling and fisheries, the security of coastal settlements and the prospects for the Western Region emerging as a tourism destination. For reasons such as these, the Inter-Governmental Panel on Climate Change (IPCC) has concluded that those living in poverty in the tropics are expected to suffer the most from the consequences of climate change.

Specific Issues Identified through the Survey of Coastal Communities

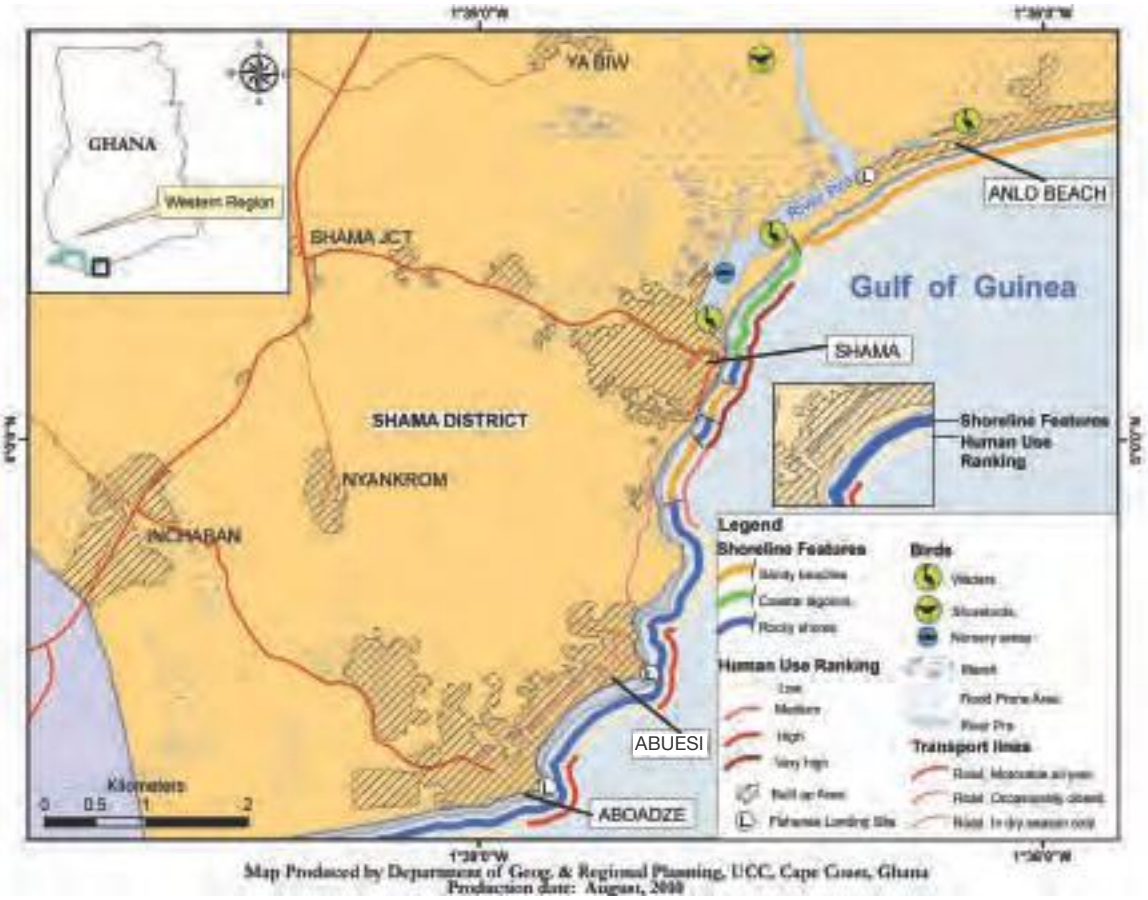
A major effort by the Hɛn Mpoano Initiative in 2009–2010 was to survey conditions in all the settlements of the Western Region. Through focus groups with members of each community and discussions with chiefs and governmental officials perceptions of current and future issues of concern and how they might be addressed were identified and recorded. The surveys also compiled secondary information on the coastline and the coastal districts.

Public Services: Schools, Sanitation and Roads

In communities where poverty is endemic and it is a daily struggle for many to keep a family fed, clothed and in school, the most pressing needs are consistent: a nearby and reliable source of potable water; basic sanitation (latrines, septic tanks or their equivalent); and, adequate drainage for waste. Access to schools with competent teachers and the ability of families to find the funds to purchase basic school supplies is another essential priority. Access to health services is another. Settlements without electricity see its absence as a major constraint. All these basic needs, when met, are a foundation for an acceptable quality of life, a sense of dignity and a reason to hope for a positive future.

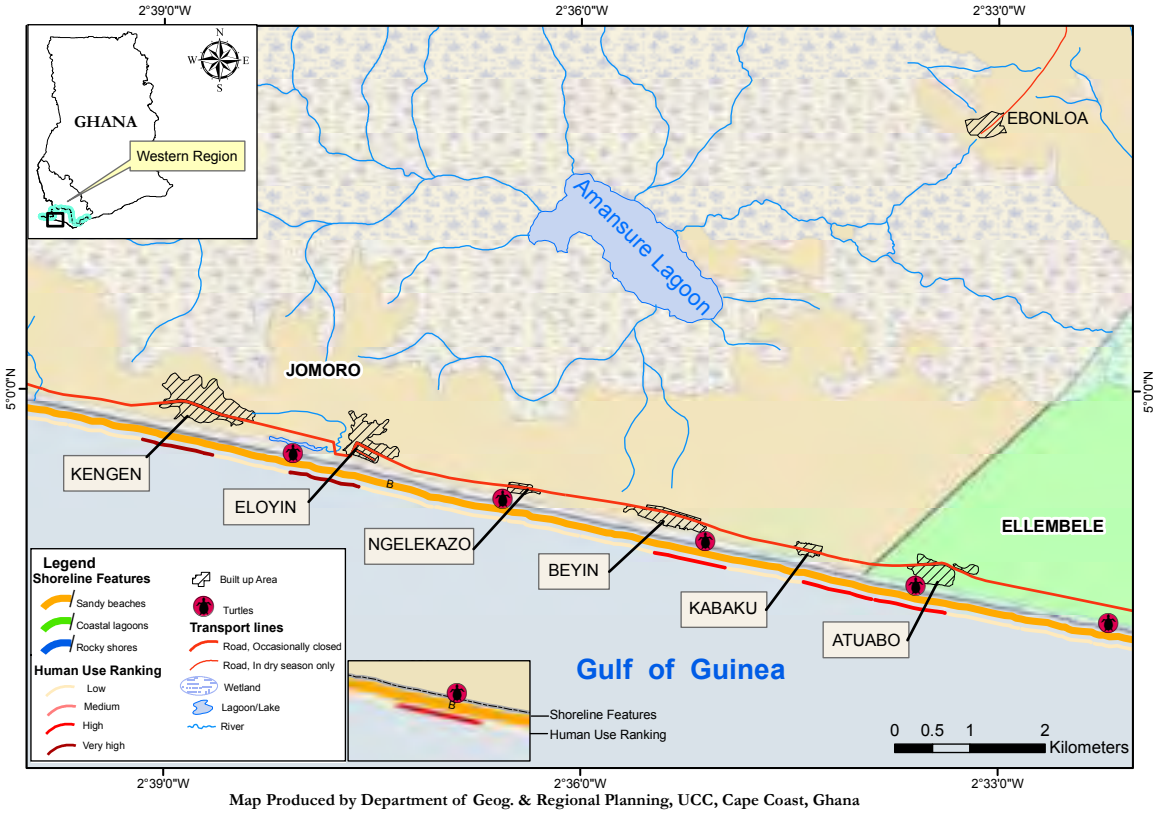
Meeting these needs requires two preconditions that are often problematic. The first is the community structure and organization needed to use such services responsibly and maintain them. This must be matched by a long-term commitment on the part of the government to provide their contributions to maintenance and repair. There are many examples in the settlements along the coast of the Western Region of latrines that are in disrepair, are locked at nightfall, or are in filthy condition. Potable fresh water often comes from a well a long walk from the village. The supply may dwindle in the dry season and the quality may not be what it should be. There are examples of water systems with faucets at convenient distances that have fallen into disrepair or have been vandalized. On the surface, these are simple problems. But their long-term solution often requires a complex mix of leadership, sustained community commitment, political support, funding and sensible design. The funding required for a one time fix may be the easiest ingredient of long-term success. Many of those interviewed during the community surveys were well aware of these dimensions of poverty and the absence of a governance system that can support the many forms of change that must come together to create a path to a better future.

Figure 2.5 Existing Information on Coastal Features in the Vicinity of the Twin Cities and Shama



Source: *Environmental Sensitivity Map for Coastal Areas of Ghana. Volume 1 - Atlas*, October 2004.

Figure 2.6 Existing Information on Coastal Features in the Vicinity of the Amansuri Wetlands in Jomoro District



Source: *Environmental Sensitivity Map for Coastal Areas of Ghana. Volume 1 - Atlas,* October 2004.

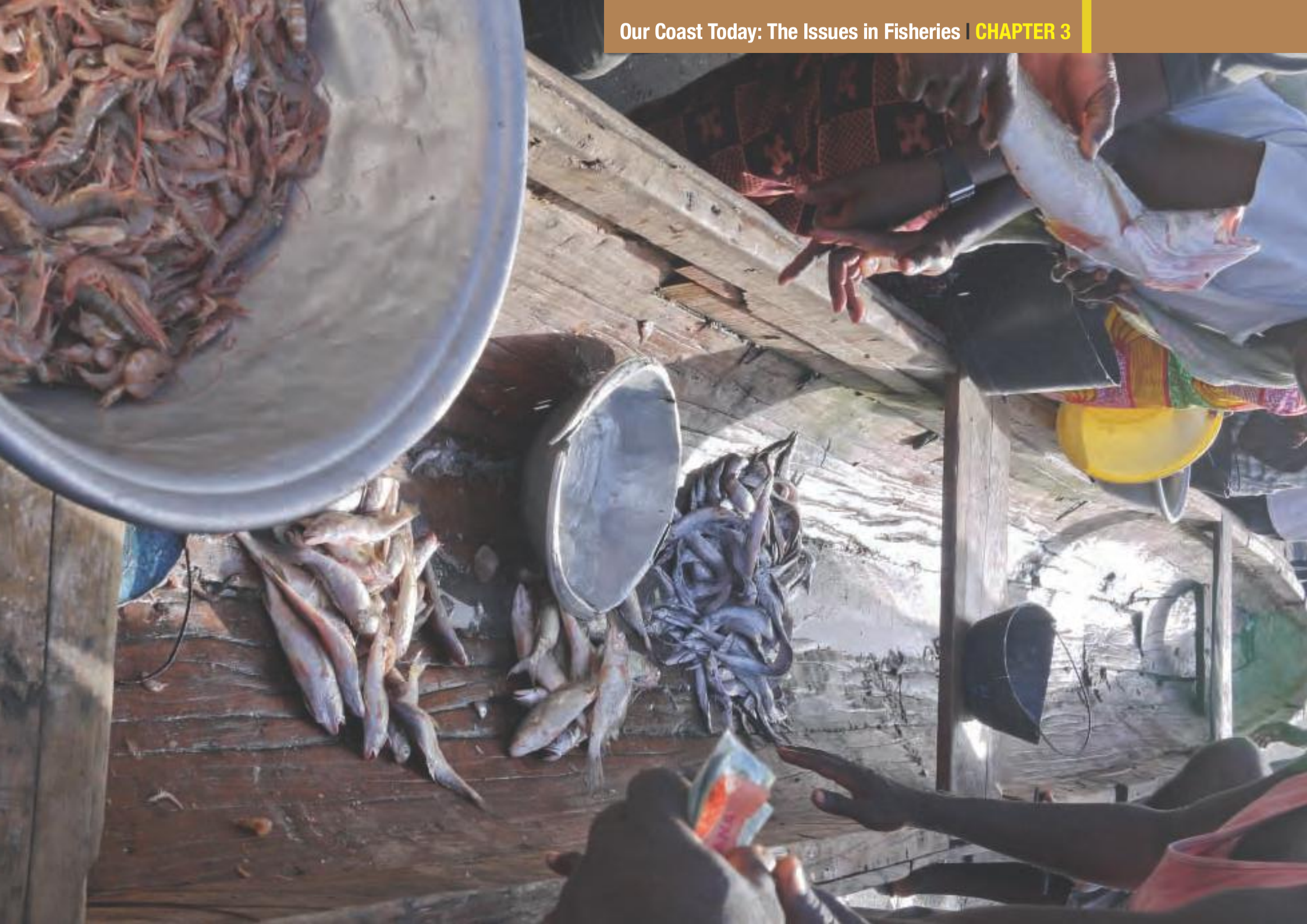
Coastal Erosion in an Era of Rising Sea Level

The coast of Ghana is a coast on the move. Compared to other regions to the east, the coastline of the Western Region is relatively stable, but here too there are places where long-time residents can point to where the shore was several hundred meters seaward of its current position when they were youngsters. These past and current expressions of a migrating coastline are not the result of climate change but changes to the inflow of sediments brought by rivers, natural patterns of erosion and accretion that, independent of human actions, may cause the mouth of a river or an the inlet to a lagoon to shift its position—sometimes quickly and dramatically. In other instances shifts in the position of a shoreline caused by the construction of a port, seawall or groin that alters nearshore water currents, the direction from which waves come ashore or trap sediment. Sand winning, dams in rivers and sand mining in rivers can reduce the flow of sand to a coastline and hasten erosion. There are stretches of shore where rocky outcrops form natural breakwaters. Elsewhere a readily erodible bank or bluff may collapse during a storm or after a period of intense rainfall, or when its vegetative cover has been removed.

All these processes will accelerate as sea level rises in response to global warming and as patterns of rainfall and storms shift from their traditional patterns. While climate change is already a reality, and is accelerating, we cannot predict with confidence how it will be expressed in a given place by a given year in the future. We know however that the worse case scenarios assembled by the respected International Panel on Climate Change (IPCC) are being exceeded and we also must face the reality that as yet there have been no significant reductions in the emissions from burning fossil fuels—the primary cause of the changes that are underway. It is prudent to anticipate that the increase will be somewhere between one and three meters a century hence. We do not know how quickly the vast continental ice sheets of Greenland and Antarctica may melt. We do know that they have the potential to increase sea levels worldwide by tens of meters. The Anthropocene will be an era of unprecedented and unpredictable global change in which we can anticipate many surprises!

