PAPBio END OF PROJECT NARRATIVE

PROMOTING CONSERVATION, PRO-CONSERVATION LIVELIHOOD AND COMMUNITY-BASED MANGROVE MANAGEMENT

GHANA ROCHA Caring for God's Creation

PAPBio

IUCN

Forestry Commission

Technical project report

PAPBio C1 – Mangrove

Project Title : PROMOTING CONSERVATION, PRO-CONSERVATION LIVELIHOODS AND COMMUNITY-BASED MANAGEMENT OF MANGROVE ECOSYSTEMS IN THE SOUTH-WESTERN END OF THE KETA-LAGOON COMPLEX RAMSAR SITE AREA (KLCRS), GHANA

Name of Beneficiary: A ROCHA GHANA AND WILDLIFE DIVISION (FC)

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Contents

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This report was prepared by Prosper Kwame Antwi, Lawrence Ocloo Tetteh, Benjamin Afful and Michael Ochem under the supervision of Dr. Seth Appiah-Kubi (National Director, A Rocha Ghana), and Daryl Bosu (Operations Director, A Rocha Ghana), under the guidance of Dorcas Owusu (IUCN, Ghana) and MBA Anthony (IUCN, Ghana). The report was prepared under the IUCN Regional Indicative Programme "Management of Mangrove Forests from Senegal to Benin" which aims to achieve integrated protection of the diversity and fragile mangrove ecosystems in West Africa and their enhanced resilience to climate change. The team would like to acknowledge the financial support provided by the European Union through ECOWAS and WAEMU.

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The actions, contributions and information provided by all stakeholders to the Project Implementation Team has been crucial for understanding the project context, implementing project activities, informing the monitoring and assessment and for developing recommendations for the future.

ACRONYMS

ARG	A Rocha Ghana
CCAM	Climate change adaptation and mitigating
CIFOR	Center for International Forestry Research
CREMA	Community Resources Management Areas
CM	Community Mobilizers
CSA	Climate Smart Agriculture
CSO	Civil Society Organization
ECOWAS	Economic Community of West Africa States
EU	European Union
FAO	Food and Agriculture Organization
FC	Forestry Commission
GNA	Ghana News Agency
IUCN	International Union of Conservation of Nature
KLCRS	Keta-Lagoon Complex Ramsar Site Area
M&E	Monitoring and Evaluation
MGT	Marine governance toolkit
NGO	Non-governmental Organization
RIP	Regional Indicative Program
TOT	Trainer of Trainees
WAEMU	West African Economic and Monetary Union
WD	Wildlife Division

SUMMARY

The project titled " Promoting Conservation, Pro-Conservation Livelihoods and Community-Based Management of Mangrove Ecosystems in The South-Western End of the Keta-Lagoon Complex Ramsar Site Area (KLCRS), Ghana" with contract number 472 is a 24 months project that commenced on 23rd September, 2021 (Date Financial agreement was signed). The project was implemented at four (4) sites in two Districts in the Volta Region of Ghana.

The main goal of the project was to contribute to both national and international efforts on managing and protecting mangrove ecosystems for sustainable coastal marine resources and human wellbeing. The projects purpose was to engender community-agency collective actions towards the management and enhancement of mangrove ecosystems functional integrity, productivity and stability through innovative interventions for both ecological and socio-economic gains under the 2 years project implementation activities. The project developed sustainable pro-conservation livelihood schemes to alleviate poverty, rolled out a marine governance tool to promote participatory management, as well as implemented a collaborative restoration and use practices for long term persistence of catchment mangrove species, habitats and human wellbeing.

To implement the project across the four Communities in the two districts, A Rocha Ghana (ARG) partnered with the Keta Lagoon Ramsar Site office of the Wildlife Division (WD), Forestry Commission (FC), Community leaders and the two District Assemblies. IUCN Ghana office through their key contact person (Mr. Anthony MBA) gave facilitation and oversight support.

The project contributed to achieving the following under the main results achievement areas:

Under Component 1 : Sustainable Livelihood development

1. Baseline survey on pro-conservation livelihood scheme and their potential impacts in the KLCRS finalized, submitted and shared

2. 60 community members were recruited from 4 participating communities (Galo, Sota, Bomingo and Galotse) and trained in community approved livelihood schemes, as well as supported in the approved income-enhancing alternative livelihood streams. All recruitemts were done with good representation of men, women and youth.

3. All 60 actors recieved training in modern time-scientifically proven Climate-Smart Agricultural techniques and technologies, and Small Business Enterprise Development, Ideation and Sustainable Managment

4. All the 60 Beneficiaries were set-up in income-enhancing alternative livelihood streams (Climate-Smart Agriculture (CSA), Sustainable fishing and processing, and Handicraft and Apprenticeship) thus their activities impacting about 300 household members

Under Component 2: Innovative demonstration projects on mangrove restoration and/or rehabilitation, sustainable harvesting techniques and the creation of alternative sources of energy and building materials

1. 20 hectares of degraded mangrove sites planted with over 30,000 mangroves

2. 10 hectares woodlot site planted with over 15,000 woodlot species. This was accomplished through participatory community collective action, nursery management trainings, dialogues and visits.

3. Over 80 volunteers across 4 communities engaged and trained in mangrove restoration and woodlot management.

4. 20 ToTs (Trainer of Trainees) were recruited from the 4 participating communities (Galo, Galotse, Sota and Bomigo) and were trained in Sustainable Mangrove Harvesting techniques using both indoors and field practical learning protocols.

Under Component 3: Deployment and application of a governance baseline tool for participatory management and support.

1. Marine governance toolkit (MGT) was successfully rolled out in all 4 communities.

2. Over 100 different actors trained and empowered in the critical components of the Marine governance toolkit

3. Surveillance equipment (1 drone, 1 motor bike) with other accessories has been supplied to the management of the KLCRS to increase their monitoring capabilities and work related actions at the entire site and oversight of restored areas.

Under Component 4: Increase the awareness and build capacities of communities and general public on mangrove conservation as well as the adaptation to global climate change

1. Awareness of local stakeholders on mangrove conservation and sustainable development increased

2. Over 2000 audiences reached through different education and awareness raising programs

3. The first-ever mangrove festival successfully carried out with more than 1000 attendees from communities and schools.

Notwithstanding few challenges encountered during project implementation; remoteness of sites, delay in funds transfer from the donor etc. that affected the timely implementation of some selected activities, there were many lessons learnt. Notably, a very unique and strong network of agencies and communities committed to furthering mangrove conservation has been created and established in the communities of Keta Lagoon Complex Ramsar Site. There was also a unique goodwill in community support for mangrove conservation in the four communities that will hopefully extend to the other satellite communities that have mangroves. The project team and partners have developed a sustainability plan to ensure the continuity of conservation efforts beyond the project duration. Importantly, the team supported the training of the newly established Community Resources Management Areas (CREMA). The team is also working towards a potential upscale of the project or identify potential sources of funding, partnerships, and strategies for long-term project management and monitoring.

I. CONTEXT ELEMENTS

1. Mangroves are among the most important ecosystems on the planet (Spelding et al. 2010). They are considered as high priorities in climate change adaptation and mitigating (CCAM) strategies throughout the world with exceptionally high carbon stocks, among the highest of any ecosystems (Center for International Forestry Research CIFOR 2012). Like other mangrove areas in the world, mangroves of Africa and for that matter Ghana play significant ecological, socioeconomic and climate amelioration functions: supporting high flora and fauna diversity; providing direct wood and non-wood products and services to the people in terms of building poles, charcoal, firewood, shoreline protection and also serving as reliable carbon sink. Beyond their direct benefits, mangroves also play an important role in global climate regulation. On average, they store around 1,000 tons of carbon per hectare in their biomass and underlying soil, making them some of the most carbon-rich ecosystems on the planet.

2. In spite of the vital role of mangrove in environmental protection, the rate in destruction of mangrove forests are three times higher than of terrestrial forests, with over 50% of global mangrove forests lost during the last 35 years (FAO 2010). There is an estimated 20-30% loss for Western Africa and an 8% loss for Eastern Africa within the past 25 years. Mangrove degradation has many impacts on species, including the loss of quality habitats, and the reduction of functioning bio-diverse ecosystems. Major causes of mangrove degradation and loss in Africa have been over-exploitation of resources, conversion of mangrove area for other land uses such as, pond aquaculture, agriculture, coastal landfill, urbanization as well as indirect effects of pollution and upstream land use.

