



DUSORNU COMMUNITY RESOURCE MANAGEMENT AREA (CREMA) MANAGEMENT PLAN (2023-2028)



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The authors of this management plan wish to acknowledge the immense contribution of the stakeholders in and around the Dusornu CREMA which made it possible for this management plan to be drafted and finalized. This management plan stands as a testament to the power of partnerships and collaborative endeavors. We are grateful for the shared vision and collective commitment demonstrated by African Union Inter-African Bureau for Animal Resources (AU-IBAR), the Swedish International Development Corporation Agency (SIDA) for providing the financial support and the International Union for Conservation of Nature (IUCN) through the IUCN–PAPBio CI Mangrove Project support, and we look forward to continuing this journey together for the sustainable well-being of our communities and its natural resources.

PREFACE

Within the framework of the African Union Agenda 2063, the Africa Blue Economy Strategy (ABES) was developed to guide the development of an inclusive and sustainable Blue Economy that becomes a significant contributor to Continental transformation and growth. In order to support the implementation of Africa Blue Economy Strategy, AU-IBAR, with support from the Swedish International Development Cooperation Agency (SIDA), is implementing a three-year project on “Conserving Aquatic Biodiversity and ecosystems in African Blue Economy”. The overall objective of the project is to enhance the Policy environment, Regulatory Frameworks and institutional capacities of AU Member States and Regional Economic Communities to sustainably utilize and conserve aquatic biodiversity and ecosystems.

The project has four specific objectives and of greater attention to this assignment, specific objective of Strengthening gender inclusivity in aquatic biodiversity conservation and environmental management come to fore.

In line with implementation of the Project, AU-IBAR initiated collaboration with the International Union of Conservation of Nature (IUCN) through the IUCN-PAPBio CI Mangrove Project to support identified NGOs to develop gender-sensitive workplans to enhance the role of women and youths in biodiversity protection and environmental governance. This is being rolled out via establishment of a Community Resource Management Area (CREMA) in the Anlo Keta Landscape to strengthen local communities’ participation in mangrove conservation and restoration in Ghana. Following establishment of the Dusornu CREMA in the Galo-Sota mangrove area within the Keta Lagoon Complex Ramsar Site, a management plan with clear gender disaggregated roles was envisioned to guide sustainable inclusive management of the mangrove ecosystem.

This CREMA management Plan is an integrated management plan cutting across terrestrial and aquatic resources and it is in line with the Continental Strategy for Gender Mainstreaming in Aquatic Biodiversity Conservation and Environmental Management in Africa that was developed by AU-IBAR with support from SIDA. The Gender Strategy was developed to guide the development of an inclusive Policy which will enhance effective gender mainstreaming in aquatic biodiversity conservation and environmental management efforts in Africa. The Strategy also aimed at supporting and providing guidance to African Union Member States and Regional institutions for coherent formulation of their National and Regional gender mainstreaming strategies that would promote transformation and growth through conservation of aquatic biodiversity and environmental management. This was also aimed at supporting and unlocking the potential for strengthening the role of women in conservation of aquatic biodiversity and environmental management in Africa.

This Management Plan is the result of a series of consultations with five communities of the Dusornu Community Resource Management Area (CREMA) that have shown a common vision to collectively manage their natural resources sustainably through the CREMA framework for their mutual benefits and

those of the communities at large. Therefore, the ideas and objectives contained in this plan emanated from a consensus obtained from accredited representatives of the five (5) constituent communities that form the DUSORNU CREMA. Staff of the Wildlife Division of the Forestry Commission, the Forest Services Division of the Forestry Commission (FSD), the Ministry of Food and Agriculture (MoFA), the Anloga and South Tongu District Assemblies, and the Agave and Anlo Traditional Authorities also contributed to the formulation of this management plans.

The Plan has been structured in three key sections. The first section provides the context for the Plan, the second section lays out the plan and the third showcases the action plans and budget to actualize the objectives of the plan. Hence it is expected that this plan will provide the basis for implementation of the DUSORNU CREMA by the five communities and their allied stakeholders to restore the natural and social-ecological values of the CREMA for sustained benefits of the present and future generations. It is designed to be carried out for five years from 2023-2028.

Approval

This plan has been reviewed by the CREMA Executive Committee and the Wildlife Division of the Forestry Commission, Government of Ghana and approved for implementation.

.....
Chairman
CREMA Executive Committee
Dusornu CREMA

Date:

I. PART ONE - THE CONTEXT

The highest political organ of the African Union endorsed the African Blue Economy Strategy (ABES) aimed at addressing the negative adverse environmental challenges on the Continent and for the AU–Member States to sustainably harness the resources of aquatic ecosystems. Within a framework of the ABES, AU-IBAR, with support from the Swedish International Development Cooperation Agency (SIDA), is implementing a three-year project on “Conserving Aquatic Biodiversity and Ecosystems in the Context of the African Blue Economy Strategy’. It is within the above ABES framework and the project “Conserving Aquatic Biodiversity and Ecosystems in the Context of the African Blue Economy Strategy”, that AU-IBAR initiated strong collaboration with the International Union of Conservation of Nature (IUCN) to support the Republic of Ghana to develop a management plan for a Community Resource Management Area (CREMA), with clear gender disaggregated roles in the Volta Region, to achieve integrated protection of the biodiversity and fragile ecosystems of Mangrove in West Africa. IUCN has strong capacity in gender mainstreaming and has developed various roadmaps for mainstreaming gender into various projects. Key example is the gender road map for REDD+ developed for the Forestry Commission of the Republic of Ghana to mainstream gender into REDD+.

The first Wildlife Conservation Policy of the Republic of Ghana was approved by the Executive Council on 9th January, 1974. The Policy was seen by the wider stakeholders as preservationist and did not encourage civil society participation on wildlife resource governance and management. An evaluation of the mandate of the Wildlife Division in the early 1990’s revealed that the policy had failed in securing wildlife resources of Ghana. A new forest and wildlife Policy was adopted in 1994 as part of reforms to strengthen the forest and wildlife sectors of Ghana. The reforms pointed to a compelling need to involve civil society (local communities) in wildlife governance and management.

Following the adoption of the 1994 Policy, the Wildlife Division developed a Collaborative / Community Based Wildlife Management Strategy in the year 2000 to involve the civil society in wildlife resource governance and management of Protected Areas in off reserves areas in Ghana. The Strategy is known as the Community Resource Management Area (CREMA) and it is applicable in areas outside of Statutory forest reserves and Protected Areas in Ghana. CREMA aims at the devolution of management authority and responsibility to defined communities and encourages the participation of other stakeholders, to ensure the conservation of the Ghana’s wildlife and other natural resources

The 1994 Forest and Wildlife Policy was reviewed in the year 2012 to strengthen Civil Society participation in natural resources governance and management by among other objectives to;

- Consolidate good governance through accountability and transparency;
- Enhance active participation of communities and land owners in the local natural resource management;
- Develop small and medium forest and wildlife enterprises as a means of job creation, for the rural and urban poor;
- Increase biodiversity conservation and ecotourism development; and,

- Secure sustainable financing for the forest and wildlife sector.

One of the specific objectives of the policy is the promotion of public awareness and the involvement of local people in forestry and wildlife conservation so as to maintain life sustaining systems, preserve scenic areas and enhance the potential of recreation, tourism and income generating opportunities.

1.1 The CREMA mechanism

The CREMA mechanism is very much consistent with the Ghana's role of contributing to Global biodiversity conservation and the achievement of Aichi's targets (Target 11 especially), sustainable development goals (SDGs) and also fits into the proposals for other effective area conservation measures (OECMs) for the Post 2020 Biodiversity conservation. 1.1 The CREMA Model. The CREMA (Box 1) mechanism encourages farmers, mangrove users and other land users to integrate natural resource management into their land uses, assume management responsibility and authority including access and control over the natural resources and benefit directly from it.

Box 1 Definition of CREMA

CREMA denotes a geographically defined area endowed with sufficient resources or has the potential for enhancing the condition of the natural resources and where the people have organized themselves for the purpose of sustainable management of their natural resources for their mutual benefits. The aim is to encourage local people to integrate natural resources management into their farming and land management systems as a legitimate land use option. It is important to note that the CREMA Model is not about strict protection of wildlife and other natural resources available on community lands.

1.1.1 Legal foundations of CREMA in Ghana

The legal basis of CREMA is enshrined in the section 1 of the Wild Animal Preservation Act, 1961 (Act 43). Section 1 gives the Minister responsible for Wildlife, authority to confer Game Wardenship on ordinary people of Ghana. This is the basis of the issuance of Certificate of Devolution by the Minister to CREMAs. However, comprehensive provisions are captured in sections 16–18 of the draft Wildlife Resources Management Bill. The Bill is yet to be passed by the Ghanaian Parliament to enable the President sign it into an Act.

The Wildlife Division that is mandated by the Government of Ghana to facilitate the implementation of the CREMA mechanism believes that, the CREMA model can contribute to sustainable rural economic development if properly implemented. What really underpins this mechanism is that, if rural communities benefit substantially and directly from the resources that they are endowed with, the possibility of supporting their sustainability and for that matter biodiversity conservation will be high.

The overall objective of the CREMA mechanism is to have the respective constituent communities to organize and integrate natural resources management into their local land use systems.

The CREMA model adapts the basic local decision-making systems both spatially and structurally, as the governance system for managing natural resources in off- reserve areas. It also provides the Forestry Commission, ability to facilitate devolution of natural resource governance and management authority and responsibilities to local communities by the sector Minister. Additionally, it provides actual legal conferment of the necessary rights required to achieve efficient localized regimes that enhance governance and ecological sustainability (Jones and Murphree, 2004).

The specific Policy objectives of CREMAs are to:

- Secure Ghana's network of Protected Areas by developing natural resources management in off reserves area as a legitimate and viable land-use option in neighbouring communities;
- Involve and develop a working partnership between the accredited state natural resources managers and local people to each other's benefit;
- Promote natural resources as a viable complement to existing agricultural practices through the sustainable production of bushmeat and other natural resource products;
- Develop and maintain an effective institutional capacity for natural resource governance and management at district and community levels;
- Facilitate and create the enabling environment for equitable access to natural resources and benefits by rural communities; and,
- Recognize the role of women and other vulnerable stakeholders in natural resources management and ensure their participation and inclusiveness in the governance of the natural resources.

To achieve the objectives, the Policy provides for development and maintenance of an effective institutional capacity for wildlife management at the district and community levels as well as facilitation and creation of an enabling environment for equitable access to wildlife /natural resources and benefits by all constituent communities and society at large.

1.2 The landscape and CREMA Development

The landscape of the CREMA area is part of the South Tongu and Anloga districts, and found within the Anlo-Keta Lagoon Complex Ramsar Site. It forms part of the coastal savannah (Mangrove zone). The area has the largest lagoon that is home to important water bird site along the entire Ghana coast with a record of 72 species of resident and migratory birds. The surrounding wetlands qualifies as an internationally important wetland under the Ramsar criteria by virtue of its total bird population of around 110,000 and the fact that it supports internationally important eight species of migratory waders.

The landscape has been under severe pressures such as the over exploitation of mangrove for fuelwood and other uses, and unsustainable harvest of fishery resources. The pressures were impacting negatively on biodiversity conservation, water shed protection, carbon sequestration and the general aesthetic beauty of the landscape. Droughts and changes in rainfall patterns that endanger food security and general livelihood of the local people were also increasing. Ultimately, the pressures resulted into several economic hardship and other unsustainable and unsuitable practices within the area. Therefore, the IUCN initiated projects to

conserve and restore the mangrove resources in the AKLCRS to compliment the efforts by the WD, other CSOs in environmental management and other sustainable livelihoods projects in the Landscape.

The PAPBio CI mangrove project targets the Mono-Volta areas and focuses to achieve the integrated protection of the diversity and fragile ecosystems of mangroves and enhance climate resilience of the two (2) social-ecological landscapes.

The PAPBio mangrove envisions a robust and vibrant civil society that is able to engage duty bearers and right holders to sustainably plan for safeguarding International Public Goods (IPGs) and effectively engage local actors in biodiversity conservation.

Therefore, the initiative leverages local support and participation as one of the means of achieving the project objectives. Hence, the Community Resources Management Areas (CREMA) approach. The CREMA approach has been widely used in other areas in Ghana to make great impacts.

1.3 Dusornu Community Resource Management Areas

The support is obtained by the WD in the establishment of Dusornu CREMA involving 5 communities. These five communities constitute the Community Resources Management Committees (CRMC) and the CREMA Executive Committee (CEC) which are in place and functioning. The five CRMCs span 2 administrative districts in the area. These districts are Anloga and South Tongu districts. The CREMA mechanism has been overwhelmingly accepted by the local communities and has been mainstreamed into the respective Medium-Term Development Plans (MTDPs) of the district assemblies that encompass the Dusornu CREMA.

Development of management plans is one of the important conditions to complete the CREMA process, leading to the devolution of management authority to communities. A CREMA management plan guides sustainable management of the natural resources within the CREMAs and when well implemented, helps build resilience to climate change, ensures sustainable livelihoods and forges a balance between conservation and sustainable livelihood.

1.4 Constitution and Bye-Laws

Consensual CREMA constitution formulated and validated by the constituent communities of the CREMA since 2023, lays out the governance and management guidelines for developing the CREMA. The constitution will be backed by local government byelaws that may be published in a Government Bulletin.

1.5 Location, size and access - Dusornu CREMA

The Dusornu CREMA (figure 1) is located both in the Southern part of the South Tongu administrative District and also on the North Western part of the Anloga District in the Volta Region of Ghana. It falls

within latitude 5°49'16.23"N; longitude 0°42'17.13"E on the Southern side and latitude 5°53'21.73"N and longitude 0°42'21.24"E on the Northern border. It is accessible on the Dabala – Savietula road. The total area covered by the CREMA is 2,083 hectares.

Also, it can be accessed from the Lolito – Lave minor routes connecting the Dabala – Savietula road from the Northern side of the CREMA.

