END OF YEAR REPORT

Safeguard the Ecological Integrity of the Atewa Forest Reserve through the Adoption of Best Conservation and Agricultural Practices.

Submitted to
Institute for Global Environmental Strategies (IGES)
Japan

Prepared by

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LIST OF ACRONYMS

CA	Conservation Alliance International
GPS	Good Agricultural Practices
IGES	Institute of Global Environmental strategies
SDM	Satoyama Development Mechanism
GAPs	Good Agricultural Practices
NTFPs	Non-timber Forest Products
STCP	Sustainable tree crop
CCE	Cocoa Certification extension curriculum
ToT	Trainer of Trainers

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1.0 INTRODUCTION

The tropical forest regions provide livelihood opportunities for communities living on the buffers of forests but human activities have significantly degraded their resources leading to loss of biodiversity. Since the 1920s, an estimated 80% of Ghana's state-managed forests have been lost due to anthropogenic activities. Ghana's Atewa Range Forest Reserve is both an Important Bird Area and a Globally Significant Biodiversity Area (GSBA), yet human activity poses a threat to the reserve's rapidly declining vegetation. The Atewa forest represents about 33% of the remaining forests in the Eastern Region of Ghana and is home to many endemic and rare species. The forest is the source of three major rivers Ayensu (103km), Densu (116km) and Birim (175km) that provide freshwater to millions of people within their catchment areas. Upon closer inspection, the Atewa forest exhibits layers of immaculate woodland and a dense, closed canopy of greenery. Because of its unique physiology, the forest plays a vital role in improving the surrounding area's resistance to environmental stressors including drought and air pollution. More than 40 communities including the Obuoho community, which is the project area, border the Atewa forest that is located inside the Akyem Abuakwa Traditional Area.

Obuoho community is within a 1km radius of the extension wing of the Atewa Range Forest Reserve. It has a population of about 1332 persons of which more than half (51.6%) are females with the rest (48.4%) being males. Due to the rich natural resources including a network of rivers, fertile agricultural lands and flexible land tenure arrangement, the town has become an attraction to many migrants seeking new economic opportunities. The Obuoho economy is agriculture-based with over 89% of the people directly or indirectly dependent on agriculture. In addition to cocoa (the dominant tree crop), the main food crops grown are tomatoes, pepper, spices, garden eggs, plantain, cassava and fruits like pineapple and banana. Families especially women headed-households have supplemented their household incomes with Non-Timber Forest Products (NTFPs) to their income due to the low productivity of farms. The Atewa forest reserve has been deteriorating more rapidly as the population grows with increasing NTFP dependency and other forest resources. In order to overcome this obstacle, it is therefore necessary to promote the implementation of best practices in conservation and agriculture to raise household incomes and strengthen the women's cooperative in resource governance. According to recent surveys (CA 2021 & 2022), the selling of NTFPs contributes more than 9.2% of household income thus protection of the forest resources is vital to sustain household incomes.

Conservation Alliance International (CA), with funding from the Institute for Global Environmental Strategies (IGES) through the Satoyama Development Mechanism (SDM)) implemented a project to safeguard the ecological integrity of the Atewa forest reserve by strengthening community women in resource governance in partnership with Rural Support Network (RSN). This report presents the objectives, activities, outcomes and recommendations of the project.

1.1 Project Objectives

i. Strengthen the capacity of community women cooperative in resource governance.
ii. Undertake community education and public awareness on the value of biodiversity.
iii. Promote the adoption of best agricultural and conservation practices through Farmer Field School approach.
iv. Link women producers to key institutions and markets.
v. Restore degraded area of southern portion of forest reserve and production landscape.
vi. Develop a database and GIS images to track changes within the forest and production landscape

2.0 PROJECT ACTIVITIES

The participating local communities' strong sense of connection and dedication to the project's intended goals was essential to its success. Building confidence with different partners is also very crucial. Therefore, in the first quarter of the project's implementation phase, influential women and local leaders were called to inform them of the project's goals, anticipated outcomes, and request their cooperation and collaboration. Their opinions were also sought after in order to improve the project's seamless and effective completion.