Muoko hyehye naaso nsambaa tum tsena mu
No matter how hot the pepper is, worms are able to live inside

ADAPTABILITY
Dɛnkyɛm



CHAPTER 3

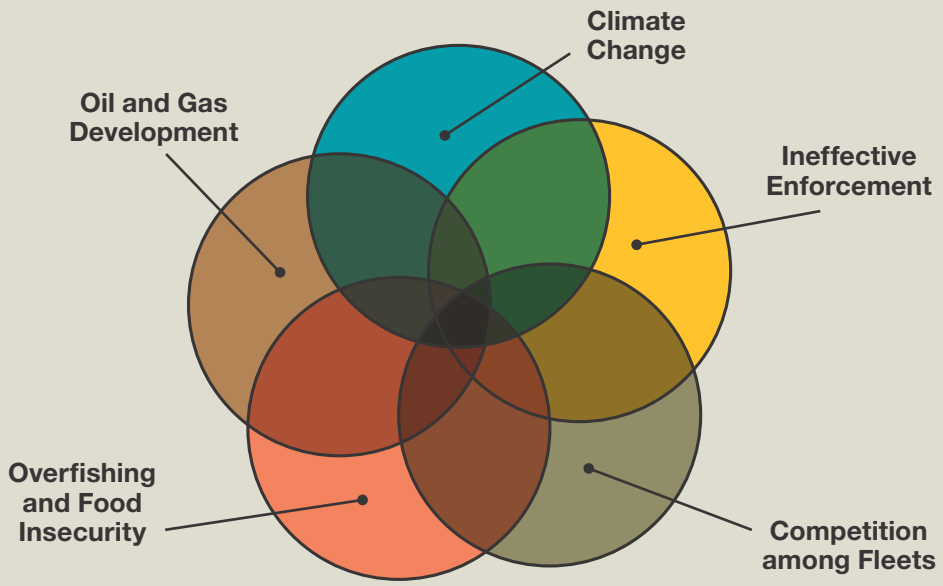
Our Coast Today: The Issues in Fisheries

A Central Pillar of the Culture and the Economy

Marine fisheries have long been a pillar of Ghana's economy. Fishing is an important source of livelihoods in every shorefront community. The Western Region contributes approximately a third of the annual catch that in recent years has produced some 300,000 tons of high quality food. Landings from both marine and freshwater fisheries and aquaculture contributed at least 4.5% to the nation's GDP in 2008 (Fisheries and Aquaculture Sector Development Plan FASDP, 2009). The wealth of protein provided by the fisheries has for centuries been critical to the diet of all Ghanaians, and to populations far inland. Ghanaians consume 23 kg per person per year (FASDP, 2009)—and this requires importing a third of the fish consumed each year. However, Ghana exports about a third of its catch. The exports are both species that command high prices in world markets and the traditional, primarily smoked fish that is traded with neighboring countries. The imported fish is primarily low value frozen blocks—primarily sardines and other small pelagics—that are smoked before being consumed. Catching, smoking, and distributing fish—primarily the abundant small pelagics—has been the centerpiece of the economy and the major source of employment in the majority of the Western Region's shorefront communities.

Today Ghana's fisheries are in crisis. As in the Guinea Current LME as a whole, the major stocks are overfished and many knowledgeable observers fear that the collapse of critically important stocks may be imminent as the effort expended to produce the annual harvest spirals upward, competition between three distinct fleets intensifies and rules designed to protect the resource are flagrantly ignored. In this chapter we review these issues (Box 3.1) and their causes as they are playing out in the Western Region. We begin with a brief description of the small pelagic and demersal stocks and the difficulties of tracking the impacts of fishing. We then describe the current fisheries and end by tracing how fisheries management has evolved since independence.

Box 3.1 Major Issues in the Seascape



A Rich and Renewable Resource

Ghana's continental shelf extends seaward 13 to 80 km (Williams 1968, Koranteng 1998), before dropping off sharply beyond the 75 m depth contour. The fish and crustaceans present in any given area of the shelf is determined in part by the bottom type of the ocean floor (Koranteng 2001). These range from muddy bottoms near rivers, to expanses of sand interspersed with occasional areas of boulders and cobble to a depth of roughly 40 meters after which hard bottom predominates out to the edge of the shelf. Several important fish species that are known to rely on estuaries for a portion of their life cycle and their abundance are likely affected by the degraded condition of many river and lagoonal estuaries.

All the seafood harvested off Ghana can be divided into two large categories. Demersal species are those that live on, in, or just above the bottom. These include such bottom dwellers as lobsters, crabs, several species of shrimp and many species of fish. These bottom dwellers are members of communities distinct to each sediment type—sand, gravel, mud and in a few places boulders and rock outcrops. Fisheries research has been conducted in Ghana's waters since 1956. According to Korangeng (2002) the density of demersal fish on Ghana's inner continental shelf was estimated at 50kg per hectare in 1963 and had declined to 32kg per hectare by 1990. Subsequent research at the scale of the LME confirms that overfishing is an increasingly serious issue.

The second large grouping is the pelagics—fish and other animals that live off the bottom. In the Guinea Current Large Marine Ecosystem, these are sustained by the upwellings that occur near the edge of the continental shelf when cold, nutrient rich waters from great depths come to the surface to support blooms of plankton that are consumed by large schools of small pelagic fish including the round sardinella, the flat sardinella, the long-finned herring and the chub mackerel. The upwellings occur twice a year, the larger between June to October and the smaller between February and March. The dense schools of small pelagics attract large pelagic predators that include skipjack tunas, Atlantic sailfish, blue marlin and several species of whales and dolphins.

Figure 3.1 Ghana Landings of Fish by Species Group 1950 to 2008

The pelagic category includes both large pelagic fish (such as tuna) that are the target species of the offshore industrial tuna fleet and the small pelagic fish that are the primary target of the canoe and semi-industrial fleets during upwelling seasons. Source: FAO Fishstat Plus as presented in Finegold et al, 2010.

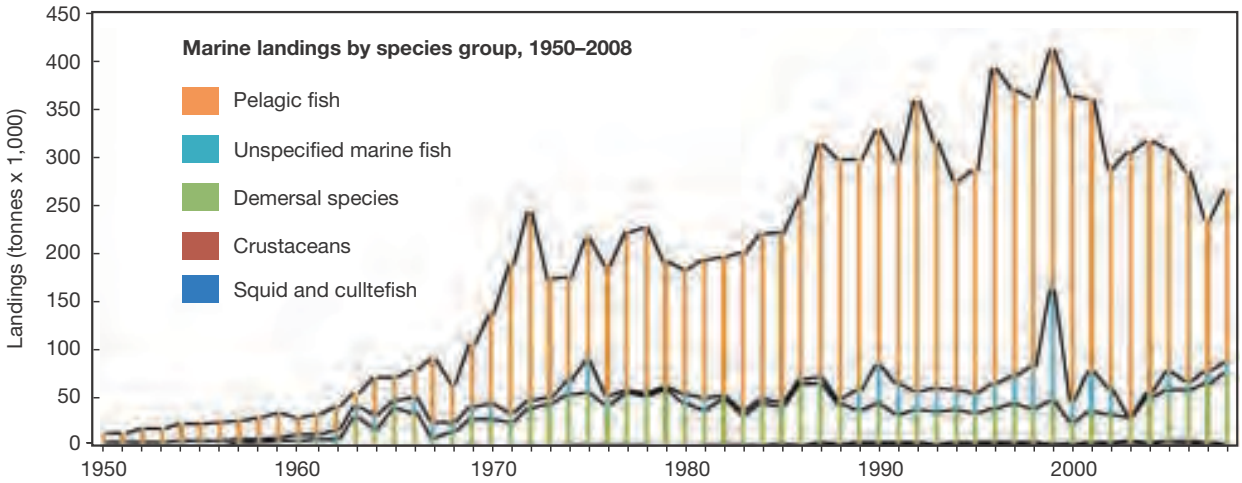
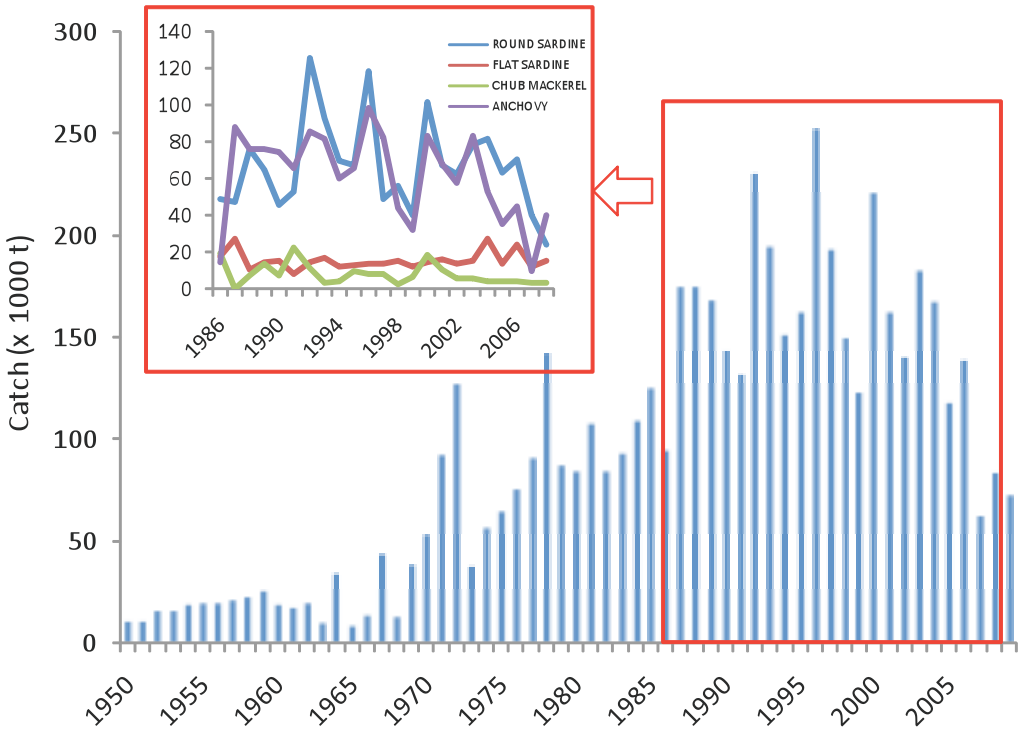


Figure 3.2 Ghana Landings of Sardines and Herrings (known as small pelagics) 1968 to 2008

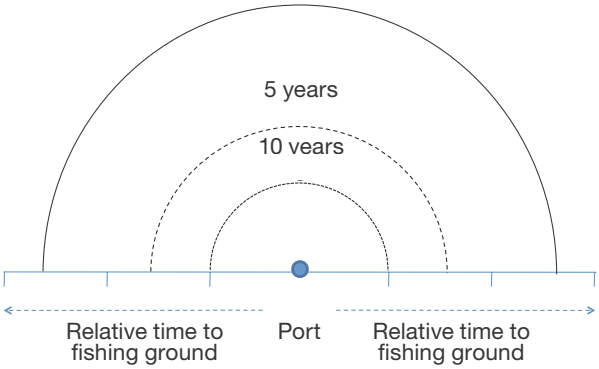
Source: FAO Fishstat and Marine Fisheries Research Division, Tema, as presented in Finegold et al, 2010.



The Problems of Estimating the Condition of the Fish and the Fisheries

Monitoring the condition of fish population, accurately documenting the size of the catches and estimating the impact of fisheries on the abundance and health of fish populations is a complex and expensive undertaking. Herein lies the root of the many failures worldwide to manage fisheries effectively and thereby avoid overfishing and the collapse of important fish populations. Ideally, the volumes of fish harvested are accurately recorded so that all know how much of each species is harvested each year and how that catch is allocated among the different fleets. Ideally, fishery scientists monitor the populations of fish at sea, sampling major variables in the conditions of their habitat, and providing another source of estimates of the proportion of each population that is being harvested. The reality is that the generation of such knowledge on the condition of the various fish and shellfish populations is so complex and expensive that in many places it is not feasible. We must therefore attempt to understand what is happening in each fishery and what is happening to the stocks by triangulating through several data sets—often of highly variable quality. This imperfect process becomes the basis for drawing conclusions on the condition of both the fish and the fisheries and determining what should be done to ensure the bounty continues to flow. The need to understand what is really happening and of thinking through how to proceed is critical. Let us now examine these issues more carefully.

Figure 3.3 Relative time required by canoes to reach fishing grounds, 10 years, 5 years ago and today.



Box 3.1 An Interview of a Fisherman Buying his 4th Canoe

I have been the captain of a fishing canoe for many years. I own four canoes and am fitting out my last one now. It's a big canoe and will be one of the very best. The total cost is 60,000 Ghana Cedis, of which about 45,000 is for the canoe and a 45 horsepower motor and 16,000 for a big encircling net. I have partnered with the best fishmonger at this landing site and each of us is covering half the cost. For some time we have been sharing the costs of each fishing trip and sharing the profits—when we make them. We have been operating this way for several years and the earnings are good. We expect to have our new canoe paid for in 18 months. (In 2010 US $1 = 1.4 Ghana Cedis)

The first question is "how much fish is being caught?" For many decades the Department of Fisheries has collected data on what are termed "landings." This means the fish that are unloaded at Ghanaian ports and landing sites. Landings do not include fish caught at sea and discarded—dead—because they are too small or not sufficiently valuable to keep and sell. Furthermore, landings do not include fish caught but landed in another country. In Ghana, how landing data is collected varies greatly by fleet. Fisheries agents based in some of the landing sites sample the catches of some canoes and report their estimates as kilograms by "fishing days." The catches of a sample of the semi-industrial vessels are also recorded by fisheries agents in each port. It appears, however, the "china-china boats" that are foreign built and in many cases foreign owned and are classified as semi-industrial may be excluded from the surveys. The landings of the vessels classified as industrial (because they have the capacity to process and freeze at sea) are gathered through an honor system by which each captain reports what he has landed—typically by month or by year. There is no method for checking the veracity of the numbers reported and this is probably why the landings reported for the industrial vessels are extraordinarily low. When the total estimated landings calculated from the samples collected by these three methods are combined the total landings estimates are calculated. Such estimates have been made since the 1950s (Figure 3.1) and suggest that landings increased steadily until the late 1980s and have subsequently shown marked annual variations, and more recently a decline.

A crucial way to indirectly gauge the abundance of the fish populations is to examine how much effort is required to catch a given amount of fish. If it takes ten times longer for a fisherman using the same gear in the same area to catch the same number of fish it is reasonable to conclude that there are less fish in that area. Box 3.2 illustrates that a similar volume of landings over many years may obscure major increases in effort that suggest a sharper decline in the fish stocks than is suggested by the landing data. The increases in fishing effort mask the decline in the resource not only in the fisheries statistics but also influence the perceptions of some fishers. It may not make sense to some fishermen to assert that the stocks are overexploited when fishing remains profitable for many. Indeed new semi-industrial vessels are being built in Sekondi harbor and many more in nearby Elmina. Construction of new canoes can be seen near many landing sites.

Box 3.2 An Example of Effort Creep

The captain of one canoe explains that his catch has varied very little over the past 10 years. But the effort that he has had to put into catching the same amount of fish has changed dramatically. Ten years ago his canoe was only 22 feet long, he had no engine and fished with one other man near to shore with a bottom set net. Five years ago, he invested in a larger canoe and an eight horsepower outboard engine and added a second crewman. He now goes further offshore, stays at sea longer and has invested in a ring net. He is now catching what he was catching ten years ago but his effort and his investment are much greater.