3. Due to the phenomenal growth in the population of the coastal zone, dependency on mangroves and encroachment of habitats has increased. This has led to over-exploitation of mangroves and pollution of its habitats with serious adverse effects in many parts of Africa. For example, early accounts show that well- developed mangrove communities were associated with, and largely confined to, semi-enclosed coastal lagoons or embayments, generally with constrained tidal exchange and limited (and markedly seasonal) freshwater input. Today, as a result of the development of large urban centres with significant industrialisation, the extent of these lagoon mangroves has been much reduced and several species that could be expected to occur are no longer found in several of such ecosystems in the region.

4. Ghana like many sub-Saharan countries, for example, Benin, Togo, Cote d'Ivoire and Nigeria, have lost mangroves through overexploitation in excess of about 70% of the original cover. The country has built a strategy for management and protection of nature reserves as well as a strategy for wetland management; however there have been no specific legal rules and regulations for mangrove management (Agyepong *et al.* 1990). The great value of Ghana's mangroves, the current and potential pressures placed on them as well as their management status are the issues of growing concerns, especially to managers, planners and policy makers at central and particularly local levels (Gordon & Ibe, 2006). In Ghana, for example, cultivation and sale of mangroves are important elements in the economy of the riparian communities of the Volta River estuary. In the early 1960s areas cleared of mangrove were planted and harvested after 12 to 15 years. This allowed the plants to mature and set seed to feed the

regeneration cycle. In recent years, mangroves are harvested only 5 to 8 years after planting (before maturity) jeopardising the traditional management practice.

5. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change predicts with high confidence that Climate variability and change could result in low-lying lands being inundated, with resultant impacts on coastal settlements (Boko et al. 2007). Climate variability and change, coupled with human-induced changes, would affect ecosystems such as mangroves with additional consequences for fisheries and tourism. Boko et al (2007) state that not only would the projection that sea-level rise could increase flooding, have implications for health, sea-level rise will also potentially increase the high socio-economic and physical vulnerability of coastal cities and/or communities.

6. Keta Lagoon Complex Ramsar Site (KLCRS) was established and designated as a wetland protected area or Ramsar site on 14 August 1992. The site with an area of 101,022.7 hectares, and covers part of the Volta River estuary is located within the South Tongu, Akatsi South, Anlo and Keta Municipality of the Volta Region of Ghana. The lagoon area of 30,000 ha is fringed by numerous settlements. In addition to the mangroves that are threatened, KLCRS contains a number of unique animal species that are relevant for conservation (Seventy-six migratory and resident waterbird species, including 21 globally significant species, numbering over 100,000).

7. Within the Keta Municipality, the Savietula-Dzita-Anyanui stretch is facing a severe sea erosion problem. At the south-western end of the Municipality, (Anyanui-Bomigo; chosen project area), extensive commercial harvesting of mangrove for domestic and industrial use has rendered some areas almost bare with consequent impact on the habitat and breeding places of fish and bird species. The intensified harvesting of red and white mangroves have aggravated the soil erosion problem, while adversely affecting both fishing and crop farming.

8. The associated declining soil fertility in the district has necessitated an increased use of chemical fertilizers and water for irrigation. This has caused ground water pollution and increased salinity of soils. The increased pressure on land, particularly along the coast, has left the soils fragile and susceptible to erosion.

9. Fishing practices, which have increasingly involved the use of chemicals, explosives (TNT), and unauthorized fishing nets has contributed to the pollution of water bodies, and the depletion and extinction of some fish species. Also, coastal sand-winning and clay deposit exploitation are continually increasing in the Municipality.

10. The wanton overexploitation of mangroves in the catchment does not only pose a threat to ecological integrity and socio-economic stability of communities, but also compromises intergenerational equity. The unacceptable rate at which mangroves are being lost in the area due to both natural and man made factors, underscores the urgent need for action to be taken to avoid total loss, which inevitably will have disastrous effects on the environment and the livelihood of several coastal communities. A holistic action for protection and development of mangrove forests in Keta and Ghana as a whole is necessary since increasing pressures on the resource and the threat of sea level rise and associated climate change phenomena will exacerbate the situation in future.

II. PROJECT DISPLAY

The International Union for Conservation of Nature (IUCN) within the framework of the implementation of the Regional Indicative Programme (RIP), the European Union (EU), in consultation with ECOWAS and WAEMU, has agreed to a grant for the adoption of the "Support Programme for the Preservation of Biodiversity and Fragile Ecosystems, Regional Governance and Climate Change in West Africa - PAPBio". One of the financed programs is the project entitled "Management of Mangrove Forests from Senegal to Benin" which aims to achieve integrated protection of the diversity and fragile mangrove ecosystems in West Africa and their enhanced resilience to climate change. During the first call of proposals for the financing agreement, A Rocha Ghana and partners submitted a proposal which was selected for funding.

A Rocha Ghana and partners project titled "Promoting Conservation, Pro-Conservation Livelihoods and Community-Based Management of Mangrove Ecosystems in the South-Western End of the Keta-Lagoon Complex Ramsar Site Area, Ghana" aims to contribute to both national and international efforts on managing and protecting mangrove ecosystems for sustainable coastal marine resources and human wellbeing.

The projects purpose is to engender community-agency collective actions towards the management and enhancement of mangrove ecosystems functional integrity, productivity and stability through innovative interventions for both ecological and socio-economic gains under the 2 years project implementation activities. The project will develop sustainable pro- conservation livelihood schemes to alleviate poverty, roll out a marine governance tool to promote participatory management, as well as implement a collaborative restoration and use practices for long term persistence of catchment mangrove species, habitats and human wellbeing.

Project Components and related Activities

To achieve the project objectives, the following main components and their respective activities were constituted to deliver the results.

COMPONENT 1: Sustainable Pro-conservation Livelihood development

Initial community profiling and surveys (baseline) was utilized as the approach towards identifying the best pro-conservation livelihood that was community-owned and site impactful. Assessment and profiling data was validated through a multi-stakeholder workshop and best options approved for rolling out. Validated options were marketed to the communities, sectors and pilot demo projects instituted. Importantly, promotion of existing sustainable livelihoods, modifications or improvements to existing livelihoods, development of new interventions and capacity enhancement in value chains and campaigns against destructive practices were strategically utilized. A total number of 60 community members from four communities were recruited, trained and supported in 3 approved sustainable pro- conservation livelihood scheme (approved after baseline). Gender was a key consideration in recruitment as women, youth, men and the marginalized were given equal opportunities.

Activity 1.1: Community profiling and surveys on pro-conservation livelihood schemes and their potential impacts

Activity 1.2: Build capacity of 60 recruited community members in approved livelihood schemes and support appropriate income-enhancing alternative livelihoods as pilot and for recruited vulnerable community members.

Output/outcome

Output/outcome 1.1: Updated assessment of the current and/or potential pro-conservation livelihoods and their impacts at the site.

Output/outcome 1.2: Integrated pro-conservation livelihoods demo projects implemented e.g. Climate Smart Agriculture, Sustainable fisheries and others as alternative livelihood.

Output/outcome 1.3: livelihood initiatives have created new jobs and new streams of finance for communities, wherein communities are sustainably managing their landscape.

COMPONENT 2: Innovative demonstration projects on mangrove restoration and/or rehabilitation, sustainable harvesting techniques and the creation of alternative sources of energy and building materials.

This project component will developed on a pilot basis, mangrove restoration and/or rehabilitation actions, sustainable utilization and extraction techniques and schemes, alternative sources of energy and building materials with the view to reducing dependency on mangroves and enhancing their stability and productivity. One key community-based nursery for mangroves and woodlot spp. was established and managed. Four degraded priority sites were mapped and replanted with about 30 thousand mangrove seedlings. 20 trainer of trainees (5 persons from each of the 4 communities) capacity were built in sustainable harvesting techniques and schemes. Woodlots were established at four main sites (each community) with about 15,000 thousand planted spp. in total.

Activity 2.1: Identify and map degraded sites for pilot restoration/rehabilitation

Activity 2.2: Set up One center of community-based mangrove and woodlot spp. nursery for the rehabilitation needs of degraded mangrove forests and new energy fuelwood sources respectively.