Plate 1 Meeting with relevant stakeholders

A scheduled gathering included women with voice/influence and one of the chiefs in the neighborhood (Plate 1). The proposal was well supported by the local government, traditional leaders and women women in attendance by the end of the discussion. The project activities that were carried out are listed below according to the predetermined project objectives.

Objective 1: Strengthen the capacity of community women cooperative in resource governance

Activities: Research on environmental governance consistently acknowledges that implementing a gender-inclusive strategy is both self-reinforcing and essential for achieving favorable development outcomes for women, their families, and communities. To kick off the project, a community engagement was conducted within the cooperative to enlist women for the project implementation. About thirty (30) women expressed interest in joining the project during its initial stage and they were chosen as lead women women. The project began with this group, with expectations for gradual increase over time. The first meeting aimed at promoting sustainable resource governance. Resource governance refers to the processes, policies, and institutions that control how natural resources (such as minerals, forests, water, and energy) are managed, allocated, and utilized. It includes decision-making on resource extraction, distribution of benefits, environmental protection, and social and economic impacts on communities. Effective resource governance aims to ensure that natural resources are used sustainably, equitably, and transparently to benefit both current and future generations.

Plate 2 Interested women women join Yonkodo women's cooperative

During this engagement, the women were briefed on the project's objectives, immediate goals, and long-term aspirations. They were informed that the cooperative would serve as a platform for knowledge sharing, capacity building and resource conservation.

In an effort to improve the women's livelihoods, they were made aware that the project would include a series of training sessions designed to enhance their secondary businesses, thereby reducing their unsustainable dependence on forest resources. Following engagement activities and exercises on leadership (see Annex B), the women recognized the need for inclusive participation and engagement in resource governance After an interactive session, the "Yonkodo Women's Cooperative" (*Yonkod*o means comradeship) selected leaders through a transparent voting exercise. The selected positions included Chairwoman/President, Organizer, Treasurer and Secretary. The 30 women were charged to be the lead Farmers and were taken through a series of trainings and education to enhance their capacity in resource governance.

Outcome

As a result of the engagement, 30 women were slected from the cooperative as lead farmers (see Annex A) and were trained to become trainers of trainers (ToT) to foster women inclusion in resource governance .

Challenges

Despite the successful execution, women's engagement in empowerment efforts was limited by time constraints resulting from their various duties. Very few constraintsresulting from various duties. Very few resistances of certain men to gender-inclusive tactics, who perceive changes to conventional/traditional roles as a threat further complicate the fight for equality and women's active participation.

Plate 3 A Yonkodo member prepping her chewing sponge for market

Way Forward

Engaging the men as allies in conversations about gender equality, emphasizing shared benefits is necessary. They will be encouraged to become advocates for women's empowerment, which can help mitigate the few resistances

Objective 2: Undertake community education and public awareness on value of biodiversity.

Activities: Biodiversity is essential for the health of our planet and all living beings, including humans. It underpins the functioning of ecosystems that provide us with clean air and water. In the first quarter of the project, CA organized biodiversity conservation education activities, guided by the Ghana Forest and Wildlife Policy (see Annex B). Throughout these activities, it became clear that the women in the community possessed some local knowledge related to biodiversity conservation.

Plate 4 Meeting with cooperative to enhance knowledge on biodiversity conservation

Training programs were developed and focused on national regulations regarding the extraction of forest products, the value of biodiversity, and the connection between ecosystems and community well-being. This was implemented in the second quarter (see Plate 5). Engaging group discussions were instrumental in raising awareness about biodiversity among the participants. During the training, the importance of their current sociocultural conservation practices, such as the observance of taboos and the reverence for rivers and water bodies were emphasized [1]. The community regards these rivers as sacred, attributing divine qualities to them, and this cultural practice has proven effective in safeguarding these vital freshwater sources. The women also received extensive training on the value of wildlife for both humans and overall ecosystem health. They follow a traditional belief that killing pregnant animals bring bad luck, which serves as a conventional method for managing and conserving animal populations. The women who participated in these training sessions expressed satisfaction with the depth of information and knowledge they acquired regarding biodiversity conservation.