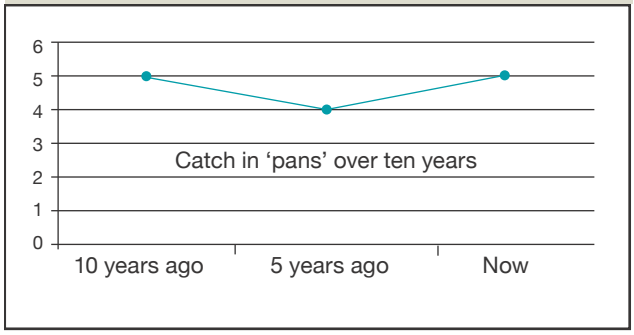


Table 3.1 Characteristics of the Three Fishing Fleets

Vessel Type	Construction	Propulsion	Ownership	Gears	Fishing Grounds *(legal in italics)*	Catch reporting
Canoes	Lower hull carved from tree trunk, planked sides	Paddle, sail, outboard motor	Ghanaian	purse seines encircling nets, a variety of entangling and gillnets, handline, and longlines	*No limitations* Inshore Exclusion Zone (IEZ) to far offshore	Sampled by fisheries officers at selected landing sites
Semi-industrial						
Semi-industrial	Wooden, locally made	Inboard engine	Ghanaian	Can be rigged as trawlers or purse seiners	*Vessels below 10m in length may fish inside IEZ without towed gear.* Range throughout continental shelf	Sampled by fisheries officers at selected landing sites
Semi-industrial China-China	Wooden, foreign made	Inboard engine	Ghanaian or Foreign-Ghanaian joint venture	Can be rigged as trawlers or purse seiners	As above	May not be sampled by fisheries officers
Industrial						
Industrial Trawlers	Steel, foreign made	Inboard engine	Ghanaian or Foreign-Ghanaian joint venture	Single trawl, shrimp trawl. Pair trawling now banned.	*Prohibited in IEZ*	Self-reporting
Tuna boats	Steel, foreign made	Inboard engine	Ghanaian or Foreign-Ghanaian joint venture	Tuna purse seine, pole and bait with live anchovy, longline	Far offshore	Self-reporting

Ghana's Current Fisheries

Before independence, fish seemed wonderfully abundant compared to today. The bulk of the catch was taken by canoes powered with paddles and a sail that operated within sight of land. After Independence the Government introduced motorized wooden vessels and by 1960 trawlers up to 25 meters in length where being built in Tema and a few canoes were using outboard motors. Industrial, steel hulled trawlers and seiners were operating off Ghana by the 1960s and by 1976 a tuna processing plant was operating in Tema that services tuna vessels that range throughout the LME. Today three distinctly different fleets compete with each other off Ghana (see Table 3.1). By 2009 these were estimated as over 12,000 canoes, 350 semi-industrial vessels and over 80 licensed industrial trawlers (FASDP, 2009). A fourth fleet is dedicated to tuna fishing, operates far offshore, and ranges over very large areas.

Each fleet fishes in a distinct manner using different types of gear. The canoes do not have the engine power or the stability to pull a trawl—a funnel shaped net that is dragged along the bottom—and rely mainly on ring nets and set nets to capture fish. Some canoes rely on hook and line either to catch fish individually or by setting a longline of baited hooks. The semi-idustrials also catch small pelagics with ring nets during the upwelling seasons but convert to bottom trawling at other times of year. The industrials are large and powerful trawlers capable of operating heavy gear at great depths. If the mesh size at the end of a trawl is small this gear can catch everything in its path and can alter bottom conditions. This

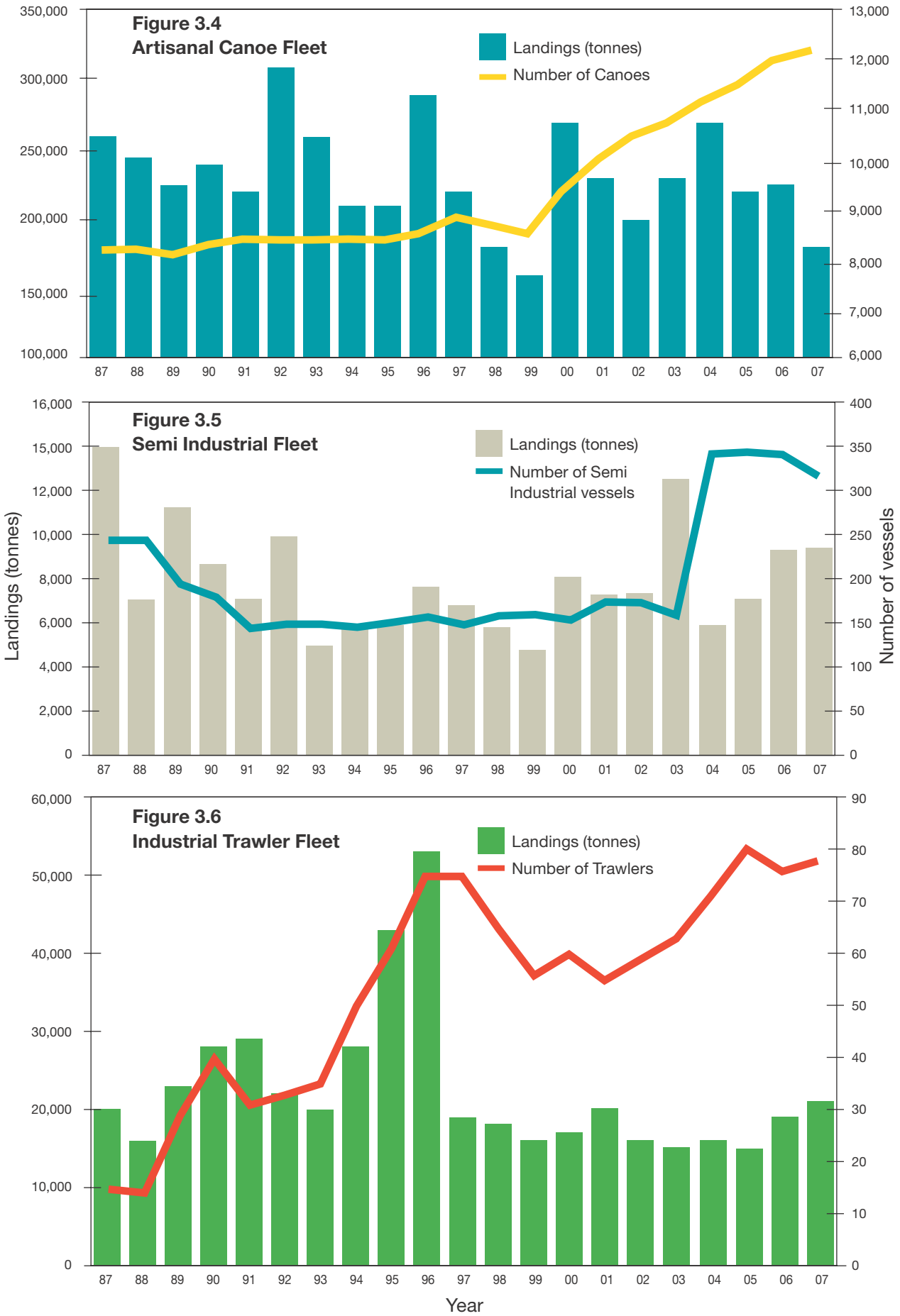
can be damaging, especially in inshore waters where juvenile fish may be abundant. In 1991, an Inshore Exclusion Zone was established and was incorporated into the Fisheries Act of 2002 that reserves waters within the 30-meter depth contour, or six nautical miles from the coast—whichever is further—for the canoes and semi-industrials not using trawls or any other form of towed gear. However, enforcement is weak and trawlers, including the big industrials, often operate within this zone. Many canoe fishermen blame the scarcity of fish in these inshore grounds on the trawlers. As fish have become increasingly scarce, fishermen have had to operate further offshore, stay at sea for longer periods and have resorted to using methods that most know to be damaging. Although prohibited by national regulations and by many Chief Fishermen, killing fish with dynamite, carbide and DDT is widely recognized among fishermen as a growing problem. In the 1980s a government sponsored program experimented by attracting small pelagics with lights at night in order to lengthen the sardine season. The project concluded that this method risked overfishing and abandoned the practice. However, in the late 1990s semi-industrial vessels and canoes found that powerful lights lowered into the water on a long cable and powered by a generator on a vessel will attract schools of small pelagics into shallower depth where they can be caught. Some Chief Fishermen worked to ban this practice but its ability to produce catches at times when fishing is poor has proved to be too great a temptation. Today light fishing is endemic among both the canoe and semi-industrial fleets. The fisheries regulations passed by parliament in August 2010 bans light fishing and reaffirm prohibitions on dynamite and poisons. Enforcement of these new regulations remains a very major challenge.

By far the biggest fleet is composed of the canoes that can be seen at every landing beach in the Western Region. Many of these are large, up to 16 meters in length, with crews of up to twenty men that venture far off shore for many days. These are powered by outboard motors and use a wide variety of gear. The canoes that fish with hook and line are typically somewhat smaller—up to 11 meters—are also powered by outboards and may be at sea for as long as a week fishing for redfish, sea breams, and groupers. Smaller canoes, some of them, powered by paddles operate nearer to the coast. As shown by Figure 3.4, the number of canoes is currently estimated at over 12,000. Landing data suggests that this fleet is currently catching about the same amount of fish as 8000 generally smaller and less well powered canoes were landing in 1990 (FASDP, 2009). The sharp increase in canoe numbers is correlated with the re-establishment of the subsidized outboard fuel program, (locally known as pre-mix) in 1999 and, more recently, by the widespread adoption of such new practices as light fishing. The landings of the canoe fleet was estimated at about 227,000 tons in 2009. In that year almost half of the canoe catch (94,000 tons) came from canoes that land in the Western Region. Nearly three quarters of the fish landed by the canoes are small pelagics (sardinella, flat sardinela, chub mackerel and anchovy).

A second, also rapidly growing fleet is composed of the wooden, so-called semi-industrial vessels powered by inboard engines that are built at selected landing sites along the coast. These vessels use purse seines and nets designed to capture pelagics during the upwelling seasons and switch to trawling at other times of year. The number of these vessels has increased from 150 in the early 90s to an estimated 350 today. The introduction of light fishing in 2003 brought in some 200 additional vessels in a 12 month period. About 90% of the landings from this fleet is small pelagics. The official estimate for the landings of the semi-industrial fleet in 2008 was 6,140 tons or about 17 tons per vessel per year (FASDP, 2009).

The third fleet is composed of the large, primarily steel hulled industrial trawlers that can process and freeze their catches at sea. It is illegal for the he industrial trawlers to operate in the Inshore Exclusive Zone but fishermen report that this rule is often disregarded. In 2008 there were 84 licensed industrial trawlers operating from Ghanian ports that landed a reported 17,500 tonns of fish. According to the official statistics vessels in this trawler fleet has been landing an average of only 209 tons of fish each year—a catch that would be landed by 10 such vessels in a healthy fishery (FASDP, 2009).

Figures 3.4–3.6 Landings by Vessel Type 1950 to 2007



Source: FASDP, 2009.

Somewhat different estimates for the numbers of semi-industrial and industrial vessels classified as "active" are presented in the report submitted to the ICFG Initiative (Finegold et al, 2010) as this document goes to print.

The Evolution of Fisheries Management in Ghana

The management of fisheries is concerned primarily with the management of fishermen. Traditionally, and to some degree today, this has been the role and the responsibility of Chief Fishermen. Their jurisdiction, however, is limited to the canoe fishery. These are technically competent and well respected members of the fishing community with special responsibilities to settle disputes, mediate with migrant fishers, coordinate actions in the event of accidents at sea and participate in religious rituals connected with the sea. Each Chief Fisherman is assisted by a council of elders and receives revenue to support his activities through the imposition of levies in the form of share of each catch. Traditionally they keep a watchful eye on the impacts of fishing on the abundance, sizes and species of fish in the areas fished by their community and regulated where and when and how fishermen in their community fished through rules, oath taking and ceremonies made in the name of the god of the sea. Historically, many Chiefs, and more recently many Chief Fishermen have resisted the introduction of methods perceived as increasingly destructive fishing practices and have often led the opposition to such practices as light fishing and the use of poisons and explosives. They have played major roles in the distribution of pre-mix.

Of comparable authority and influence are the "konkohene" or leaders of the fishmongers who are elected by the elder fish traders. The fishmongers are nearly all women and their leaders play a similar role as the Chief Fishermen among the women that are responsible for the processing and marketing of the fish landed in their community. The leader sets the price for the fish landed each day and determine how it will be distributed. These community leaders together manage the community patronage system and are typically among the most influential and respected people in shoreline communities.

The evolution of government-led fisheries management may be subdivided into four eras.

The Colonial Era

As early as 1850, Chiefs in Ghana saw that a new fishing gear, the ali net introduced by Fanti fishermen, was so efficient and perceived as potentially destructive that it significantly reduced the abundance of fish in their fishing grounds and produced

such large catches that prices fell. There are numerous records of court cases from that period in which colonial officials rejected local ordinances instigated by Chiefs that prohibited the use of ali nets or otherwise attempted to regulate fishing effort. In one 19th century case the Colonial Secretary of Agriculture overturned effort-limiting bylaws stating that "the best net is the net that catches the most fish." The British established a Fisheries Department in 1946, introduced the first motorized trawlers that same year and established a Boatyard Corporation in Sekondi in 1952 to encourage the construction of a modern, mechanized fishing fleet.

Centralized Fisheries Management

Seven years after independence fisheries regulations were adopted by Parliament to guide the actions of the Fisheries Department (in the Ministry of Agriculture). This established a basic administrative framework to provide technical assistance in support of fisheries and occasional governmental subsidies. It left the business of managing the issues raised by fishing at the community level to the Chief Fishermen. The Fisheries Department collected some landing data and maintained a vessel for conducting research on the stocks. During this period the fishery remained open access and at the national scale largely unregulated.

Decentralization

A result of the decentralization movement of the late 1980s was to make fisheries management one of the responsibilities of the newly created District Assemblies. While the Fisheries Department in Accra retained responsibility for setting policy, monitoring and enforcement, the Assemblies were to formulate and adopt bylaws over fisheries. However, the district level officials responsible for fisheries were agriculture specialists with little knowledge or interest in fisheries matters. It also became apparent that the issues raised by the rapid increases in trawlers, the operation of foreign vessels and conflicts among these and the canoe fleets could not be handled at the District scale.