Activity 2.3: Train 20 trainer of trainees in sustainable harvesting techniques and schemes

Activity 2.4: Identify and map site to cultivate suitable plant materials, which may be used as fuelwood (coppicing) and as building material.

Activity 2.5: Carry out trees maintenance through replanting and caring of mangrove trees and measure trees' growth in the rehabilitated forest for at least 6 months after the planting in a participatory manner.

Output/outcome

Output/outcome 2.1: The availability of mangrove seedlings through the establishment of community-based mangrove nursery center in one of the Communities was used for reforestation and mangrove planting.

Output/outcome 2.2: The rehabilitation of degraded mangrove forest area by planting mangrove tree spp. More than 30,000 Seedlings planted

Output/outcome 2.3: Community woodlots at community approved site with suitable species, e.g., Sena sp., Cassia sp. as alternative source of energy and building materials established. About 15,000 woodlot species planted

Output/outcome 2.5: Sustainable mangrove harvesting models and techniques implemented

COMPONENT 3: Deployment and application of a governance baseline tool for participatory management and support.

The methodology is based around the application of a diagnostic tool for marine protected area governance: the 'governance baseline tool'. Through application of the tool, partnerships of government, business, NGOs and communities were brought together to conduct a series of exercises and workshops which enabled the creation of a common vision. The analysis enabled looking back at changes in the area and the pressures which are driving these; taking stock of how effective planning and management has been; and looking forward to future mangrove, climate change impacts and seeking to identify goals for livelihoods and habitats and species collaboratively. Key to the analysis was identifying the needs of local communities, effectiveness of current livelihood initiatives, and opportunities for creating new pro-conservation livelihoods which enabled positive solutions for nature and people.

Activity 3.1: Community meetings - analysis of Governance baseline tool: 'Looking Back' Taking Stock' Case studies and 'Looking Forward' Components with communities

Activity 3.2: Stakeholder Workshop, Fishers, Residents, Mangrove Communities, Hunting Communities, District Assemblies, CSOs, FC (WD)

Activity 3.3: Form Coastal Resources Management committees and build capacities to support the co-management of mangroves and other coastal resources

Activity 3.4: Purchase and supply surveillance and monitoring equipment to committees and (WD) agency

Output/outcome

Output/outcome 3.1: Co-management of mangrove resources and sustainable development of coastal resources

Output/outcome 3.2: Built mutual understanding about the needs of different communities and sectors, where there is sometimes currently conflict or misunderstanding

Output/outcome 3.3 Newly established Community Resources Management Area (Capacities of executives built by the project).

Output/outcome 3.4 Instituted collaborative committees with built capacities and supported with basic surveillance and monitoring tools (Drone, Motor-bike, garden equipment (rakes, wheelbarrows etc)).

COMPONENT 4: Increase the awareness and build capacities of communities and general public on mangrove conservation as well as the adaptation to global climate change

Notable among the reasons for the high-level destruction of mangroves and their habitats is the extremely low awareness among communities and the general public of its importance to society and industry. An appreciation of the immense benefits mangroves offer by all the stakeholders and policy-makers would help in ensuring sustainability of the interventions proposed in this project. Accordingly, the project used creative action tools, as well as organised education of public using inter alia workshops, public fora, film shows, signage and primers for spreading the ecological and economic importance of mangrove ecosystems and climate change to local school children and community members.

Activity 4.1: Carry out a minimum of 8 times awareness raising activities about mangrove conservation and adaptation to global climate change, through film screenings and discussions at village level.

Activity 4.2: Carry out conservation education to children and adolescents through school visits for at least 8 times

Activity 4.3: Carry out mangrove conservation festival 1 time in which a variety of activities such as exhibitions, competitions (football), and mangrove conservation campaign are being held.

Output/outcome

Output/outcome 4.1: Increased understanding and awareness of communities, including children, youth and fishing groups on the importance of saving and conserving mangrove ecosystems in Keta Municipality.

Output/outcome 4.2. Increased capacity of fishermen groups being facilitated on the management of sustainable natural resources and the importance of conserving mangrove ecosystem through training, awareness raising and groups discussion.

Output/outcome 4.3. First-ever Mangrove festival organized in the landscape with more than 1000 indigenes in attendance

Component 5: Project management, monitoring and evaluation

Activity 5:1: Day-to-day project management

Activity 5:2: Conduct regular project Monitoring & Evaluation (M&E) programs based on the project management plan

Activity 5:3: Production of participatory film as project documentation.

Activity 5:4: Draft a final report that describes the progress of projects, achievements, challenges and impact of the project, as well as the follow-up plan.

Output/outcome

Output/outcome 5.1: Monitor, ensure and document program deliveries are achieved as the time frame and plan stipulated.

Output/outcome 5.2: Look for recommendations for program improvement and sustainability.

Output/outcome 5.3: Draft mid and final project report.

Project Beneficiaries

The direct beneficiaries of this project are the local community members living in the South-western part of the Keta lagoon Complex Ramsar Site of Keta Municipality of Volta Region, Ghana. `Specifically four communities (that is: Galo, Bomigo, Galotse and Sota) were involved in the project intervention. These are very impoverished areas with household incomes well below national averages. The villages have limited infrastructure and few working opportunities outside subsistence fishing/farming. Young people in the catchment often migrate to the municipal capital and other areas in search of employment opportunities. The agricultural and environmental systems in these areas are continuously deteriorating. Fishing is hampered by recurring incidents of old unsustainable events, and mangrove overexploitation is reported to be on the rise. Unsustainable agriculture activities has hampered agricultural productivity and increased environmental contamination witnessed over the past few years, rendering large tracts of land unsuitable for cultivation. Most importantly however, the local communities are lacking in the social infrastructure required to advance sustainable farming. Lack of coordination between actors for development efforts has proven to be major impediments for livelihood development initiatives.

REVIEW OF RESULT 1

Sustainable livelihoods supported by strong foundations for inclusive economic growth and innovation as well as resilience and action on long-term environmental change.

1.1. Activity 1: Community profiling and surveys on pro-conservation livelihood schemes and their potential impacts

Sub activity 1.1: Development of Terms of Reference (ToR) for pro-conservation livelihood schemes, surveys, and profiling, facilitating the structured approach to data collection and analysis

Sub activity 1.2: Successful identification and engagement of Dr. Andrew Agyakumhene from the University of Ghana, Legon, Accra, who conducted and completed the baseline survey effectively

1.2 Activity 2: Stakeholder engagement for validation of baseline survey

Sub activity 2.1: Organization of a Validation Workshop on Friday, May 13th, 2022, facilitating stakeholder involvement and feedback

Sub activity 2.2: Preparation and submission of a detailed final report on community and stakeholder validation of pro-conservation livelihood schemes by the consultant, providing comprehensive insights for further action.

1.3 Activity 3: Build capacity of 60 recruited community members in approved livelihood schemes and support appropriate income-enhancing alternative livelihoods as pilot and for recruited vulnerable community members

Sub activity 3.1: Recruitment and training of 60 community members from Galo, Sota, Bomingo, and Galotse communities, ensuring representation of men, women, and youth for inclusivity

Sub activity 3.2: Provision of training in modern, scientifically-proven Climate-Smart Agricultural techniques, Small Business Enterprise Development, Ideation, and Sustainable Management to all 60 beneficiaries

Sub activity 3.3: Establishment of income-enhancing alternative livelihood streams including Climate-Smart Agriculture, Sustainable Fishing and Processing, and Handcraft and Apprenticeship for all beneficiaries.

REVIEW OF RESULT 2

Innovative demonstration projects on mangrove restoration and/or rehabilitation, sustainable harvesting techniques and the creation of alternative sources of energy and building materials.

2.1 Activity 1: Identify and map degraded sites for pilot restoration/rehabilitation

Sub activity 1.1: Feasibility assessment completed, which led to the selection of communities and restoration sites based on site-specific characteristics

Sub activity 1.2: Eight (8) main sites was digitized and mapped, comprising four (4) sites for mangrove restoration work and four (4) sites for alternative fuelwood plantation.