Outcomes

Three (3) awareness education exercises were conducted that focused on conservation awareness of the importance of protecting native tree species and wildlife. About 60% of the lead farmers adopted sustainable practices such as agroforestry to improve the ecological health of their production landscape. There are strong indications that more women will adopt these practices in future.

Challenges

Changing behavior patterns usually take a while but information that focuses on value of biodiversity and need for sustainable use are critical to influence change in behavior.

Way Forward

Overall, enhancing women's knowledge and skills on biodiversity conservation has made significant strides in raising awareness and knowledge among women farmers. The trained lead farmers will continue to lead efforts in advocating for adoption of more sustainable practices within the communities.

[1] In Obuoho, Thursdays are taboo days for farming activities. This tradition is to ensure that the farm and all biodiversity are effectively managed.

Objective 3: Promote the adoption of best agricultural and conservation practices through Farmer Field School approach.

Activities: Good agricultural practices (GAPs) have proven to be an effective strategy for enabling women to maximize their profits while preserving the environment. Following the commitment of the women and the approval from local authorities, CAI initiated a series of actions to fulfill Objective 3 of the project. The project team organized interactive education sessions that took the form of both classroom and field discussions. These sessions began with engagements designed to assess the women's existing knowledge of agricultural and conservation practices. This initial assessment proved crucial for guiding the ensuing topics, as it soon became clear that the women's understanding in this area was quite limited.

Plate 5 Training on GAPS

The first topic addressed was climate-smart agriculture, an essential strategy for mitigating the effects of climate change. During these discussions, the women shared their perspectives on climate change, reflecting on its impact on agricultural practices and crop yields over the years. Through these conversations, they identified specific ways in which climate change affected their farms and explored steps they could take to reduce its effects and enhance productivity.

Next, the discussions turned to the importance of proper farm management setup, incorporating the women's feedback. Given that all participants primarily grew cocoa, they learned about the benefits of planting both temporary and permanent shade trees to protect their cocoa trees and improve soil health. The project team highlighted several desirable beneficial permanent tree species, including *Terminalia ivorensis* (Emire), *Khaya senegalensis* (Mahogany), and *Terminalia superba* (Ofram).

The project team also promoted the adoption of temporary shade like plantain, cocoyam, and banana to reduce run-off, rapid uptake of soil nutruents and incidence of aphids. Soil management also received attention, particularly regarding the issue of soil erosion exacerbated by climate change. Emphasizing the need to maintain soil cover, the team advocated for effective weed control measures, including manually removing softer weeds. This approach encouraged the women to reduce their reliance on herbicides. Additionally, the women were urged to plant leguminous cover crops, such as groundnuts, to enhance soil fertility. The proper use of pesticides was also discussed including the adoption of integrated pest management (IPM). Good record keeping of farm activities as well as financial activities were encouraged to make the beneficiary women see farming as business enterprises.

Throughout the training, the project team incorporated elements of traditional practices, such as protecting farm water bodies, observing "no-farming" days, and safeguarding particular tree species known for their ecological and cultural significance. Although traditional land preparation methods like slash and burn were common, the women recognized the detrimental effects of this practice on biodiversity. They expressed a commitment to adopting the project's recommended approach of zero burning to improve ecological health on their farms. This seamless integration of modern and traditional biodiversity conservation methods such as community based conservation where local communities use traditional knowledge and practices to manage biodiversity sustainably and restoration ecology as well as agroforestry which focuses on rehabilitation of degraded ecosystems to their natural state simplified the implementation of these new practices.

Outcome

Three (3) training sessions were organized for 30 lead women farmers who then shared their acquired knowledge and skills with 12 additional women who expressed interest to join the cooperative. At the end of the project, there had been a 40% increament in women practicing integrated pest management thus leading to a reduced overdependence on pesticide use and chemical runoff into water bodies.

Challenges

The adoption of new conservation and agricultural techniques often came with high upfront costs, and some of the women struggled to balance the immediate benefits of short-term productivity with the long-term sustainability goals of the project.