Community Based Management

In 1997, with funding from the World Bank, a new approach was launched that featured Community-Based Fisheries Management Committees (CBFMCs). The central idea of this approach was that individual communities should assume a level of responsibility for the management of fisheries through structures that encourage involvement and responsibility at the community level while maintaining the policies and engagement of the responsible agencies of government. While in many instances a structure for discussing and in some cases resolving community conflicts and needs proved to be useful, it is not possible for communities to manage fishing activities

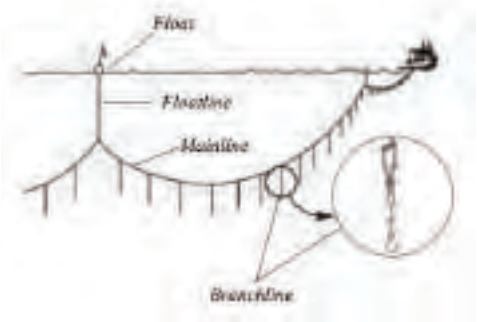
Figure 3.7 Gear Types

Surrounding net

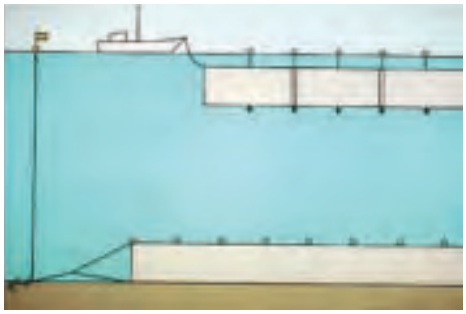
Beach seine

Bottom trawls

Long lines



Set net



that occur over large areas for which the communities have no control. The efforts of the CBFMCs could only be directed at the canoes that operated from their landing site and could not influence the semi-industrial and industrial vessels with which the canoes are competing. These problems were compounded over the lack of clear definitions for what forms of fishing are classified as illegal or what legal procedures should be taken when an infraction was seen. It has to be concluded that the CBRMCs failed to have a significant impact on how fisheries are conducted.

Fisheries Management at the National Scale

The pressures and the frustrations over how fisheries should be managed at the national scale are no less daunting. For decades the Fisheries Department has been a unit in the Ministry of Agriculture and was briefly a ministry between 2005 and 2009. A Fisheries Act that grants a Fisheries Commission broad statutory powers for developing fisheries plans and licensing vessels and canoes was passed by parliament in 2002. The Minister of Agriculture sets the policies to be pursued by the Commission. The Act also created a monitoring, control, surveilance and enforcement unit in association with law enforcement agencies. An important feature of the Act is that it requires that canoes be registered and licensed "on demand" meaning that the canoe fishery shall remain an open access fishery.

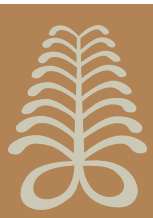
In 2001, in preparation for the Act that came a year later, the Fisheries Department developed a bold and forward looking Marine Fisheries Management Plan that addressed the over exploitation of the demersal stocks by measures that included banning new trawlers, and increasing minimum mesh sizes for all categories of nets. The plan was not approved and the provisions of the 2002 Act provide only very general statements on the objectives of fisheries management, limiting access and enforcement. This perpetuated a situation in which there is no legal framework for co-management, no explicit statements on such measures as licensing, limiting fleet sizes or specifying gear limitations. In August 2010, as this document goes into print, a revised an updated set of fishery regulations were released. What the response will be in terms of enforcement and voluntary compliance will mark another important juncture in efforts to manage Ghana's fisheries.

The Government of Ghana and the World Bank have joined forces and released in 2009 a draft Fisheries and Aquaculture Sector Development Plan (FASDP) that proposes to re-activate the community-based approach by reorganizing some 200 committees and creating District Fisheries Management Committees in each of the 22 coastal District Assemblies. These District Fisheries Management Committees would be responsible for overseeing the implementation of a consolidated set of fisheries bylaws. The Plan argues for eliminating the pre-mix program, licensing all canoes and semi-industrial vessels and eventually making the transition to a managed access fishery. The Plan emphasizes the importance of the enforcement of fisheries regulations, including the exclusion of industrial vessels from the artisanal fishing zone, and eliminating the illegal and unlicensed incursions of trawlers into Ghanaian waters.

In Summary

This brief overview of a highly complex situation suggests that Ghana's fisheries are at a crucial junction. The evidence is that the catch per effort has spiraled downwards and the apparently modest decline in the total landings masks a major decline in the stocks. The widespread use of light fishing now makes pelagic populations accessible to fishing during their "resting stage" when in the past they were largely undisturbed. The Guinea Current LME has proved to be a remarkably productive and resilient system because it is driven by the twice annual upwellings of nutrient rich waters and the resulting blooms of plankton and small pelagics. This source of productivity may change as climate change becomes more apparent. Further complicating the picture is the development of oil and gas resources—currently in very deep water off the continental shelf. This introduces a new set of activities that is already affecting fishing activities and could have an impact on the health of the ecosystem. The most immediate problem is the increase in fishing effort. This can only be reduced if entry into the fishery is not open to one and all. In Ghana, as in the great majority of coastal nations, the open access to fisheries is a passionately defended principle with deep historic roots. This raises a host of governance issues that are explored in more detail in the next chapter.

Nnyɛ obi na ɔma kotokrodo detse na nsu ma ɔdze si ne dan
One has to be resourceful and endure whatever hardships to attain his/her goals in life



ENDURANCE RESOURCEFULNESS
Aya

CHAPTER 4

The Challenges Posed by the Current Governance System

Meeting the Challenges of Governance in the Coastal Zone

Responsible and effective responses to the issues identified in the previous chapters will require a revitalized governance system that recognizes the linkages among the issues and can provide answers to such questions as the following:

- **How can an often unpredictable and inefficient system of planning and decision-making over how land will be utilized and altered into a predictable, transparent and equitable system that plans for the long term?**
- **How can the Western Region's extraordinary biodiversity assets be conserved, where feasible restored, and made into a source of livelihood and pride?**
- **How can an open access, over-exploited and unregulated fishery make the transition to an orderly and sustainable industry that can generate abundant and secure livelihoods to coastal communities for generations to come?**
- **How can the benefits and the threats of oil and gas development be managed to generate long term benefits to the region as a whole, thereby avoiding the curse of oil that has brought conflict and misery to many and great wealth to a few in other regions of sub-Sahara Africa?**
- **How can human activity along the shoreline be managed to minimize the impacts and costs of coastal erosion and the anticipated increases in sea level?**
- **How can the necessary policies and actions be knitted together as expressions of a stewardship ethic that builds on traditions of responsible use and is supported by an educated and aware public?**

The volume of goods and services flowing from the coastal seascape and landscape to the people of the Western Region's coastal zone is declining. As we look to the future the fundamental challenge is whether a reformed and revitalized governance system will permit this trend to continue in its downward direction, will "hold the line" by sustaining current conditions or will reverse the trend and deliver a positive future. A reduced or stable population can contribute to restoring the flow of goods and services and improving quality of life because the challenges of reducing poverty and increasing the quality of conditions for both people and the environment will be more tractable if the population and its demands for services and employment do not increase. The ecosystem approach contends that these sets of variables are inter-related. The desired trends and the outcomes that they may be anticipated to generate define in broad terms the long term goals for ecosystem governance in the coastal zone of the Western Region.

Governance is Not the Business of Government Alone

We now turn to the current governance system and consider its capacity to effectively address the issues posed by the accelerating processes of change in the lands and waters of the Region's coastal zone. **The ecosystem approach requires that the three sources of governance (Box 4.1) participate and contribute to defining the goals and selecting the strategies that can build the path to a desirable and equitable future.** Today the three major sources of governance operate in some isolation, and occasionally in conflict with one another. There are few opportunities where representatives of the three come together to discuss issues and how they can collaborate on common goals and strategies.

The Traditional Chieftaincy System

When the first Europeans arrived over five centuries ago they found a subsistence economy based on agriculture and fishing and a governance system in which royal families held the land in trust for a population composed of commoners and slaves. The pre-colonial system did not foster the concentration of wealth and the standard of living within populations was similar for all members of a given population. The chieftaincy system is recognized by Ghana's constitution as a feature of the nation's governance system. Although less powerful than in the past, the traditional chiefs continue to play an important role in promoting ecosystem stewardship and determining how the large areas of land that they hold in trust are allocated and developed. The emergence of the modern state with its emphasis on the generation and accumulation of wealth has enriched many chiefs. A proportion of the profits generated by mining operations, for example, are allocated to the chief of the land

Box 4.1

The Three Principal Sources of Governance

Government

The conventional view is that government sets the rules and enforces them, recognize and protects property rights, and provide goods and services to its citizens. Governmental rules regulate business practices and the use of natural resources. Government maintains security and order by enforcing the rules within which people can interact peacefully with one another. A distinguishing characteristic of government is its monopoly on the legitimate use of coercive force to control the behavior of individuals and groups. Government may encourage certain sectors through a variety of incentives and subsidies—like the pre-mix program for the canoe fishery—and it sets priorities and polices that are expressed through the allocation of governmental revenues for schools, transportation infrastructure and health services to the regions and the districts.

Markets

The Western Region, like the vast majority of the world's coastal zones, is being transformed primarily by the forces of global markets. In Ghana, as in nearly all other countries, the oil and gas industry, the exploitation fisheries, the activities of mining companies and agro-industries and tourism are all driven by opportunities for profit in a world marketplace managed largely by international corporations. National government may set standards and limits on how businesses operate and how the revenues generated are distributed. A central problem is that market prices do not tell the 'ecological truth' (Brown 2001). They do not reflect the full cost of producing products from ecosystem resources. Market prices cover the cost of capital and labor, but market prices to do not cover the costs of reducing a fish stock, of damaging habitat, of waste disposal and pollution, and other ecological costs. Businesses operating in the Western Region, not least petroleum companies, can play major positive roles by investing in the education and training of local people so that they can meet international employment standards and they can adopt policies that encourage local businesses to provide the services they require. Smaller businesses, like hotels, not only provide employment but can play a pivot role in conservation—for example in promoting the protection of nesting sea turtles. Businesses are often the most effective agents in promoting new approaches to fisheries, advocating for necessary reforms and demonstrating responsible practices in how natural resources are utilized and their benefits sustained.

Civil Society

Civil society is the source of governance that works to modulate the forces and actions of government and markets. Civil society functions through nongovernmental organizations, the press, religious organizations, universities and, in Ghana, the traditional Chieftaincy system. Civil society can exert great power over government by how it votes and over markets by what it chooses to buy. The emphasis upon "public participation" and "stakeholder involvement" in the processes and policies of governmental programs recognizes that the meaningful involvement and support of civil society is essential to the successful implementation of a policy, a rule, a plan or a program that addresses issues of concern to society. In the coastal zone of the Western Region the Chiefs, churches, mosques, nongovernmental organizations, independent media and many educational institutions of civil society should play crucial roles in defining and achieving effective and equitable governance. At times of great change the press can play a crucial role in directing public attention to core issues, holding parties accountable and promoting an informed discourse.

that is mined and the purchase of chieftaincy land or its rental generates income that is held by the Chief and is expended or distributed as he sees fit.

In coastal communities the Chief Fisherman and lead fishmonger are among the most important and influential members of their communities. Both are rarely members of a royal family but they serve as agents of the local Chiefs for that area. Chief Fishermen may be appointed or the people over whom they exert authority may select them. They may be relieved of their position if they are viewed as ineffective or misuse their authority. The traditional role and responsibility of Chief Fishermen is to mediate disputes, regulate fishing effort and prevent practices that are seen damaging to the resource or the common interest. The influence of Chief Fishermen has been diminished, in part, by Christian Churches that oppose references to traditional deities and oaths taken in their name to abide by rules—such as those banning light fishing. Lead fishmongers are always women. They mediate disputes, set the prices for any given day and oversee the distribution of portions of each catch within their community. These community leaders exert major influence over the patronage system and in some cases their position enables them to become the wealthiest members of their community.

Box 4.2 An Example of the Authority of Chief Fishermen

In another community the Chief Fisherman and his council of elders performed a ritual in which the canoe owners swore an oath to the Sea God, the God Almighty, the God of Thunder and Lightning, and the Earth God, promising to refrain from using explosives and poisons. The Chief Fisherman explained, "Thunder and lightning will strike your canoe and drown all the crew members, and if you keep dynamite in your room, thunder and lightning will strike there too and destroy it." Similar rituals have been performed at other landing sites with varying degrees of compliance. (Overå, 2001)

The Current System of Government in the Coastal Zone of the Western Region

The Decentralisation of Government

The decentralisation reforms of the late 1980s and early 1990s many formerly centralised government functions to new local government units called District Assemblies. These were established to be a principle mechanism by which the policies of central government would be implemented throughout the nation. The decentralization reforms made over 80 functions, including planning, finance, infrastructural development, and security the responsibility of the District Assemblies. Twenty-two ministries and departments, including the Ministry of Agriculture (MOFA)—which included fisheries—were decentralised to the District level. However, central departments retained responsibility of such functions as formulation of policy, monitoring and evaluation. Implementation of the decentralized system proved to be patchy. The result was that District-level civil servants continued reporting to their line ministries and lacked the resources to carry out many of their assigned functions.

The Districts are organized into regions whose functions are limited to those of coordination. The highest level official at the regional level is the Regional Minister and their counterpart at the District level is the District Chief Executive (DCE). Both are appointed by the President. Two thirds of the Assembly members are elected and one third are appointed by the President. This means that presidential elections result in a "winner takes all" system. The District Assemblies of the Western Region are composed of 40 to 50 representatives who serve four year terms. They are not remunerated.

The Functions of the District Assemblies

The Districts are responsible for planning, constructing and maintaining public services (water supply, electrical supply, roads) and schools. Each coastal District has a small staff of civil servants, including a District Planner. Each District Assembly is organized into not less than seven committees and a number of subcommittees. None of the Assemblies in the Western Region have a committee dedicated to fisheries and this is seen by many as a reason for lack of attention to fisheries-related issues in coastal communities. On paper, there are town councils, area councils, and unit committees but in practice power and influence resides with the Assemblies.

Bylaws and the Gazetting Process

A major mechanism for District level governance is the adoption of bylaws that define the policies and rules for a given activity or area. Bylaws approved by the Assembly are reviewed by a district lawyer to confirm that they conform to national laws and policies and must be gazetted in Accra before they become operational. Bylaws prepared through the community based fisheries management program that did win approval at the District level did not proceed through the gazetting process. One reason for this was that the documents were large and the per page fee charged for gazetting could not be secured.

Biannual District Development Plans

The District Assemblies prepare the biannual District Development Plans (Medium Term Plans) that follow the national policies and priorities set forth by the Ministry of Local Government. These list the actions to be taken in a two year period and allocate the budget. The formulation, approval and implementation of annual budgets and the preparation of District bylaws is overseen by a District Assembly. The biannual District Development Plans contain long lists of desired investments many of which go unfunded. Annual funding to the districts for the implementation of these plans often arrives near the end of a given year and the amount is often far less than proposed. Solid waste disposal consumes a major portion of the annual budget of some districts. The Regional Planning Office monitors the degree of completion and coordinates, but does not approve or modify, the District Development Plans.