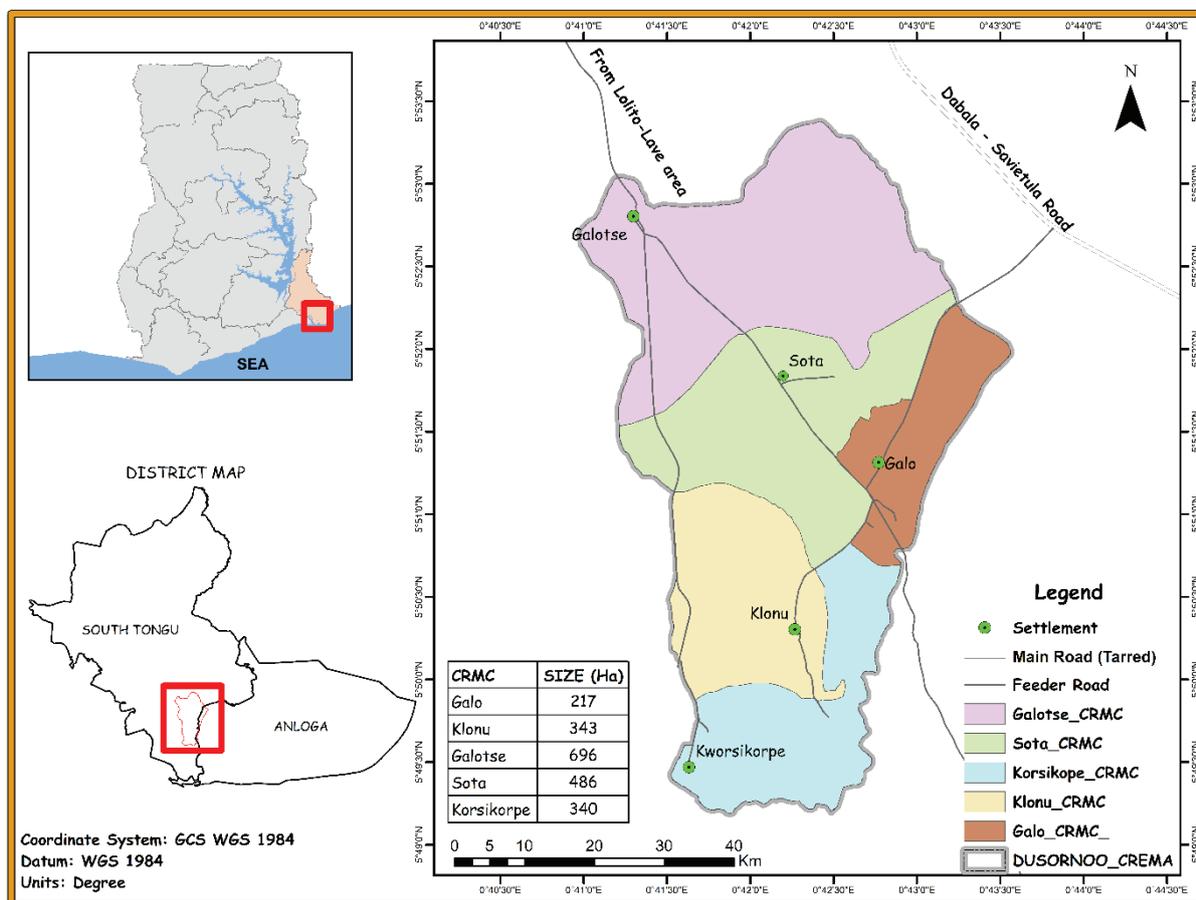


Figure 1: Map of Dusornu CREMA
Source: Author, 2023

The Dusornu CREMA communities come under the jurisdiction of the Agave and Anlo traditional authorities referred to as paramountcy. The CREMA has a 5-member management team referred to as the CREMA Executive Committee and community level management group of 5 persons each per community resources management committee (CRMC), to ensure community level participation. In all, 25 persons make up the total at the CRMC level.

1.6 Socio-Economics of the Dusornu

Introduction

This document captures the socio-economics of the Dusornu CREMA, though not exhaustive. The information is largely gathered through the activities of resource persons who have worked over the years in the CREMA area and other secondary sources especially literature and articles and the Medium-Term Development plans of the respective District Assemblies (2023-2028).

1.7 The Social Setting

The Settlement Pattern

Settlements in the Dusornu CREMA can be generally be described as linearly distributed with a few ones dispersed. Most of settlements are located along the feeder roads within the CREMA.

1.7.1 Hierarchy and distribution of settlements

Settlements are classified into five levels of hierarchy. The hierarchy of settlements is based on the functions of the settlement and the population sizes of the communities.

1.7.2 Traditional Set-Up

1.7.3 Chieftaincy

The DUSORNU CREMA falls within both Anlo traditional and Agave traditional areas. One part that is the Galo CRMC falls under the Anloga traditional area which has 36 states and headed by the King, Torgbi Sri III the Awoamefia of Anlo who serves as a symbol of authority among all people in the traditional area. Within the area, there are other chiefs with their own areas of influence who assist the Awoamefia in the promotion of peace and stability in the district.

The other four CRMCs, Sota, Galotse, Korsikorpe and Klonu falls under the Agave traditional area. Each traditional area is autonomous with its own paramount chief, queen and festival.

Various CRMCs have their Chiefs who in turn are responsible to their respective Paramount Chiefs. Harmonious co-existence plays out between the chiefs and people and between the various traditional areas by reason of similar cultural heritage. This brings about unity and togetherness among them which could promote collaboration in development and business.

Festivals

The Dusornu CREMA is endowed with some cultural practices and festivals. Every year in the first week of November, the people gather at Anloga to celebrate Hogbetsotso Festival which is a major one. A minor festival celebrated by the Galo CRMC is the Bomi festival.

The people of Agave traditional area of which the four CRMC is part celebrate an annual “Dzawuwu” festival during the month of August. Two months prior to the festival, picking of fresh clams/oysters (adodi)

is forbidden. “Kporle” festival literally meaning (arresting the tiger) is usually celebrated in December by the people of Korsikorpe. “Dunenyo” is also celebrated by these communities for the purpose of development in the community.

1.7.4 Land Use Planning and Development Control

The main land use practices are building of new houses in the settlement’s areas, farming, harvesting of mangroves and other human activities are carried out within the mangrove stands that borders the immediate settlement areas. Beyond the farming areas are patches of open grasslands which are sparse in some of the areas. Around the fringes (buffer) of the rivers or stream are mangrove forest. On the open ranges are pockets of mudflats and micro wetlands where most water bird’s species roost, feed and nest.

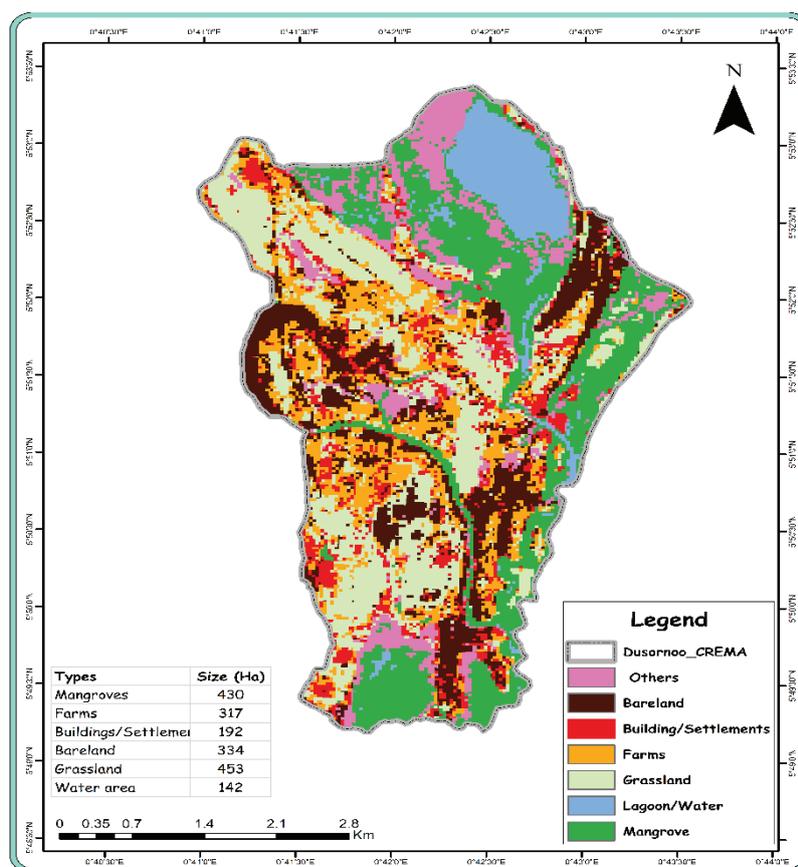


Figure 2: land cover map of Dusornu CREMA
Source: Author, 2023

1.8 The Economic Setting

1.8.1 Agriculture

Agriculture plays a vital role in the socio-economic development of the people in the Dusornu CREMA though most of the activities is done on subsistence bases. Therefore, much of the agricultural potentials in the Dusornu CREMA remain unutilized. There is still huge bare land of about 334 hectares which can be explored and cultivated with appropriate farming technologies.

1.8.2 Agricultural Land Acquisition

Land in the Dusornu CREMA is vested in the hands of the Tsalawo clan. For agricultural purposes, the land can easily be accessed by both natives and non-natives, and this is a great potential for agricultural development. In line with the customs and traditions of the community, non-natives in need of land for agricultural activities are required to approach the landlord with a token of drinks, or maybe a small amount of money for a parcel of land. However, crop production is challenged by high cost of inputs, inadequate extension services due partly to insufficient extension staff of the local Ministry of Food and Agriculture, poor storage system and low marketing opportunities.

1.8.3 Technology in Agriculture

The technology employed in Agricultural Production in the area is largely the traditional cutlass and hoe. Availability of land for large-scale mechanized production of crops such as maize and cassava for the local markets exist. However, mechanized farming is very limited and the rate of adoption of other agriculture related technologies is also equally low. Farming is entirely rain-fed as there are no irrigation facilities and this culminates in low productivity. Access roads to farming centers are also poor thus hampering the marketing of the products. These together with the absence of storage facilities give rise to high post-harvest losses (South Tongu District Assembly Medium Development Plan 2022-2025).

1.8.4 Crop Production

The soils in the CREMA favour the production of variety of crops. Currently, crops grown include cassava, maize, beans and pepper (Table 2).

Table 1: Estimated Size of Cultivated Area per Crop in Dusornu CREMA

Major Crops Cultivated	Area Cultivated per Crop (Ha)
Maize	33
Cassava	40
Pepper	10

Source: Author, 2023

1.8.5 Post-Harvest Losses

Post-harvest losses are a widespread phenomenon and represent a major challenge to farmers. The incidence of post-harvest losses is particularly very high for certain crops like cassava, mango and vegetables such as pepper. These losses are mainly due to general lack of knowledge about preservation techniques and inadequate proper processing and storage facilities. Poor road network is also a contributing factor, since a lot of produce cannot be conveyed to marketing centres on time. The high incidence of post-harvest losses affects the incomes of farmers and has been a disincentive to farmers who want to embark on large scale production.

1.8.6 Agro-Processing

The area cannot boast of processing facilities. Currently there is only one mill that processes maize into powdered forms in the area. There is potential opportunities for this to be developed in the area.

1.8.7 Livestock and Poultry Production

Livestock production is one of the agricultural activities. Unlike crop production, livestock production is quite limited to some households. Poultry production is mostly about chicken and can be found in most households in the area. Production is on a small scale though the area has favorable conditions for large scale livestock production.

The dominant livestock kept in the CREMA is Chicken constituting 29% followed by Goat 24%, and Sheep 5%, (Figure 3). The major challenge facing the livestock sub-sector is lack of access to veterinary services due to short supply of the officers in the district as a whole. This implies that given adequate technical support households could earn more income from livestock rearing resulting in increased household income levels and improved well-being.

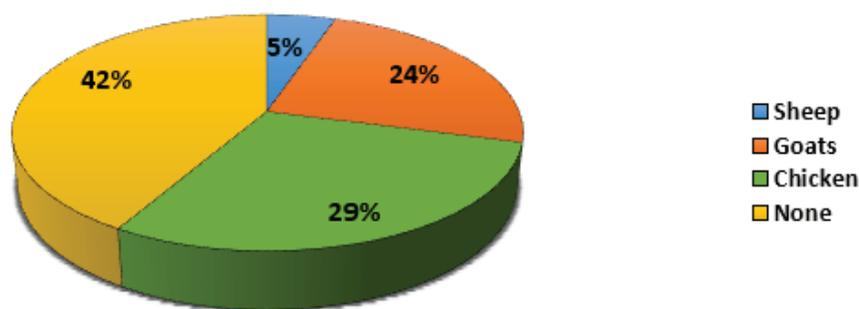


Figure 3.0 Percentages of livestock reared
Source: Author, 2023.

1.8.8 Fishing

Fishing on the other hand, employs 23% of the total number of households employed in agriculture. The CREMA is endowed with water bodies (river, creeks and lagoon) which makes fishing one of the important activities in the area. There is potential for aquaculture within the area due to enormous waterbodies in the area.

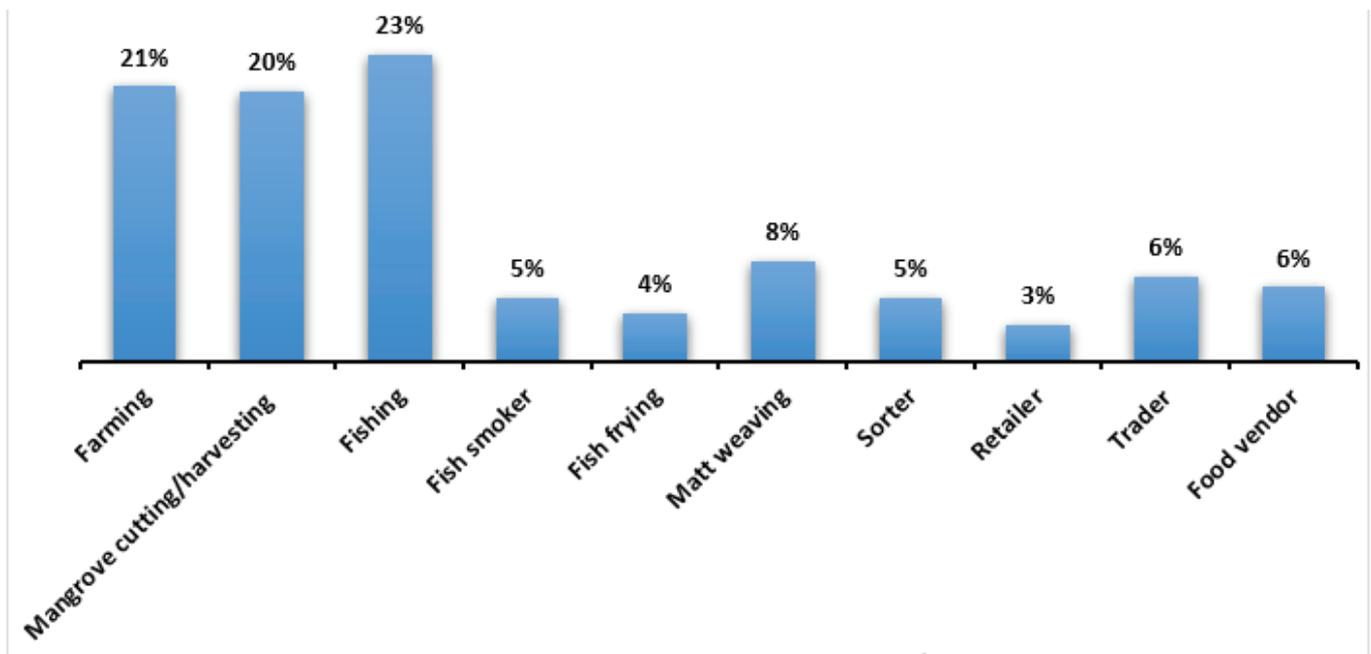


Figure 4.0 Fishing within the CREMA
Source: Author, 2023

1.9 Local Economic Development

The economic and social development of the CREMA is dependent upon the quality and quantity of its productive resources, of which the labor force is extremely important. The CREMA abounds in a lot of economic resources such as tourism though not fully developed, arable land for farming, animal rearing, and light industrial activities among others.

