Land Use and Land Resource Management at Gyamfiase-Adenya, Ghana

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Key words: Biodiversity, conservation, agrodiverse, agroforestry

SUMMARY

The Global Environmental Facility (GEF) funded the United Nations University project on *People, Land Management and Environmental Change* (UNU/PLEC) 1998-2002. The project aimed at biodiversity conservation in small farms. The purpose was enhancement of food security, rural livelihoods and environmental integrity. PLEC adopted a win-win scenario. Project key players were small farmers, multidisciplinary scientists and policy agents. Their collaborative work took place at 100 sq km demonstration site. The case in point is Gyamfiase-Adenya demonstration site in Ghana. Farm holdings were between one and eight unit farms per farmer. Farms barely exceeded 2 ha. Farms were reasonably close to farmers' permanent residences. Farmers were organized under an association. Members exchange knowledge and cultivars. Farmers kept biodiverse agroforestry farms, home gardens and backyard forests. Farmers had regenerated agro-forest from grass-covered land at Bewase and Duasin. They maintained group nurseries as well as individual commercial plant nurseries. Individual ventures were more successful. They also tended a sacred grove, group and individual citrus farms. Vegetation transitional sequence, forest-to-cropped land-to-grass vegetation was evident at part of the sacred grove slashed for farming. The sacred grove suffered resource abuse. Some farmers undertook snail and fish farming. Initial snail harvest was quite encouraging. The association's swine dispersal project was saddled with problems. PLEC scientists introduced farmers to split corm and mini sett techniques for plantain and yam propagation respectively. They also identified and selected exceptionally successful farmers in biodiversity conservation on-farm as expert farmers. Their farms were biodiversity conservation epitome for other farmers and school children. Expert farmers also served as farming consultants. PLEC scientists and expert farmers participated in plant policy formulation meetings. Policy agents drew from their rich indigenous knowledge. A scientist donated cassava-grating machine to the farmers' association. Indigenous farmers are successful land resource managers. They are motivated by economic incentives. When this is nil land resources suffer abuse. Generally, association members have sustainably improved their food security, livelihoods and environment.

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1. INTRODUCTION

Small farmers dominate Ghana's arable agriculture, in terms of local food production and cash crops for export. Therefore any project that hinges on small farmers may engender widespread acceptance.

The United Nations University collaborative project on *People, Land Management and Ecosystem Conservation* (formerly, Environmental Change) (UNU/PLEC) was founded in 1993. PLEC project pursued sustainable resource conservation, especially biodiversity in agriculture, through participatory approaches. PLEC's main objective was sustainable improvements in food security and rural livelihoods (Brookfield 2001; Brookfield *et al*. 2002; Brookfield *et al*. 2003; Gyasi *et al*. 2004). Project key actors were small farmers, multidisciplinary scientists and policy agents from developing countries. The Global Environmental Facility (GEF) funded PLEC activities between 1998–2002. In Ghana PLEC demonstration site covered an area of 100 sq km. Ghana had seven demonstration sites namely:

- Gyamfiase-Adenya
- Sekesua-Osonson
- Amanase-Whanabenya
- Jachie
- Tano-Odumase
- Bognayili-Dugu-Song; and,
- Nyorigu-Benguri-Gore.

A farmer held between one and eight unit farms. A farm barely exceeded 2 ha. PLEC labeled exceptionally successful farmers in biodiversity conservation on-farm as expert farmers.

UNU funded PLEC scientists in Ghana to monitor and evaluate the PLEC activities in the country after cessation of GEF funding. This paper discusses a detailed account of Gyamfiase-Adenya demonstration site. The monitoring and evaluation (M & E) were held on 12 and 13 of June 2003.

2. FARMER ASSOCIATION

The farmers' association was a voluntary organization of farmers in a demonstration site. Gyasi *et al*. (2003:98) described the farmer association as a forum for:

- 'farmer-scientists interactions and collaborative work
- farmer-to-farmer interactions including exchange of knowledge and germplasm
- reaching out to farmers and sensitizing them to issues of conservation and development
- mobilizing the latent knowledge, energy, and other resources of farmers for the purpose of conservation and development

- tapping or accessing external support for farmers
- carrying out demonstrations
- in general, empowering farmers politically, socially, and economically'

Gyamfiase-Adenya demonstration site began in 1993 with three male and four female farmers. Membership rose to 150 during the peak of PLEC activities 1998-2002. There were 65 male and 85 female farmers. During the M & E in 2003, membership had dropped to 25 males and 40 females, the total of 65.

Between February 2002 and February 2003, Gyamfiase-Adenya farmers association held five meetings. The agenda for the meetings were:
- preparation to host PLEC external scientist who was to announce formal cessation of GEF funding and discuss self sustaining measures;
- delegation to alert farmers of Asaasekorkor about degradation of their land;
- delegation to promote agrodiverse farming and discourage monoculture at Pratu;
- delegation to encourage *in-situ* and *ex-situ* maintenance of trees at Adakaa; and,
- discussion on the cassava grater.