District Revenues

The central government distributes 7% of its annual budget to the Districts. Funding for implementation of the Development Plans comes almost entirely from this annual allocation administered by the Ministry of Local Government. Additional revenues may be raised by the District from parking, fees on markets and the like but these revenues are minor in the coastal Districts of the Western Region. Districts that contain lucrative mining operations may raise more revenues from their share of royalties and fees than they receive from their governmental allocations. Property taxes are a potential source of revenue to the Districts but for the most part they are so low they are not worth collecting. A re-evaluation process of privately owned buildings is underway but proceeding slowly and has not produced a significant increase in the revenues collected.

Land Tenure

The traditional system of land tenure was based on the principle that all land, and resources it contains—forests, animals, minerals, agricultural soils—is owned by royal families composed of kings and a hierarchy of Chiefs. Today the ownership of land falls into three major categories:

> In the Western Region, as Ghana, all land is held in trust by the Chiefs and, in principle may be allocated to government and to individuals in the form of a lease not to exceed 99 years. Large tracts of land, particularly in rural areas have not been transferred and are "stool lands" under the direct jurisdiction of a Chief.

> State lands have been purchased from the Chiefs by the government, originally to encourage plantations of cacao and rubber.

> Family lands that are privately owned by an individual or a family and can be sold—either freehold or rented through a 25, 50 or 100 year leasehold.

From a land management perspective, the system presents several challenges. The first in that the majority of rural lands ascribed to a Chief and in some instances family lands, are not formerly registered with a land title and well defined meets and bounds on record with the national Lands Commission. A Chief may grant use of a parcel to an individual, a group or a corporation but the Chief's family or heir may question the wisdom of the decision or wish to withdraw the right to make use of the land as formerly granted. The use and/or development of Chieftaincy lands may be negotiated by an investor proposing a large scale development or operation with the appropriate agency of government in Accra but the Chief or Chiefs may not be informed or compensated in a manner that they deem appropriate. These problems greatly complicate land transactions and make land use planning and management difficult. The Lands Commission manages government owned land and approves lease agreements for mining and timber extractions. In principal, the Lands Commission should approve and register all land transfers. Nevertheless, many transactions are handled informally according to traditional practice.

Current Planning and Regulation of Land Use

The prevailing concentration of power and authority in the agencies of central government in Accra is expressed in the negotiation of major development proposals and land use decisions (for example, permits for the construction of an oil refinery or a major commercial development) that are made in Accra by the responsible ministries with little or no involvement of District level government. In cases where an environmental impact assessment is required the process is also centered in Accra—with only relatively minor decisions left to the Environmental Protection Agency's regional office. Until recently none of the coastal districts had a "structural" or long term land use plan to guide the development process and identify areas that have development constraints or should be preserved—such as wetlands. Today the District of Shama has completed a land use plan and the Land Administrative Program has completed a structural plan to guide development in the coastal corridor between Takoradi and Axim. This plan provides for more detailed planning to be undertaken at the community scale. Elsewhere in the rural districts District Planner may prepare "development schemes" for areas where development is anticipated. Not infrequently, the form of development and its spatial design will be negotiated first between the developer and the owner of the land (a Chief or a private owner) and the District Planner will become involved only after the major features of the development have been decided.

The process for obtaining permits for a substantial residential building is typically a long, complex and somewhat unpredictable one. Several District Committees may need to be consulted and several may require a permit and the payment of a fee. It is therefore not unusual for a developer to begin construction and negotiate fines and permit fees as the need arises. The fines and fees are typically a very small fraction of the building costs. Many structures are on land whose meets and bounds have not been filed with the Lands Commission.

Two Case Studies of Fisheries Governance

We now turn to the challenges of fisheries governance in an unregulated, open-access fishery in which three fleets are competing for the same fish in the same areas. We begin our review of these challenges with two case studies designed as response to conditions in the canoe fishery. Such governance case studies seek to assess the degree to which an initiative (1) made the transition from issue analysis and planning to successful implementation of a plan of action and (2) the degree to which the changes in behaviour required to achieve stated goals have improved environmental and/or social conditions.

Such case studies of governance responses to important issues are an essential element of a baseline. The Orders of Outcomes framework (Box 4.3) is a tool for structuring such analysis. It calls for segregating the assembly of preconditions that create a positive context for the successful implementation of a plan of action (the 1st Order) from the changes in the behavior of institutions and user groups—in this case canoe fishermen, institutions of government and Chief Fishermen—that signal the successful implementation of a fisheries plan, rule or policy (the 2nd Order). The changes in behavior are in turn selected as those that are required in order to achieve desired environmental and societal conditions (the 3d Order). In the two case studies that follow (the pre-mix program and the community-based management program) are examples of responses to the issues raised by the condition of Ghana's fisheries. They did not produce the necessary behaviors and therefore also failed

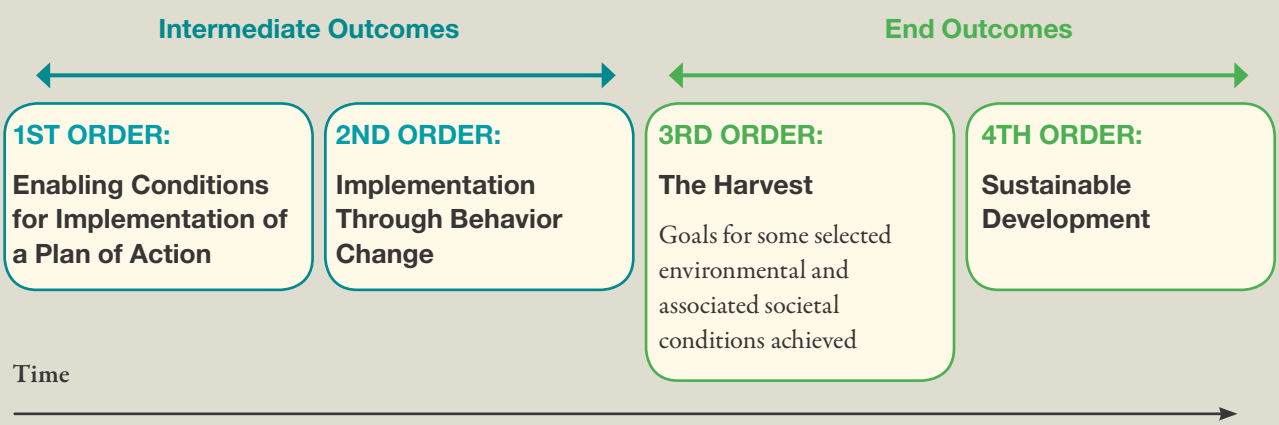
to generate the desired results. This suggests that the root problems lay in failures to assemble the necessary 1st Order preconditions. This approach to the analysis of governance responses to ecosystem conditions is described in greater detail in the Annex.

The Pre-mix Program

The pre-mix program is a governmental subsidy designed to support the canoe fishery through the provision of fuel prepared (pre-mixed) at the Tema oil refinery for use in the two stroke outboard engines that power the larger canoes. The program was initiated in 1991 and has been discontinued on several occasions only to be revived in response to the demands of the approximately 130,000 canoe fishermen in the many coastal communities in which the canoe fishery is an important, if not the major, source of livelihood. The first generation program distributed unmixed gasoline at about half the price of fuel purchased at a gas station. Much of the subsidized fuel was diverted and used for other purposes and many fishermen damaged their outboards by adding the wrong proportion of oil required for two stroke engines. The second generation program initiated in 1994 mixed the fuel at the refinery and developed a complex set of procedures and regulations designed to avoid its diversion and misuse. The third generation, initiated in 1999 added a colorant so that the fuel could be easily recognized and made a series of revision to the distribution procedures. The limitations of the program and the conflicts it generates is one of the major issues raised during the community surveys and interviews conducted in preparation of the fisheries sector review.

In its current third generation program form, pre-mix is delivered by tanker truck to landing sites where it is distributed by a landing site committee. The fuel is then distributed to individual canoes following procedures defined by the committee. Before distribution, approximately 0.20 cedi per gallon is levied on the fuel by the local pre-mix committee. The proceeds are split with 47% going to the committee members and 53% slated for community projects selected by the committee. The program currently comes at a cost to the government of about US$8 million per year. Despite repeated efforts to reform the distribution process the program continues today to be a major source of conflict at many distribution points with frequent accusations of corrupt dealings and abundant evidence of illegal actions. The more isolated landing sites may not receive their allocation and there are conflicts over how a limited supply is distributed. Another source of criticism is how the "profit" made by the landing committees is distributed. For example, each week eight tanker loads may come to a large port like Elmina, generating a weekly "profit" that can approach 10,000 cedi (about US$7,500). In some cases the portion of this income that should be allocated to community improve-

Box 4.3 The Order of Outcomes Framework
Adapted from Olsen, Page, Ochoa 2009



ments has indeed been used to build toilets, sheltered areas for mending nets and street lighting. Elsewhere there is little evidence that the funds have been used for such purposes. It is widely believed that the most recent presidential election was won in good measure by a commitment to maintain the pre-mix program. While many observers and some fishermen declare that the program should be abandoned, all agree that the political implications of ending the subsidy would likely be significant and experience suggests that making further minor adjustments to how the program is administered is unlikely to result in halting the misuse of pre-mix. The evidence is clear that despite progressing through three generations of planning and implementation, achieving Second Order changes in the behavior of those that administer the pre-mix program has not occurred. In terms of Third Order outcomes, the program has significantly reduced the costs of fishing for those that receive the subsidized fuel and therefore only temporarily increased incomes and enabled some to keep fishing. It appears, however, that the most needy fishermen, those that operate from the more isolated rural landing sites are the ones who benefit the least. More importantly, the pre-mix program is a major contributor to increases in fishing effort and the resulting heavy pressure on the demersal and small pelagic stocks. Cancellation of the pre-mix program would benefit the stocks but have a significant negative short term impact on many fishing communities.

Community Based Fisheries Management

In 1997, with funding from the World Bank, a new approach to the challenges of managing Ghana's marine fisheries was launched that featured Community-Based Fisheries Management Committees (CBFMCs). The program was inspired by the example of Mumford, a fishing community in the Central Region that had succeeded in resolving problems brought by a breakdown in social order expressed as outbreaks of theft, school absenteeism and conflicts at the landing beach. In 1991, under the leadership of a newly appointed Chief Fisherman supported by a seven member committee, order was restored and the rules governing behavior on the landing beach were formalized as a set of bylaws. The degraded conditions in the adjoining lagoon improved after imposing a closed fishing season. Inspired by this experience the Fisheries Capacity Building Project worked to encourage individual communities to assume a level of responsibility for the management of fisheries in support of the policies and regulations promulgated by the Fisheries Department. The program created 133 committees, usually under the leadership of Chief Fishermen but not always. According to a lengthy and detailed CBFMC Manual (undated), each committee was to develop a management plan and bylaws that address "the protection of fish stocks, the use

of appropriate fishing methods and the welfare and socio-economic development of the community." The committees were to receive financial and technical support from both the District Assemblies and the Department of Fisheries and the bylaws they produced were to include provisions for levies that would support the management system.

The program encountered numerous difficulties that are detailed in a study conducted by the World Bank in 2009 (Braimah, 2009). According to that report, these included a number of procedural issues, inadequate funds and technical support, a perceived lack of interest in the Department of Fisheries and difficulties in winning endorsement of the bylaws first at both the District Assembly level and then in Accra—where District bylaws must be approved by the Attorney General before they can be enforced. The committees were expected to enforce within their area both their own approved bylaws and the fisheries regulations set by the Department of Fisheries. This raised major problems when, for example, many committees believed that the mesh size regulations set by the Department were unreasonable and unenforceable. Another problem is that the committees could only work to influence the activities of the canoe fleet and not its increasingly numerous competitors in the semi-industrial fleet or the illegal encroachment into the Inshore Exclusive Zone by industrial and semi-industrial trawlers. According to the Braimah report, the program was conceived and planned with little real input from the people who were to be responsible for its implementation. Most committees stopped meeting as soon as the international funding ended.

The goal of the CBFMC program was to achieve greater compliance with the Fisheries Regulations developed by the Department of Fisheries while enhancing the conduct of activities at landing beaches and their associated communities. An essential first step was that communities would develop bylaws

and successfully see them through the District level approval process and subsequent gazetting in Accra. This occurred in very few Districts and points to a failure to make the transition from planning to formal approval of a plan of action and its implementation. There is also no evidence that the program achieved greater compliance (Second Order behavior change) with the national fisheries regulations. This is not unexpected given that the CBFMCs have no legal jurisdiction over marine areas or the conduct of fisheries. Nonetheless, many CBFMC participants interviewed during the conduct of the community surveys see benefits in a forum at which community needs can be discussed and conflicts on the shorefront negotiated. Several Chief Fishermen see co-management as "a beautiful idea."

A Positive Context for Fisheries Reform

Through several consultative sessions in the past year, participants drawn from civil society, government (the Fisheries Department) and the fishing industry (both canoe Chief Fishermen and leaders from the semi-industrial fleet) met to discuss fisheries issues and the goals. The degree of consensus on the issues that must be addressed and the goals of governance was remarkable. Those from the fishing industry put high priority on the need for engagement and consultation with the Fisheries Department and Fisheries Commission in defining and enforcing rules over how fishing is conducted. All agreed that the stocks are declining, that there are too many vessels, and that damaging practices—such as light fishing—need to be controlled or eliminated. This does not imply that all participants in the artisanal and semi-industrial fisheries agree with these views. Indeed many of the younger fishers feel that fish are still abundant and see that fishing can be a profitable business. Yet fishermen who have worked off the coast of Cote d'Ivoire and other countries in the region are impressed by the benefits of a regulated fishery. They ask why closed seasons, closed areas and regulations over gear are not being applied in Ghana. At the national level the context for reform is also positive. The government of Ghana, through its Fisheries and Aquaculture Plan has identified the same fisheries issues and proposed a plan of action that in many aspects reflect the priority needs expressed by the fishers. The World Bank and several international donors are prepared to make major investments in fisheries reform if a context for positive forward movement can be created. This suggests that the initiatives that seek to address these issues in Western Region are timely.

An Open Access Fishery

The central challenge for future fisheries governance is to begin the transition from an open access fishery to some form of controlled access. If this does not occur, any effort to reduce fishing effort, allow depleted stocks to recover and thereby avoid the collapses that are seen as imminent by many fisheries scientists and many members of the fishing community are likely to have only a marginal effect. It is widely acknowledged that the canoe fishermen are a powerful political lobby and will strongly resist controls over new entrants unless they can be convinced that in the long run this will improve their prospects for a secure livelihood. Indeed, the 2002 Fisheries Act specifies that the canoe fishery will remain an open access fishery. Similarly many of the owners of vessels in the burgeoning semi-industrial feet and the industrial trawler fleet are well connected politically. The view is that the first step to exerting control over expansion in the canoe and semi-industrial fleets is to reform the registration process for the semis and register and license the canoes. Anyone visiting the fishing harbors of Sekondi and Elmina will see that many new entrants in the semi industrial fleet are being built and it is widely recognized that many unregistered vessels are operating. New canoes are also being built and the canoe registration process is proceeding slowly. An essential first step is to broaden the dialog between the authorities and the fishers and seek out the measures that bring order and control over the activities of the three fleets. Positive progress is unlikely if actions are directed only at the canoes.