1.9.1 Potential Investment Opportunities

Construction of a Cultural Market

There is availability of vast land for the establishment of a cultural market to bring together all cultural workers, investors and tourists in as one stop centre.

1.9.2 Tourism

This CREMA has a lot of untapped tourist potential which need to be harnessed. The tourist attractions are numerous namely: Ancestral grooves in Sota and galotse as well as the creeks around the Aglor Lagoon. There is potential for spot fishing and boat tours. There is one uncompleted guest house currently within the CREMA, but some can be located about 7 km away.

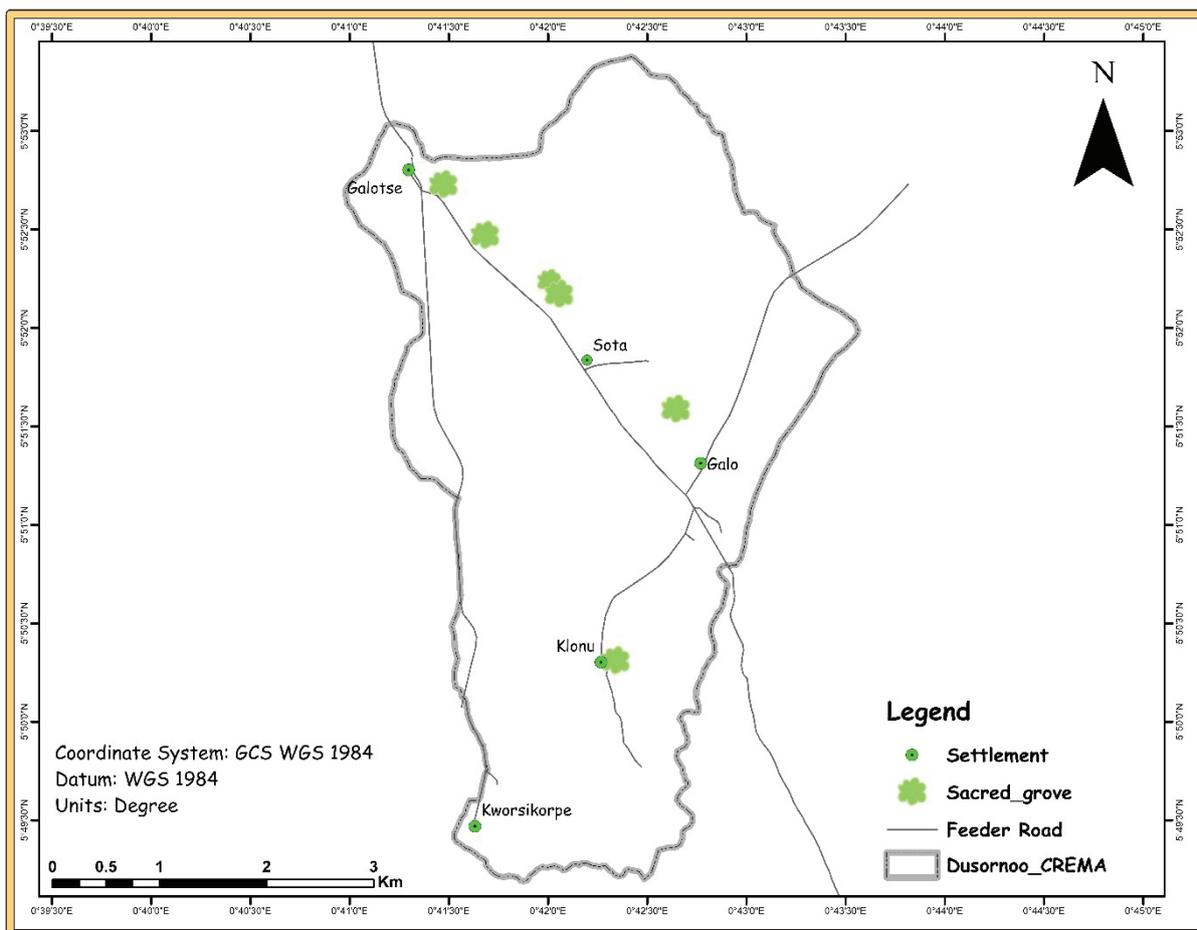


Figure 5.0 Sacred groves within the area
Source: Author, 2023

1.10 The Bio-Physical Setting

The physical environment exhibit features typical of mixture of scrub and tall grass (mostly Guinea grass), with giant anthills. This is attributed to the physical location of the CREMA, which falls within the coastal savannah ecological zone. The physical environment of the CREMA is challenge with the high incidence of logging. Environmental problems are caused by unsustainable human practices.

1.10.1 Climate

1.10.1.1 Temperature and rainfall

Temperatures are generally high throughout the year and is good food crop farming and plants in general. The climate of the area is influenced by the southwest monsoon winds twice in a year resulting in a double maxima rainfall regime. The main rainy season starts in late March and ends in July, recording an average rainfall of 195 mm. The second rainy season starts in late September and ends in November, recording an average rainfall of 73mm.

1.10.2 Vegetation

The Dusornu CREMA falls within the coastal savannah ecological zones and is a high biodiversity area. The area is endowed with different types of mangroves such as *Rhizophora racemosa*, *Avicennia germinas*, found around the riparian zones along the water courses and *Laguncularia racemose*. The typical pristine mangrove trees have been cut various reasons and these are gradually replaced by other trees. Also, plants such *Typha domigensis*, *Sporobolus pyramidalis*, and *Cyperus articularis* show high presence in the CREMA. The *Typha* plant is frequently used in weaving mats, fans etc. Other micro wetlands areas also have *Cyperus littoralis*, Water lily and the grass, *Paspalum vaginatum*.

The drier and saline areas around the water bodies are characterized by *Sesuvium portulacastrum*. Some other plants include *Cocos nucifera* (coconut), *Gossypium sp.*, *Chloris barbata*, *Scirpus littoralis*.

Some of the plants are listed below;

Scientific name	Common name	Local name
<i>Rhizophora racemose</i>		Atra
<i>Avicennia germinas</i>		Amuti
<i>Languncularia racemose</i>		
<i>Andropogon contortus</i>		
<i>Nypa sp.</i>		
<i>Scirpus cubensis</i>		
<i>Paspalum vaginatum</i>		Gbekle
<i>Typha sp.</i>		Ava
Borassus palm	Palmyra palm	Agor
Palm tree		
<i>Azadirachta indica</i>	Neem	Korlebu ti
<i>Chloris sp.</i>		
<i>Blutaparon vermiculare</i>		
<i>Cyperus articularis</i>		Ayike
<i>Sporobolus maritimus</i>		
<i>sporobolus pyramidalis</i>		
<i>Sesuvium portulacastrum</i>		Soli
<i>Scirpus littoralis</i>		
<i>Andropogon gayanus</i>		
<i>Hyparrhenia rufa</i>		
Cactus <i>Opuntia</i>	Prickly pear cactus	Esre
<i>Cyperus articularis</i>		
<i>Lagunlaria racemose</i>	White mangrove	Amuti
<i>Nymphae micrantha</i>	water lily	Agu
<i>Acrostichum aureum</i>	Golden leather fern	Lamah
<i>Anacardium occidentale</i>	Cashew	Atsia
<i>Eucalyptus</i>		
<i>Searsia pallens</i>		
<i>Cuscuta</i>		
Borassus palm		
<i>Elegia fistulosa</i>		Ayike
<i>Chondropetalum tectorum</i>		Fagbui

Scientific name	Common name	Local name
Brachypodium sp.		
Uvaria chamae	Bush banana	Gbale
Gossypium sp.	Cotton tree	Detsifu

1.10.3 Geology and Soils

The underlying rocks in the entire south Tongu district are metamorphic in origin. The major soils formed over these geological formations include Ziwai-Zebe Complex, Tondo-Motawme Complex and Agawtaw-Pejeglo Complex soils which are formed over the Dahomeyan Acidic Gneiss rocks. Toje-Agawtaw Association and Amo-Tefle Association soils have the Acidic Gneiss and Schists as their parent rocks. Ada-Oyibi Association, Ada Association, Aveyime-Ada Association and Oyibi-Muni Association soils have alluvial and coastal deposits as their parent rock for the entire district.

However, within the CREMA area, there are fine sand deposits around Sota and Galotse, with some areas having muddy sand deposit as well. The soils support crops such as maize, cassava, beans and pepper.

1.10.4 Relief and Drainage

The CREMA project area serves as a watershed to several streams, because it is generally a flat area. The area is drained by several streams some of which find their source from the Volta River (Figure). The CREMA area can simply be described as a watershed to these streams hence warrants conservation effort. Some of the streams serve as source of water to the surrounding communities. The main water body or Aglor lagoon which is in the northern side of the CREMA feeds other streams in the CREMA. The Aglor lagoon has a surface area estimated at about 2 km², but *Typha domigensis*, an aquatic weed, has grown to cover a portion of its periphery and reduced it to about 1 km². The lagoon has a depth ranging from 0.28 to 1.5 m (Author, 2023). The Aglor Lagoon also receives water from River Kpem which originates all the way from the Akwapim--Togo ranges and enters the Avu Lagoon. The wetness of some micro wetlands has reduced and segments practically dries up in some areas during the dry season. Therefore, the wetlands do not provide all year-round dependable sources of water supply to the communities.

1.10.5 Fauna

Various animal species exist within the diverse ecosystems. The main ecosystems are arboreal, aquatic and terrestrial which include the mangrove ecosystem. There are different small mammals and birds within the area. Others include reptiles such as monitor lizards, green mamba, python etc. The aquatic ecosystems consist of various species of fresh fish species such the red bellied tilapia, the Nile tilapia and the heterotis fish. Others are listed below:

Group	Species	Scientific name	Local name
Avifauna	Black winged stilt	<i>Himantopus himantopus</i>	Tsompa
	Cattle egret	<i>Bubulcus ibis</i>	Nyitaxi
	Great egret	<i>Ardea alba</i>	Horhor
	Common quail	<i>Coturnix coturnix</i>	Tegli
	Common sand piper	<i>Actitis hypoleucos</i>	

Group	Species	Scientific name	Local name
	Spur winged lapwig	Vanellus spinosus	Kpedamiawufa
	Grey heron	Ardea cinerea	Kpaklo
	Squacko Heron	Ardeola ralloides	Akla
	Plovers	Charadriinae	Torkornuxe
	Pied Kingfishers	Ceryle rudis	Akpor
	African jacana	Actophilornis africanus	Agudzixe/ Akplanga
	Moorhen/marsh hens	Gallinula	Torme kokloe
Amphibians	Toad	Bufo regularis	Akporkplor
	Frog		Abenah
Fish	African bony tongue	Heterotis niloticus	Efa
	Blackchin tilapia	Sarotherodon melanotheron	Akpanui
	Nile tilapia		Gbolonu
	Channel catfish	Ictalurus punctatus	Adehe
	Catfish	Chrysichthys nigrodigitatus	Blolo
	Redbelly tilapia	Coptodon zillii	Akpatsu
	Voilet vinegar crab	Episesarma sp.	
Reptiles	African royal Python	Phython sabae	Efhor
	Cobra	Naga nigricoltis	Efli
	Puff adder	Bitis aricutas	Dzakpata
	Monitor lizard		Ve/ Tsangbe
	Green mamba	Dendroaspis viridis	Amakpamui / Xeda
	Chameleon		Agama
Rodent	Giant rat	Ericetomys gambianus	Kissi
	Cane rat/ Grasscutter	Thryonomys swinderianus	Xortsukplui/ Nukpui
	Lemniscomys bellieri	Bellier's striped grass mouse	Gborxifi
	Mus musculus	House mouse	Xormefi
	Ground squirrel	Xerus erythropus	Ador
Mammals	Mongoose	Herpestina	Aglar
	Hedgehog	Erinaceus albiventris	Hlormade
	African Civet	Civettictis civetta	Dzogolo

The alarming rate at which biodiversity is lost calls for action to arrest the situation for the benefit of present and the future generations.

1.10.6 Pressures and challenges with natural resources governance and management

The CREMA has diverse natural resource governance and management challenges. The challenges include excessive and indiscriminate exploitation of natural (mangrove) resources, etc. and climate change impacts.

1.10.7 Climate Change

The Climate is gradually changing and less predictable. The rainfall pattern has become less predictable. There used to be two major rainy seasons but in recent years the minor season is largely less noticeable. Rainfall pattern are now difficult to predict and average annual temperature is also slightly higher.

These climatic changes are affecting economic activities such as agriculture. Crop failures due to shortages in expected rainfall is very common. Another aspect of water related climate hazards are flooding. Floods associated with the compact and torrential rains currently being experienced lead to major crop losses and submerging of settlements. Mangrove resources are also largely degraded due to pressure by the farmers who as a result of crop losses resort to tree cutting for charcoal and fuel wood for sale to cope with the harsh economic situation. Furthermore, river bodies are gradually dwindling and this is affecting fish stock as well.

There is evidence that in the past fifty years, portions of the municipality that were in fact thick and luxuriant forest have gradually degraded and depleted to almost bare areas and water channels or streams that were flowing all year round have almost become seasonal and intermittent.

The under listed is a summary of the factors which are further aggravating this problem

- Tree harvesting (Overexploitation)
- Pollution of River bodies
- Farming along the River banks
- Dumping of liquid and solid waste indiscriminately.

The incidence of climate change as described above has the following potential impacts on the socio-economic development of the CREMA:

- Harvest failures
- Low incomes for farmers leading to poverty
- Loss of tree resources
- Loss of animal species
- Reduction in grazing fields leading to reduction of livestock size and nutrition.
- Food insecurity

The phenomenon of environmental degradation is now a serious problem. Besides, the employment of improper methods of farming, people have continued to harvest the mangrove resources indiscriminately thus degrading the environment without the commensurate regeneration of the trees through tree planting. These activities are therefore causing the rapid disappearance of the mangrove forest vegetation.

1.10.8 Logging

Fuelwood as an economic venture in the Dusornu CREMA is widespread and unregulated. Vast areas have been completely stripped of trees for fuel wood. This venture has been identified as the leading cause of deforestation in the Dusornu CREMA.

Though the area is Ramsar site, the adherence to regulations has been weak.