3. METHODOLOGY

Farmer group discussion was held at Gyamfiase on the June 12, 2003. The main issues discussed centered around:
- meetings held by the farmers' association and for what purpose;
- exchange programmes organized by the association;
- on-farm and off-farm land resource management activities;
- demonstrations; and,
- PLEC initiated experiments.

Farmers' responses were recorded into a log frame. Observation, aided by photo camera, of farms, sacred grove and PLEC experiments followed on the same day and the next.

4. SACRED GROVE

Gyamfiase sacred grove, an ancestral relic was kept with pride by the chief and his subjects. It served as cemetery for chiefs and members of the royal family, the abode of ancestral spirits. Farming and other land use forms were prohibited in the grove. The beauty of it attracted the attention of PLEC scientists who with the permission of the chief adopted it for demonstration and conservation. The chief passed away and his nephew was enstooled. The monitoring and evaluation group witnessed that most of the timber species in the grove had been harvested. Also part of the grove had been cleared for farming. The farmed part exhibited land use transition, forest-to-cropped land-to-grass cover. The relatively young chief depended on proceeds from timber and sharecropping to make ends meet. PLEC farmers planned to integrate beekeeping and snail farming in the remaining forest; ventures envisaged to financially reward the chief to retain the remaining forest grove.

5. AGROFORESTRY

At Duasin, a retired police officer turned farmer (Rtd. Sgt. Nyame) underwent an agroforestry experiment. It began in 1995 in collaboration with PLEC scientists to turn grass cover land into a regenerated forest. By 2003 the experiment had reached a closed canopy stage. Sgt. Nyame intended to integrate yam but due to lack of funds for yam seeds, made do with maize and cassava, sun-loving crops. The canopy of the agroforestry had been opened. Some trees were drastically pruned. Others were being managed as live stakes for yams. There was evidence of improved soil fertility by the good performance of crops grown on the regenerated forest. He planned to nurture particularly economic tree osese to be sold as timber and carving wood. He used the harvested trees as rafters, fencing poles and firewood. Meanwhile others were encroaching upon his trees in the farms far away from his cottage.

Adenya Junior Secondary School with the collaboration of PLEC maintained agroforestry patch of trees on the school compound. Mahogany and cassia were intercropped by cassava and oil palm. The school plot was bounded by cassia.

6. AGRODIVERSE FARMS

Agrodiverse farms integrated different crops with trees in order to conserve biodiversity on-farm, Plate 1.

Plate 1: Agrodiverse farm at Gyamfiase-Adenya

A prolific yam farmer at Adenya, Agbayiza raised 3,000 mounds in the 2003 farming season. He planted 16 varieties of yam intercropped with maize, cocoyam and pawpaw, plate 2. He was conducting an experiment on the effect of tree shade on yams and other crops by using a big mango tree.

Plate 2: From right: Agbayiza in white T-shirt with Prof. Gyasi (PLEC-Ghana leader) in the former's yam intercropped farm

At Obom, another farmer E. K. Bekoe concentrated on different timber species such as wawa *(Triplochiton scleroxylon)*, emire *(Terminalia ivorensis)*, mahogany, odum, ehedua, okotreamfro, odwen, ote and ofuntum. Planted in between the trees were cocoyam, yam, cassava, plantain, cocoa and oil palm.

Again at Obom, Bossman Kwapong kept a fenced snail farm under an exceptionally big tree in his conserved forest. First snail harvest was expected in August 2003. Gyasi *et al* (2004) reported of a modest harvest. Furthermore, he managed an oil palm orchard and mixed crop of plantain, cocoyam, cassava, pepper, garden eggs, pawpaw and maize. He practiced fish farming in a small pond adjoining his farm.

At Otwetire, Yaw Apeti integrated fruit and food crops with trees in his home garden. The garden possessed pineapple, orange, guava, coconut, cocoyam, yam, plantain and trees such as bronyadua, odwenyina, osena/yooye, ato, osese, pepediawuo and teak.

Amponsah Kissidu also maintained a home garden at Adenya. The oyankyen, osisiriw and the three emire *(Terminalia ivorensis)* trees were intercropped with cassava, cocoyam, yam, pawpaw, pineapple and avocado.

7. BACKYARD FOREST

PLEC scientists encouraged farmers to maintain the forest adjoining their cottages. Most successful experiences were those of Yaw Awuke (Adenya) who had integrated yam and sponge vine. E. K. Bekoe had also integrated yam, orange and adesaa. A female farmer Maame Awuaa was yet to add to her backyard forest.

8. PLANT NURSERY

Gyamfiase-Adenya farmers' association had nurseries at Bewase and Obom but had collapsed at the time of the M & E. They served the primary purpose of training grounds for private nursery development. The association raised 500 seedlings of oil palm. It also nursed and distributed mahogany and prekese seedlings. The private nurseries developed seedlings for personal use and also for sale. Bossman Kwapong nursed orange, rough lemon, mahogany, plantain and cocoyam. Amponsah Kissidu on the other hand raised oil palm, orange, pepper, yam, mahogany, kaya and asaa. Other farmers such as Etoku, Opoku, Henry, Kojo Kabakaba, Kwamevi and E. K. Bekoe also had their own nurseries.