Way Forward

Objective 3 of the project significantly advanced the knowledge and practices of women in Obuoho community, promoting both agricultural productivity and environmental conservation. Moving forward, addressing the economic challenges related to implementing these new practices will be essential for ensuring sustained success in their conservation efforts through an etablishment of a microfinance program specifically for women and crop insurance scheme policies.

Objective 4: Link women producers to key institutions and markets

Activities: Understanding how women access markets as both producers and wage laborers was crucial in promoting inclusive economic growth within the Obuoho community. The residents of Obuoho face significant barriers to market access, as there are no open markets for selling their harvested goods locally. The nearest market is located about 40 minutes away in *Anum Apapam*, where market days are held on Fridays.

Plate 6 Market Day

In addition to cultivating cocoa, the women in the cooperative are renowned for their production of spices and plantains. One notable spice is *Aframomum melegueta*, also known as alligator pepper or grains of paradise. This spice is native to the tropical rainforests of West Africa and can be found in coastal forest zones stretching from Senegal to Cameroon which is a vital part of their livelihoods, contributing significantly to their income. It plays a role in forest dynamics by supporting herbivores and acting as an understory species that contributes to soil stability and forest health.

The poor condition of the road from Obuoho to Anum Apapam presents a significant challenge to transport of products to the market. Transporting agricultural produce to the market center is prohibitively expensive, often necessitating the rental of costly motorbikes. Consequently, many women find themselves selling their goods at the farm gate to other women, resulting in minimal profits.

To address these challenges and achieve the project's goal of indirectly improving the livelihoods of women, the project team encouraged the women to collectively export their produce as a cooperative rather than as individuals. A meeting was convened to discuss the best strategies for linking the cooperative to profitable markets. During this meeting, the participants agreed to sell their harvested produce as a unified group, which would help reduce transport costs and increase their overall income. The cooperative established linkage with export buyers who were prepared to receive their goods, which were then sent to Accra, the capital city of Ghana, for sale to consumers.

Outcome

By the end of the project, all 30 women lead women farmers are now able to sell their produce—plantains and spices—at significantly higher and more equitable prices than before at the Anum Apapam Market. Additionally, there is a 30% increase in cooperative women from Obuoho community directly linked to open markets. As a cooperative, the 30 women collectively sell one full truck[2] of plantain in the open market, which is an improvement, and a much better option than selling at farm gate and also helped reduce post-harvest loses by 10% and increasing household incomes. Collaboration with commodity market operators have provided opportunity for increased access to customers and allowed these women to collectively sell produces yielding higher profits.

Plate 7 Aframomum melegueta

Challenges

One challenge faced is in regards to the poor road conditions from Obuoho to Anum Apapam especially after a heavy downpour. The poor state of the roads after rain increased both travel time and costs.

Way Forward

It would be very beneficial to encourage the local government and authorities to support the enhancement of the road network between Anum Apapam and Obuoho. This has the potential to greatly cut down on both time and travel cost.

Objective 5: Restore Degraded Area of Southern Portion of Forest Reserve and Production Landscape.

Activities: To achieve this objective, the project team, women, and other interested women who had not officially joined the cooperative yet, embarked on a tree planting exercise during the third quarter of the project. Prior to the planting activities, sites were selected and mapped as part of a comprehensive strategy that emphasized community empowerment and ecological rehabilitation. The focus areas for the planting exercise included agricultural landscapes and degraded areas within the forest surrounding the community's agricultural zone. Women from the community established a small nursery, successfully raising more than 1000 seedlings, including species such as *Khaya ivorensis* (Mahogany) and *Terminalia superba* (Ofram). Women were mobilized to plant trees in the designated degraded forest areas and within agricultural landscapes. A total of 1000 seedlings were planted across beneficiary farms, averaging 8 seedlings per acre.

Plate 8 Planted seedlings which have been tagged within buffer zones in agricultural landscape

Outcomes

A community nursery center was established of which Five (5) out of 30 of the lead women farmers are the custodians of the nursery that will keep on providing seedling for the community for ongoing restoration efforts. The initiative also resulted in the successful sourcing of about 1000 seedlings from the Obuoho community nursery, which were distributed among interested women thus increasing in the number of shade trees on beneficiary farms, and around the buffers of the forest. It also helped define the degree of success of the field activities.