2.0 PART TWO - THE PLAN

2.1 *Purpose of the Plan*

The management plan falls within the Collaborative Resource Management Policy of the Wildlife Division, 2000 and the Forest and Wildlife Policy, 2012. It aims at enhancing the effective gender mainstreaming in aquatic biodiversity conservation and environmental management efforts as well as supporting and unlocking the potential for strengthening the role of women in conservation of aquatic biodiversity and environmental management.

The Plan outlines actions to be adopted for the sustainable management of the DUSORNU CREMA. The plan outlines measures to be undertaken to restore degraded biodiversity or resources within the CREMA and partly the basis for improving local livelihoods, household incomes and optimise community benefits of the people living within the CREMA. It is therefore expected that the Plan will provide the administrative and operational direction for developing the DUSORNU CREMA by the five (5) communities and the various stakeholders. It is also to restore the social-ecological values of the area for the long-term mutual benefit of the CREMA constituents in particular and the larger population in general. The Plan is designed to be implemented over a five-year period from the year 2023-2028. It is also expected that viable local livelihood enterprises will be developed and the people supported to implement them to improve their welfare.

Management Prescriptions of the Plan

By the end of the year 2028 it is planned that the CEC of the DUSORNU CREMA would have achieved the following:

2.2 *Key Outcomes*

1. The degraded ecosystems and biodiversity in the CREMA restored to support viable significant species of wildlife populations and free natural genetic mixing and transfer of biota within and through the adjoining areas;
2. Food crop, livestock and fuelwood production as well as other economic activities including other enterprise development projects and their value chains boosted to improve the welfare of the constituent communities;
3. Approaches that enhance natural resource conservation efforts and the potential for strengthening the local communities' gender disaggregated roles and mainstreaming in conservation of aquatic biodiversity and environmental management unlocked, supported and improved;
4. Local responsibility for the management and authority for natural resources encouraged and institutionalised; and,

5. Areas of potential tourist features and attractions developed with appropriate infrastructure managed to provide economic benefits to the local communities.

2.2.1 Management Prescriptions

Background

The main objective of the DUSORNU CREMA is to enhance the ecological integrity of the natural ecosystems and secure biodiversity conservation and sustainable management of natural resources. To realise this broad objective, it is recommended that the DUSORNU CREMA Executive be carefully guided by their constitution and this Plan to implement the following management prescriptions.

2.2.2 Improving Conservation Awareness

Background

The traditional conservation rules and regulations that influence conservation practices in the DUSORNU CREMA are not respected sufficiently, in the area observed due probably to modernization, unhelpful political interference and weakened local traditional authority. Enforcement of traditional conservation practices is done without the necessary conservation education and awareness creation. Considering the deep-rooted traditional uses of natural resources in the area, a vigorous education and conservation awareness is needed to sensitize people about the negative impacts of uncontrolled exploitation of natural resources in the area.

It must be emphasized that realisation of the poor state of natural resources by local communities in itself is not enough for people to support conservation. Acknowledgement of the declining state of the resources should be accompanied by a conscious effort to link the current condition of natural resources with non-observance of adequate conservation practices. This can only be done through a consistent environmental education and conservation awareness programme among the people.

Management Objective

To sensitise the people about the effect of unregulated human activities on the natural resources in the area and the consequences on their social and economic lives.

Management Prescriptions

- Identify, train and support a select group of conservation education volunteers to carry out environmental awareness creation in the area
- Develop conservation education materials to facilitate visual education programmes on the values of nature conservation in the area.
- Organise local study tours for CRMC/CEC to places where conservation efforts have contributed to the attainment of better social and economic lives

2.3 *The role of women in the DUSORNU CREMA*

Background

Decision making in the DUSORNU CREMA are traditionally male-dominated, leaving women less active in the traditional governance system. The women, however, play an important role in the management of natural resources and in many cases are more directly involved in the collection and use of natural resources. Women are also active in household and small-scale enterprise activities. The CREMA has to support the active participation of women at all levels of management decision making without imposing any external and traditional restrictions. Empowering the priestess who are respected women leaders in the communities can encourage women's participation in decision making. In the plan, Women in CREMA area are supposedly likely to be engaged in practical activities integrated in their daily cores that contribute to natural resources conservation and through leadership decision making.

Management Objective

To support women's participation in decision making and CREMA management process

Management Prescriptions

- Sensitise women to actively participate in CREMA activities and assume leadership roles in the CREMA management. Sensitise and encourage traditional authorities and men on the need to ease traditional barriers to ensure equitable involvement of women in the decision-making process;
- Collaborate with NGOs who are into women empowerment and advocacy to support women activities in the CREMA.

2.4 *Promotion of small-scale cottage industries for CREMA constituents*

Background

The local people are engaged in a number of processing activities in the area but poor market access, low technology and inadequate managerial skills do not allow them to reap the full benefits of their efforts.

Management Objective

To improve the knowledge and entrepreneurial skills of the people, particularly women in the CREMA communities so as to assist them reap the full benefits of their enterprise activities.

2.4.1 *Management Prescriptions*

- Organise local people into cooperatives to give them a better bargaining power.
- Seek the support of NGOs or volunteer groups in training and upgrading the knowledge and skills of the local people in their enterprise activities.
- Support supply of appropriate equipment and facilities to improve efficiency into the enterprise development activities.

2.5 *Development of Small-Scale Fishing Industry in the CREMA*

Background

The rivers and its tributaries that drain the area are the main sources of fish for the CREMA communities but there is no planned fishing programme in the CREMA. Fishing methods and gears used are not regulated (use of illegal fishing nets smaller than permitted mesh sizes). Other inappropriate methods of fishing include ‘damming’ of water bodies to scoop out the water to indiscriminately catch fish within the mangrove areas.

Management Objective

To develop and implement a comprehensive fishing programme with technical advice from the Directorate of Fisheries of the Ministry of Fisheries and Aquaculture.

2.5.1 Management Prescriptions

- Construct two dams in the multiple use zone of the CREMA to facilitate fish farming;
- Educate communities and create awareness on the dangers of using chemicals to fish and on the use of appropriate fishing gear and methods;
- Support supply of approved fishing gear to fishers to encourage use of appropriate methods of fishing;
- Sensitise women and youths to actively participate in fishery activities and assume leadership roles

2.6 *Supporting Community Development Activities*

Background

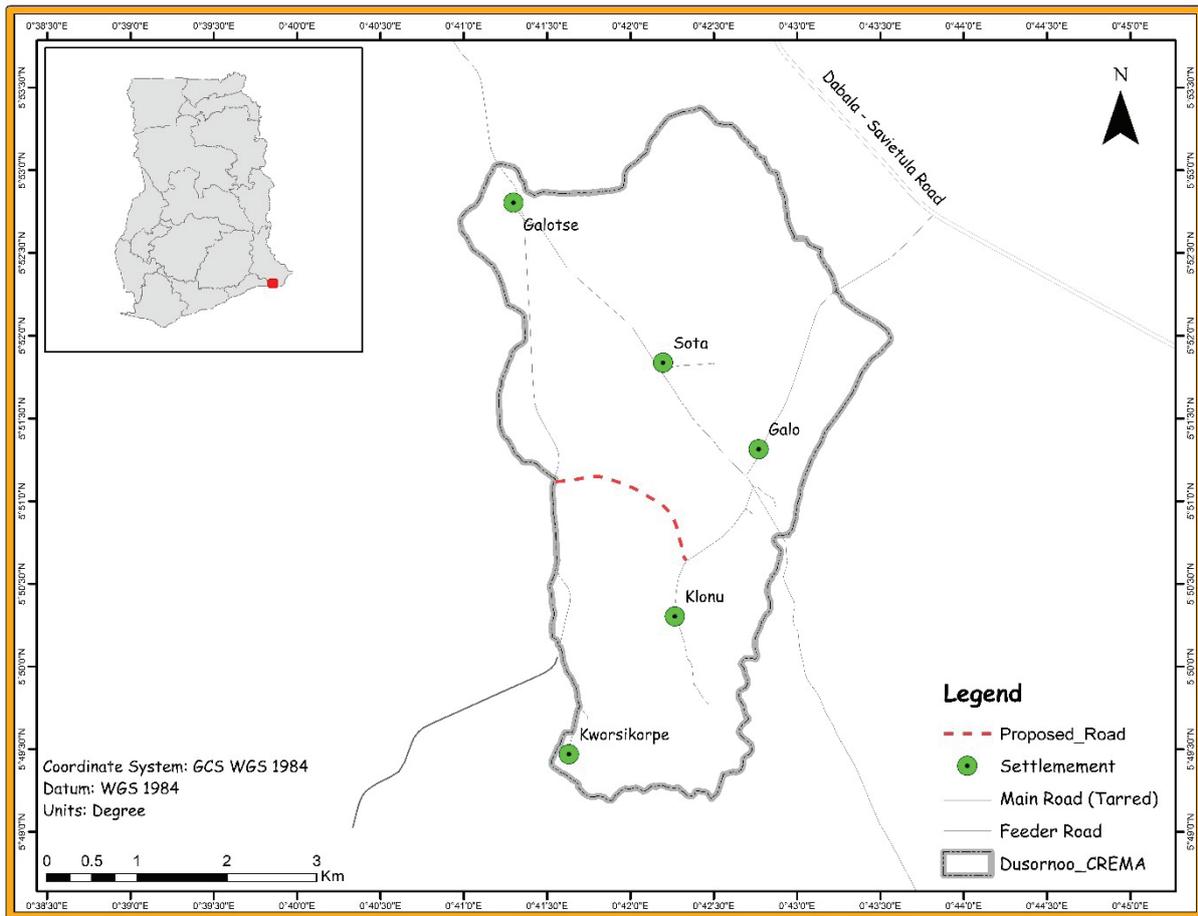
Currently the state of infrastructure in the area is poor. To support development activities, there is the need to link up with the District Assemblies to provide for example, motorable roads and other infrastructure in the area (see map for infrastructure). This will ensure commitment of the people in upholding the objectives of the CREMA.

Management Objective

To develop community infrastructure in DUSORNU CREMA

2.6.1 Management Prescription

Solicit support from the district assemblies for the provision of community infrastructure including the improvement of roads infrastructure.



Map 4: Proposed road network (shown in red) to improve accessibility in DUSORNU CREMA
Source: Author, 2023

2.7 Management of wild fire within the CREMA

Background

Wildfires are a common phenomenon in the CREMA. Reasons for setting bush fires include safety and security against wild animals that may stray into homes, land clearing for farming and hunting. Therefore, fires are set for both social and economic reasons.

Annual bush burning and wild fires are a major cause of land degradation leading to the loss of critical ecosystems, general vegetative cover, non-timber forest products and other ecosystem goods and services thus affecting biodiversity and local livelihoods negatively.

The Rural Fire Department of the Ghana National Fire Service carried out sensitisation in the CREMA and made some recommendations in the activity report. The recommendations include among others preparation of a fire management plan. The recommendations of the report, as well as the District Assembly bye-laws on bushfires will be implemented in collaboration with the Ghana National Fire Service.

Management Objective

To develop a comprehensive fire management plan to help minimize the incidents of wildfires and the associated negative impacts in the CREMA.

Management Prescriptions

- Develop and implement fire management plan
- Create awareness to sensitize communities on fire control and prevention including development of guideline manuals, posters, publications, radio, and street plays, etc.
- Create fire belts and other interventions such as early burning to physically manage fire in the core zones and other ecologically sensitive areas within the CREMA.
- Collaborate with traditional authorities to protect areas of traditional and cultural importance (shrines, sacred groves, etc) from wildfires.

2.8 Building the Capacity of Local Communities

Background

Building capacities at the local community level is central to the maintenance of the assets created and for any intervention to be effective and sustainable. Training for the local communities will focus on areas such as management of wildfires, simple ecological monitoring methods, human-wildlife–livestock conflicts, dry season farming, and tree growing and management. Training will be conducted through the government departments and agencies such as MoFA, Wildlife Division, Ghana National Fire Service, National Disaster Management Organization and available local level expertise such as local NGOs.

Management Objective

To build capacity of local communities to manage CREMA assets and natural resources

2.8.1 Management Prescription

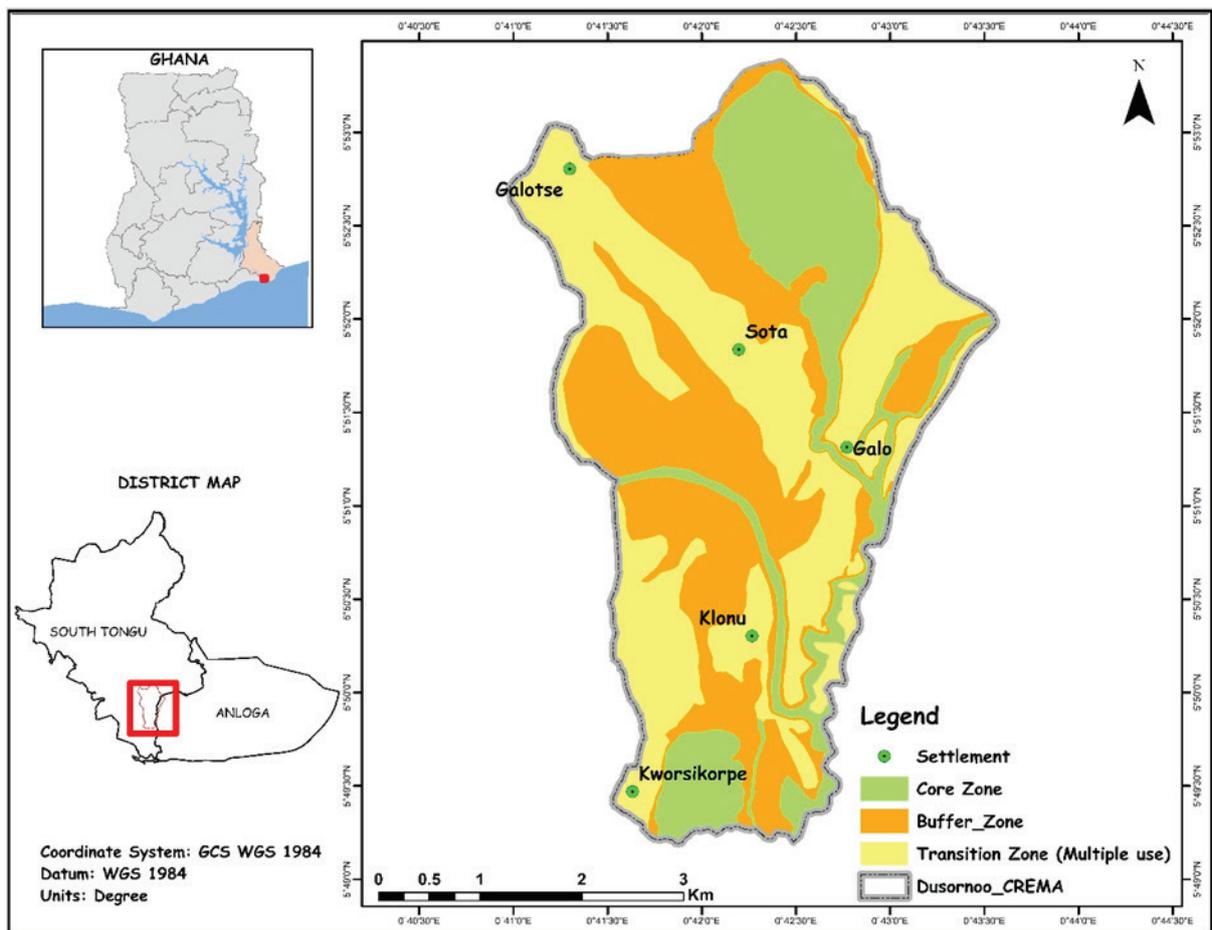
- Conduct training needs assessment and develop training materials for the training of community groups and individuals.
- Identify and seek financial and technical support from the relevant District Assemblies, NGOs and donors for the training of community groups and individuals.