2.2 Activity 2: Set up One center of community-based mangrove and woodlot spp. nursery for the rehabilitation needs of degraded mangrove forests and new energy fuelwood sources respectively and Degraded Mangrove Site and Woodlot Site preparation and planting

Sub activity 2.1: Establishment of one (1) community-based nursery site which accommodated approximately 50,000 mangrove seedlings at different developmental stages, that was used for restoration and beating up purposes.

Sub activity 2.2: Restoration of 20 hectares of degraded mangrove sites with over 30,000 mangrove seedlings and 10 hectares of woodlot sites with over 15,000 woodlot species

Sub-activity 2.3: Successful propagation and establishment of nursery facilities for mangrove seedlings and tree saplings, ensuring healthy seedlings for transplanting

Sub-activity 2.4: Community engagement and participation in nursery management and restoration activities, which fostered community ownership and sustainability

2.3 Activity 3: Train 20 trainer of trainees in the sustainable harvesting techniques and schemes

Sub activity 2.1: Successful recruitment and training of 20 Trainer of Trainers (ToTs) in Sustainable Mangrove Harvesting techniques from participating communities.

Sub activity 2.2: Comprehensive training was provided, incorporating both indoor and field practical learning protocols.

2.4 Activity 4: Identify and map site to cultivate suitable plant materials, which may be used as fuelwood (coppicing) and as building material

Sub activity 2.1: Identification and finalization of four (4) community-based sites for woodlot plantation, covering a total land area of 10 hectares

Sub activity 2.2: Planting of over 15,000 woodlot species in designated sites, serving as alternative energy sources.

2.5 Activity 5: Carry out trees maintenance through replanting and caring of mangrove trees and measure trees' growth in the rehabilitated forest for at least 6 months after the planting in a participatory manner

Sub-activity 2.1: Distribution and replanting of over 5000 mangrove seedlings for replacement across all mangrove and woodlot sites.

Sub-activity 2.2: Regular monitoring of growth performance and survival of planted mangroves and woodlot trees carried out.

Sub-activity 2.3: Implementation of weed control mechanisms and community-led protection efforts to ensure sustainability

Sub-activity 2.4: Maintenance and care plan initiated to support the growth and survival of planted mangroves and woodlot trees, including regular weeding and monitoring against external threats

REVIEW OF RESULT 3

Deployment and application of a governance baseline tool for participatory management and support.

3.1 Activity 1: Community meetings - analysis of Governance baseline tool: 'Looking Back' Taking Stock' Case studies and 'Looking Forward' Components with communities

Sub activity 1.1: Selection of 60 actors from 4 participating communities for engagement

Sub activity 1.2: Conducted series of group tasks and presentations facilitating community members to 'look back' and 'take stock' of ecological, environmental, and social changes within their landscape.

Sub activity 1.3: Collected feedback from actors on the Deployed Marine Governance Baseline Tool for participatory marine resource management.

Sub-activity 1.4: Established regular communication and engagement with community members beyond initial meetings, fostering a culture of transparency, inclusivity, and accountability in project implementation processes.

3.2 Activity 2: Stakeholder Workshop, Fishers, Residents, Mangrove Communities, Hunting Communities, District Assemblies, CSOs, FC (WD)

Sub activity 1.1: Organized a Stakeholder Workshop engaging over 80 participants from fisher groups, community members, hunting groups, Anloga District Assembly, and Forestry Commission of Ghana.

Sub activity 1.2: Facilitated participatory engagement in various marine and coastal resources conservation initiatives, including sustainable mangrove harvesting, fishing, hunting, policy implementation, and law enforcement.

3.3 Activity 3: Form Coastal Resources Management committees and build capacities to support the co-management of mangroves and other coastal resources

Sub activity 1.1: Identified key stakeholders interested in coastal resource management, particularly mangroves.

Sub activity 1.2: Conducted training workshops to help communities define roles and responsibilities of Coastal Resources Management Committees, specifying objectives, decision-making processes, and activities related to mangrove and coastal resource management.

Sub activity 1.3: Promoted community support and participation in decision-making processes and implementation activities related to coastal resource management, fostering a sense of ownership and responsibility.

Sub-activity 1.4: Conducted a 2-day capacity building session for the KLCRS 20-member Coastal Resources Management Committee to strengthen decision-making and evidence-based conservation practices

3.4 Activity 4: Purchase and supply of surveillance and monitoring equipment to committees and (WD) agency

Sub activity 1.1: Purchased and delivered surveillance equipment (drone, motorbike) to enhance monitoring capabilities of KLCRS management for site oversight and restored areas.

Sub activity 1.2: Provided laptop and digital projector for community film screenings and school visits, supporting day-to-day mangrove conservation and education activities

Sub activity 1.3: Supplied basic nursery development and management support equipment (wheelbarrows, mattocks, hand shovels, garden gloves, rakes, safety boots, cutlasses, etc.) to KLCRS team for effective mangrove restoration efforts

REVIEW OF RESULT 4

Increase the awareness and build capacities of communities and general public on mangrove conservation as well as the adaptation to global climate change

4.1 Activity 1: Carry out a minimum of 8 times awareness raising activities about mangrove conservation and adaptation to global climate change, through film screenings and discussions at village level

Sub activity 1.1: Awareness about mangrove conservation and climate change adaptation disseminated among local stakeholders.

Sub activity 1.2: Workshops on mangrove conservation conducted to build the capacities of local stakeholders in all 4 participating communities

4.2 Activity 2: Carry out conservation education to children and adolescents through school visits for at least 8 times

Sub activity 1.1: Increased knowledge and understanding of mangrove conservation among children and adolescents.

Sub activity 1.2: Enhanced visual aids for effective communication during educational sessions

Sub activity 1.3: Preparation of educational materials to facilitate learning during school visits

Sub-activity 1.4: Deepened understanding of mangrove ecosystems among students through interactive education sessions

4.3 Activity 3: Carry out mangrove conservation festival 1 time in which a variety of activities such as exhibitions, competitions (football), and mangrove conservation campaign are being held

Sub activity 1.1: Initial planning and coordination for the festival completed.

Sub activity 1.2: Successful implementation of the festival with participation from 1000 community members and 400 students.

Sub activity 1.3: Increased community and school involvement in mangrove conservation efforts.

Sub-activity 1.4: Wide-reaching impact and dissemination of conservation messages among participant communities and schools.

Sub-activity 1.5: Increased effectiveness of educational activities and heightened interest in mangrove conservation.

SUMMARY OF THE IMPLEMENTATION OF ACTIVITIES

RESULT	ACTIVITIES	STATUS OF IMPLEMENTATION (NOT ACHIEVED OR COMPLETED OR IN PROGRESS)	OBSERVATIONS/COMMENTS
Result 1 : Sustainable livelihoods supported by strong foundations for inclusive economic growth and innovation as well as resilience and action on long-term environmental change	Activity 1: Community profiling and surveys on pro-conservation livelihood schemes and their potential impacts	**COMPLETED**	Terms of Reference for the pro-conservation livelihoods schemes, surveys and profiling was developed. A specialist by name, Dr. Andrew Agyakumhene (Univeristy of Ghana, Legon, Accra), was identified and successfully conducted and completed the baseline survey
	Activity 2: Stakeholder engagement for validation of baseline survey	**COMPLETED**	A Validation Workshop was organized on the Friday 13th May, 2022. A detailed final report was drafted and validated by stakeholders and community members.

