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ACTIVITY REPORT ON

MANGROVE RESTORATION

CONSERVATION AND SUSTAINABLE MANAGEMENT AT THE KETA LAGOON RAMSAR SITE, GHANA, FOR BIRDS AND COMMUNITY CLIMATE RESILIENCE

Activity Report on
Mangrove Restoration

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1. Introduction

The Keta Lagoon Complex Ramsar Site, located along the southeastern coast of Ghana, is one of the most important wetlands in West Africa. It supports diverse ecosystems, including mangroves and lagoons, which serve as habitats for numerous species of flora and fauna. Beyond its ecological significance, the site is home to communities whose livelihoods largely depend on agriculture and fishing.

Mangroves (shrubs or small trees that grow in coastal saline or brackish waters) have been identified as one of the most productive and biologically complex ecosystems in the Keta Lagoon Complex Ramsar Site. They represent a unique ecosystem which play crucial environmental functions. Some of these include the following:

- Provides ideal breeding/spawning grounds for fish and other aquatic life. It is generally recognized that without mangroves, the fisheries sector within the coastal Keta area will most likely be doomed.
- Provides effective, low-cost environmentally friendly protection natural barriers against extreme whether events such as storms and floods particularly for low-lying coastal communities.
- They are considered one of the most productive ecosystems rich in biodiversity and provides habitats for a wide variety of animal (particularly migratory birds) and plant species.
- Provides livelihoods for the local population through mangrove harvesting business, fishing, crabs collection etc.
- Play a crucial role in groundwater purification, storage and recharge.
- Store considerable amounts of carbon and thus serve as major carbon sinks to mitigate climate change effects.

In recent years, however, the Mangrove of Keta landscape has come under increasing pressure from:

- Climate change resulting from declining rainfall and the continuous buildup of salts in the soil.
- Unsustainable land use practices such as chemical induced farming, unsustainable harvesting for fuelwood, salt mining etc.
- Conversion into human settlements.

- Pollution due to waste disposal and dumping.

The above threats are further compounded by limited knowledge of sustainable harvesting regimes and intentional communal restoration programs. Accordingly, one of the objectives for the project titled "**Conservation and Sustainable Management at the Keta Lagoon Complex Ramsar Site, Ghana, for Birds and Community Climate Resilience"** is to build capacity of communities in sustainable mangrove harvesting regimes and to restore 8 hectares of degraded mangrove lands.

1.1.General objective

Under Specific Goal 4: Local community members in the Keta Lagoon landscape are sustainably managing mangroves and farmlands for biodiversity, food security, livelihoods, and Nature based Solutions to climate change. Specifically, communities' capacities are to be built in sustainable harvesting of mangroves and are also to restore 8 hectares of degraded mangrove sites with about 20,000 mangrove seedlings.

1.2. The process

Given the importance of mangroves to the Keta seascapes, it is imperative that efforts at the community level be geared towards not only their protection but restoration as well. This simplified steps were adopted for restoring mangroves in two approved local land holdings in the Afiadenyigba environment. Since there are different species of mangroves depending on location, the project planted mangroves of the Rhizophora species commonly found in West Africa and also suitable for the site based on site specific conditions.

Nursery establishment

The project implementation team through consultations decided to raise the seedlings in the nursery holdings of the Keta Lagoon Complex Ramsar site. The reasons for selecting the nursery holding among others are:

- They have available water source for nursery purposes
- They have the on-site experts to oversee the management protocols
- They have unique experience in successfully working with and training community members

Eight women and two men were recruited for the purpose of nursery establishment and management protocols. Mr. Lawrence Ocloo Kisseh (Keta Wetland Manager) was tasked to oversee the nursery management and train the recruited actors.

The training focused on all aspects of establishing and managing a healthy mangrove nursery, including good nursery practices, types of species and their particular sorting and handling, watering regimes and seedling protection. The actors were also taught the best practices for transplanting seedlings, focusing on timing and handling techniques to ensure minimal damage to the young plants. Proper transplanting timing is vital to match seasonal weather conditions and optimize plant growth. Proper nursery establishment, management and seedling transplanting is important because it:

(i) Saves seeds and money since fewer seeds will be wasted as compared to planting directly on the field

(ii) Improves survivability after transplanting even when field conditions are harsher

(iii) Leads to higher yields since most of the seedlings transplanted will be healthy, and

(iv) Helps plants adjust to harsh conditions due to climate change.

1. Collecting the seeds

Mangrove seeds are called 'Propagules'.The seeds (propagule) will ripen and fall to the ground in the middle towards the end of the rainy season. A propagule is ripe when the buds start to emerge at the tip. Collection is done by women and youth under the guidance of Wildlife Division officers.

2. Transporting, storing the propagules and seeding in bags

The ripe propagules collected are transported to the nursery sites, where they are seeded in black poly bags. At the nursery, they are placed in water overnight to prevent them from losing their water content.

3.Site identification.

The project implementation team undertook a two day field feasibility assessment to ascertain the best site for planting. Critical considerations among others are: ideal site for planting mangroves is subjected to daily tidal influence, has clay top or upper subsoils. If the site is

outside the influence of the daily tides, the planted seedlings will not survive. Two sites within Afiadenyigba were selected after meeting the site-specific criteria.

4. Planting techniques.

A total of 60 Community members were recruited for the planting at the two sites (30 each for a site). They were all supported with Cutlasses and Wallington boots to enhance the planting process. Random planting regime was adopted with a spacing distance of 2 meters apart. This spacing gives 2,500 plants per hectare. A total of 20,000 seedlings have been planted at the two sites covering a total area of 8 hectares.

5. Follow ups and sustainability plan.

To be successful, mangrove restoration initiatives should be community-based and involve the participation of the local communities. Accordingly, the project has made the restoration community owned. The family heads, selected unit committee members and the Wildlife Division office are collectively monitoring the site. The Keta Lagoon Complex Ramsar Site Office under the headship of Mr. Lawrence Ocloo Kisseh would oversee the beating-up process to replace those that did not survive. The project is also conducting schools' education and awareness creation in nearby schools, with the purpose of establishing environmental clubs as agents for change. Regular field visits as part of the environmental curriculum in the schools would be organized to the sites. In that way, learning and monitoring aspects can be taken up by the schools' environmental clubs on behalf of the communities.

Conclusions

Mangroves play very important role in maintaining ecological balance both for living organism and nonliving. Conservation effort must be considered knowing that the Keta Lagoon Complex Ramsar Site area has a number of threatened species and experience anthropogenic damages. Accordingly, this project has adopted a community-based approach to restore 8 hectares degraded mangrove sites. A total of 20,000 mangrove seedlings have been planted by 60 community members at two critical sites in Afiadenyigba. Through a participatory monitoring protocol, the site is being managed and conserved for the present and the future generations as well as for the diverse life forms at the site.

Appendix- Photos from Training Session

Plate 1: Mangrove nursery established at the landscape

Plate 2: Project team undertaking a feasibility assessment on the sites for restoration

Plate 3: Picture of volunteers undertaking restoration exercise