2.9 Zonation of the CREMA

The CREMA has different land cover characteristics that require different management regimes to facilitate conservation and development. Therefore, the CREMA would be zoned and managed for different purposes to meet the overall goal. The zones are the core, buffer, multiple use and tourism development zones (Map5).

2.10 Policies

- The entire CREMA will be managed for conservation and development.
- All the mangrove forest and the sacred groves will be managed as core zones
- The river and other tributaries will be managed as buffer zones and extended in accordance with the buffer zone policy of 2012
- Tourism development will take place within areas designated as tourism development zones



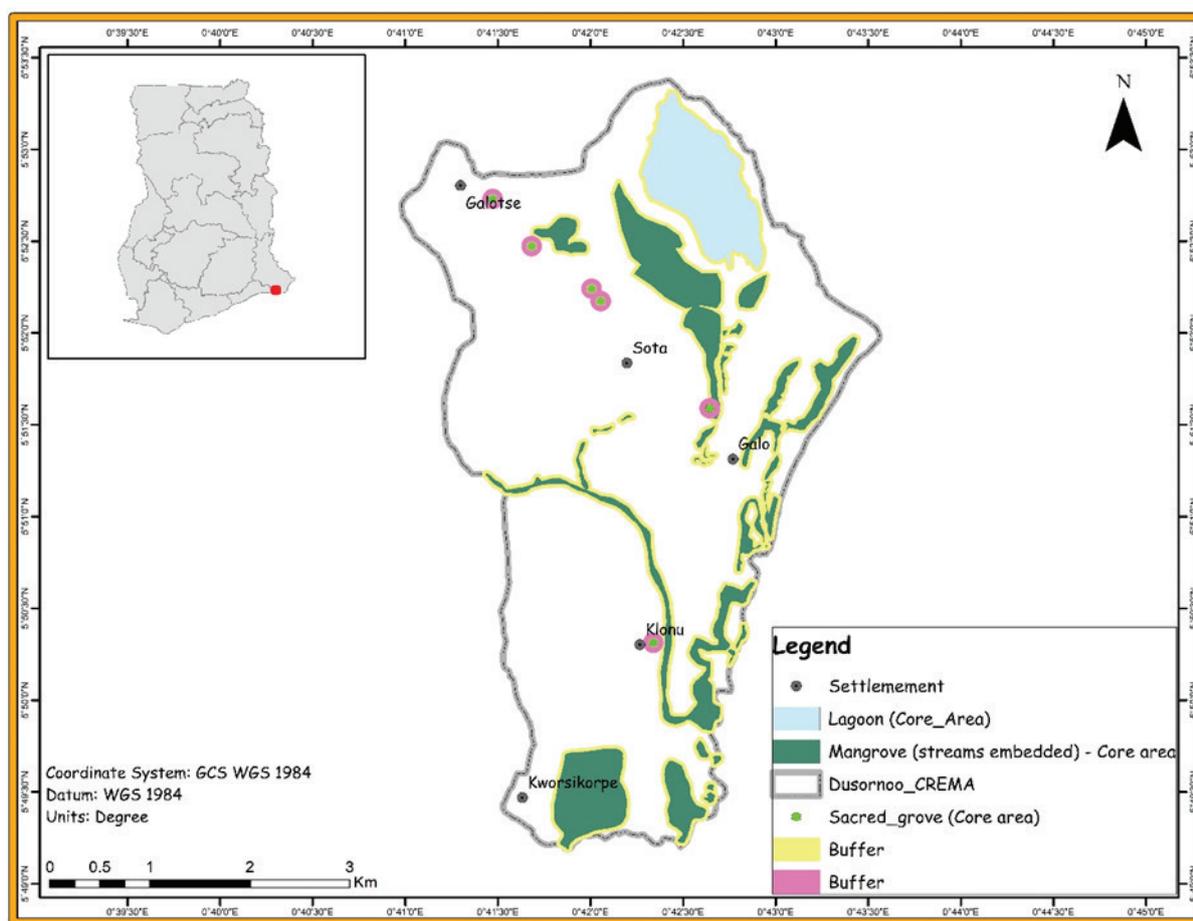
Map 5: Management zones of DUSORNU CREMA
Source: Author, 2023

2.10.1 Core Zones

The mangrove Forest areas located within the DUSORNU CREMA will form the core zone. Each of the mangrove Forest was established to achieve specific management objectives. The CREMA Executive will collaborate with the Forest Services Division and the Wildlife Division of the Forestry Commission to implement specific management prescriptions aimed at addressing the associated challenges of the mangrove Forests

2.10.2 Mangrove Forest Restoration and Management

The mangrove Forest occupies an area of 430 ha and is managed by the owners of the land (Map 6). The forests are also protective forest and are physically unique in protecting the Rivers and the catchment areas for most of the tributaries. However, portions of the forest reserve are encroached upon by the communities for wood fuel, farming and other purposes. The area needs immediate protection so as to prevent it from becoming grassland and or wasteland. The plan provides for actions to be undertaken by women and youths e.g Mangrove tree planting and restoration in degraded areas, practising nature-based enterprises e.g. bee keeping, curio shop businesses, eco-tourism and assumption of daily management roles.



Map 6: Land cover map of Core Zone (Mangrove and Sacred Grove areas)

Management Objective of the core zone

- To improve on the biodiversity of the forest ecosystems.
- To serve as resource banks for the local people
- To protect ecosystems and improve the migratory routes for wildlife

2.10.3 Management Prescriptions

Women and Youth could be engaged in different roles:

- Establish management committees for the management of mangroves with clear gender disaggregated roles;
- Supporting the women to actively engage in mangrove restoration and management activities;
- Training the communities in engaging in ventures that benefit economically without destroying the

- ecosystems tourism, and ecosystem carbon trade.
- Continue with awareness creation on the importance of biodiversity to the local people;
 - Develop internal tracks to facilitate tourist use of the core zone;
 - Form Community Resource Assessment teams to collect information on NTFPs regarding their distribution, frequency or abundance, location and extent of their present exploitation to determine their levels of sustainability if they are to be allowed for harvesting;
 - Develop a permit system for the collection of NTFPs by the fringe communities under the collaborative supervision of CEC, FSD and WD;
 - Collaborate with FSD and Wildlife Division to protect flora and fauna in the core zone;
 - Establish collaborative anti-poaching systems to protect wildlife in the Forest Reserve by the CRMCS within each of the five (5) communities;
 - Undertake enrichment planting in the open and degraded forest areas to help maintain their ecological integrity;
 - Disallow cutting of fresh trees for fuel wood within the core zone;
 - Maintain forest reserve boundaries and replace missing and broken boundary pillars;
 - Rehabilitate all degraded areas within the reserve through enrichment planting;
 - The Forest Services Division in collaboration with the CRMCS and the Ghana National Fire service will work out modalities to create fire belt and awareness creation in the communities on wildfire control strategies, training and retraining of community fire volunteers as well as organization of community durbars on maintenance of fire-free environment in the natural and plantation forest areas;
 - Rehabilitate failed areas within the compartments and where applicable cut areas covered by stunted plantation stock for firewood and replant with fast growing species such as *Eucalyptus* spp; and,
 - Support annual traditional and ceremonial activities already practiced around sacred groves, shrines, hills etc., subject to obtaining the appropriate permits issued by the FSD/CRMCS/CEC.

2.11 Buffer Zones

Background

The hydrology of the CREMA is under siege as the banks of the rivers and its tributaries are being farmed probably for want of water in other areas to irrigate their farms. Farming along the river banks has led to erosion and consequently silting of the river systems. There is therefore the need to create buffer along the water systems by protecting the banks of the rivers and its tributaries in order to assure availability of water for longer periods within the year and to avail water to wildlife.

Management Objective

To protect rivers and its tributaries from siltation and to ensure a longer period of water availability and increased vegetative cover for wildlife in the CREMA.

2.11.1 Management Prescription

- Identify, demarcate, and plant all degraded areas along the river banks and its tributaries within the CREMA with the appropriate shrub in line with the buffer zone policy of the Water Resources

Commission.

- Construct and maintain fire belts along the buffer zones to prevent the spread of wild fire.

2.12 Multiple Use Zone

Background

The multiple use zone in the CREMA will cover most areas outside the core and buffer zones and will serve as the zone of influence (7km buffer from the external boundary of the CREMA) where the respective communities will carry out their indigenous livelihood activities and enterprise development.

Crop and livestock production are carried out in the multiple use zone with a number of practices that destroy the area including inappropriate land preparation, agricultural expansion, destruction of water points, and uncontrolled bush burning. The impact of these activities can be minimised if proper measures are put in place.

Management Objective

To minimise the impact of improper agronomic practices.

2.12.1 Management Prescriptions

- Provide adequate agricultural extension services
- Provide adequate veterinary services for livestock farmers
- Construct waterholes/dug outs to provide water for animals and farming particularly during the dry season.

2.13 Tourism Development Zone

Background

The tourism development zone conceptually covers all the sacred and historical sites with marketable attractions and other areas where wildlife and game viewing facilities may be developed based on the distribution patterns and movement of wildlife within the CREMA.

Providing incentives in the form of tourism enterprises as alternative livelihood opportunities can provide more benefits for the local communities and also serve as a way of soliciting their support for conservation of the area.

Management objective

To promote ecotourism activities as economic ventures to serve as incentive for the effective management of the CREMA and the corridor as a whole.

2.13.1 Management Prescriptions

- Prepare a Strategic Environmental Assessment (SEA) for the tourism development strategy for

the CREMA in line with the Medium-Term Development Plans of South Tongu and Anloga District Assemblies

- Support the development of more environmentally friendly and ecotourism related sub project proposals such as crafts making, etc.

2.14 General Wildlife Management Issues

2.14.1 Wildlife Management and Utilization

Currently, wildlife is treated as an open access resource with no known local regulatory measures to control the utilization of wildlife in the CREMA apart from the wildlife laws of Ghana which are flagrantly disregarded. There are no restrictions on wildlife utilisation at the community level. Wildlife utilization will be regulated through a series of approaches such as; conservation education, close season enforcement, issuance of permits and licenses and rigorous enforcement of all national laws and community bye-laws.

2.14.1.1 Wildlife Hunting Strategy

The hunting strategies of the Dusornu CREMA would be based on the quota system. The establishment of quotas would be based on a sound technical advice especially on the increase in wildlife numbers. All species to be harvested and their quotas would be subjected to National Wildlife laws and international conventions as well as all the relevant traditional regulations and bye laws.

The CREMA executives would come up with hunting permit system which will regulate the hunting / exploitation of wildlife.

2.14.1.2 Law Enforcement

Members of the Dusornu CREMA have the major responsibility of protecting the resources of the CREMA. Currently no patrols are being carried out by the CRMCs. The CREMA Executive Committee (CEC) and selected members of the various Community Resource Management Committees (CRMC) should be trained to deal with enforcement of the CREMA bye-laws

2.14.1.3 NTFPs Utilisation

The communities in the Dusornu CREMA utilise non-timber forest products through an open access system. Farmers harvest key plant and animal species for economic, social and cultural benefits.

NTFPs such as bush meat, fuel wood etc harvesting would be regulated as enshrined in the CREMA constitution.

2.14.2 Research and Monitoring

The only way to make sound management decisions and respond to changes to management decision and resource condition is through research and monitoring. The effectiveness of any measures taken would therefore be monitored to see whether the desired objective is being achieved.

2.14.2.1 Annual CREMA Monitoring

The CREMA Executive Committee (CEC) would familiarize themselves with the status of the resources in the CREMA at any point in time before drawing programmes to achieve the objectives for which the CREMA has been established.

Research activities could include:

- The impact of farming activities on the ecosystem and biodiversity, especially the impacts of agrochemicals on water quality of the streams and Rivers of the CREMA.
- Seasonal distribution of fauna
- Mangrove cover assessment within CREMA
- Socio-economics

Students and other research institutions would be encouraged to conduct their research activities in the CREMA.

2.15 Administration and Staff

2.15.1 Staff Situation

The Dusornu CREMA is managed by the CREMA Executive Committee (CEC) made up of the representatives of Community Resource Management Committees (CRMC) from the five communities.

There is no permanent staff position for the running of the CREMA. The CREMA Executive Committees and Community Resource Management Committees will run the affairs of the CREMA as the constitution stipulates.

2.15.2 Training

The CREMA Executive Committee (CEC) will liaise with agencies such as Non-governmental organisations, the District Assemblies and the Forestry Commission to facilitate their training needs. The CEC would also learn from other community based natural resources management initiatives in other CREMAs within the district and outside.

Training needs will include:

- a. Ecological monitoring of the CREMA.
- b. Tourism development and management.
- c. Inter cultural relations
- d. Conservation education training
- e. Law enforcement training
- f. Inventories and sustainable utilisation/harvesting methods

The next section – Part three lays out the action plans to be implemented to achieve the management objectives of the CREMA. Part three should therefore be read in tandem with the Plan –Part two

3.0 PART 3 - ACTION PLAN

3.1 Action Plans for DUSORNU CREMA

Part three describes various actions that need to be undertaken to achieve the management objectives of the Plan. It discusses eight priority areas of intervention as follows;

1. Improving environmental education and conservation awareness
2. Broadening the economic base of the CREMA communities to ensure equitable balance between conservation and local wellbeing and to contribute to a CREMA fund
3. Improving conservation and security of biodiversity resources within the CREMA
4. Promote gender equity and participation
5. Re-energising and improving participation in the CREMA
6. Building the capacity of the local communities
7. Developing ecotourism in the CREMA
8. Establishing a well-functioning and visible CREMA secretariat

Each of these priority areas has been treated as a separate module and discusses the implementation strategy, the implementation arrangements needed to achieve the management objective. It also looks at the purpose of the module, the rationale and the expected outcomes that inform a list of actions required to achieve the outcome(s).

Vision and mission statements, constraints to ensuring effective management and governance of the CREMA, the strategic scope and a summary of the expected outcomes provide the background for the action plans.

3.1.1 Vision Statement

To have a dynamic CREMA leadership and well-informed constituents' communities with secured ownership of natural resources who are committed to enhancing environmental and socio-economic benefits for all segments of the CREMA, and financial independence of the CREMA through, transparent and accountable governance.