Noncompliance with Rules

In August 2010, new fisheries regulations were issued that have been approved by parliament. Many reaffirm past regulations that stipulate minimum mesh sizes and prohibit the use of subsurface lights to attract pelagics. It would appear that the new regulations contain a number of loopholes and it remains to be seen what actions will be taken to enforce them. It therefore appears that, as in the past, the rules promulgated by the Fisheries Department and those promoted by Chief Fishermen at individual landing sites will continue to be disregarded by most fishermen. Thus far, there have been no suggestions on how to enforce the ban on trawling in the Inshore Exclusion Zone. This complex situation is compounded by legal and procedural processes are less than clear and have made enforcement and the punishment of offenders difficult and in some cases impossible. Fishermen point out that when illegal fishing is widespread, as for example in the practice of fishing with lights, no one is willing to "play by the rules." It makes no sense to abide by a rule that reduces your catch when so many others

do not. The 2002 Act calls for the establishment of a Monitoring, Control, Surveillance and Enforcement Unit comprised of personnel drawn from the Armed Forces and fisheries officers. "Authorized Officers" may be appointed with police powers including the power of arrest. The courts, however, are responsible for determining the guilt or innocence of those charged with fisheries offences as well as the imposition of penalties within the guidelines of the Act. Clearly there is much to be done to make the transition from a legislative mandate for the new fishery regulations to a functioning governance system.

Box 4.4 Enforcement of Fisheries Rules at the Community Level

The CBFMC in one community found itself in conflict with migrant fishers who refused to follow local bylaws or recognise the authority of the CBFMC. In one incident, the CBFMC confiscated undersized nets and the fishers in question challenged this in court. Despite the fact that the nets were not only prohibited locally were also smaller than the national minimum mesh size, the court ruled in favour of the migrant fishers and found that the CBFMC had stolen their nets (Lenselink, 2004).

Weak Relationships with the District and National Levels of Government

A closely related issue is the frequent complaint that concerns raised by fishing communities receive little or no response from the District Assemblies. Some suggest that a step in the right direction would be to establish a fisheries committee or subcommittee in each region. Yet District Chief Executives point out that there are already too many committees and it is not at all clear what the benefits would be of creating another unless its roles and responsibilities were substantive and clearly defined. It might be more appropriate to create a forum for discussing and acting upon the concerns of the fishing community at the regional scale. The CBFMC experience also illustrates the weak links between fishing communities and leaders and the Fisheries Commission and Department in Accra and raises the question if such stakeholder committees are to be effective do they need to be linked to government?

Subsidies

A fundamental and politically charged issue is that the spiraling effort of the canoe fleet is subsidized by the pre-mix program. This subsidy will be difficult to remove in a context of poverty and high unemployment and when it is widely recognized that a pledge to retain the pre-mix program was pivotal in the most recent Presidential election. The failure of repeated attempts to reduce corruption and the mismanagement of the pre-mix program suggests that the capacity of government to respond effectively to such challenges is very limited.

Monitoring the Fishery

Any future governance system must be informed by reliable information on where the three fleets are operating and how much they are catching. Ghana has a relatively sophisticated system for gathering landings data from the canoe and semi-industrial fleets. As discussed in Chapter 3, the current system does not provide information on changes in fishing effort and this limitation demands attention at a time when effort is increasing sharply and stocks are declining. Another weakness that must be addressed is the reliance on voluntary reporting of catches by the industrial fleet and the non-sampling of vessels in the semi-industrial fleet that are foreign-owned or operated by non-Ghanians. The landing statistics suggest that two thirds of the landings are generated by the canoe fleet. This implies that management must be directed at the canoes since they are responsible for the bulk of the landings. The reality, however, may be that the semi-industrials and more importantly the industrials are responsible for a much larger share of the landings than the statistics suggest.

Community Based Fisheries Management or Co-Management?

It is important to distinguish between community based fisheries management and co-management. In community based management the responsibility and the authority to regulate fishing in a defined geographic area is vested in the community that fishes that area. Community-based management can be effective where a fishery takes place in a small and readily definable area such as coral reef or a small bay over which a community can reasonably be expected to monitor how fish and shellfish are harvested, who does the harvesting and what forms of harvesting is permitted.

Box 4.5 Global Experience in Community Based Fisheries Management

Global experience in community based fisheries management has shown that management is likely to fail:

- **When there is open access;**
- **When the authority to mange the activities of fishers at the community scale has not been defined by statute and the process for setting and enforcing the rules is not clear;**
- **When committees are burdened with expectations to manage a wide agenda of social and community development issues;**
- **When the committees lack technical support and financial resources;**
- **When the issues that are affecting the fisheries cannot be addressed at the community scale.**

Nguan ɔha a hɔn sahen yɛ sebɔ no dzi nkunyim wɔ nsebo apema a oguan yɛ hɔn sahen
Success depends on the leader

CHARISMA AND LEADERSHIP
Adinkrahene

CHAPTER 5

The Path Ahead

Assembling the Preconditions for Effective Ecosystem Governance

A response to the multiple challenges and opportunities discussed in this paper must take a long-term view and recognize that instilling a fresh approach to governance in the coastal zone of the Western Region will require a decade or more of concerted effort and inspired leadership. The Hɛn Mpoano Initiative is designed to assemble the pre-conditions for both landscape and seascape for long-term and effective ecosystem governance of the coastal zone of the Western Region. This will be achieved when the following are in place:

- **A core group of well informed and supportive *constituencies* actively supports the program,**
- **Sufficient initial *capacity* is present within the institutions responsible for the program to implement its policies and plan of action,**
- **Governmental *commitment* to the policies of a program has been expressed by the delegation of the necessary authorities and the allocation of the financial resources required for long-term program implementation, and**
- **Unambiguous *goals* that address both societal and the environmental conditions have been adopted against which the efforts of the program can be measured.**

The learning-by-doing approach adopted by Hɛn Mpoano will work to build a body of tangible, lived experience, in the practice of ecosystem stewardship that sets in motion the process of growing the necessary capacity and winning constituencies and commitment for an ecosystem based approach to planning and decision making along the coast. Once people in the Western Region see the benefits of actions that are strategic, that address needs for both development and conservation and are conducted in an even handed and transparent manner then the political will can be mustered to gain commitment within central government. The hope is that tangible forward progress on the tangle of issues along the coast of the Western Region will provide a model for a national program and a potential source of experience and capacity for the Gulf of Guinea region.

The Hɛn Mpoano Initiative has been structured into three phases. The first, that is concluding with the preparation of this document, has emphasized consultation, information gathering and the preparation of a baseline that documents conditions and issues as they are perceived at the initiation of this effort. Phase 2 will be devoted to a range of activities designed to build capacity and assemble the preconditions for more effective and efficient coastal and fisheries governance. The initial actions to be undertaken during Phase 2 are outlined in Box 5.1. The 3rd Phase will emphasize consolidation of experience and, it is hoped, gaining commitment to formalize a coastal planning and management program for the Western Region and securing the resources required for its long term implementation as a resilient program capable of responding to the rapidly changing conditions that we anticipate will mark the 21st century.

A baseline of the status of Hɛn Mpoano in terms of the Policy Cycle and First Order Enabling Conditions is included in Annex 1.

A major strategy of this initiative is to build partnerships with the many other projects and programs in the Western Region and elsewhere that can bring resources, experience and energy to the process. As the first phase of the initiative draws to a close, several partnerships are emerging that range from collaboration with the Fisheries Commission and World Bank on fisheries reform to a partnership with beachfront hotel owners to protect nesting sea turtles and collaboration with international programs dedicated to strengthening the enforcement of fisheries rules.

As the Hɛn Mpoano initiative matures, it will be working to generate a widening network of partners drawn from national and international governmental agencies, civil society and the business community. A strong emphasis will be placed on gaining the support and active involvement of the traditional Chiefs who can play a pivotal role in promoting a stewardship ethic and instigating a fresh approach to the governance of the coastal zone.

Learning by Doing

The 2nd Phase of Hɛn Mpoano will sponsor activities designed to address the issues identified through the baselining process. Each of the components listed in Box 5.1 will be addressed by a working group composed of a designated leader (in some instances co-leaders) and a team that draws from the initiative's staff, and selected stakeholders drawn from government, civil society and business. Each team will be supported by one or more external experts.

The activities undertaken will be designed to build towards a nested governance system in which the roles and responsibilities of the individual communities, the six coastal districts and coordination at the regional scale are made explicit and strengthened. This responds to repeated calls for improved linkages between the levels of government that emerged as an important theme during the process of assembling this baseline. For example, those who participated in the CBFMC program repeatedly noted the difficulty of gaining interest and support in their District Assembly for the bye laws they were instructed to prepare. In several instances they noted that

Box 5.1 Major Components and Initial Activities Selected for Phase 2 of the Hɛn Mpoano Initiative

Component 1: Develop and formalize a nested governance system for the coastal zone of the Western Region

- Work with the Hɛn Mpoano Advisory Council to define the strategies by which the initiative will work to achieve its long term objectives
- Build constituencies at all levels that can generate political support for a fresh approach to the governance of the coastal zone
- Assess alternative approaches to structuring a nested governance system with defined roles and responsibilities at the community, district, region and national levels.

Component 2: Improve the governance of the landscape

- Build capacity to design and implement Strategic plans that will guide land use and development in the six coastal Districts
- Develop management plans for selected critical ecosystems of high biodiversity value
- Diversify livelihood options in coastal communities

Component 3: Improve the governance of the seascape

- Strengthen the enabling conditions for effective management of fisheries in the Western Region
- Identify potential sites for establishing marine protected areas

Component 4: Build capacity for ecosystem governance

- Sponsor a small grants program designed to test a variety of stewardship strategies
- Design and implement training, public education and scholarship programs that meet identified capacity building needs

Component 5: Monitor and evaluate progress and learning

- Select indicators and monitoring protocols for establishing baseline conditions and monitoring progress
- Conduct periodic self assessments as a basis for learning and adaptive management

representatives of the Fisheries Department did not participate in the initiation ceremony or engage in the process of formulating bylaws. During the community surveys the participants frequently spoke of their isolation from their District Assembly.

Building Capacity at the Community Scale

Specific geographic areas will be selected in which the initiative will work to instigate improved planning and decision making. These areas will illustrate conditions in both urbanized shorelines and areas where biodiversity conservation is the priority. These areas will be selected by applying the following criteria:

> Significant accomplishments are achievable within two years

> The planning and decision making progress will address the priority coastal and fisheries issues identified in phase one

> The initiative is feasible with time, skills and funding available

> There are opportunities for positive community involvement

> The experience gained has high potential for transfer and application to other areas

For example, the Amasuri wetlands and associated coastline is a relatively undeveloped, rural area with very high biodiversity value. The protected status of the wetlands and lagoons needs to be strengthened, a management plan is needed to direct and limit further development and the low elevation of the shoreline offers opportunities to demonstrate the application of practices that anticipate the impacts of rising sea level and the associated impacts of climate change. In contrast, the estuary and shoreline of the Pra River mouth in Shama District are severely impacted by human activity and raise issues of degraded water quality and heavy sediment loads caused by mining and construction activities in the watershed. The shoreline near the river mouth is densely developed and has suffered from episodes of flooding and severe coastal erosion. This area also offers opportunities for addressing the challenges of responding to rising sea level and flooding in an urbanized setting. The challenges of conserving the remaining wetlands in the twin cities offers an opportunity to practice an approach that addresses conservation needs in an urban setting. In each of these geographic focal points the approach will be to form a Community Council, or similar forum, that draws together individuals selected for their standing in the community, their knowledge of the issues and their capacity to shape and promote the implementation of a plan of action. The Community Council and the associated Hɛn Mpoano working group will together define what the Initiative hopes to achieve within a three-year period.

In shorefront communities the Chief Fisherman and the lead fishmonger are anticipated to play an important role in such Community Councils. The strategy will be to integrate across those who have participated in CBFMCs, the Zoil Brigades (engaged in solid waste collection and disposal and response to oil spills) and the largely dormant unit councils that in theory link community scale governance to the District Assembly. However, such Councils will not assume a role in fishery management that extends beyond the community's jurisdiction over areas and activities on the land and beach. While Chief Fishermen will be encouraged to strive for compliance with fisheries regulations and sustain their traditional roles in mediating conflicts among fishers both at sea and on the landing beach the Community Council will not engage in the enforcement of fisheries rules unless they are granted statutory authority to do so. This policy seeks to avoid the repetition of past experience where local actions against such illegal activities as light fishing and the possession of small mesh nets has been overturned by the police or a judge.

Building Capacity at the District Scale

Area specific activities such as those illustrated above, will serve as a source of experience that will inform improvements in land use management through the zoning of lands for different types and intensities of use within each coastal District. This will draw from, and integrate with, the structural and community level planning and management approach under-

taken in the Takoradi to Axim coastal corridor by the Land Administrative Program and the land use plan recently developed for the Shama District. Such land use planning should identify, for example, areas suitable for residential development, potential sites for industrial facilities, agricultural lands, and areas that should be conserved in its natural condition. Land use planning at the District scale must be informed by the prospect of climate change and long term trends in ecosystem condition. The demonstration of shorefront construction setbacks and other coastal management measures that anticipate future erosion and sea level rise should be a basis for their application to the coastlines of each District. A detailed needs assessment should specify needs within each of the six coastal districts for maps, a common data base and knowledge management system that can be accessed through the web and specific training needs.

Over the long term it will be important to secure a greater flow of revenues to the Districts to sustain a professional land use planning and decision making system. While a larger annual allocation from the central government is one option, District level governance would likely be enhanced if revenues were obtained from a share of petroleum revenues, a reformed property tax system and/or from carbon credits.

Another reform with potentially major implications would be to make the District Chief Executive an elected rather than appointed position. District Assemblies could also be more effective and accountable to their constituencies if all district representatives were elected rather that the current practice by which one third are appointed. Other potentially positive reforms would be to provide financial remuneration to representatives, to reduce their numbers and to revise the system of committees and subcommittees that many of those consulted during phase one find cumbersome and inefficient.

Building Capacity at the Regional Scale

Coordinating initiatives at the scale of the Western Region can demonstrate the benefits that can be generated by at an intermediate scale between the Districts and the national levels of the governance system. The Hɛn Mpoano Initiative can model such enhanced coordination through the actions of its Advisory Council. This has been structured to provide for the perspectives and contributions of government institutions, business interests and civil society. For example, it may be appropriate to organize a platform designed to address the growing interactions between the fishing and petroleum sectors. As petroleum production gets underway offshore the frequency of collisions at sea between often unlit canoes and their nets and supply boats are increasing. There are reports of conflicts brought by fishing operations within the exclusion zone around rigs. As pipelines and other structures on the seafloor multiply it is to be expected that conflicts and accidents caused by the operations of trawlers will increase. While the Fisheries Commission has created a procedure for processing damage claims there may be an opportunity to create a consultative process that brings together representatives of the

petroleum companies and leaders from the fishing industry to identify and agree upon measures for improving the visibility of canoes, marking nets with and defining transit corridors where fishing activities are limited. Another opportunity is to establish fora for a coordinated response to the anticipated impacts of climate change on coastal communities and shorefront infrastructure. Model bye laws could be prepared to provide a common basis for responses to coastal erosion, shorefront development, access to the shore and protection of turtle nesting beaches.

