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# SUSTAINABLE FISHERIES MANAGEMENT PROJECT (SFMP) Resilience Planning Workshop For Pra Estuary



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Friends of the Nation



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**Cover photo:** Stakeholders deliberating on relevant resilience issues (Credit: Theophilus Boachie-Yiadom)

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## **ACRONYMS**

CAPs	Community Action Plans
CREW	Community Resilience through Early Warning
DMTDP	District Medium Term Development Plan
DO	Dissolved Oxygen
FoN	Friends of the Nation
ICFG	Integrated Coastal and Fisheries Governance
IUCN	International Union for the Conservation of Nature
NADMO	National Disaster Management Organisation
SDA	Shama District Assembly
UAV	Unmanned Aerial Vehicle
UNDP	United Nations Development Program
URI-CRC	University of Rhode Island Coastal Resources Centre
USAID	United States Agency for International Development
WMC	Wetlands Management Committee
WMP	Wetlands Management Plan
WR	Western Region

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## **BACKGROUND AND INTRODUCTION**

Between 2009 and 2014, the United States Agency for International Development (USAID) funded an Integrated Coastal and Fisheries Governance (ICFG) Initiative in the Western Region (WR) with focus on the six coastal districts in the region. Shama District was one of these six coastal districts. Shama benefited immensely from the project as it initiated a number of information gathering and spatial planning efforts for the lower Pra estuary including the fish landing site in Shama Old Town and the entire coast of the district. These led to shore classification, land use mapping, flooding assessment in the Anankwari sub-basin, mangrove and coastal zone use designation, and livelihood activities in the Anlo Beach area.

Following through with outputs of the initiative, Friends of the Nation (FoN) zoomed in to the Pra Estuary area which is mainly a mangrove and coastal zone designation area. By this, FoN secured funding support from the International Union for Conservation of Nature (IUCN) of which FoN is a member, for a conservation project in the estuarine area. The project sought to conserve the Anlo Beach Wetland Complex through improved management strategies and local livelihoods. As a result, a flora and fauna survey was conducted in addition to socio-economic data, this effort:

- Facilitated the creation of local institutions for conservation to improve wetland management practices and improve livelihoods in the riparian communities.
- Deepened stakeholder participation in land use planning at the district level
- Lead to better managed areas through developing social norms that prohibit over-exploitation of wetland resources and help mangrove restoration efforts.
- Helped to formulate management plans and community action plans and assisted community leaders to specify their roles and responsibilities.
- Improved local stakeholder's participation in the land use policies formulation with key recognition for wetland conservation.

In the process, over 14,000 mangrove trees were replanted to cover just a part of the over 76 hectares loss of mangrove cover within the wetland complex. Additionally, a Wetlands Management Committee (WMC) was formed who drafted a Wetlands Management Plan (WMP) as their first output. Three communities around the Pra Estuary also developed Community Action Plans (CAPs) as a result. These CAPs and WMP were included into the District's Medium Term Development Plan (DMTDP) for 2014-2017. This has considerably enhanced governance arrangements instituted by the Shama District Assembly. As a result, Shama became an exemplary district to many other districts in the Western Region.

In order to sustain this effort and ensure that communities surrounding the Pra Estuary are more resilient to excessive flood and other vulnerabilities, and ensure the rebuilding of marine fisheries stocks and catches, the SFMP selected Pra Estuary as one of the only two areas for the development of mangrove ecosystem and fisheries management plans. In view of this, additional technical information will be acquired to update and extend the understanding of the shoreline and estuary wetland distribution, use patterns and dynamics. The workshop initiated this process, shared information and solicited inputs from the participants.

## **INFORMATION SHARING**

Information was shared during the two-day workshop, including:

- Overview of SFMP
- Scoping and literature Review

- Medium Term Development Plans with activities that relate to the Pra Estuary area
- Lessons from Ankobra Resilience Planning
- Presentation on Resilience mapping and Spatial Interventions
- Unmanned Aerial Vehicle (UAV) Pilot Project

## **BRIEF OVERVIEW OF SFMP**

The Sustainable Fisheries Management Project (SFMP) is a five-year project (2014 -2019) with the goal of rebuilding targeted marine fish stocks that have seen major declines in landings over the last decade, particularly the small pelagic fisheries that are important for food security and are the mainstay of the small-scale fishing sector. University of Rhode Island Coastal Resources Centre (URI-CRC) leads a consortium of partners tasked with an integrated suite of activities including

- Improved legal enabling conditions for implementing co-management, use rights, capacity and effort-reduction strategies.
- Improved information systems and science-informed decision-making.
- Increased constituencies that provides the political will and public support necessary to make the hard choices and changed behavior needed to rebuild Ghana’s marine fisheries sector, feeding into applied management initiatives for targeted fisheries ecosystems.
- Implementation of applied management initiatives for several targeted fisheries ecosystems.