3.1.2 Mission Statement

To mobilize the collective action of all CREMA constituent communities to work in harmony with their allied stakeholders including any adjacent CREMAs within the area to ensure long term development and management of natural resources for improved local wellbeing and environmental conservation.

3.1.1.1 Constraints to Ensuring Effective Management and Governance of the Dusornu CREMA

In developing the action plan, due attention has been accorded the following constraints associated with the DUSORNU CREMA:

- Weak governance system in particular

- Inadequate participation of many CREMA constituents particularly women due to local traditional barriers
- Insufficient managerial and technical capacities of CREMA leadership
- Weak economic base and rationale for the CREMA
- Overdependence on external sources of funds to operate

3.2 *Strategic Scope*

This action plan will be implemented over a five-year period (2023-2028). It is expected that training and capacity development will be delivered to the CREMA constituents particularly the leadership (CRMCS and CECs) to enable them enforce the provisions of the constitution and the bye laws and implement this management plans efficiently. Mechanisms to ensure financial independence of the CREMA will also be explored. It is also expected that implementation of this action plan will facilitate effective governance and deliver enhanced biodiversity conservation, ecological integrity and the production and security of the ecosystem goods and services needed to improve the socio-economic wellbeing of all CREMA constituent communities into the long term.

The expected outcomes of the action plan derived from the key outcomes listed in the Plan will be:

1. A cadre of local people trained to deliver sustained environmental education and conservation awareness in all corners of the CREMA by end of year one and ongoing
2. Essential provisions of the CREMA constitution and byelaws well known by all CREMA constituents and respected by end of year one and ongoing
3. An all-inclusive, proactive, accountable and transparent decision-making system achieved by end of year four.
4. Livelihood base of CREMA constituents enhanced by end of year three
5. Financial independence of CREMA secured by end of year four
6. Deterioration of biodiversity halted and biodiversity condition improved by end of year five
7. Managerial and technical capacities of the local people built by end of year three
8. All potential features of historical, cultural and natural significance for tourism in the DUSORNOO CREMA identified, assessed and prioritised for value addition and development by year two.

3.3 *Improving environmental education and conservation awareness in the DUSORNU CREMA*

Implementation Strategy: There is an obvious realization of the local people of the decline in natural (mangrove) resources availability and the need for strategies to be set in place to collectively conserve the natural endowment of the CREMA and even beyond. Realisation of declining trends and weakening availability of natural resources by local communities in itself is not enough for people to support conservation. Therefore, acknowledgement of the unimpressive state of the resources will be accompanied by a conscious effort to link the current condition of natural resources with non-observance of adequate conservation practices. This can only be done through a consistent environmental education and conservation awareness

programme among the people. The CREMA constitution and bye laws as well as best practices learned from indigenous knowledge and elsewhere will be comprehensively disseminated to all segments of the CREMA.

Implementation arrangements: People respond more positively to messages when the message is delivered in a suitable environment and with a communication and message strategy that the target audience can identify with. Therefore, a cadre of CREMA constituents will be identified and trained in environmental education and conservation awareness to deliver an internally driven campaign in a language that the people understand better and can associate with. The CREMA Executive Committee (CEC) will lead the identification of suitable candidates for the training and suggest the most appropriate message and communication strategies to deliver conservation awareness. Video shows and clips on best practices from elsewhere will also be used.

Management objective

To sensitize people about the contribution of human activities on the challenges associated with the current state of natural resources in the area and the need for collective action to address the problem.

Purpose: To encourage compliance with the rules and regulations as stated in the CREMA constitution, as well as attitudinal and behavioural changes towards conservation of natural resources as efforts are made to bring a balance between conservation and local livelihoods.

Rationale: The traditional conservation rules and regulations that influence conservation practices in the DUSORNU CREMA are not respected sufficiently, due probably to modernization, unhelpful political interference and weakening of local traditional authority. Enforcement of such rules and regulations is done without the necessary conservation education and awareness creation and therefore tensions arise when people perceive that their rights of access to their bonafide natural resources to make a living are being interfered with. Considering the deep-rooted historical and traditional uses of natural resources in the area, a vigorous education and conservation awareness is needed to sensitize people about the contribution of human actions on the challenges associated with the current state of natural resources in the CREMA.

A great opportunity exists in the CREMA given the willingness of the communities to see a successful CREMA hence there is great yearning for more interactive engagements with the local communities on strengthening conservation awareness and local livelihood enhancements. It is therefore envisaged that this module will lay a good foundation for inclusive participation in the decision making and stimulate the requisite responses from the CREMA constituents.

Outcome: A cadre of local people trained to deliver environmental education and conservation awareness in all the CREMA communities by end year one and (ongoing) beyond.

3.4 Action Plan - Improving Conservation Awareness in the DUSORNU CREMA

Table 3: Improving Conservation Awareness in the DUSORNU CREMA:

A cadre of local people trained to deliver environmental education and conservation awareness in all of the CREMA communities by end of year one					
Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Consult with the CREMA Executive Committee to identify suitable nominees for training with a focus on gender inclusiveness	By end of month three of year one	WD office and chair of the CEC	Meeting	Meeting costs Travel and Transport costs	X number of targeted local people identified with equal representation of women
Recruit a trainer to screen the nominees to do a final selection of a cadre of trainees	By end of month three of year one	WD office and CEC	Meetings	Resource persons fees Transport and Travel allowances	Recruited trainer Final set of X number of trainees identified with equal representation of women
Carry out a need's assessment of the selected trainees to determine areas of training	By end of month four of year one	Resource person	Workshop	Servicing costs of workshop	Training needs assessment report
Develop message taking into consideration women roles, perspective in conservation and communication strategies	By end of month five of year one	Trainees Resource person with knowledge in gender issues	Workshop	Resource persons fees Workshop costs	Consensual communication and message strategies
Deliver customized training to and equip the selected trainees	By end of month six of year one	Resource person WD	Workshop Procurement of materials and logistics	Resource persons fees Workshop costs Cost of material and logistics	25 number of local persons trained and equipped
Develop implementation strategies focusing on women and their roles and resource 25 number of local persons to create conservation awareness	By end of month six and beyond	WD office and CEC	workshop	Workshop costs	Environmental education and conservation awareness ongoing in all corners of the CREMA

3.4.1 Broaden the Economic Base of CREMA Communities to ensure Equitable Balance between Conservation and Local Well Being and to contribute to a CREMA Fund

Implementation strategy: The CREMA constituents engage in livelihood activities including farming which is done during the short rainy season, livestock rearing and poultry, as the main income earning activities

Given the fact that farming, fishing and livestock rearing are the predominant livelihood activities and the economic mainstay of the local people and considering the challenges associated with the 3 activities within the landscape (see Appendix I I – To be signed and attached) a Memorandum of Agreement with particularly the Ministry of Food and Agriculture within the relevant districts to commit their Fisheries and Agricultural Extension Agents (AEAs) to target the beneficiary communities/farmers routinely to carry visits to offer the requisite extension support in best practices such as gear selection, dry season farming, post-harvest interventions and veterinary services. MoFA will detail the dynamics of the financial and logistical mechanisms to assist AEAs to set up demonstration farms; provide training and the relevant material for dry season farming for example as well as post-harvest management and value chain development strategies to the farmers.

Farming and livestock rearing are supplemented by gathering and in some cases processing of Non-Timber Forest Products (NTFPs) such as any edible or non-edible forest products, as well as fruits. A multi stakeholder workshop involving representatives of local communities returned a list of enterprise developments options that members of each constituent community would like to develop to supplement household incomes (Appendix I 2 - To be signed and attached). In addition to the list of identified enterprise development options, a survey will be carried out to scope other viable alternative livelihood options within the CREMA as well as the value chains that can be developed to increase profitability of the various options. The results of the survey will be disseminated widely within the communities to sensitise them to actively participate. Selected interested persons will be grouped and trained in their chosen options and supported to carry out their enterprises. Beneficiaries will be supported to develop and implement business plans and a Memoranda of Understanding (MoU) will be entered into with each beneficiary to make a modest contribution from the profit from the economic venture to support the CREMA fund. The rest of the population will also be sensitized on the need to sacrifice some of their profit for the running of the CREMA by making routine contributions such as membership dues etc or whatever revenue stream that the CREMA constituents themselves may determine in the CREMA constitution.

A relationship will be established with financial institutions (banks) to train the beneficiaries of alternative support in basic financial management, business administration and investment.

Other innovative revenue generation mechanisms such as village saving schemes will be identified and agreed upon to support long term funding of the enterprises. All the funding mechanisms will feed into a clear exit strategy with sustainable sources of revenue at the local level that will be elaborated and implemented at an early stage of the implementation of this action plan.

Implementation arrangements: A resource person will be hired by the CREMA Executive Committee with the support of the Wildlife Division Officer and representatives of the Ministry of Food and Agriculture (MoFA) to carry out the agricultural improvement and post-harvest needs and make recommendations for support. Livelihood surveys and value chain development assessments with recommendations will also be made. The CRMCs/CECs will disseminate and create awareness widely within the CREMA about the agricultural interventions recommended as well as alternative livelihood options and the recommendations of the resource person and facilitate selection of interested persons to be supported. The youth, women and other vulnerable groups if any will be specially targeted. The resource person will assist the targeted beneficiaries to develop and implement business plans. In collaboration with Wildlife Divisions Office and representatives of the Ministry of Food and Agriculture (MoFA), the CEC will supervise and ensure that training is delivered to the appropriate beneficiaries. A sensitisation campaign on the need to mobilize funds routinely to run the CREMA more effectively will also be carried out in all CREMA communities. The CEC will coordinate the sensitisation and awareness creation exercises, and the development of the business plans.

Objective: To strengthen local livelihood strategies and diversify livelihood opportunities of CREMA members and promote financial independence of the CREMA by end of year 3 (2025)

Purpose: To generate more wealth within the CREMA and create (viable) sustainable employment avenues for the jobless and vulnerable in particular and broaden the income earning base of the CREMA in general to balance conservation and community well-being as well as motivate the CREMA constituents to contribute financially into the CREMA coffers for long term planning and functionality of the CREMA.

Rationale: The CREMA constituents particularly the women are very enterprising in their efforts to make ends meet but poor market access, low technology, inadequate or the lack of financial capital and inadequate managerial skills prevent them from reaching their optimal potential. Besides, the climatic conditions of the landscape within which the CREMA lies provide limited natural opportunities for livelihood enhancement due to the nature of the land. Therefore, the economic motivation of the CREMA to balance conservation and local well-being will need to be strengthened to provide scope for sustained interests in integrating conservation into local livelihood prospects.

Additionally, many CREMA constituents complain of inadequate income to enable routine financial contributions to be made to support CREMA activities. It is therefore necessary to promote other sources of livelihood to enable the youth particularly earn some income and be encouraged to contribute to the CREMA fund. This will enhance the ability of the executive to undertake important activities to ensure its effectiveness. Making contributions directly to the CREMA coffers will also encourage the youth or more people to be interested in the CREMA and demand transparency, accountability and good governance from their leaders. This module will have two outcomes as follows:

Outcome I: Livelihood base of CREMA constituents enhanced by end of year three.

Outcome 2: Financial independence of the CREMA secured by end of year four

3.5 Action Plan - Broadening the Economic Base of CREMA Communities to Ensure Equitable Balance between Conservation and Local Well Being and to contribute to a CREMA Fund

Table 4: Broadening the Economic Base of CREMA Communities to Ensure Equitable Balance between Conservation and Local Well Being and to contribute to a CREMA Fund

Livelihood Base of CREMA Constituents Enhanced.					
Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Sign a Memorandum of Agreement with MoFA to provide agronomic extension and veterinary services to CREMA constituents	By end of month four of year one	WD Office CRM/CEC MoFA	Meetings	Meeting costs Stationery and secretarial costs	Memorandum of Agreement
Construct dug outs/dams for dry season farming, livestock watering and fisheries and aquaculture development	By end of year two	WD Office MoFA CEC Ministry of fisheries and aquaculture	Contract resource persons to design and recommend suitable locations	Design contract fees Construction costs	2 number of dug outs/dams and rehabilitate existing ones if they exist.
Promote dry season farming and aquaculture development	By end month six of year three	MoFA and the Directorate of Fisheries and Aquaculture CEC	Field demonstrations Direct engagements with interested CREMA constituents	Field demonstration costs Transport and Travel allowances Field incidental expenses	10 number of demonstration plots 18 acres of dry season farms Dugouts/dams endowed with fish Fish harvests and management plans
Commission a livelihood survey to scope other alternative livelihood options and value chain development	By end of month three of year two	WD Office CEC	Recruit resource person	Resource person fees Transport and travel allowances Community protocol costs	Livelihood survey report
Disseminate results of other alternative livelihood options in the CREMA communities	By end of month four of year two	CEC with support from resource person and other local partners and the National Board for Small Scale Industries (NBSSI)	Community meetings	Resource person fees Transport and travel allowances	Demonstrated interest of CREMA constituent in additional alternative livelihood options

Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Develop criteria for selecting prospective beneficiaries of alternative livelihood options and create awareness of the criteria	By end of month four of year two	CEC and CRMCS with support from resource person MOFA and NBSSI	Community meetings	Resource persons' fees Transport and travel allowances	Criteria for selecting prospective beneficiaries in groups for training
Select and train interested groups of community members in their chosen alternative livelihood options (sub projects)	By end on month six of year two	CRMCS/CEC with support from WD Office MOFA and NBSSI Other Resource persons	Community meetings Workshops Practical demonstrations	Resource persons fees Training material costs Transport and travel allowances Workshop costs	X number of groups of trained CREMA constituents in various livelihood options
Assist beneficiaries of alternative livelihood options to develop business plans	By end of month seven of year two	CRMCS/CEC with support from WD Regional Office, MOFA and NBSSI Other Resource persons	Workshops	Resource persons costs Workshop costs	X number of business plans
Provide start up support to trained CREMA constituents to undertake alternative livelihood activities (sub projects)	By end of month five of year two	WD Regional Office MoFA/ CEC and CRMC NBSSI District Assembly	Business proposals Consultation with National Board for Small Scale Industries, District Assembly	Start-up capital i.e. Funds/ logistics Production materials	X number of groups in various alternative livelihood enterprises in CREMA communities
Negotiate and sign a Memorandum of Understanding (MoU) with beneficiaries of alternative livelihood support	By end of month five of year two	WD Regional Office CEC/ CRMC NBSSI District Assembly MoFA	Meetings with groups of selected beneficiaries of alternative livelihood options	Meeting costs	X number of signed MoUs Benefit sharing mechanisms (ref CREMA constitutions)
Monitor and implement MOUs	By end of month three of year three	CEC CRMC Leadership of alternative livelihood groups WD Office with support from NBSSI	Visits to beneficiaries	Transport and travel allowance	Demonstrated observance of provisions in MoU

Financial Independence of the CREMA Secured by end of year four					
Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Educate and create awareness in CREMA communities about the need for a financially independent CREMA	By end of month three of year two	CEC CRMCS	Community meetings Household visits	Community meeting costs	Demonstrated appreciation of CREMA constituents on the need to for financial independence of CREMA
Hold discussions with CREMA constituents on other local revenue sources for the CREMA as identified in the CREMA constitution	By end of month three of year two	CEC CRMCS	Community meetings Household visits	Community meeting costs	X number of local sources of income for the CREMA identified and being implemented
Hold discussions with CREMA constituents on revenue collection and accountability mechanisms	By end of month four of year two	CEC CRMCS	Community meetings Household visits	Community meeting costs	Revenue collection and accountability mechanisms agreed
Collect revenue as per the agreed mechanisms	By end of month six of year two and on going	CEC CRMCS	Household visits	Incidental expenses	X amount of revenue (cash)
Train CEC and CRMCS in financial and investment mechanisms and management	By end of year two	CEC CRMCS Resource persons	As recommended by the resource person	Resource person's fees	X number of trained CEC and CRMCS members
Seek advice and institute appropriate investment portfolio to grow income	By end of month three of year three	CEC CRMCS	As recommended by resource persons	Resource person's fees	X amount of CREMA monies invested appropriately
Organize appeals for funds to increase CREMA funds and invest on appropriate advice	By end of month six of year three	CEC	Contacts with CREMA partners, companies and other sympathisers of CREMA and community development agencies	Incidental expenses	X amount of money raised

3.6 *Improving Conservation and Security of Biodiversity Resources within the DUSORNU CREMA*

Implementation strategy: The condition of natural resources or biodiversity for that matter within the DUSORNU CREMA is deteriorating through habitat destruction occasioned by indiscriminate bushfires, farming, mangrove overharvesting, and impacts of climate change among others. The human activities are without regard to ecologically sensitive areas, cultural heritage assets, and implications for the future. To reduce the deteriorating trend of natural resource condition of the CREMA, the area will be demarcated into zones namely; core zones, buffer zones, multiple use zones and Tourism development zones.