Building Capacity for the Effective Governance of Fisheries

The Regulation of Fisheries

Progress in overcoming the many challenges posed by the current condition of Ghana's fisheries, and specifically fisheries conducted from the ports and landing sites in the Western Region, requires recognizing that the statutory framework for fisheries management places authority and responsibility with the Fisheries Department and the Fisheries Commission at the national scale. These national level fisheries institutions have the authority to set fisheries policy, develop fisheries management plans and enforce the associated regulations. While the decentralization program of the late 1980s gave Districts the authority to license canoes and semi industrial vessels operating from ports and landing sites within their jurisdiction this authority has not been exercised by the Districts in the Western Region.

Chief Fisherman have an essential role to play in encouraging a stewardship ethic and compliance with fisheries regulations but they have not been granted statutory authority. Because of this actions taken by Chief Fishermen with or without the support of CBFMCs, are not seen as enforceable by the courts even when the rule they have attempted to enforce is a rule promulgated by the national fisheries authorities. It must also be recognized that communities have no statutory authority seaward of the shore. This makes the practices of community based management of the type practiced in the Philippines and elsewhere inoperable.

These realities do not imply that there is no role for communities or Chief Fishermen in fisheries management. To the contrary, they have in the past and will in the future make major contributions. The limitations of their statutory authority, however, must be recognized. For this reason the approach taken by Hɛn Mpoano is to build towards a co-management system and to work to make the roles and responsibilities of each layer in a nested governance system clear to all concerned. As experience accumulates it may be desirable to petition for the delegation of greater authority to the District, community organizations and Chief Fishermen levels. Such delegated authority could enable one or more of these to play a role in the enforcement of national fisheries regulations and potentially, the management of marine protected areas or compliance with restrictions over the fishing gear employed (such as small mesh nets and light fishing) closed seasons or closed areas. Such measures would best be attempted initially at a pilot scale and then, if successful, applied more broadly.

Since the setting of fisheries policy and the preparation of management plans and the definition of rules are all responsibilities vested in national level institutions, it will be essential for the Hɛn Mpoano initiative to work closely with the Fisheries Commission and the Fisheries Department in all efforts designed to address fisheries issues in the Western Region. It is hoped that these national agencies will see the Western Region as an ideal place to experiment with new approaches and build a nested system in support of fisheries governance with clear roles and responsibilities at the community, the district and regional levels.

Enforcement of Rules

Given the degree of non-compliance with fisheries regulations over the past several years but widespread recognition within the canoe and semi-industrial fishing community that rules are necessary and must be enforced, efforts designed to increase enforcement capabilities are a priority. This should be undertaken in a strategic and step-wise manner and in close consultation with leaders in the fishing community. The objective should be to build constituency for a fresh approach to fisheries governance, encourage innovation and invest in leadership at every level.

Initial steps will likely include the training for fisheries enforcement officers and making operational the Enforcement Unit called for by the Fisheries Act. Specialized training may also be necessary for police officers and members of the judiciary to prepare them for sanctioning those who violate fisheries regulations. Monitoring and enforcement at sea may well require the purchase or leasing of appropriate craft to be used for patrols.

Reduction of Fishing Effort

The Fisheries and Aquaculture Sector Development Plan issued by the Government of Ghana and the World Bank in 2009 states that preference will be given to the canoe fishery and that the policy will be to reduce or eliminate the industrial trawlers. Such a policy, when implemented could be a major incentive for achieving compliance with rules over light fishing and other destructive methods. Decisions must be made over the enforcement of the Inshore Exclusion Zone that is reserved for non towed gear and reduction or elimination of beach seines that are known to catch large numbers of juvenile fish of importance to the demersal fisheries.

Data Gathering

Effective fisheries management must be based on sound information that—at a minimum—documents the magnitude of the catches and the effort expended by each of the fleets. This will require making adjustments to the manner in which canoes and vessels are sampled and how the data is processed. The collection of fisheries data by agents of the Fisheries Department could be supplemented by retaining young professionals from the National Service volunteer program and reviving the fisheries observer program to provide for trained observers who go to sea on industrial and semi-industrial vessels to sample catches and collect a variety of information on fishing practices and fishing grounds.

Livelihood Diversification

The economic and societal value of fisheries, the livelihoods generated as well as the magnitude and distribution of the economic multipliers produced as the goods and services associated with fishing multiply within the economy are largely driven by what happens to the fish once it is landed. This important dimension of fisheries governance requires careful observation, data gathering and analysis. An important feature of this element of a plan of action for fisheries is value chain analysis, methods for reducing losses in the quality of the fish after it is harvested, and the identification of livelihoods that provide alternatives to those might otherwise engage in fishing.

Training and Public Education

Other priorities include capacity building that promote awareness of the conditions in the fishery and the need for compliance with rules. Enhanced awareness may be fostered by:

> A public education program that targets schools (the next generation of fishers)

> Radio broadcasts that disseminate knowledge (for example through radio-dramas and discussions) on how the fisheries of the region have evolved, why they are central to the future and why stewardship provides benefits for all

> Field trips for fishers and others to places where fisheries management is operational and seen as beneficial (such as Cote d'Ivoire and Senegal)

> Sponsorship of small grants that encourage innovative business opportunities targeted at coastal communities

> Annual celebrations of environmental stewardship initiatives (such as beach cleaning and mangrove re-planting) undertaken by groups at the community level

> Strengthening of curricular offerings at Cape Coast University on fisheries governance issues and methods.

Cross Cutting Activities

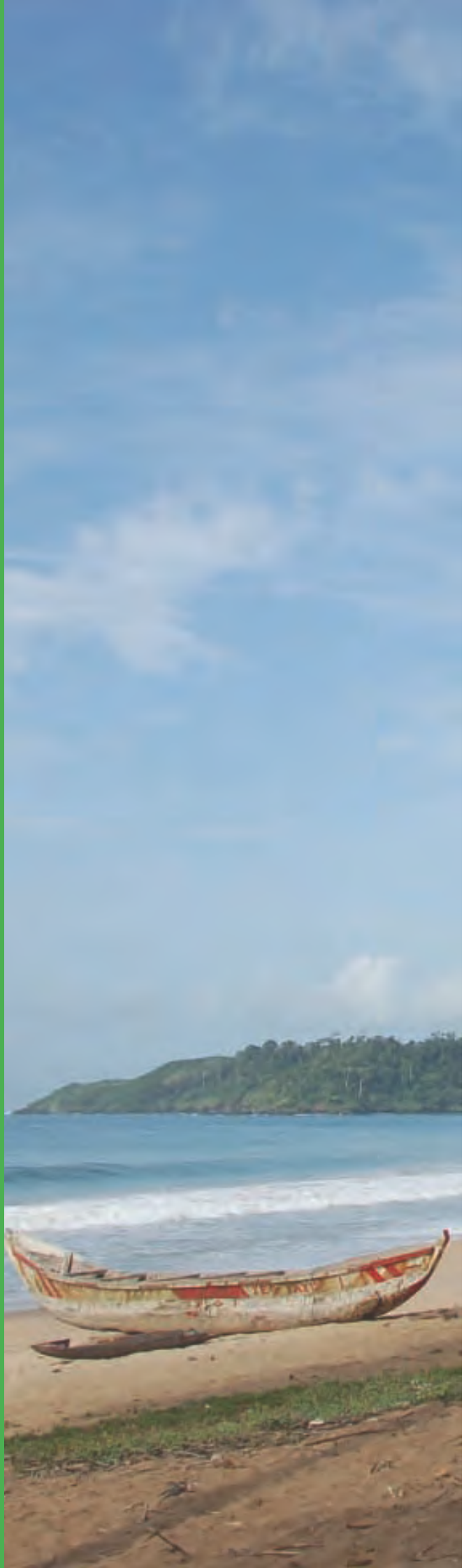
All actions undertaken by the Hɛn Mpoano initiative and by the working groups will require support and services that serve the dual function of meeting common needs and linking across multiple actions in order to promote learning within the initiative as a whole.

Monitoring and Evaluating Progress

A well designed monitoring and self-evaluation program will provide the glue that binds the Hɛn Mpoano initiative into a coherent whole. What the program selects as its specific goals and how it chooses to monitor progress and learning will have a profound effect on the culture of the initiative, the consistency of its actions and, ultimately its impacts. An effective monitoring and self evaluation program will need to be strategic in selecting what will be monitored to generate the documentation and feedback that will be a basis for learning and adaptation. This element of the initiative will feature an annual stock taking workshop that will be scheduled approximately one month before the tasks and budgets for the subsequent year are prepared. The workshop will draw together the working groups and their partners together to review what has been accomplished and what has been learned in the previous year. This assessment will be the basis for subsequent priorities and adjustments. At these events successes will be celebrated and failures or disappointments openly acknowledged.

Communications and Training

The building of capacity to practice ecosystem governance is the fundamental purpose of the Hɛn Mpoano initiative. While the working groups will operate primarily in a learning-by-doing mode, their capacity will be augmented by training and educational activities designed as responses to identified needs. These will include short courses, study tours and seminars designed to access experience in addressing similar issues elsewhere in Ghana, in the region or further afield. Capacity building, however, cannot be directed only at those participating in the working groups and must involve a broader audience of stakeholders, students and the public at large. Hɛn Mpoano will sponsor a public education program that is likely to feature radio broadcasts and a school program. As needs for capacity building become more clearly defined and as experience from the learning-by-doing approach accumulates, the initiative will work to shape a university based program that is structured as interlocking components of tertiary education, extension and research that responds to the problems and opportunities posed by changing conditions in Ghana's coastal ecosystems.



Annex

Assessing the Responses to Coastal Ecosystem Change

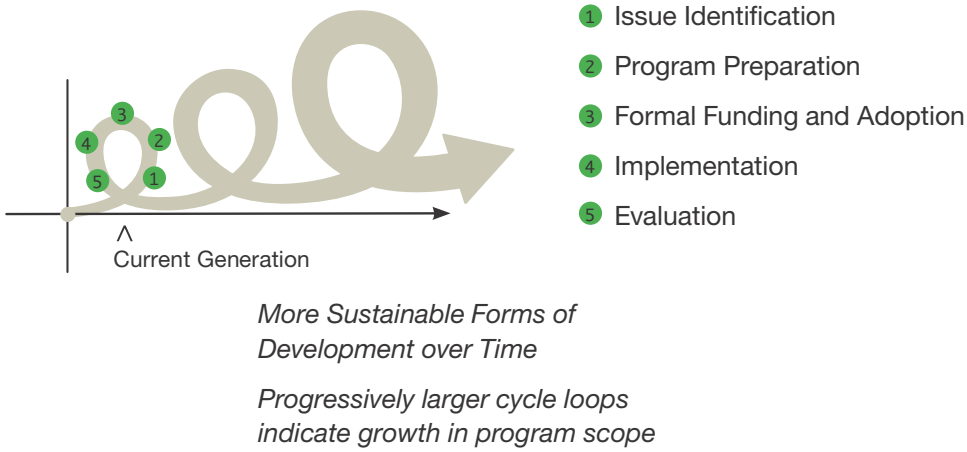
The practice of the ecosystem approach recognizes that both the environment and the associated human population must be addressed simultaneously. It is concerned primarily with instigating the changes in human behavior that are required to restore and sustain the desired qualities of ecosystems. As an initiative lead by the Coastal Resources Center (CRC) at the University of Rhode Island the Hɛn Mpoano is rooted in simplifying conceptual frameworks that are readily understandable by the multiple stakeholders who participate in ecosystem stewardship initiatives. Baseline conditions as summarized by this document are the foundation for the application of a monitoring and evaluation system that draws upon the methods that have been developed by the CRC and its partners over the past two decades. These were most recently compiled in the form of a handbook produced by the international Land-Ocean Interactions in the Coastal Zone program (Olsen et al., 2009).

Tracking the Processes of Coastal Governance Through the Management Cycle.

A simplifying and widely used framework for sequencing the many actions associated with the processes of an ecosystem governance initiative was offered by the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP, 1996). The GESAMP cycle begins with an analysis of problems and opportunities (Step 1). It then proceeds to the formulation of a course of action (Step 2). Next is a stage when stakeholders, managers, and political leaders commit to new behaviors and allocate the resources by which the necessary actions will be implemented (Step 3). This involves formalization of a commitment to a set of policies and a plan of action and the allocation of the necessary authority and funds to carry it forward. Implementation of the policies and actions is Step 4. Evaluation of successes, failures, learning and a re-examination of how the issues themselves have changed rounds out a "generation" of the management cycle as Step 5. At the scale of a nation or province, a generation may require a decade or more to complete.

As suggested by Figure A.1, ideally, successive generations of a coastal governance program repeat these five steps to address an expanding agenda of issues and/or a larger geographic area. This conceptually simple cycle is useful because it draws attention to the interdependencies between the steps and, in mature programs, between successive generations of management. The five steps may be completed in other sequences, as for example, when an initiative begins with enactment of a law (Step 3) that provides the mandate for analyzing issues and

Figure A.1: The Policy & Learning Cycle



Adapted from the GESAMP Cycle (1996)

developing a detailed plan of action (Steps 1 and 2). Altering the sequence, however, often comes at the cost of efficiency, as when it becomes apparent that the authorities provided by the law prove to be inadequate for implementing the actions that are required. Progress and learning are greatest when there are many feedback loops within and between the steps (GESAMP, 1996; Olsen et al., 1997, 1999).

In the case of Hɛn Mpoano, the policy cycle will be used to track progress at the scale of the Western Region's coastal zone towards a formally established program with a mandate from the appropriate institutions in national government to formulate and implement policies and actions that are appropriate to the coordination role of regional government. At this scale, the objective is to complete the actions associated with steps 1, 2 and 3 of the management cycle. The formulation of such a coastal zone program at the regional scale will be informed by a number of initiatives directed at much smaller geographic areas as described in Chapter 5 of this document. Here the same steps and actions can be completed more quickly at a smaller geographic scale. Where the initiative works to development prototype management plans for selected shorefront communities and areas of high biodiversity value it should be feasible in some instances to enter into an implementation phase (Step 4) within two years. A number of other activities, for example training events, communications programs and research activities are not suitable for management cycle analysis. Table A.1 illustrates a baseline application of the management cycle at the scale of a future coastal zone management program for the Western Region.

Tracking the Outcomes of Coastal Governance Through the Orders Framework.