	Activity 3: Build capacity of 60 recruited community members in approved livelihood schemes and support appropriate income-enhancing alternative livelihoods as pilot and for recruited vulnerable community members	**COMPLETED**	60 community members were recruited from the 4 participating communities (Galo, Sota, Bomingo and Galotse) and trained in the approved livelihood schemes, as well as fully supported in the approved income-enhancing alternative livelihood streams. The recruitment was done with good representation of men, women and youth
Result 2 : Innovative demonstration projects on mangrove restoration and/or rehabilitation, sustainable harvesting techniques and the creation of alternative sources of energy and building materials	Activity 1: Identify and map degraded sites for pilot restoration/rehabilitation	**COMPLETED**	8 main sites were selected, digitized and mapped for restoration activities; 4 sites for Mangrove restoration work (20 hectares) and 4 sites for alternative fuel wood plantation (10 hectares)
	Activity 2: Set up One center of community-based mangrove and woodlot spp. nursery for the rehabilitation needs of degraded mangrove forests and new energy fuelwood sources respectively and Degraded Mangrove Site and Woodlot Site preparation and planting	**COMPLETED**	One centre of community-based mangrove and woodlot nursery was successfully set up for restoration purposes
	Activity 3: Train 20 trainer of trainees in the sustainable harvesting techniques and schemes Identify and map site to cultivate suitable plant materials, which may be used as fuelwood (coppicing) and as building material	**COMPLETED**	20 ToTs were trained in Sustainable Mangrove Harvesting techniques using both indoors and field practical learning protocols

	Activity 4: Identify and map site to cultivate suitable plant materials, which may be used as fuelwood (coppicing) and as building material	**COMPLETED**	Community-based Woodlot sites identified were planted with over 15,000 woodlot species (covering a total land area of 10 hectares) as alternative energy sources
	Activity 5 : Carry out trees maintenance through replanting and caring of mangrove trees and measure trees' growth in the rehabilitated forest for at least 6 months after the planting in a participatory manner	**COMPLETED**	6-months intensive tree maintenance protocols were carried out through beating-up, weeding and monitoring survival rates
Result 3 : Deployment and application of a governance baseline tool for participatory management and support	Activity 1: Community meetings - analysis of Governance baseline tool: 'Looking Back' Taking Stock' Case studies and 'Looking Forward' Components with communities	**COMPLETED**	60 actors were selected from the 4 participating communities to 'look back' and 'take stock' of both ecological, environmental and social changes (ie. Landscape issues, causes and possible solutions) within their landscape, as a critical mangrove ecosystem
	Activity 2: Stakeholder Workshop, Fishers, Residents, Mangrove Communities, Hunting Communities, District Assemblies, CSOs, FC (WD)	**COMPLETED**	Over 100 participants were participatorily engaged in different marine and coastal resources conservation initiatives, such as sustainable mangrove harvesting, sustainable fishing and hunting, good policy implementation and law enforcement
	Activity 3: Form Coastal Resources Management committees and build capacities to support the co-management of	**COMPLETED**	A 20-member Coastal Resource Management Committee (5 members from each of the 4 communities) was successfully formed and trained to foster good decisions making, as well

	mangroves and other coastal resources		as carry out evidence-based mangrove conservation practicums
	Activity 4: Purchase and supply of surveillance and monitoring equipment to committees and (WD) agency	**COMPLETED**	Surveillance equipment (1 drone, 1 motor bike), Laptop and Digital projector, and basic nursery development and management support equipment (including, wheelbarrows, mattocks, handshovels, gardengloves, rakes, safety boots, cutlasses, etc.) were purchased and delivered to the KLCRS team
Result 4 : Increase the awareness and build capacities of communities and general public on mangrove conservation as well as the adaptation to global climate change	Activity 1: Carry out a minimum of 8 times awareness raising activities about mangrove conservation and adaptation to global climate change, through film screenings and discussions at village level	**COMPLETED**	Mangrove Conservation education and awareness creation were successfully carried out at all 4 participating
	Activity 2: Carry out conservation education to children and adolescents through school visits for at least 8 times	**COMPLETED**	Mangrove Conservation education and awareness creation were successfully carried out in 4 community schools (2 sessions per school) within the KLCRS
	Activity 3: Carry out mangrove conservation festival 1 time in which a variety of activities such as exhibitions, competitions (football), and mangrove conservation campaign are being held	**COMPLETED**	Successful implementation of the mangrove festival with participation from 1000 community members and 400 students

LEVEL OF ACHIEVEMENT OF RESULTS INDICATORS

Objective	Result	Indicator	Target to achieve	Target achievement level	Success rate (= value to achieve / target value)	Observations /Comments
Main objective : The project will contribute to both national and international efforts on managing and protecting mangrove ecosystems for sustainable coastal marine resources and human wellbeing		Two years after project completion Alternative income sources of local communities within and around the mangrove area developed. Sustainable mangrove forest ecosystem management developed.	local community members living (including women) in the catchment are supported by the preservation of mangrove forest ecosystem and also utilizing sustainable harvesting regimes and alternate fuelwoods. Degraded mangrove lands rehabilitated.	Successfully completed all objective	100%	The project has effectively supported local community members in preserving the mangrove forest ecosystem, rehabilitated degraded mangrove lands, enriched poorly managed core areas biologically, and replicated sustainable livelihood models in nearby communities

			Poorly managed core areas biologically enriched. Sustainable livelihood models replicated in other nearby communities			
Specific objective 1 : Sustainable pro-conservation Livelihood development (based on initial catchment area assessment existing and/or potential ones and their impacts)	Sustainable livelihoods supported by strong foundations for inclusive economic growth and innovation as well as resilience and action on long-term environmental change	Finalized baseline assessment document on pro-conservation livelihoods and their impacts at the site	A community developed and approved pro-conservation livelihood document.	Developed and approved pro-conservation livelihood document	100%	The pro-conservation livelihood document has been developed and approved by the community
		Number of Integrated pro-conservation livelihoods demo projects implemented	At least 2 pro-conservation livelihood schemes proposed and rolled out.	Proposed and rolled out 4 pro-conservation livelihood schemes	200%	4 pro-conservation livelihood schemes have been proposed and successfully implemented
		Number of individuals trained and supported in pro-conservation livelihood scheme	60 beneficiaries trained on at least 2	Trained 60 beneficiaries on 4 sustainable pro-	100%	Sixty beneficiaries have been trained on two

			sustainable pro-conservation livelihood schemes and supported	conservation livelihood schemes and supported		sustainable pro-conservation livelihood schemes and provided with support
		Number of livelihood initiatives creates new jobs and new streams of finance for communities, which also care for plants and animals	60 beneficiaries trained on 4 sustainable pro-conservation livelihood schemes and supported	Trained 60 beneficiaries on 4 sustainable pro-conservation livelihood schemes and supported	200%	Sixty beneficiaries have been trained on two sustainable pro-conservation livelihood schemes and provided with support
Specific objective 2 : Innovative demonstration projects on mangrove restoration and/or rehabilitation, sustainable harvesting techniques and the creation of alternative sources of energy and building materials	Innovative demonstration projects on mangrove restoration and/or rehabilitation, sustainable harvesting techniques and the creation of alternative sources of energy and building materials	Hectares of degraded Mangrove Sites rehabilited and number of mangrove seedlings replanted	Mangrove protection zone area increased by planting 30,000 mangrove seedlings covering about 20 hectares of degraded mangrove sites	Increased mangrove protection zone area by planting 30,000 mangrove seedlings covering about 20 hectares of degraded mangrove sites	100%	Thirty thousand mangrove seedlings have been planted, covering the targeted area of 20 hectares
		Hectares of Community woodlots established and number of woodlot species planted at community approved sites	Four woodlot sites planted with 12,000 seedlings for alternate	Planted four woodlot sites with 12,000 seedlings for alternate fuelwood	100%	Twelve thousand seedlings have been planted in four woodlot sites as planned

			fuelwood and building material	and building material		
		Developed sustainable harvesting document	Developed action plans for sustainable harvesting	Developed action plans for sustainable harvesting	100%	Action plans for sustainable harvesting have been successfully developed
		Management effectiveness of the catchment improve to 10-15 % from present state	Improve the management effectiveness of the catchment to 10-15% from its present state.	Achieved an increase in the management effectiveness of the catchment to the proposed range of 10-15% from its initial state	67%	The management effectiveness of the catchment area has shown significant improvement, reaching a level of 10% from the initial state, thereby demonstrating progress towards achieving the targeted range of 10-15%. Continued efforts in monitoring and implementing effective management practices will further enhance the overall management effectiveness