The core zones will include the forest areas and the sacred groves; the buffer zones will align both sides of the water bodies to the extent prescribed by the Ghana buffer zones policy 2012, the multiple use zones will cover most areas outside of the core and buffer zones as zones of influence where the respective constituent communities will carry out their traditional livelihood activities and the enterprise development projects that may be introduced. The tourism development zone conceptually covers all the sacred and historical sites with marketable attractions and other areas where wildlife and game viewing facilities may be developed.

Each of these zones will be given specific management prescriptions in order to achieve a cocktail of objectives that will improve the local biodiversity situation of the CREMA and to boost the socio-economic prospects of the local population (see part two, the Plan). Fire management plans will be developed to guide fire prevention and management interventions, degraded areas will be restored with indigenous species based on technically designed tree growing and management plans to ensure high survival rates. Collaborative ecological monitoring schemes will be developed to track the trends of biodiversity condition in the CREMA.

Implementation arrangements: The Regional Office of the Wildlife Division (WD) will collaborate with the Forest Services Division to guide the Community Resource Management Committees (CRMCs) and the CREMA Executive Committee (CEC) to implement many of the interventions. The CREMA Executive Committee with the support of the WD and the FSD will be assisted to develop simple fire and tree growing management plans for implementation.

Objective: To halt the deteriorating trend of biodiversity, improve biodiversity condition and increase species richness within the CREMA by end of year five (2025).

Purpose: To ensure that ecologically sensitive areas are well protected and managed to encourage return and security of native wildlife, which will in turn boost the ecotourism potential of the CREMA in a manner that optimizes environmental and livelihood benefits and promotes a balance between conservation and development (climate-smart landscape development).

Rationale: The CREMA consists of independent individual who are making natural resource use and management decisions that are often unlinked, leading to functional fragmentation and inability to achieve optimal benefits as necessary. Additionally, sensitive and critical habitats are being destroyed to the extent that rivers and their tributaries are silting up leading to scarcity of water and loss of critical habitat of wildlife. Furthermore, poaching is high and as a result wildlife species migrate to more suitable habitats and even cross international borders. The situation reduces the otherwise high eco-tourism potential of the areas and this affects the economic rationale of the CREMA negatively. To prevent or at least minimize unsustainable use of land and water resources, this module attempts to forge a balance between conservation and sustainable livelihoods. Additionally, the fight against climate change will be well served if forest and tree resources are managed and used in an informed manner. There is therefore a crucial need for more attention on growing, developing, and managing the biodiversity base of the CREMA. This module will have one outcome:

Outcome I: Deterioration of biodiversity halted and biodiversity condition improved by end of year five (2028)

3.7 Action Plan: Improving Conservation and Security of Biodiversity Resources within the DUSORNU CREMA

Table 5: Improving Conservation and Security of Biodiversity Resources within the DUSORNU CREMA

Deterioration of biodiversity halted and biodiversity condition improved by end of year five (2025)					
Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Delineate and clear boundaries of the management zones	By end of month six of year one and ongoing	CEC CRMC with support from FSD, WD	Plan and organize local communities and forest guards to survey delineate and clear boundaries of the management zones	Boundary schedules Field allowances Cost of logistics for the exercise Transport and travel allowances Other incidental expenses	Clearly delineated management zones
Carry out Resource mapping exercises to assess the resource conditions of the various ecosystems in each zone	By end of month eight of year one	CEC CRMC FSD WD	Interactive engagements between the FSD, WD and the CREMA executives Maps Direct field visits	Field allowances Transport and travel allowances	Resource conditions of the various ecosystems in the various zones ascertained and documented

Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Develop tree growing and management plan for each zone	By end of month twelve of year one	CEC FSD WD Ghana National Fire Service	Workshops Field demonstrations	Workshop costs Logistics for field demonstrations Travel and transport allowances	Training reports Resources Images of the CREMA Demonstrated improved understanding of the use and management of critical ecosystems
Sensitise the community and carry out enrichment planting of all degraded areas in the zones as essential	By end of year three	CEC FSD WD	Seedling production Planting tools Use of local labour Field gear	Field allowances Cost of logistics Cost of seedling production Cost of hiring local labour	X hectares of degraded area replanted in each zone and doing well
Train CREMA constituents on tree management and maintenance and general sustainable resource uses of critical ecosystems	By end of month six of year one	CEC FSD WD	Workshops Field demonstrations	Workshop costs Logistics for field demonstrations Travel and transport allowances	Training reports Images of field demonstrations Demonstrated improved understanding of the use and management of critical ecosystems
Develop and implement fire management plans for the CREMA	By end of month six of year one	CEC FSD WD Ghana National Fire Service	Workshops Field demonstrations	Workshop costs Logistics for field demonstrations Travel and transport allowances	Training reports Resources Images of the CREMA Demonstrated improved understanding of the use and management of critical ecosystems
Rehabilitate existing dug outs and or build new ones	By end of year two	Ghana Irrigation Development Authority (GIDA) CEC FSD WD	Contract resource persons to design dug outs/dams rehabilitation construction plans	Design contract costs Rehabilitation / construction costs	X number of rehabilitated dug outs/dams X dams constructed
Desilt silted sections of the and Rivers in the CREMA	By end of year two	CRMCs CEC GIDA FSD WD DAs	Identification of silted sections Mobilize local communities Provide implements and logistics	Field allowances Cost of implements and logistics	Free flow of Rivers No flooding of flood plains during the rainy season

Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Develop and implement simple ecological monitoring sheets and analysis schemes	By end of year one and on going	CEC FSD WD EPA	Workshops Field demonstrations Selection of suitable local community members and training in data collection and analysis data analysis sessions	Workshop costs Cost of software for data analysis	Monitoring mechanisms in place A cadre of monitors trained Biodiversity data. MIST system running in the CREMA

3.8 Re-energizing and improving Participation in DUSORNU CREMA Governance

Implementation Strategy: For effective and productive participation in the decision-making processes of the DUSORNU CREMA, the institutional framework of the CREMA that revolves around the consensual constitution and the district assembly byelaw suggest that the tenure of office of the CRMCs and the CEC will be two years renewable once. This means that elections will be held to elect new members or retain them by the close of year two and to replace them completely in year four. It is recognized that women play very key roles in natural resource conservation but they hardly participate openly in institutional governance due to cultural limitations in largely male dominated local communities. In keeping with the principles of affirmative action specific efforts will be made to ensure strong women participation as captured in the CREMA constitution. With about three months to end of tenure of office community sensitization will be done to create awareness on the need for fresh elections and communities will be encouraged to do a critical assessment of their representatives in order to retain or reject existing members for the second two-year term.

Following the provisions of the CREMA constitution elections will then be conducted at each CRMC level and those elected and or retained will be showcased by posting their photographs in strategic public places for the constituent to review the capacities of the elected, and if there are any objections raised for consideration. This is to ensure that persons of high moral integrity get the opportunity serve the collective interest of all the community members and to enhance vibrancy of leadership. The CRMC will then nominate their representatives to the CEC. The new CRMC and the CECs will be taken through leadership and administrative skill to enable them perform to expectation.

Copies of the constitution and byelaw will be made available to all “new members” who will be taken through them to better acquaint themselves with the provisions enshrined thereof.

Implementation arrangements: The CREMA Executive Committee (CEC) will lead the call for fresh elections. However, the CEC will be supported by the WD or an accredited partner to provide backstopping and facilitate the training of the new comers.

Objective: To ensure that the CREMA constitution and district assembly byelaws are well known by all CREMA constituents and their provisions are respected by 2024.

Purpose: To create an enabling environment for Gender sensitive, proactive, accountable and transparent decision-making system that stimulates trust, ownership and true commitment of all the respective communities to the cause of the CREMA for the achievement of governance effectiveness.

Rationale: The general governance structures are already in place however the constitution and bye laws were formulated with representatives of the constituent communities i.e. the Community Resource Management Committee (CRMC) and the CREMA Executive Committee (CEC). Therefore, the majority of the members of the CREMA are not aware of the details of the constitution and bye laws because they have not been disseminated to the non-executive members of the CREMA/the community members.

Consequently, the provisions of the CREMA constitution remain unknown to the majority of the CREMA constituents. Additionally, best democratic governance practice, suggest as stipulated by the CREMA constitution that elections have to be held every two years to vary the holders of CREMA authority to ensure adequate democratic representation and accountability. There is therefore the need to ensure that processes to hold fresh elections are highlighted to make sure that the elections are held as stipulated. Inclusion of more women in governance will be respected to lessen feelings of exclusion, suspicions and mistrust and a general lack of commitment of women to the cause of the CREMA.

Nonetheless, the willingness of the communities to see a successful CREMA is still quite appreciable and hence there is a yearning inclusion of many more women in the decision-making arrangements of the CREMA. It is therefore envisaged that this module will open up the governance space and lay a good foundation for inclusive participation in the decision making. Effective governance will therefore be enhanced through the following outcomes:

Outcome 1: CREMA constitution and byelaw well known by all CREMA constituents and their provisions respected

Outcome 2: An inclusive, proactive, accountable and transparent decision-making system ensured

3.9 Action Plan - Re-energizing and improving Participation in DUSORNU CREMA Governance

Table 6: Re-energizing and improving Participation in DUSORNU CREMA Governance

CREMA Constitution and Byelaw Well Known by all CREMA Constituents and Their Provisions Respected					
Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Educate, sensitise and prepare the leadership of the CEC and the CRMC to disseminate the CREMA constitution	By end of month six of years two and four	Resource person	Meetings	Resource persons fees Transport and Travel allowances	Provisions of constitution well known by the CEC and the CRMCS
Educate and create awareness on the CREMA constitution and bye laws particularly with women	By end of month six of years two and four	CEC CRMCS Resource person	Community meetings	Servicing costs of meetings	All CREMA constituents know about the CREMA constitution and bye laws
An inclusive, proactive, accountable and transparent decision-making system ensured by end of year four					
Sensitise local communities on the need to have dynamic and hardworking CRMCS	By end of month five of year one	CEC with support from WD FSD	Community mobilisation and meetings	Travel and transport allowances	Readiness of CREMA constituents to partake in CREMA election activities
Organise elections to revamp the CRMCS	By end of month ten of year two and four	CEC with support from WD FSD DA	Community meetings	Travel and transport allowances	Revamped CRMCS
Elect executive for the revamped CRMCS	By end of month two of year three	CRMCS with support from WD FSD	CRMC meetings	Travel and transport allowances	Elected Executive of revamped CRMCS
Publicise the members of the revamped CRMC widely in the relevant communities to enhance their visibility and encourage cooperation from the general populace	By end of month eleven of year one	CECs	Publication of pictures of CRMC members in public	Cost of publication	Revamped CRMC members known and accepted largely by the respective local community(s)
Inaugurate revamped CRMCS	By end of months two of years three and five	CEC with support from WD FSD	Community durbars	Cost of servicing community durbar	Evidence of inaugural ceremony and reports
Nominate CRMC members to revamp the CEC	By end of month ten of years two and four	CRMCS	CRMC meetings	Cost of servicing meetings	Nominated members of CRMCS
Reconstitute the CEC and elect executives	By end of month ten of years two and four	Outgoing CEC	CEC meeting	Meeting costs	Revamped CEC members and executives known

Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Publicise revamped CEC members and executives widely in the relevant communities to enhance their visibility and encourage cooperation from the general populace	By end of month twelve of years two and four	Outgoing CEC	Publication of pictures of revamped CEC members and executive in public	Cost of publication	Revamped CEC members and executives well known and accepted largely by the CREMA communities
Inaugurate revamped CEC	By end of month two of years three and five	Outgoing CEC with support from the traditional authority and WD FSD	Community durbars	Cost of servicing community durbar	Evidence of inaugural ceremony and reports
Hold meetings and report back to wider community on decisions for feedback	As per CREMA constitution	CRMCs and CECs	meetings	Cost of servicing meetings	Minutes of meetings and reports on feedback from the communities at large
Build capacity of CRMC and CEC on leadership skills, group dynamics etc	By end of month four of years three and five and on going	CEC with support from partners	workshops	Resource persons fees Workshop costs Training materials	More effective and dynamic CREMA leadership at all levels

3.10 Building the capacity of local communities

Implementation strategy: Training for the local communities will focus on areas such as management of wildfires, simple ecological monitoring method, human – wildlife -livestock conflict, dry season farming and tree growing and management training needs assessment would be carried out to know the areas of capacity building and strengthening. Training will be conducted through the government agencies such as MOFA, Wildlife Division, FSD, Ghana National Fire Service, National Disaster Management Organization and available local level expertise such as NGOs.

Implementation arrangement: A consultant will be hired by the CREMA Executive Committee to carry out training needs assessment and make recommendations. The CREMA will seek financial and technical support from NGOs and donors for the training of the community groups and individuals. The CEC will disseminate and create awareness widely about the various training options and the recommendations of the consultant within the CREMA and facilitate the selection of the interested persons to be trained in the various areas. Resource persons will be sourced from the various government agencies to help develop training materials and organise the training of the selected person from the community as per the recommendations.