Analysis of experience in coastal governance initiatives, like other efforts to apply the ecosystem approach, reveals that a well designed and executed management process does not always lead to the desired outcomes. This has led CRC and its partners to develop the Orders of Outcomes framework (Olsen, 2003; United Nations Environment Program, 2007). This disaggregates the ultimate goal of sustainable forms of development into a sequence of more tangible outcomes The 1st Order Outcomes define the four enabling conditions for the sustained practice of the ecosystem approach. The central objective of Hɛn Mpoano is to assemble the 1st Order preconditions for a coastal; zone program at the scale of the Western Region. Experience suggests that the transition to the full scale implementation of a coastal ecosystem governance program can be anticipated only when all four of the following conditions are present:

1. A core group of well informed and supportive constituencies supports the program,
2. Sufficient capacity is present within the institutions responsible for the program to implement its policies and plan of action,
3. Governmental commitment to the policies of a program has been expressed by the delegation of the necessary authorities and the allocation of the financial resources required for long-term program implementation, and,
4. Unambiguous goals define both the societal and the environmental conditions against which the efforts of the program can be measured.

Table A.1 Baseline Conditions as of October 1, 2010 for the Process of Establishing a Nested Governance Program for the Coastal Zone of the Western Region: Steps and Actions of the Management Cycle.

▼ = Not Initiated; ▲ = Underway; ● = Completed

STEP	INDICATORS	HƐN MPOANO PROGRESS
STEP 1: Issue Identification and Assessment	Principal environmental, social and institutional issues and their implications assessed	▲
	Major stakeholders and their interests identified	▲
	Issues upon which the Hɛn Mpoano will focus its efforts selected	●
	Goals of the initiative defined	▲
	Stakeholders actively involved in the assessment and goal setting process	▲
Comments on Progress in Step 1: The issues and objectives for actions undertaken in both the landscape and the seascape will be defined in greater detail in consultation with stakeholders as phase 2 of the Hɛn Mpoano Initiative unfolds.		
STEP 2: Design of a Nested Governance Program for the Coastal Zone of the Western Region	Scientific research on selected management questions conducted	▲
	Boundaries of the area of focus defined (coastal zone,Western Region of Ghana)	▲
	Baseline conditions documented	▲
	Institutional framework for the nested governance system designed	▼
	Institutional capacity for implementation developed	▼
	Pilot activities implemented at selected sites model necessary changes in behavior of resource users and governance institutions	▼
Comments on Progress in Step 2: As of this baseline, Step 2 activities of Hɛn Mpoano have been defined but the implementation of specific actions on the landscape and seascape are yet to begin. The seaward extent of the area of focus for the Hɛn Mpoano Initiative where actions are to be undertaken will be refined as strategies to support new fisheries regulations are defined.		
STEP 3: Formal Adoption and Funding of a Nested Governance Program for the Coastal Zone of the Western Region	Policies/plan formally endorsed and authorities necessary for their implementation provided	▼
	Funding required for program implementation obtained	▼
Comments on Progress in Step 3: The Hɛn Mpoano Initiative hopes to catalyze the actions associated with Step 3 by 2014. The activities undertaken in Step 2 are being designed to create the capacity and political will required by the formalization of a sustained coastal governance program.		
STEP 4: Implementation of a formally constituted Nested Governance Program for the Coastal Zone of the Western Region	Behaviors of strategic partners monitored, strategies adjusted	▼
	Societal/ecosystem trends monitored and interpreted	▼
	Investments in necessary physical infrastructure made	▼
	Progress and attainment of goals documented	▼
	Major stakeholder groups sustain participation	▼
	Constituencies, funding and authorities sustained	▼
	Program learning and adaptations documented	▼

Table A.1 continued

▼ = Not Initiated; ▲ = Underway; ● = Completed

STEP	INDICATORS	HƐN MPOANO PROGRESS
Comments on Progress in Step 4: The implementation of a future coastal program for the Western region will be informed by the pilot scale activities undertaken in Phase 2. During Phase 2, steps for actions will be seen at the community and District scales.		
STEP 5: Self Assessment and External Evaluation	Program outcomes documented	▼
	Management issues reassessed	▼
	Priorities and policies adjusted to reflect experience and changing social/environmental conditions	▼
	External evaluations conducted at junctures in the program's evolution	▼
	New issues or areas identified for inclusion in the program	▼
Comments on Progress in Step 5: Monitoring and evaluation lies at the heart of adaptive ecosystem governance and will be a major feature of both Hɛn Mpoano and the nested governance program that it hopes to catalyze. During Phase 2 of Hɛn Mpoano, the results of monitoring will be the basis for self assessments and adjustments to the program's activities. In Phase 3, the progress made towards establishing a sustained governance program will be evaluated as a source of experience for a national coastal and fisheries governance program.		

These accomplishments result from the successful completion of the first three steps of the management cycle. Table A.2 defines the baseline conditions for indicators for the 1st Order preconditions at the start of Phase 2 of Hɛn Mpoano in the last quarter of 2010.

The outcomes that signal the implementation of new or reformed practices of resource use and conservation are defined in the 2nd Order. These are changes in the behavior of governmental institutions; changes in the behavior of the relevant groups exploiting or otherwise affecting ecosystem conditions; and changes in the behavior of those making financial investments in the system. A critical feature of 2nd Order change is success in generating the funds required to sustain the program over the long term. The 3rd Order marks the achievement of the specific societal and environmental quality goals that prompted the entire effort. In ecosystems that are much altered by human activities, the achievement of a sequence of 3rd Order goals marks the path to sustainable forms of development that are defined as the 4th Order.

At the geographic scale of a coastal community or a protected area it can be anticipated that there will be instances of 2nd Order changes in behavior within a three-year period. It is hoped, for example that the initiative will catalyze improved compliance with fisheries regulations and may succeed in helping to reduce the butchering of sea turtles that come to nesting beaches. Greater interaction between government, the NGO community and oil companies that leads to progress on conflicts between supply boats and fishing vessels would be another example of 2nd Order outcomes. It is important to recognize, however, that in most instances Hɛn Mpoano will have contributed to such outcomes and should not claim that such achievements are attributed solely to its efforts. In complex systems simple cause and effect relationships where a change in behavior can be attributed to a single factor or program is the exception rather than the rule.

The Hɛn Mpoano initiative hopes to instigate the establishment of a formally constituted governance program for the Western Region by working over a four year period to assemble the First Order enabling conditions for such a program. Table A.2 below serves as a baseline in the form of ratings for indicators for the four major categories of enabling conditions for such a future program. These indicators will be reviewed semi-annually as a basis for documenting progress, discussing what is being learned and adjusting the initiative's strategies.

First and second Order baselines for selected program elements (such as fisheries, community management and protected areas) will be developed in the first half of Year 2 of the program and subsequently updated through a Monitoring and Evaluation (M and E) program.

Table A.2 Baseline Conditions as of October 1, 2010 for the Process of Establishing a Nested Governance Program for the Coastal Zone of the Western Region: Progress in Assembling the Enabling Conditions (1st Order Outcomes).

UNAMBIGUOUS GOALS (3 INDICATORS) KEY QUESTIONS					RANK TIME 1	RANK TIME 2
Have management issues been identified and prioritized by the Hɛn Mpoano Initiative?	**0** no action to date	**1** broad issues identified by project team; some stakeholder involvement	**2** specific issues identified with stakeholders; prioritization underway	**3** issues have been identified and prioritized with stakeholders	2	
Justification for the ranking: The community surveys, a series of technical reports and the Our Coast document have identified the issues associated with trends in the social and environmental conditions and current human activities in the coastal zone. To varying degrees the issues have been discussed with stakeholders but the process of prioritization, the setting of objectives and selecting the strategies for addressing them—is incipient. As Phase 1 draws to a close, these crucial decisions are being addressed through the preparation of the Phase 2 workplan and initial discussions with the Advisory Council.						
Do the Hɛn Mpoano Initiative goals define both desired societal and environmental conditions?	**0** no goals defined	**1** goals are being negotiated with stakeholders but have not been formalized	**2** desired long-term goals address either societal or environmental outcomes	**3** goals define both desired societal and environmental outcomes	1	
Justification for the ranking: A long term goal (10–20 years) for the coasts and fisheries of Ghana to which Hɛn Mpoano hopes to contribute was defined in broad terms in the submission to USAID. Specific societal and environmental goals at the scale of the coastal zone of the Western Region have been discussed with participants in general terms.						
Are the Hɛn Mpoano Initiative goals detailed through time bound and quantitative targets (how much, by when)?	**0** no targets defined	**1** targets are expressed in non-quantitative terms	**2** targets specify either a date or a quantitative measure, but not both	**3** targets have been defined in quantitative terms (how much, by when)	0	
Justification for the ranking: Specific goals for a future coastal zone governance program for the Western Region have not been discussed with stakeholders. Quantitative targets as required by USAID are in the process of being defined for some elements of the program.						

Table A.2 continued

CONSTITUENCIES (3 INDICATORS) KEY QUESTIONS					RANK TIME 1	RANK TIME 2
Do the user groups who will be affected by the actions of the Hɛn Mpoano Initiative understand and support its goals, strategies and targets?	**0** many important user groups are unaware of the program's goals, strategies and targets	**1** user groups are aware of program's goals and targets but the degree of support varies	**2** with a few important exceptions, user groups understand and support the program	**3** relevant user groups understand program goals and targets and actively support them	1	
Justification for the ranking: While many important groups in government, civil society and the market are aware of the program they do not yet know its goals, strategies or targets since these have thus far been expressed only in general terms.						
Is there public support for the Hɛn Mpoano Initiative?	**0** there is little public awareness of the program	**1** public awareness is incipient	**2** public support is building up due to public education efforts, positive press coverage, endorsements from community leaders	**3** surveys reveal that there is wide public support for the program and its goals and targets	1	
Justification for the ranking: During Phase 1 of the Initiative, selected stakeholders have participated in workshops and the community survey introduced the program to residents on coastal settlements. Media attention has been growing and a detailed communications plan is being developed.						
Do the institutions that will assist in implementing Hɛn Mpoano understand and support its agenda?	**0** there is little awareness of the program within institutions that will be important partners during implementation	**1** while pertinent institutions are aware of the program their degree of support is unclear	**2** with few exceptions pertinent institutions understand and support the program and have publicly endorsed it	**3** program recognized as important and legitimate by institutions that will be involved in implementing plan of action	1	
Justification for the ranking: Institutions believed to be important to the implementation of the program have agreed to serve on the Advisory Council. Traditional Chiefs have been invited to program events and have expressed interest in the program as have the planners in the coastal districts and at the regional level, representatives of some national agencies and the Fisheries Commission. Several university faculty members have begun to participate in program activities.						

Table A.2 Progress in Assembling the Enabling Conditions (1st Order Outcomes) **continued from page 61.**

FORMAL COMMITMENT (3 INDICATORS) KEY QUESTIONS					RANK TIME 1	RANK TIME 2
Have the Hɛn Mpoano Initiative policies and plan of action been formally approved by the appropriate level of Ghanaian government?	**0** formal approval process has not been initiated	**1** there is a governmental mandate for the initiative	**2** policies and actions are being negotiated with approving authorities	**3** plan of action and policies have obtained approval required for implementation	0	
Justification for the ranking: A proposal for a nested governance system for the coastal zone of the Western Region of Ghana will be formulated in the latter part of Phase 2 and presented in Phase 3.						
Has the government provided the Hɛn Mpoano Initiative with the authorities it needs to successfully implement its plan of action?	**0** no government support	**1** acknowledgement by some leaders of necessary authorities needed	**2** commitments negotiated between government representatives and responsible institution(s)	**3** formal commitment (law, decree, or decision) cements legitimacy of program	0	
Justification for the ranking: While collaborative relationships have been established with governmental institutions in the Western Region and at the national level, a proposal for a nested governance system for the coastal zone of the Western Region of Ghana has not been initiated.						
Have sufficient financial resources been committed to fully implement the program over the long term?	**0** no financial resources committed for implementation of plan of action	**1** some pledges and commitments, but significant funding gap remains	**2** adequate short term funding (3–5 years) secured for program design	**3** sufficient financial resources in place to fully implement program over long term	2	
Justification for the ranking: USAID has committed to fund the project for an initial 4 year period. Similarly, the World Bank is planning major investments in fisheries reforms at the national scale and other donors are sponsoring activities that can contribute to the outcomes promoted by this program. This proposal is anticipated to emerge in years 3 and 4 of the program.						
INSTITUTIONAL CAPACITY (5 INDICATORS)						
Does the Hɛn Mpoano Initiative possess the human resources to implement its plan of action?	**0** no personnel have been assigned responsibility for program implementation	**1** staffing for program implementation is inadequate	**2** staffing is adequate in some institutions but not in others	**3** sufficient human resources are in place to fully implement the program	2	
Justification for the ranking: Staffing appears to be adequate for the initial implementation for the Phase 2 Workplan. Capacity to practice the ecosystem approach in the Districts and in institutions responsible for fisheries is weak. Capacity building needs are being identified and are being addressed through a variety of activities.						

Table A.2 continued

INSTITUTIONAL CAPACITY (continued) KEY QUESTIONS					RANK TIME 1	RANK TIME 2
Has the Hɛn Mpoano Initiative demonstrated their capacity to implement its plan of action?	**0** institutional capacity necessary to implement program is not present	**1** institutional capacity to implement program is marginal	**2** in some key institutions institutional capacity is adequate but there are important weaknesses in others	**3** sufficient institutional capacity is present in institutions with responsibilities for implementing program	2	
Justification for the ranking: The Hɛn Mpoano team is building its internal capacity through a combination of training and learning-by-doing activities. Capacity in partner institutions at the regional and national levels in many instances is weak. Capacity building needs are being identified and are being addressed through a variety of activities.						
Has the Hɛn Mpoano Initiative demonstrated the ability to practice adaptive management?	**0** no evidence of adaptive management	**1** practice of adaptive management is incipient and is being expressed as minor adjustments to operational procedures	**2** important institutions engage in periodic self assessments and have modified their behavior based on experience and learning	**3** program as a whole has demonstrated its ability to learn and adapt by modifying important targets and/or policies	1	
Justification for the ranking: It is not possible to assess the effectiveness of adaptive management at such an early stage of a new initiative.						
Is the focal area for Hɛn Mpoano, the coastal zone of the Western Region, structured as a decentralized planning and decision making system?	**0** power and responsibility are concentrated at one level in governance system	**1** program provides for some responsibility and initiative at various levels	**2** decision making and responsibility is decentralized but there are significant coordination issues	**3** program successfully integrates top-down and bottom-up initiative; it is structured as a decentralized system without sacrificing efficiency	1	
Justification for the ranking: While the decentralization of government has in actuality retained power and authority within central government, there are nonetheless opportunities for building a decentralized system.						
Have important actions and policies been successfully tested at the pilot scale?	**0** No pilot programs have been initiated	**1** Pilot programs are underway to assess viability of actions and policies	**2** Pilot programs are completed and outcomes have shaped actions and policies	**3** Action plans and policies have been successfully tested at pilot level	1	
Justification for the ranking: Pilot activities are being designed at the time of this baseline.						

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Coastal Resources Center University of Rhode Island
Narragansett Bay Campus
University of Rhode Island
Narragansett, RI 02882, USA

Tel: (401) 874-6224
FAX: (401) 874-6929
www: http://www.crc.uri.edu/

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