						of the catchment
Specific objective 3 : Deployment and application of a governance baseline tool for participatory management and support	Co-management of mangrove resources-enhanced understanding of community-agency-based mangrove management by local communities and authorities	Number of persons with greater understanding about ecological and social trends of mangroves Percentage communities/sectors with built mutual understanding about coastal resources	90 community members envisioning sustainable resources through use of marine governance baseline tool	100 community members envisioning sustainable resources through the use of the marine governance baseline tool	111%	Over 100 community members have utilized the marine governance baseline tool to envision sustainable resources
		Co-management working document developed	20 Coastal Resources community members trained on skills for monitoring of mangrove forest patrol operations	Trained 20 Coastal Resources community members on skills for monitoring of mangrove forest patrol operations	100%	Twenty coastal resources community members have been trained on skills for monitoring mangrove forest patrol operations
		Number of Coastal Resources Management committees Instituted with built capacities and supported with basic surveillance and monitoring tools	A sound monitoring system for mangrove biodiversity and ecosystem developed	Developed a sound monitoring system for mangrove biodiversity and ecosystem	100%	A sound monitoring system for mangrove biodiversity and ecosystem has been successfully developed
		Number of monitoring equipment provided for co-management	Participatory management developed and	Developed participatory management and supplied	105%	Participatory management has been developed, and surveillance

			surveillance equipment supplied (1 drone,6 GPS, 1 motor bike with 30 Raincoats and boots)	surveillance equipment (1 drone, 6 GPS, 1 motorbike with 30 raincoats and boots), a laptop and a Bluetooth Portable PA System		equipment has been supplied as planned
Specific Objectiv 4 : Increase the awareness and build capacities of communities and general public on mangrove conservation as well as the adaptation to global climate change	Awareness of local stakeholders on mangrove conservation and sustainable development increased	level of awareness generated in persons (Increased understanding and awareness of communities, including children, youth and fishing groups on the importance of saving and conserving mangrove ecosystems in Keta Municipality). Number of persons not exploiting mangrove Number of persons participating in conservation programs Number of persons using alternative fuel and building materials	About 3000 indigenes directly and indirectly educated and their awareness raised on sustainable mangrove and coastal resources management	Educated about 3000 indigenes directly and indirectly and raised awareness on sustainable mangrove and coastal resources management	100%	Approximately 3000 indigenes have been educated directly and indirectly, raising awareness on sustainable mangrove and coastal resources management

UNPLANNED RESULTS OBTAINED

1. Empowering the Newly established KLCRS Community Resource Management Area (CREMA) Executives

In the course of implementing our PAPBio Mangrove Project, an unplanned yet significant outcome emerged as A Rocha Ghana took on the task of training the newly established KLCRS Community Resource Management Area (CREMA) Executives. This unexpected development seamlessly aligned with our project activity of establishing and building the capacities of coastal resource management committees.

Leveraging our expertise and track record in CREMA formation, establishment and development processes, A Rocha Ghana played a pivotal role in imparting essential skills and knowledge to the CREMA Executives. Through comprehensive training sessions, we covered various aspects of coastal resource management, including crema by-law creation, operational procedures, and the establishment of strong functional structures within the team.

By extending our support to the KLCRS CREMA Executives, we not only enhanced their capacity to effectively manage coastal resources but also fostered collaboration and cohesion among team members. This unplanned initiative underscores our commitment to empowering local communities and fostering sustainable natural resource management practices.

Moving forward, A Rocha Ghana remains dedicated to nurturing partnerships and fostering capacity-building initiatives that contribute to the long-term conservation and resilience of mangrove and coastal ecosystems.

2. EU and IUCN Project Monitoring: Insights from the KLCRS Landscape

In June 21, 2023, the European Union (EU) and IUCN project monitoring team conducted a comprehensive visit to the Keta Lagoon Complex Ramsar Site (KLCRS) as part of their rigorous monitoring and evaluation process. The esteemed delegation, consisting of the PAPBio Project Coordinator, EU Representative, and members of the Ghanaian media network, including Joy News and Ghana News Agency (GNA), observed various facets of the project's implementation.

Additionally, on April 4, 2022 and May 22, 2023, the IUCN team undertook a similar visit to the KLCRS landscape, comprising key personnel such as Anthony Adeea Mba (IUCN Ghana), Dr. Paul Silai Tendeng (PAPBio Project Coordinator), and Lamine Doucoure (PAPBio Project Monitoring and Evaluation Officer).

During these visits, several critical activities were undertaken, including discussions on project progress, exploration of potential collaborations with partners, and assessments of livelihood beneficiaries and climate-smart farms. Field visits to mangrove restoration and woodlot sites provided insights into the survival rates of planted species, with impressive figures of 85% for mangroves and nearly 95% for woodlots.

However, challenges such as delays in funding, bushfires at the Galo Mangrove Restoration Site, and issues surrounding chieftaincy disputes over land in Bomingo were also noted. Despite these hurdles, the monitoring team conducted thorough assessments and engaged with community stakeholders to address concerns and strategize for future project endeavors.

Overall, the monitoring visits provided invaluable insights into the progress and challenges of the project, reaffirming the commitment of all stakeholders to the conservation and sustainable management of mangroves within the KLCRS landscape.

3. Successful Launch of the PAPBio Project

On December 10, 2021, a momentous occasion unfolded in Galotse, one of the project's focal communities, as the PAPBio Project was officially launched. The event marked a significant milestone in the journey towards mangrove protection, biodiversity conservation and sustainable development in the KLCRS landscape.

The project launch garnered widespread attention and participation, with a notable presence of esteemed dignitaries and guests. Chiefs representing the four (4) participating communities - Bomigo, Galotse, Galo, and Sota - graced the occasion with their esteemed presence. Additionally, key representatives including District Chief Executives from Keta and South-Tongu, District Planning Officers, District Agriculture Officers, Assembly Members, Deputy Wildlife Director, Wetlands Operations Director, and members of various community-based organizations (CSOs) in the landscape, contributed to the success of the launch.

The overwhelming turnout of stakeholders underscored the collective commitment towards the project's goals and highlighted the significance of collaborative efforts in driving positive change for mangrove conservation.

IMPLEMENTATION DIFFICULTIES

This community-agency driven project has achieved great successes and made impacts in the four communities and adjoining landscapes. That notwithstanding, the project encountered some implementation difficulties. During the project closing discussion, stakeholders identified amongst other things, constraints, best practices, and how to replicate or ensure continuity.

In year one of project implementation, Mangrove planting within one of the communities (Bomigo), could not be carried out. This was due to some land litigation issues (at site earmarked for planting) among two families. After numerous efforts to settle the land related issues without any success, the project team resorted to aborting the planting activities at the site. The team strategically increased planting of mangrove numbers at the other three community sites to cater for the total numbers of seedlings to be planted for the first year.

During the dry spell period of the first year, some planted mangrove stands at the Galo Site was gutted by fire. The team off-setted the lost by planting more mangrove seedlings in the second year. Related to the lessons learnt, the project implementation team put up a comprehensive fire management plan for all the sites and increased site surveillance by the community mobilizers.

On the planting side, One of the woodlot sites (Galo) experienced low growth rate in the first year despite the site being tested prior to planting. Further assessment showed rather high levels of salinity in the soil. Accordingly, the team looked for a new site in the second year for planting and increased woodlot seedlings number to cater for the loss in the first-year planting period.

On the operational side, the project was hindered to some extent by delays in financial releases which caused delays in implementation of project activities but not to the detriment of overall success. The Lead applicant determined to achieve the greatest project success on most occasions pre-funded some activities. This was to mitigate any possible setbacks and failure to the project. Also, the success of the community mobilization and passion to work at all times was as a result of the motivation payment schemes for mobilizers and nursery workers (one of the key features of the projects). While mobilization and organization into an organized collective was the task allocated to Community mobilizers (CM), ARG and KLCRS office continuous communication and transparency was a unique tool that ensured collaborative working spirit among all actors.

ARG and KLCRS office's engagement with the community was done in a transparent and well-documented manner through agreements that define each party's roles and responsibilities and set-out the payments to be made as incentives. Accordingly, transparency and accountability aided ownership by the community thus eliminating disappointments which has transpired in the communities through other projects. Additionally, the various capacity building and trainings provided to the communities also payed off in that the success rate of the plantations (woodlot and mangroves) maintained by them was positive.

TEACHINGS

Uniquely, the project adopted a participatory process through the Marine Governance Tool Kit to look back in time, assess the present and to look forward into the future on a variety of defined resources themes. The process offered the group to understand that, restoration should look at the hydrological situation of the site and assess different creeks, soil, water and stream situation at present to inform the process. The main lesson learned from this experience by the communities was that, baseline factors are essential in any mangrove reforestation technique proposed, which was recognized for its effectiveness. The participants also associated this initial assessment with the organization and awareness that went with it. The second lesson was the recognized importance of mangrove and woodlot planting in view of the multiple benefits observed a few years later. These results are considered to generate a strong human development impact, through the achievement and adoption of a simple and effective technique within reach of the villagers and through the fact that this activity on a key ecosystem of the Keta Lagoon territories may have been the engine of solidarity.