## **Scoping and Literature Review**

In order not to duplicate efforts, FoN conducted an intensive scoping exercise and desk top review to identify information and interventions that already existed in the Pra Estuarine areas. The exercise revealed vital information which included but not limited the following

- There has been the development of a Wetlands’ Management Plan and the establishment of a Management Committee for the Shama District.
- Three adjoining communities (Shama Apo, Anlo Beach, Krobo-Bosomdo) have developed Community Medium Term Action Plans.
- Anlo Beach Community has developed Community Bye-Laws for the protection of Anlo Beach Wetland Complex
- In 2013, NADMO Ghana in collaboration with UNDP Ghana began a Norwegian Government-supported project titled, Community Resilience through Early Warning (CREW) with a goal to ‘reduce disaster risks through better understanding hazard risks, reducing vulnerability to hazards, and enhancing capacities for disaster risk reduction’.
- The CREW project which was expected to end in 2015, concentrates on 10 pilot districts across the nation, with a district each from the 10 regions of Ghana.
- In the western region, Shama District was selected as the pilot district; and in shama, risk mapping was done, with two communities (Anlo Beach and Krobo) identified as hotspots for flooding (UNDP, 2014).
- The UNDP assessment indicated that maximum flood levels in Krobo stand around 1 meter above the floor level of houses in the community; while Anlo Beach floods when ‘high discharges from the Pra River are unable to flow into the sea freely due to high tides’.
- Okyere (2014) carried out some studies in the Anlo Beach area to, as part of his objectives; examine the linkages between livelihood assets, livelihood activities and ecosystems using ecological models to identify opportunities for strategic

interventions. His study provided scientific and socio-economic data needed for sustainable management of the aquatic ecosystems, fishery and connecting livelihoods at Anlo Beach.

- A flora and fauna assessment conducted by Friends of the Nation (2014) identified five tributaries of the Pra River which influence the Anlo Beach Wetland complex. In all these tributaries, there was a low Dissolved Oxygen (DO) concentration. DO is a critical water quality parameter for estimating the health of aquatic systems

It also identified four mangrove species (*Avicennia germinans*, *Laguncularia racemosa*, *Rhizophora mangle* and *Conocarpus erectus*) which entire area had decreased from 594.60 to 517.90 hectares amounting to 15% loss over a 20-year period (i.e. more than 76 hectares loss)

### **MTDPs for the Pra Estuary**

Facilitated by the Shama District Assembly (SDA), information was shared on the Medium Term Development Plans that focused on the Pra Estuary area. It was noted that the Pra Estuary has been designated by the SDA and plans are in place to turn the area into a leading eco-tourism site in the entire nation. To this effect, the district wishes to:

- Develop and improve transportation systems on the Pra River by facilitating the acquisition of Life Jackets to reduce the risk of drowning
- Improve the natural vegetation cover in the area
- Develop the Anlo Beach Community into a beach resort
- Develop a mini fishing harbor or landing beach around the area

### **CREW Programme**

The Meteorological Department of Shama District Assembly, talked about a Norwegian Project called the Community Resilience and Early Warnings (CREW) Programme. Under this programme, machines will be mounted upstream that can easily help in the prediction of flooding days ahead before rainfall.

The project was supposed to be completed in December, 2015 but due to some inconveniences, it has not been completed. They hoped to complete the project within this year. The project will be looking at van information system for relaying information to the communities. Also, the use of community radios will be considered

### **Lessons from Ankobra Resilience Planning**

A representative from Hen Mpoano shared with participants lessons from a similar resilience planning exercise conducted in Ankobra. Key amongst the lessons shared was that if care is not taken, a vulnerability and resilience assessment could be skewed towards general development during discussions. Another was that weather condition is an important phenomenon to consider during resilience assessments. Last but not least was the need to segregate stakeholders into focused groups so that interventions based on the assessment will be focused on the real needs of the people.

### **Unmanned Aerial Vehicle (UAV) Pilot Project**

Christopher Damon from the University of Rhode Island (URI) shared experiences in a pilot activity conducted in Sanwoma, Axim and Iture. The objective was to demonstrate Analytical and Planning Capabilities of UAV Imagery and build a case for a larger unit. In Sanwoma, the focus was on shoreline erosion; while in Axim and Iture, the focus was on Fisheries Infrastructure and Mangrove Delineation respectively.



