



Framework for monitoring invasive tree species in Ghana

Darwin Initiative for the Survival of Species

Project Ref. No.: 162/9/019

Annual Report 2002

Centre for Natural Resources & Development (CNRD)

Ghana Organic Agriculture Network (GOAN)

Suntaa-Nuntaa Agroforestry (SNA)

Forestry Research Institute of Ghana (FORIG)

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1. Darwin Project Information

Project title	<i>Framework for monitoring invasive tree species in Ghana</i>
Country	<i>Ghana</i>
Contractor	<i>CNRD, Nature Bureau International</i>
Project Reference No.	<i>162/9/019</i>
Grant Value	<i>£93,793</i>
Start/Finishing dates	<i>01/10/00 to 28/02/03</i>
Reporting period	<i>01/04/01 to 31/03/02</i>

2. Project Background

Concern has been expressed over the invasiveness of exotic tree species, in particular neem (*Azadirachta indica*), in fallow agricultural land, dry forest and game reserves in Ghana (Childs 1999; S. Rietbergen, pers. comm.). Invasive tree species appear to be disrupting the natural succession of savannah and dry forest, reducing the availability of agricultural land for farmers, contributing to the loss of rare tree species and reducing mammal biodiversity (Childs 1999; Decher and Bahian, 1999; W. Hawthorne, pers. comm.). This project aims to provide a framework for the monitoring and evaluation of the impact of invasive tree species on biodiversity in participation with rural communities. The project is relevant to the conservation priorities of Ghana as outlined in its Environmental Action Plan, and will assist in meeting the country's obligations under Articles 7, 12, 13, 14 and 17 of the Biodiversity Convention.

3. Project Objectives

The purpose of the project is to develop a framework for monitoring the impacts of invasive tree species on biodiversity in rural communities of Ghana.

Specific outputs include:

- A framework for the participatory monitoring of invasive tree species in Ghana
- The provision of training to governmental and non-governmental staff on how to monitor and ameliorate the effects of invasive tree species, and considerations for their introduction to new environments.
- The dissemination of research results through a wide variety of outputs.

No Logical Framework has been developed for this project.

The Project Implementation Timetable was developed in terms of its detail in consultation with all project collaborators in July 2001. Minor changes were made, but in essence the Timetable remains the same as that developed in February 2001.

4. Progress

4.1 History of the project

The project started in October 2000 with a discussion of project objectives, roles and activities. Initial work was carried out in Ghana and the UK on the selection of study sites, background information was gathered and the necessary permission to work in the Shai Hills Game Reserve was obtained by the Forestry Research Institute of Ghana (FORIG). It was decided that the Ghana Organic Agriculture Network (GOAN) would commission Suntaa-Nuntaa Agroforestry (SNA) (a

Month	GOAN	SNA	FORIG	UK staff
October	Implement the methods in the selected communities Facilitate participatory research Achieved by January 2002	Implement the methods in the selected communities Facilitate participatory research Achieved	Continuation of experiments Achieved	Visit to review work and discuss regeneration research (JRC) Postponed to February 2002
November		Facilitate participatory research Gather information on selected communities Achieved	Setting up research for burning trials (early) Achieved	
December	Report on preliminary results (Dec 15 th) Distribute report to all project partners Achieved	Report on preliminary results (Dec 15 th) Distribute report to all project partners Achieved	Bright to accompany GOAN Report on work to date (Dec 15 th) Distribute report to all project partners Achieved	Distribute report to all project partners Discussion by email of reports from each community Achieved
2002				
January				
February		Analyse information Achieved	Other research activities identified? Achieved	Summarise ideas for controlling invasive tree species Visit to review work and discuss regeneration research (JRC) Achieved
March	Facilitate participatory research. Gather information on selected communities. Analyse information. Report of results (15 th March) Distribute report to all project partners Achieved	Obtain qualitative and quantitative indicators Draft final report of results (15 th March) Distribute report to all project partners Achieved	Report of research to date (15 th March) Distribute report to all project partners Achieved	Summarise indicators i.e., What changes may we see to wildlife if invasive tree species are controlled? Compile and distribute annual report to all project partners Achieved

4.3 Narrative account of project work completed during the last year

4.3.1 Summary of research carried out by GOAN and Suntaa-Nuntaa

General objective

To develop a participatory framework for monitoring invasive tree species.

Specific objectives

- To understand rural communities' perceptions of invasive tree species.
- To develop indicators of change

Study sites

The participatory research is being carried out on the Accra Plains and the Upper West Region, both areas where invasion by exotic trees was found to be causing problems. The Accra Plains form part of south-eastern Ghana lying between the Akwapim Range, the lower Volta River and the sea. It lies between 6°14'N and 5°29'N and 0°23'W and 0°41'E. Four communities were selected for study and include: Dodowa, Oyibi, Kordiabe and Old Ningo. The Upper West Region is found in the north west of Ghana, and lies between 9°40' and 11°N, and 2°50'E and 1°30' E. Five communities were selected for study and include: Busa, Goripie, Naaha, Dapuori and Tanchara. Three of these communities had invasive tree species, Naaha has a forest reserve and Goripie was without forest resources or invasive trees.

Methods

Methods were selected from the PRA repertoire, but used specifically to focus on the research topics relevant to the project, i.e. **change** and **impact**. A basic list of tools were tested and evaluated for their suitability and the sequence in which they could be used. Tools included: maps, time-lines, trend diagrams, semi-structured interviews and problem trees, with impact diagrams to be used at a later stage in the participatory research. Initial work with communities has been undertaken and the results of the research analysed.