Challenges

Firstly, securing consistent participation from women in the community proved difficult due to varying levels of commitment and competing agricultural responsibilities. Additionally, adverse weather conditions, including unpredicted drought periods, limited initial survival rates of some seedlings and necessitated supplementary watering efforts by volunteers

Way Forward

Despite the above challenges, the enthusiasm showed during the restoration exercises was remarkable thus showing that the project's ultimate results showed that it had a positive impact in galvanizing women and the communities to undertake more restoration exercises to enhance ecological resilience of the landscape. Implementation of a system of continuous monitoring and adjustment was proposed to stakeholders to allow for real-time response to changes in the ecosystem, ensuring that restoration efforts remain effective over time.

Objective 6: Develop A Database to Track Changes Within Forest and Production Landscape

Activities: To accomplish this goal, the project team collaborated with women and GIS specialists to create a mapping-based monitoring tool designed to track the project's impact. This initiative was implemented at the farm level. A map of the farms of the project beneficiaries in the Obuoho community was created to help the team keep a close eye on the project's effects. Women whose farms are close to forest boundary and rely on them for their living are generally supportive of projects iyclui9diyg this SDM project which seeks to protect the environment and ecosystem. This understanding guides the project team in choosing the best places to focus their efforts.

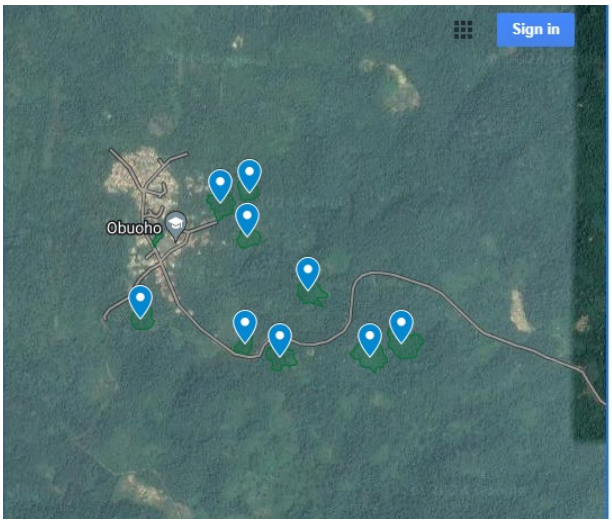

Plate 10 Map of 9 model farms in Obuoho community

Surveys and taking GPS coordinates of farms, were successfully completed in the production landscape. Field teams meticulously gathered location data, which will serve as a foundation for the database. Field teams utilized advanced GPS equipment to ensure accurate data collection, resulting in a comprehensive dataset that highlights various farm locations within the Atewa landscape. Other information recorded in the farm data include yield data for past season, land use history, and biodiversity indicators.

Following the surveys, the team entered the data into Google Maps. This process mapped the surveyed coordinates, facilitating a visual representation of agricultural landscapes within forest boundary to allow for better monitoring of landscape changes over time.

Outcome

At the end of the project, there is an improved data accessibility of the farms of the beneficiary women through a centralized database providing researchers, decision-makers, and local communities with access to vital land use and farm information that can be used to identify trends like deforestation, land degradation, and crop pattern changes at the farm level. Link to view map is included in annex C.

Challenges

Weather patterns were unpredictable, which presented a series of difficulties during data collection. Along with interfering with fieldwork schedules, unexpected downpours and temperature changes also had an impact on GPS reading accuracy.


Plate 11 Field workers taking coordinates of farms

Way Forward

The activity is on track, and the team is optimistic about the capacity of the trained women to lead efforts to enhance landscape management and monitoring efforts through the developed database. To ensure sustainability of the project, the women, and all stakeholders involved in the project will be trained on how to access the information and future updates.