9. PLEC EXPERIMENTS

Gyamfiase agroforestry/biodiverse forest was still in existence. Most successful trees included cedrella, mahogany, prekese and ankyi. Unfortunately the plantain failed.
Opoku gave a successful report of the regenerated forest at Bewase.
About 80% of the citrus survived in the Gyamfiase citrus farm but fruiting had not yet started even though the farm was about two years old.

10. CITRUS FARM

Individually owned citrus farms were quite successful. Bossman Kwapong had an acre of flowering citrus farm whilst Amponsah Kissidu's one third of an acre farm was fruiting. The other farmers, Opoku had 15 citrus trees, Nana Kojo Darko (the Gyamfiase chief) 12, Agbayiza 20, Alex Ganyo 10, Maame Asieduaa and Kojo Kabakaba had 15 each.

11. DEMONSTRATIONS

PLEC farmers used demonstrations to propagate PLEC ideas, Plate 3.

Plate 3: Amponsah Kissiedu, an expert farmer, demonstrating home gardening to school children at Adenya

In June 2002, 40 farmers at Asaasekorkor hosted the Gyamfiase-Adenya farmers' association. The host was encouraged to adopt forest regeneration strategies. A debate ensued on the adverse effect of hoe as against cutlass as basic farm implements.

At Pratu in November 2002, PLEC farmers' association delegates demonstrated the split corm technique for plantain propagation. They also alerted the farmers of the disappearance of cocoyam in their locality. About 30 farmers attended the function.

Bossman Kwapong taught school children from Adawso Roman Catholic Junior Secondary School fish farming, split corm technique and nursery management in November 2002.

An expert farmer, Alex Ganyo spoke to about 20 farmers at Adakaa on *in-situ* and *ex-situ* tree maintenance and the importance of mixed cropping in December 2002.

Amponsah Kissidu demonstrated budding to Adenya Junior Secondary School in February 2003.

In March 2003 he demonstrated split corm technique to Amanokrom Junior Secondary School. He also taught the school children nursery development. He reported, the school had established a nursery with 1000 oil palm seedlings.

12. SWINE DISPERSAL PROJECT

This project started with two gilts. One delivered six and the other was still pregnant. Five piglets survived and were distributed as follows: one to the owner of the male that crossed the female; and, one each to a PLEC farmer and three non-PLEC farmers on share cropping basis. Opoku and Henry, two volunteers, turned the gilts. Feeding and vertinary services remained their main problems.

13. CASSAVA GRATER

The grater was a gift from Professor Janet Momsen, University of California, Davis to the Gyamfiase-Adenya farmers' association. The female wing of the association profitably operated the machine. It processed cassava into fine flour, gari and agblima.

14. CONCLUSION

Gyamfiase PLEC farmers association started with seven members. Membership rose to 150 at the peak of PLEC work and had since declined to 65. The end of tenurial arrangements between tenants (some PLEC farmers) and their landlords was responsible for the decline. PLEC members who owned their farmlands were still active in the association. Others left the association because their expectation for monthly salary was not met.

The farmer association lacked communal spirit and group management skills. Evident by the collapse of the association's plant nursery and poor management of the swine dispersal project and the citrus farm near Gyamfiase.

Benefits of the association included:
- improved ways of farming;
- increased income (improved livelihoods);
- improved food security; and,
- improved social contact.

Some key lessons learnt from the monitoring and evaluation exercise included:
- Land ownership and security of tenure are two pillars on which land use and land resource management rest.
- Conservation without commensuration is likely to fail as epitomized by the Gyamfiase sacred grove.
- Bequeathing family treasure such as sacred grove to the care of the youth deserved a careful consideration.
- Understanding of group dynamics is the bedrock of success for group owned ventures.
- Poverty explains the choice sometimes of environmentally unfriendly land use practices as exemplified by Sgt. Nyame's agroforestry experiment.
- School children, 'catch them young', are the window of hope for environmental sustainability.
- Indigenous farmers are innovative.
- Indigenous farmers could conserve our forest but they need collaboration from other stakeholders.
- Indigenous land users are economically rational; they are sometimes driven by profit pursuits.
- Indigenous farmers are vehicle of change as shown by their demonstrational activities.
- Lack of local interest could cause the failure of a viable project as epitomized by the swine dispersal project.

Though the association declined in size following the cessation of funds, it was still a viable organization during the M & E. PLEC project aims were achieved. PLEC ideas were very well understood, superbly maintained, wonderfully articulated and highly propagated. Evident by the excellent agrodiverse farms, agroforestry experiments/regenerated forests, home gardens, citrus farms, backyard forests, snail farming and the demonstrations.

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EXPERIENCE:

2004-To Date	*Lecturer* Department of Environment and Resource Studies University for Development Studies, Tamale
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1999-2002	*Master of Philosophy (MPhil)* Geography and Resource Development, University of Ghana, Legon Thesis: Rural Electrification and Small-Scale Enterprises in the Dormaa District of Brong Ahafo Region
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