Objective: To build the capacity of local communities to manage CREMA assets and natural resources.

Purpose: To build the capacity of community members in the following areas of wildfire management, simple ecological monitoring method, human-wildlife-livestock conflict, dry season farming and tree growing and management training.

Rationale: There is a general lack of appropriate technical experience in wildfire management, simple ecological monitoring methods, human-wildlife-livestock conflict, dry season farming and tree growing and management, wildfires have been blamed on farmers practising slash and burn as well as hunters setting fires for hunting. The local people have very limited knowledge of fire management. Hunting is done in the community without any proper system of control. Again, there is no data on animal numbers and no monitoring mechanisms exist to track wildlife population which is essential in the sustainable use of wildlife. Another area that needs attention is human – wildlife- livestock conflict. Wildlife invade farms and destroy crops, so do herds of cattle grazing on a free-range system. There is therefore the need to train local communities on strategies for dealing with the challenges associated with resources uses within the CREMA. Furthermore, good knowledge in dry season farming needs to be enhanced to produce all year-round crops. Tree planting and management also needs attention since the establishment of woodlot will help in the supply of fuel wood for house hold use as well as protecting the landscape from erosion.

Outcome I: Well-trained community members by end of year three.

3.11 Action Plan: Building the capacity of local communities

Table 7: Building the capacity of local communities

Well trained community members by end of year three					
Activities	When (Period)	Who (Responsibility)	How (method)	Resources required	Performance indicator
Conduct training needs assessment	By the end of month three of year one	CEC Consultant	Recruit a consultant to carry out the training needs assessment	Consultant fees, transport and travel allowances community protocol cost	Training needs assessment report
Develop training materials for training selected local community members	By the end of month three of year two	CEC/CRMC WD FSD Consultant	Prepare training materials based on recommendations of the need's assessment	cost of preparing training materials	Training materials available
Train and equip CRMCS on ecological monitoring	By the end of month, the two of year two	WD Regional Office, TCO, WD head office, CEC/ CRMCS	Workshops , Field demonstrations	Training cost	Trained CRMCS conversant with ecological monitoring systems
Activities	When (Period)	Who (Responsibility)	How (method)	Resources required	Performance indicator

Train and retrain of community fire volunteer squads	Once a year	GNFS, FSD, WD), TCO, CEC/ CRMCS	Lectures, and field demonstration	Training cost	Well trained and active fire volunteer squads
Train a number of farmers on dry season farming	By month two of year two	CEC MOFA	Consult CRMC / CEC for selection and screening	Training cost	Farmers equipped with skills in dry season farming
Train CEC and CRMCS on management of human-wildlife – livestock conflicts	By the end of month six of year two	CEC WD	Use existing resource persons from WD FSD TCO	Training cost	Training reports Demonstrated capacity of CEC / CRMC members in human-wildlife-livestock conflict management
Train local communities on tree growing and management	By the end month six of year two	CEC FSD MOFA	Workshops Field demonstrations	Training costs	X number of local communities trained

3.12 Development of ecotourism of the DUSORNU CREMA

Implementation Strategy: A tourism development strategy that connects the DUSORNU CREMA with other tourism circuits within the district will be developed. The strategy, among others, seeks to review current and potential tourist attractions, related infrastructure needs as well as the potential of the area as a tourist destination. Indicative investments needed for development of a portfolio of tourism attractions within the corridor have also been outlined. This plan will set forth action steps to prioritise the tourism potentials for development and promotion for the benefit of the DUSORNU CREMA communities.

Implementation arrangements: The DUSORNU CREMA Executives will take advantage of the recommendations and guidelines in the tourism strategy to develop and promote the ecotourism features and sites within the area. However, in a typical rural environment such as the DUSORNU area ecotourism development will require a systematic approach for identification of the potential tourists' attractions for value addition. In this regard, the CEC will lead through the District Assemblies and seek external guidance or consultancy to prioritise activities in the development and management of the tourist attractions. The consultant will assist the CEC and the Assemblies to secure funding and encourage support from the relevant traditional leaders, NGOs and private sector participation. The consultancy will identify and establish linkages with relevant tourist 'circuits' particularly in the Northern Region of Ghana. Again, the CEC will identify a consultant to train selected local community members to market the tourism packages and products to sustain tourism in the area.

Management objective: To develop the ecotourism potentials of the DUSORNU CREMA into a vibrant economic venture to serve as contributory incentive for the effective management of the CREMA and the corridor as a whole.

Purpose: To make tourism a recognised activity in the DUSORNU CREMA in order to generate income and optimize community benefits from tourism and tourism related activities.

Rationale: The DUSORNU CREMA has diverse undeveloped tourism features and sites of historical, cultural and natural importance that could serve as basis for promoting community support for biodiversity conservation and development. Providing incentives in the form of tourism enterprises as alternative livelihood opportunities can provide more benefits for the local communities and also serve as a way of soliciting community support for biodiversity conservation. They believe that tourism provides livelihood opportunities and create wealth. They also realise that some aspects of tourism development including provision of the necessary infrastructure and facilities is far beyond their local means. The role of DUSORNU CREMA constituents is to institute the appropriate control measures and local community support in preserving the natural environment including the wildlife resources that could serve as basis to attract visitors that come with the perceived benefits from tourism. The DUSORNU CREMA communities will support the conservation of biodiversity and promotion of tourism in the area, knowing that the resources will serve their interests in more tangible ways through eco-tourism.

Outcome: All potential features of historical, cultural and natural significance for tourism in the DUSORNU CREMA identified, assessed and prioritised for value addition and development by end of year two.

3.13 Action Plan: Development of ecotourism of the DUSORNU CREMA

Table 8: Development of ecotourism of the DUSORNU CREMA

All potential features of historical, cultural and natural significance for tourism in the DUSORNU CREMA identified, assessed and prioritised for value addition and development by the end of year two.					
Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Identify all potential features of historical, cultural and natural significance for tourism development	By end of month three of year one	WD Regional office CEC TCO Ghana Tourist Authority	Reference to the Tourism Strategy in the plan Consultation with traditional leaders, DAs and the general public Field inspection	Meeting costs Travel and Transport costs	List of potential features and sites of tourist interests.
Engage local Resource Person to prioritise, assess infrastructure needs and provide cost estimates.	By the end of month six of year one	CEC in collaboration with the WD TCO, Anloga and South Tonug District Assemblies	Through National Competitive Bidding (NCB)	Resource person's costs	Signed TOR, Prioritised list of infrastructure needs with cost estimates.
Establish tourism committee to supervise implementation of the prioritised list of infrastructures	By end of month six of year one and on going	CEC WD TCO in collaboration with Anloga and South Tonug District Assemblies	Meetings	Servicing costs of meetings / travel allowance of participants	X member tourism committee established and out doored

3.14 *Establishing a well-functioning and visible CREMA Secretariat*

Implementation Strategy: The CREMA Executive Committee will negotiate for land from the landowners and mobilize the requisite resources from within and outside the CREMA for the establishment of the secretariat. Directional signages that point to the various parts of the CREMA will also be posted at strategic locations increase the public prominence of the CREMA. A qualified architect or a draftsman will be engaged to design the secretariat and the directional signages to reflect local needs and provide the CREMA visible stations/identity. As much as possible local labour including women (skilled and unskilled) will be identified and recruited to construct the building and the visibility signages for the CREMA.

Implementation arrangements: The CREMA Executive Committee will set up a project implementation committee with representation from the Community Resource Management Committee and other co-opted members, to implement all the activities leading to the construction and setting up a well-functioning secretariat and visible CREMA.

Objective: To establish a well-functioning CREMA secretariat and directional signages by year 3 (2026)

Purpose: To provide formal office and administrative space where documents and other relevant information about the CREMA can be stored, managed and accessed, where formal CREMA engagements can be undertaken and where awareness of the CREMA will be improved.

Rationale: The CREMA has no formal office where the executives can be reached easily to conduct CREMA related businesses. Therefore, CREMA meetings for example are held in homes of the executive and official records are left in the hands of individuals thus making storage and access to CREMA documents difficult. Additionally, the CREMA has no visible identity which creates awareness and reminds the CREMA constituents of their collective responsibilities towards natural resources conservation and livelihood development.

Establishing a disabled friendly secretariat and strategically placed signages will make the CREMA more visible to serve as a clearing house that can be manned by an appropriate officer of the CREMA to provide information, educate and create awareness among visitors and the communities at large. It will also provide more congenial atmosphere for locating the CREMA, coordinating CREMA activities and for lodging and settling grievances through alternative dispute mechanism and generate confidence in the governance system.

Outcome I: CREMA Secretariat Established and Well-Functioning and visibility signages posted at strategic locations

3.15 Action Plan - Establishing a Well-Functioning and Visible CREMA Secretariat

Table 9: Establishing a Well-Functioning and Visible CREMA Secretariat

CREMA Secretariat Established and Well-Functioning					
Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Scout for an appropriate location and acquire a plot of land to construct a secretariat	By end of year one	CEC	Consultations with land owners Cost of preparing the indenture	Protocol costs Token fund to pay for the land Indenture preparation costs	Indenture
Register lands with land commission	By end of year one	CEC	Engagements with officials of the land title registry	Processing and Registration fees	Title deed
Establish a building committee	By end of month three of year two	CEC	Consult with CRMC and appoint	Incidental expenses	X member building committee
Procure a building plan	By end of month eight of year two	Building Committee	Procure the services of an architect/ draftsman	Cost of producing building plan	Building plan
Acquire building permit	By end of month three of year three	Building Committee	Submit application to the appropriate District Assembly	Cost of acquiring building permit	Building permit
Appeal for funds and building materials	By end of year three and on going	Building committee	Direct engagements with CREMA partners other sympathizers and local businesses	Incidental expenses	Funds and building materials
Construct CREMA Secretariat	By end of year four	Building committee	Mobilize funds Consult with CREMA communities and institute communal labour Negotiate and recruit skilled labour	Cost of material and labour Incidental expenses of building committee	CREMA Offices
Identify, design and posts a network of visibility sinages at strategic locations	By end of year two	Building committee	Mobilize funds Consult with CREMA communities and institute communal labour Negotiate and recruit skilled labour	Cost of material and labour Incidental expenses of building committee	CREMA Secretariat And a network of Offices visibility sinages
Identify and train a team of office and front desk personnel	By end of year four	CEC and partners	Short tailor-made courses learning by doing	Training costs	Skilled office and front desk personnel

Activities	When (period)	Who (Responsibility)	How (Method)	Resources required	Performance indicator
Procure office equipment	By the middle of year five	CEC	Agree on specification and Scout for quotations	Funds	Receipts on purchases Office equipments
Inaugurate CREMA Secretariat	By middle of year five	CEC	Community durbar	Funds	Inaugural programmes and ceremonies and reports

4. INDICATIVE BUDGET

An indicative budget has been developed for the implementation of the individual modules as shown in Table: 10. The total cost of implementation of the action plan is estimated to be 1,664,790 USD including 5% administration cost. The detailed breakdown of the cost is provided in Appendices. An indicative budget for equipment required is also provided in Appendix

Table 10: Indicative Budget for Implementing the Action plan

	Modules	Sub totals in USD
1	Improving environmental education and conservation awareness in the DUSORNU CREMA	32,600
2	Broaden the Economic Base of CREMA Communities to Ensure Equitable Balance between Conservation and Local Well Being and to contribute to a CREMA Fund	535,600
3	Improving Conservation and Security of Biodiversity Resources within the DUSORNU CREMA	426,840
4	Re-energizing and improving Participation in DUSORNU CREMA Governance	20,920
5	Building the capacity of local communities	30,400
6	Development of ecotourism of the DUSORNU CREMA	7,200
7	Establishing a well-functioning and visible CREMA Secretariat	22,700
8	Required equipment for DUSORNU CREMA	33,600
GRAND TOTAL (MODULES 1-7 and equipment cost (8)) FOR DUSORNOO MANAGEMENT PLAN		1,109,860
Administration Cost (5%)		554,930
Great Grand Total (Modules 1-7 + Equipment + Administration Costs)		1,664,790

CONCLUSIONS

The CREMA Executive Committee is very desirous of having a vibrant CREMA that is conserving its biodiversity as a basis for improving local wellbeing. Indications are that all the four paramount chiefs are in full support of the CREMA concept as exemplified by the full and unconditional participation in all the processes that have brought the development of the CREMA thus far. There is therefore a great opportunity for harnessing collective action and corporation of all segments of the CREMA population to implement the action plans toward achieving the critical objectives of the CREMA. Realising the collective objectives of the CREMA necessitates all inclusive, transparent and accountable governance. Nonetheless, without a good stream of income into the coffers of the CREMA, good governance into the long term cannot be guaranteed and therefore capacity building of the CREMA operatives to position them to generate funds for the CREMA will be useful in achieving the long-term objectives of the CREMA. Concerted efforts of all stakeholders to make the CREMA operatives self-sustaining technically and financially will be desirable, hence implementation of this management plan should ensure that.

APPENDIX

CRMC leaders from the five communities are as follows

Position	Name	Community	Indicate gender
Chairman	Christopher Asilevi	GALO	
Vice Chariman	Atsu Confident	GALO	
Secretary	Gershon Asilevi	GALO	
Organizer	Martin Dorglo	GALO	
Treasurer	Glova Adika	GALO	
Chairman	Gedzia Selasi Glormor	SOTA	
Vice Chariman	Faustine Kuku	SOTA	
Secretary	Kwame Duadze	SOTA	
Organizer	Kwami Akpenyetsi	SOTA	
Treasurer	Kwadzo Akpenyetsi	SOTA	
Chairman	Moses Adzamli	KORSIKOPE	
Vice Chariman	Fada Dorglo	KORSIKOPE	
Secretary	Matilda Fiakorme	KORSIKOPE	
Organizer	Augustine Adzamli	KORSIKOPE	
Treasurer	Patience Yiborku	KORSIKOPE	
Chairman	Jacob Adika	GALOTSE	
Vice Chariman	Abotsi David	GALOTSE	
Secretary	Thompson Martey	GALOTSE	
Organizer	Ehpraim Eklu Agbolepa	GALOTSE	
Treasurer	Tsatsu Eunice	GALOTSE	
Chairman	John Boatrie	KLONU	
Vice Chariman	Mary Boatrie	KLONU	
Secretary	Akrong Godwin	KLONU	
Organizer	Atsu Gershon wosornu	KLONU	
Treasurer	Gladys Korsorku	KLONU	

CEC members

Positon	Name	Indicate gender
Chairman	Christopher Asilevi	
Vice Chariman	Jacob Adika	
Secretary	John Boatri	
Organizer	Kwami Akpenyetsi	
Treasurer	Matilda Fiakorme	
Ex- officio	Glormor Selasi Gedzia	
	Eunice Tsatsu	

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