It was learnt that the UAVs provide cost-effective means to capture current high resolution imagery for planning and analysis. Output products are also directly compatible with GIS systems. Specialized software and equipment are however needed for quality products.

## **BREAK-OUT SESSION**

To initiate the process of updating vulnerability and resilience information; and to get participants thinking about the relevant issues of concern, there was a break-out session. In this session, participants were grouped into six depending on the stakeholder representation pattern. For instance, as some were grouped by communities, others were grouped by offices held. The grouping included *Assembly Staff, Sub-committee members, Shama Apo, Krobo-Bosomdo, Supom Dunkwaw/Beposo, and Anlo Beach*. The various groups were then tasked with the identification of threats/challenges to the Pra Estuary as well as opportunities that exist for management; and then propose solutions. Below is the outcome

### **Assembly Staff**

#### *Identified Threats/ Challenges*

1. Indiscriminate defecation
2. Indiscriminate dumping of refuse
3. Lack of controlled dump sites
4. Improper animal husbandry practices
5. Galamsey activities
6. Land reclamation
7. Deforestation
8. Poverty – could lead to
9. Teenage pregnancy
10. Divorce
11. Poor nutrition
12. Increased school enrollment

#### *Identified Opportunities*

1. Investors
2. Tourism enhancement
3. Serves as flood prevention
4. Job creation -: crustaceans e.g. adodi, crabs

#### *Proposed Solutions*

1. Attitudinal change
2. Education on the opportunities
3. Enforcement of bye-laws
4. Introduction of improved technology in animal husbandry
5. Enforcement of laws on mining in water bodies
6. Formation of self-help groups to provide alternative sources of livelihood. E.g. VSLA, Cage Farming
7. Afforestation (mangrove restoration)
8. Enforce use of approved fishing gears
9. Encourage the formation of vigilante groups
10. Adhering to the fishing and non-fishing seasons

### **Sub-Committee**

#### *Identified Threats/ Challenges*

1. Lack of education
2. Encroachment on the banks of rivers
3. Sand winning
4. Defecating openly at the bank of river
5. Access roads to estuarine
6. Reduction in fish harvest
7. There is the problem of agro-chemical farming practices
8. Child labor

#### *Proposed Solutions*

1. Community sensitization
2. Structures built around estuarine should be woefully discouraged
3. The assembly should liaise with the various stakeholders
4. Assembly should extend tarred roads the estuarine
5. Laws must be passed to punish fishermen who use chemical for fishing
6. Agro-chemical farming should be reduced
7. Child labor should be discouraged

### **Shama Apo**

#### *Identified Threats/ Challenges*

1. Fishing
  - a. High cost of fishing materials
  - b. Lack of funds for fish processing
2. Tourism
  - a. Open defecation at the beaches and dumping of refuse indiscriminately
  - b. Lack of education on tourism promotion
3. Mining
  - a. Siltation of the Pra river
  - b. Destruction of fish species
  - c. Destruction of water for domestic use
4. Other challenges
  - a. Improper layout of buildings
  - b. Unauthorized buildings along the shore

#### *Identified Opportunities*

1. Fishing
2. Fish processing
3. Tourism
4. Mining

#### *Proposed Solutions*

1. Enforcement of SDA bye-laws
2. Works department should be effective
3. Intensification of sea defense along the beaches
4. Provision of land sites and dust bins
5. Periodic clean up exercises by SDA and community
6. Illegal miners should be educated, regulated and if possible prosecuted
7. Sensitization programs to build civic responsibilities
8. Provision of soft loans to help women in fishing
9. Educating women on the dangers of excessive smoke

## **Krobo-Bosomdo**

### *Identified Threats/ Challenges*

1. Flooding
2. Inadequate classrooms
3. Lack of protective gears for transportation on the river
4. Lack of social amenities such as toilet facility, potable water, poor road network

### *Identified Opportunities*

1. Tourist attraction

### *Proposed Solutions*

1. Relocation
2. Provision of
  - a. Toilet facilities
  - b. Potable water
  - c. School buildings
  - d. Life jackets
3. Access road should be developed

## **Supom Dunkwaw/Beposo**

### *Identified Threats/ Challenges*

1. Flooding
2. Difficulty in Relocation due to limited lands.
3. Poor road network
4. Inadequate toilet facilities
5. Unsafe water/River Transport
6. Youth unemployment
7. Illegal mining activities / galamsey
8. Gambling activities/ wee smoking by the youth
9. Poor market structure