Plate 12 Obuoho community landscape

3.0 CONCLUSION

Community women's participation in resource governance has increased significantly as a result of the effort to protect the ecological integrity of the Atewa forest reserve. The project has raised awareness of biodiversity protection, improved farming practices, and repaired degraded areas through capacity building, education, and practical interventions. Sustainable frameworks for further conservation efforts have been established with the founding of the community nursery and the *Yonkodo Women's Cooperative*. The project has effectively connected women producers to markets and started a database for monitoring changes in the landscape, despite obstacles including gender stereotypes and communication problems.

4.0 RECOMMENDATIONS/NEXT STEPS

Based on the significant impacts of the project, the following are recommended that will also constitute the next steps for post project activities and sustainability.

1. Continue supporting the *Yonkodo Women's Cooperative* to ensure long-term sustainability of conservation efforts.
2. Expand training programs to include more communities within the Atewa forest landscape, particularly addressing gender inclusivity.
3. Enhance the database and mapping system for better monitoring of landscape changes.

ANNEXES

Annex A: Members of Yonkodo Women's Cooperative

NO.	Name	Agricultural Produce
1	Adobea Janet Opoku (President/Chair)	Cocoa, Plantain, Spices
2	Mercy Larweh (Secretary)	Cocoa, Plantain, Spices
3	Gladys Ayeteh (Organizer)	Cocoa, Plantain, Spices
4	Sarah Batsa (Treasurer)	Cocoa, Plantain, Spices
5	Rebecca Odeibea	Cocoa, Plantain, Spices
6	Grace Addo	Cocoa, Plantain, Spices
7	Diana Nti	Cocoa, Plantain, Spices
8	Lardjeh Vivian	Cocoa, Plantain, Spices
9	Adobea Janet Opoku	Cocoa, Plantain, Spices
10	Joyce Ntiyea	Cocoa, Plantain, Spices
11	Esther Tetteh	Cocoa, Plantain, Spices
12	Rita Nyarko	Cocoa, Plantain, Spices
13	Ruth Quainoo	Cocoa, Plantain, Spices
14	Nana Kokomeko Esaa	Cocoa, Plantain, Spices
15	Mary Nartey	Cocoa, Plantain, Spices
16	Ama Asabea	Cocoa, Plantain, Spices
17	Esther Tetteh	Cocoa, Plantain, Spices
18	Rita Nyarko	Cocoa, Plantain, Spices
19	Ruth Quainoo	Cocoa, Plantain, Spices
20	Nana Kokomeko Esaa	Cocoa, Plantain, Spices
21	Emelia Tetteh	Cocoa, Plantain, Spices
22	Ruth Quacoo	Cocoa, Plantain, Spices
23	Elizabeth Amuzu	Cocoa, Plantain, Spices
24	Abena Dede	Cocoa, Plantain, Spices
25	Joyce Enfie	Cocoa, Plantain, Spices
26	Janet Momley	Cocoa, Plantain, Spices
27	Augustina Osei	Cocoa, Plantain, Spices
28	Dede Gladys	Cocoa, Plantain, Spices
29	Vida Asare	Cocoa, Plantain, Spices
30	Abena Asawa	Cocoa, Plantain, Spices

Annex B: Training Materials, Manuals and Guides for GAP Trainings

i. STCP Training Curriculum
ii. CCE Curriculum
iii. **Dohmen M, Noponen M, Enomoto R, Mensah C, Muilerman S. 2018.** Climate-Smart Agriculture in Cocoa: A Training Manual for Field Officers
iv. **United States Agency for International Development (USAID) & Global Communities**. (n.d.). Gender equity and good governance in cooperatives: Facilitator training guide.
v. Training in Agroforestry- A toolkit for Trainers (World Agroforestry Centre)

References used as basis for discussion at biodiversity education and awareness creation at communities included:

i. The Ghana Forest and Wildlife Policy, 2012
ii. Wild Animals Preservation Act. 1961

Annex C: Link to Google Maps of Demonstration Farms

https://www.google.com/maps/d/edit?mid=1WlsJ_gU7dEkY10vRTwRMl1vcwHHYd7g&ll=6.015180469615833%2C-0.6202355000000059&z=16