Following the mangrove restoration and pro-conservation livelihood actions, community actors report that they have taken measures to protect and manage mangroves, particularly against illegal and unsustainable cutting of mangrove wood and destructive fishing methods by indigenes or others. This awareness during and after mangrove restoration action is considered important and indicates a good social potential for the sustainability of Keta lagoon ecosystem. Also, some community actors have reported planting new mangroves in degraded areas on their own initiative as well as expanded their farms using conservation agriculture protocols. This information provides tangible evidence of awareness for the sustainable management of this ecosystem.

In terms of community actions, different elements stand out for learning: watching each other for the common good (any unsustainable resources use action to be handled by the CREMA), the community decision to control unsustainable and excessive logging and the improvement of landscape resources integrity by all for all. Notably, about half of the communities have realized the importance of protecting their mangrove capital and have seen the need and linkage to their fisheries and other livelihood resources. The high rate of protection decisions is an undeniable impact towards the

sustainable management of mangroves. Nevertheless, there is still room for improvement in the implementation of decisions.

SUCCESS STORY

Success Story 1: Empowering Coastal Communities Through Sustainable Livelihoods

In the 4 beneficiary communities of the PAPBio project, where mangrove forests were once threatened by unsustainable harvesting practices, a transformative initiative has taken root. Through our mangrove project, we introduced pro-conservation livelihood schemes aimed at supporting local communities while preserving the precious mangrove ecosystem.

One success story stems from the establishment of a community-led climate-smart farming, sustainable fishing, Handcraft and Apprenticeship initiative. By providing training and resources, including fishing canoes and approved nets, seeds and seedlings, and manual sewing machines, we empowered community members to engage in responsible agriculture, fishing and craft making. As a result, not only have livelihoods been improved, but the pressure on mangrove forests for traditional harvesting methods has significantly decreased.

Today, community members like Mr. Abotsi, a father of 8 children and Miss Forgive, a peasant fisher, are thriving. Forgive, once struggling to make ends meet, now earns a sustainable income from her sustainable fishing activities while actively contributing to mangrove conservation efforts. Forgive's story signifies the positive impact of the sustainable pro-conservation livelihood initiatives in coastal communities.

Success Story 2: Restoring Mangrove Ecosystems for Future Generations

Within the 4 selected communities (Galo, Galotse, Sota and Bomingo), where mangrove forests had been reduced by years of degradation, a remarkable transformation has taken place. Through collaborative efforts under our mangrove project, degraded mangrove lands have been rehabilitated, paving the way for the restoration of vital ecosystems.

One notable success story revolves around the ambitious mangrove reforestation efforts undertaken in partnership with the local communities and the KLCRS Office of the Forestry Commission. With the planting of over 30,000 mangrove seedlings across 20 hectares of degraded sites, once barren landscapes have been transformed into thriving mangrove forests. This restoration not only enhances biodiversity but also provides crucial habitat for countless species of flora and fauna.

Furthermore, the reforestation initiative has sparked a renewed sense of environmental stewardship among community members. Through hands-on involvement in planting activities and educational workshops, local community members have become passionate advocates for mangrove conservation. As a result, sustainable management practices are now firmly rooted in the community's ethos, ensuring the long-term health and resilience of mangrove ecosystems for future generations to enjoy.

Success Story 3: Increased community engagement

One evident success story which relates to this project has to do with the beneficiary communities. Strategically, the project involved the training of women, youth, and men in sustainable mangrove harvesting and other restoration techniques, as well as recruiting mobilizers and nursery volunteers from the communities for all conservation-based practices within the landscape. It has enhanced communal ownership and action, reaching wide and beyond the communities. The trained beneficiaries are continually overseeing the restoration and conservation of mangrove sites, and are now actively involved in voluntarily raising awareness of mangrove restoration and importance of mangrove conservation among local communities. The increased community engagement and ownership of the mangrove restoration efforts amongst beneficiary community members is critical to the long-term success of the project.

ACTIONS TO BE SUSTAINED

This project which aims to achieve integrated protection of the diversity and fragile mangrove ecosystems in Keta Lagoon Ramsar Site and their enhanced resilience to climate change has brought up many insights which has contributed to partner organizations, communities and the other stakeholders of the project to improve their skill and knowledge about mangrove restoration, pro-conservation livelihood, climate change and to enhance their adaptive capacity to tackle the climatic risk within the Keta intervention area. Notable actions to be sustained among others are:

Unique partnership: The project achievements reflect the success of an innovative partnership between an implementing National NGO (A Rocha Ghana (ARG)) and National Agencies: Keta Lagoon Ramsar Site Office of Wildlife Division, Forestry Commission, and Two District Assemblies. Each partner contributed their unique set of technical and field knowledge, to mobilize and bring together various stakeholders including several scientists and officers from departments across the two districts and other agencies. The equal, respectful and symbiotic relationship observed between the two co-applicant organizations (ARG and KLCRS) during the project is a lesson for the larger development community. It highlights how scientifically proven interventions can be effectively scaled out at the field level, while at the same time highlighting how local ground-based insights and impacts can also be communicated to the larger global audiences. This partnership when continued will go a long way to inure to the benefit of the people and landscape resources

Participatory identification and design of Mangrove restoration and climate resilient interventions: The two key strategies the project combined that is: 1. The Marine Governance tool kit 2. Ecologically sensitive techniques for climate change adaptation and mitigation in farming (in particular agroecology, agroforestry and conservation agriculture) as well as in other businesses using pilot plots both used a participatory approach for designing the project implementation plan to ensure that stakeholders and communities develop partnerships for the present and future and that primary stakeholders (Smallholder farmers and fishers) have the opportunity to provide feedback on areas for improvement. These kinds of participatory approaches, promote learning, program improvement, and sustainability. Importantly, the project learnt that, majority of the farmers/fishers are keen to contribute to project monitoring and evaluation if allowed to do so in ways that suit their other daily activities. With the creation of the new Community Resources Management Area (CREMA) at the site, related actions will continue as ARG and KLCRS through the support of IUCN Ghana will continue building communal support and upscaling actions. Importantly, both woodlots and mangrove sites will be continually monitored and sustained by communities through the functional CREMA.

Lessons in institutional capacity building: Hands-on, do it yourself really helps Smallholder farmers/fishers to believe what they see. Also, creating awareness through videos and evidence of technological adoption can enable faster mobilization of farmers/fishers for institutional formation. Showing them what other farmers/fishers are doing and what simple technology can help them achieve helps in convincing them better. Providing economic incentives (eg. Business start-ups) works as an effective incentive to adopt a technology. For instance, smallholder farmers took more interest in the conservation agriculture protocols when they were provided with simple supporting tools. The simple do it, try it approach further encouraged them to own the process which is and will be sustained within the landscape through farmer knowledge transfer practices.

Convergence is key to building Mangrove Restoration and Climate resilience : Different interventions across several departments at district levels play an important complementary role in promoting Mangrove restoration and climate change adaptation and mitigation intervention at the community level. Mainstreaming restoration, adaptation and mitigation into planning, as well as implementation of same can provide a means to scale up local restoration, adaptation and mitigation actions at the district level. The project results and lessons will be integrated into district medium term development plans as a convergence plan for mangrove restoration, climate adaptation and overlaying it with the types of interventions within the assemblies and finally aligning it to on-going government programs. These can serve as a valuable tool for communities and policymakers to guide their decisions on future resilience and livelihoods related actions.

PERSPECTIVES AND RECOMMENDATIONS

The goal of the project was to to contribute to both national and international efforts on managing and protecting mangrove ecosystems for sustainable coastal marine resources and human wellbeing. Also, the project purpose was to engender community-agency collective actions towards the management and enhancement of mangrove ecosystems functional integrity, productivity and stability through innovative interventions for both ecological and socio-economic gains under the 2 years project implementation activities. To this end, the project developed sustainable pro-conservation livelihood schemes to alleviate poverty, rolled out a marine governance tool to promote participatory management, as well as implemented a collaborative restoration and use practices for long term persistence of catchment mangrove species, habitats and human wellbeing within the Keta Lagoon Complex Ramsar Site.