### *Proposed solutions*

1. Re-location to hilly grounds
2. Assembly's intervention needed
3. Government intervention needed for the roads
4. Provision of toilet by the assembly
5. Provision of life jacket by the assembly
6. Government to create employment opportunities/ enabling environment
7. Government to have political will to curb galamseying
8. Enforcement of assembly's bye-laws on gambling and drug abuse
9. Assembly to provide market

## **Anlo Beach**

### *Identified Threats/ Challenges*

1. Farming
  - a. Climate change due to natural occurrence, human activities like seasonal crop planting, dumping of waste improperly
2. Fishing
3. Deep sea fishing

- a. Inappropriate fishing gears
- b. child labor in fishing
- c. seasonal fishing
- d. post-harvest losses (storage facilities)
- 4. Riverine fishing
  - a. inappropriate fishing gears
  - b. inappropriate fishing methods
  - c. dumping of waste into rivers, killing fishes
- 5. pollution of water
  - a. cutting down on mangroves
- 6. Mangrove fetching for fish smoking and gari processing
  - a. smoke emanating from gari processing and fish processing
  - b. lack of life jackets
  - c. tidal wave (transportation)

#### *Proposed solutions*

- 1. Fishing
  - a. The assembly should come out with bye-laws to regulate the fishing activities
  - b. Sensitizing the community on the dangers in crude method of fishing
  - c. Discouraging children from fishing activities by providing them with sponsorship packages
  - d. Stopping galamsey
- 2. Farming
  - a. Agric extension officers to educate farmers on climate change and best farming methods
- 3. Firewood fetching
  - a. Afforestation practices
  - b. Providing economic livelihood support for the people

## **MAJOR LIVELIHOOD SOURCES AND ASSOCIATED CHALLENGES**

Natural and social assets available to a group of people have the possibility of defining how resilient the people will be to vulnerabilities. For this reason, the groups were tasked to identify the main livelihood sources available to them and some challenges associated with those livelihood sources.

### **Krobo/Bosomdo**

#### *Information on Livelihoods*

- Farming
  - cassava, coconut, maize, casea tress
  - the casea tree farming started over 10 years ago
  - 100% of the people are engaged in farming
- Fishing
  - Inland fishing
  - About 20% of the men are engaged and about 5% of the women are also in to fishing
- Gari Processing
  - About 85% of people are engaged in this livelihood mostly, they are husband and wife engaged in such activity.
- Charcoal Production
  - 60% of the people are engaged in this livelihood activity.

- Mostly done by both men and women especially husband and wife.
- The women mostly do the picking of the charcoals.
- Bird Hunting (pigeon)
  - 20% of men are engaged in this.
  - This has been practiced in the communities for a very long time over the past years ago.
  - Both men and children are engaged in this activities
  - The birds are mostly found on mangrove trees where gum are used to trap them.
- Bee Keeping (Krobo)
  - There are about 11 bee hives

#### *Associated Problems*

- Farming
  - Flooding from the River Pra. When there is flooding, farmlands are being cut down which makes it difficult to access the farmlands. This problem is peculiar to Anlo Beach.
  - The issue with land tenure system. Unlike Anlo Beach where most lands are owned by families where individuals within such families can easily get access to land when they want to go into farming, Krobo and Bosomdo most lands are inherited by individuals.
  - Low level lands which are fertile are very scanty.
- Fishing
  - When the Pra dries up, it is very difficult to catch fish. Therefore leading to low fish catch.
  - Galamsey activities on upstream
- Charcoal Production
  - Low market. That is low in demand for charcoal as a result of the majority preferences to Liquefied Petroleum Gas.
  - Limited casea trees these for some years back
- Bird Hunting
  - The recent emergence of the Ebola disease affected the market for it and since then, it been less patronage unlike before.
- Gari Processing
  - Sharing of market day among communities slows the market for gari. And the market structures and space at Beposo isn't enough. About 200 communities are surrounding Beposo so just imagine the pressure when most people want to send their produce to sell at the Beposo Market.