The project made a conscious decision to work to reach a highly vulnerable group not just from a mangrove and climate risk perspective but also in terms of overall coastal development. Here, the impacts are reflected not just in terms of restoration successes and income improvements, but also in terms of the significant level of convergence done, collective action undertaken even during challenging times. This validates the appropriate selection of both mangrove restoration technologies and innovative community mobilization approaches to enhance the resilience of coastal fishers and farmers in the most isolated and underdeveloped parts of the two districts in the country. The project's experience and learnings highlight ample scope to further build on the safeguarding and innovative model for mangrove restoration and expand it in other Communities, Districts and Regions.

The project interventions have empowered coastal communities through new knowledge, technology and practices and built a mechanism that has huge potential to scale them out. A unique contribution of the present intervention appears to be the creation of an ecosystem within which both fishing and farming groups can connect with relevant stakeholders and markets and avail solutions to some of

the institutional and regulatory bottlenecks that otherwise hamper productive coastal resources conservation and/or management. Impacts of community led approaches and convergence initiatives will continue to build the resilience of fishers/farmers and coastal communities beyond the life of the project.

Some recommendations and lessons are:

1. Strengthening capacity is a process. For this reason, the local governance structure (Community Resources Management Area) initiated and established through the support of IUCN Ghana should be continually supported through continuous capacity building and with basic operational equipment.

2. Community-agency collective action processes should continue with unique transparency, accountability and respect for all and by all

3. To reduce the dependency on mangrove-related products there is an urgent need to provide pro-conservation alternative livelihoods. This should be tied to communal engagement and participation, training and the provision of start-up capital. One key area for adaptation is fisheries post-harvest processing issues. We recommend possible project that looks at solar freezers for fisher groups. Also, the alternative energy and wood sources through woodlots should be expanded in hectarages

4. Mangrove and coastal development projects should always incorporate sustainable beneficial roles for whole communities rather than roles with only immediate economic benefits. It should also take into consideration the roles of the vulnerable groups the communities.

5. The need to continually seek local knowledge and experience in planning and for development through close collaboration with local communities; Fishers/Farmers are happy if their voice is heard, and are given the opportunities where they can share experiences and knowledge.

ANNEXES

Annex 1: Photos of activities with captions

Plate 1: Participants seated during the Validation Workshop

Plate 2: Group work sessions during the validation process

Plate 3&4: Mapping and Assessment of site for restoration activity and woodlot establishment

Plate 5: Mangrove and Woodlot seedlings ready for planting

Plate 6: One of the community-based woodlot site

Plate 7&8: Mangrove Restoration Site

Plate 9&10: Delivery of Suivellnce Equipment (Motor Bike and Drone) and Nursery Centre support equipment

Plate 11,12,13&14: Schools conservation education session (presentations, group works, etc.)

Plate 15: Indoor Discussions and Debriefing of the PAPBio Project with the IUCN Team

Plate16: Field Visit to degraded mangrove sites earmarked for restoration

Plate 17: A group photo of the IUCN Team (extreme left and right), KLCRS Manager and the ARG Programs Manager (middle)

Plate 18: Group Work, Task and Presentation Sessions during livelihood training sessions

Plate 19: CCAM Scientist and Participants (climate-smart farming methods)

Plate 20: Sustainable Mangrove Harvesting Training (Group picture and field practical learning session)

Plate 21: A Rocha Ghana and KLCRS Team monitoring the status of Mangrove and Woodlot site

Plate 22: Marine Governance Tool deployment: Group reasoning for landscape issues


Plate 23: Marine Governance Tool deployment: Group reasoning for landscape issues

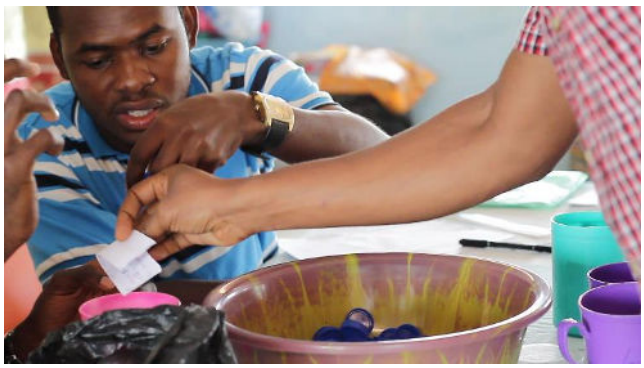


Plate 24: Wetland Resources Harvest Games and Group presentations


Plate 25: Meeting and Training sessions with Community Mobilizers for Village-level awareness creation

Plate 26&27: A Rocha Ghana and KLCRS Team visit Salo Village Mangrove Market to create mangrove conservation awareness

Plate 28: Piled Mangroves harvested for sales at the Salo Community Mangrove Market within the Keta Lagoon Complex Ramsar Site

Plate 29&30: Continuous engagement meeting sessions and follow-ups with community project beneficiaries: the project team providing technical assistance and coaching on the various livelihood streams

Plate 31&32: Land preparation in readiness for 2nd phase of woodlot establishment and mangrove restoration activities

Plate 33&34: Community members and KLCRS Officers working on re-stocking mangrove and woodlots nursery to meet the Second Phase (2023) restoration and planting targets of 15,000 mangroves and 6,000 woodlots

Plate 35&36: Mangrove and Woodlot Nursery site: seedling ready for transplanting


NP300


NP300
GS-5310-12

Plate 37-40: Mangrove and Woodlot seedlings distributed across all planting sites for beating-up processes and Phase 2 restoration planting

Plate 41-44: Mangrove restoration site: Planting Volunteers offloading Mangrove seedlings for planting processes across all planting sites

Plate 45&46: Group photo of mangrove restoration and planting volunteers

Plate 47: Formal deliberations, dialoguing, and plenary sessions with key leaders across all 4 communities prior to future project activites (example, Stakeholder workshop, Coastal Resource Management Committees, Mangrove festival, etc.)

Plate 48&49: European Union and IUCN Project Monitoring Team visit to beneficiary community woodlot and mangrove restoration sites: Group photo with community heads/mobilizers


Mangroves, Our Lifeline,
Our Livelihoods

Plate 50-52: European Union and IUCN Project Monitoring Team visit to beneficiary community woodlot and mangrove restoration sites

Plate 53: European Union and IUCN Project Monitoring Team visit to mangrove and woodlot nursery sites


SONG
Save the mangroves 2x
Replant the trees today!
2x
Boys come and help us
Girls come and help us
Replant the trees today!
2x


WEDNESDAY
10th Week
Save the
Replant th
Boys come
Girls come
Replant th

Plate 53-56: Mangrove Conservation education and awareness creation in schools. About 80 University Environmental Educators engaged children and adolescents in their various schools.

Plate 57-61: A Rocha Ghana Team presenting livelihood support items to beneficiaries (Handskill development and apprenticeship, Sustainable fishing boats, processing ovens and gas cylinders)

Plate 62-63**:** Mangrove Festival: Mangrove Wheel Game Context amongst schools

Plate 64-65: Mangrove Festival: Mangrove Soccer Competition amongst all 4 participating/beneficiary communities

Plate 66-67: Mangrove Festival: Mangrove Conservation Cross-word Puzzle Context


Plate 68-70: Mangrove Festival: Poetry Recitals Context amongst the schools

Plate 71-72: Mangrove Festival: Mangrove Education and Conservation Awareness, Knowledge sharing and Learning Stands

Plate 73: Mangrove Festival: Prizes displayed to be awarded to participating communities and schools

Annex 2 : Links to Online-related publications about the Project

https://web.facebook.com/page/150379535029401/search/?q=papbio

https://web.facebook.com/AROCHAGHANA/posts/pfbid02LUdsJvyonGHSagUAvLkZQTvWE1kNCm984QT8gMsaVAyrFSAjBMCH4MJrPSvNkFmCl

https://web.facebook.com/AROCHAGHANA/posts/pfbid09gePyhNue392ZuZrgUmwSuM1ZNij7bZXoY1KciBQKZ3QFSKHo35ffpYDwaY9Lz6dl