### **Supom Dunkwaw/Beposo**

#### *Information on Livelihoods*

- Farming
  - About 60% people are engaged in farming
  - About 45% are men and 15% are women
- Gari Processing
  - About 25% are women engaged in this activity
  - About 15% of both women and men are into this activity.
- Trading
  - About 90% people are engaged in trading

- About 70% are women and 20% are men
- Galamsey
  - About 15% of people are engaged in this activity (Beposo)
  - About 25% of men at Supom Dunkwa

#### *Associated Problems*

- Farming
  - Due to low nature of the farmlands, they are easily flooded.
  - Climate change
  - Poor road accessibility especially during rainfall and flooding. Road linking communities from Beposo to Otodum to Dankwakrom to Egyabam to Kojokpo finds it very difficult to access their farmlands as well as the market.
  - Safety of people when they are navigating on the Pra.
  - The use of inappropriate chemicals
    - The chemicals also being washed into the Pra during raining season resulting in low farm yields
- Trading
  - The market at Beposo should be expanded in order to accommodate more traders
  - The market days that has been shared among communities should be reviewed and shared properly again.
  - Poor drainage system within the Beposo market
  - Poor market structures
- Gari Processing
  - storage facility
- Galamsey
  - One of the participants, a chief suggested the issue of galamsey should be handed to various affected communities where communities will have full responsibilities and power to take actions over the problems that galamsey is creating. To him, the laws are not working or being enforced so if communities take charge of the issue and knows the effect of the problems accruing from galamsey, they will join forces and stop this galamsey.

### **Anlo Beach**

#### *Information on Livelihoods*

- Fishing
  - About 80% of men are engaged in marine fishing
  - About 40% of men are also engaged in inland fishing (freshwater fishing)
  - About 20% are both engaged in marine and inland fishing
  - About 2% of both men and women are into fishing
- Farming
  - About 25% men are engaged in farming
- Fishing and Farming
  - About 10% of the population is into both activities.
- Fish Processing
  - About 70% of women are into this activity
  - 1 man process fish and he does that during the bumper season.
- Gari Processing
  - About 5% of women are into gari processing

- Mangrove Harvesting
  - About 5% of both men and women are into mangrove harvesting
- Hairdressing/Seamstress
  - About 5% of women
- About 4% are into artisanship, farming and fishing. They are engaged in all three activities.

#### *Associated Problems*

- Fishing
  - Storage facility
  - High tidal waves destroying canoes especially in the month of August.
  - Sudden changes in wave current
  - Sea storms also affect fishing
- Mangrove Harvesting
  - Capsizing of the canoes of mangroves harvesters losing goods, canoes and lives
- Farming
  - Flooding from the Pra River sweeping away most farmlands and displacing people from their homes. Also, it makes access to farmlands very difficult at the low lying lands. At times, during the dry season, most farm on low lying lands. But since nature is unpredictable, it can rain at any time and this also cause unexpected flooding and hazards.
    - The flooding is intense during May-July where even if it rains continuously for 4 hours or 200mm of rainfall, Anlo Beach will get flooded.
  - Land tenure system also prevents others from farming especially those who wants to farm uplands.
    - Most lands are owned by family where any member from that family is eligible to farm. This makes it difficult for people who are not in such families face difficulties in getting land to farm.
    - Also, the land tenure system, where most lands are on lease where an agreement is made to pay every year after the land has been given out. Also, there is the sharing of farm produce 1/3 between the land owner and the farmer. In this case, the one farming on the land doesn't own the land. So if he or she decides to stop farming, the land owner takes his land back.
    - Lands may be leased up to 50years for special crops like coconut and citrus
  - At times, the seasonal changes of the Pra make it difficult to farm and as well, practice irrigation farming. During September - April, the river is very salty. During May – August, the river is fresh. But the fresh water these years cannot be compared to that of 10years ago due to galamsey activities.

### **Shama Apo**

#### *Information on Livelihoods*

- Fishing
  - About 80% of men are engaged in fishing
- Mangrove Harvesting
  - 10% of men are into this livelihood

- 5% of women are also involved
- Fish Mongering/Smoking
  - About 90% of women are into this livelihood activity

*Associated Problems*

- Mangrove Harvesting
  - It started about 60 years ago. Now few people are cutting the mangroves due to flooding.
- Fishing
  - Coastal flooding when there is high tides especially during the rainy season around August.
  - Now the coastal flooding is too severe because of some huge rocks found at the coast and these same rocks too are destroying canoes.

**KEY CONCLUSION AND RECOMMENDATIONS**

Participants concluded that flooding was the major issue for communities along the Pra River that affects the livelihood and their existence. They also noted that the degradation of wetlands and mangroves was also another issue that affects them.

Participants recommended that there was the need for floor hazard mapping and simulations for the lower Pra River area to inform planning. Other recommendations included strengthening of local institutions to facilitate the design and implementation of resilience actions at the District and community levels.