Results

Perceptions of invasive tree species

Upper West Region: Over 80% of the people in the sampled communities had increasingly felt the impacts of invasive trees and a reduction in biodiversity. Most people felt that invasiveness was a result of a poor level of awareness surrounding tree species, i.e. neem and leucaena, and dependence on natural resources for livelihoods, but with poor land management practices contributing to invasiveness, e.g. shifting cultivation, bushfires, etc. The communities sampled gave a number of reasons for the spread of invasive tree species that included the need for fodder and fuelwood, fewer number of native trees, incomplete information from over-enthusiastic extension workers, aggressive growth and the rapid spread of seeds. Positive and negative effects of these tree species were recognised and control measures were suggested.

Accra Plains: Communities in this region identified exotic tree species (predominantly neem and leucaena) as invasive due to their aggressive and rapid growth, and their ability to have detrimental effects on the surrounding native species. They perceived that invasiveness was a result of shifting cultivation, seed dispersal by birds and other mammals and bushfires. The speed of invasion was felt to be facilitated by the tree's ability to sprout easily after the cutting of stems and roots. The communities sampled felt that re-sprouts occurred more rapidly in clay soils than in sandy soils. The use of tractors for ploughing was also felt to contribute to invasiveness through the cutting of roots and disturbance of the top soil. As in the Upper West Region, both positive and negative effects of invasive trees were recognised, and control measures suggested.

Indicators of change

Indicators of the lessening negative impacts of invasive tree species were felt to include:

- Increased food security;
- More land under cultivation;
- Reduction of poverty;
- Increases in the numbers of native trees and other less invasive tree species;
- Increased biodiversity; and

- Rural livelihoods maintained.

Conclusions

The communities in which the project has worked have been shown to hold a range of perceptions surrounding the role of exotic invasive tree species in farming situations. The communities have recognised both positive and negative effects of these tree species, and the need for control measures to prevent their further spread. The next stage of the project will focus on feeding back the results of the research to the communities and facilitate the exchange of ideas for future monitoring and control.

4.3.2 Summary of research carried out by FORIG

General objective

To investigate the natural regeneration of invasive tree species and the biotic factors contributing to invasiveness. The research described below is focusing on the invasive tree species, neem (*Azadirachta indica*).

Specific objectives

- A. To determine the competitive ability of invasive plants in different habitats.
- B. To investigate the natural regeneration of neem from seeds, roots and stumps
- C. To determine invasive plant species recovery after fire
- D. To analyse the effect of invasive tree species on biodiversity
- E. To determine the effect of different light intensities on the germination of neem.
- F. To assess the seed predation rates of neem in grass and understorey of neem pure stands.

Study site

The research is being conducted in Shai Hills Game Reserve situated on the Accra Plains approximately 50 km from the capital city of Accra (6°54'N 0°4'E). The reserve is a small-protected area (54 km²) of savanna plains surrounding a range of southern outlier inselbergs that reach to an elevation of 290 m. The hills of the reserve are covered by undisturbed low stature, dry evergreen forest of the south-east outlier type. The plains surrounding the hills consist of short grass savanna with shrubs and evergreen trees. The reserve harbours typical savanna species of animals. The dominant faunal species are kob, bushbuck and savanna duikers. Three species of primate - green monkey, lesser spot-nosed monkey and olive baboon occur in the reserve. Several genet cats and a colony of tomb bats are present. There is a wide array of resident and migratory birds species in the reserve together with a strong population of monitor lizards, turtles, and a wide variety of snakes.

Methods

A. The competitive ability of neem

The competitive ability of ground cover vegetation on neem seedling emergence will be determined using a randomised complete block experiment with three treatments:

1. Grass vegetation
2. *Chromolaena odorata* vegetation
3. Grass-*Chromolaena* vegetation

Neem seedlings, raised in a nursery at FORIG, will be used for the experiment. Seed was collected from the Shai Hills Game Reserve and sown in polythene bags. When the seedlings are six weeks old they will be transported to Shai for transplanting. Each experimental plot of size 4m x 6m will have 12 seedlings at a spacing of 2 m x 2 m. The plots will be replicated 3 times in the different vegetation types (grass, *Chromolaena odorata* and grass-*Chromolaena* vegetation). Seedling height and diameter will be recorded at eight-week intervals.

B1. Regeneration from stump re-sprouts

Two sample plots of size 10 m x 10 m have been established to simulate the conditions in most farming community plots. One plot was a pure stand of neem, and the other was a mixed stand of neem and other plant species. Initial enumeration of all trees on selected plots was done and plots clear-cut at different height (<0.5m, 1.0m and 1.5m). The fourth plot was left intact. Trees were marked with oil paints so that regeneration could later be distinguished from new neem seedlings. Stem count was categorised into 3 DBH classes: 0-20mm, 20-40mm and >40mm. Number of coppice shoots arising/tree, the height and diameter of the tallest shoot and stump survival were measured.

B2. Lateral roots coppicing ability

Mature neem trees (>4cm dbh) were selected at the Shai Hills Game reserve. The lateral roots of the trees were exposed and cut into three parts without altering their original root position. One part was partly **'buried'** in the soil after cutting; another was still **'attached'** to the parent tree, whereas the last part was **'detached'** from the main root. These roots were assessed after eight weeks for re-sprouting ability. Data on stem DBH, root diameter, and numbers of seedlings were recorded.

C. Species recovery after fire

Regeneration and re-sprouting of tree species following fire has been assessed to gain an understanding of how this may facilitate the spread of invasive trees due to the disturbance of natural vegetation. Two plots (20 m x 10 m) were established. An initial enumeration of all trees present was done. Each plot was further divided into two parts (10 m x 10 m): trees on one half were cut while the others were left intact (to simulate the different methods used by farmers and range managers). All trees were tagged with metal plates before burning. Early burning was carried out in October 2001, and late burning in the dry season, i.e. April 2002 and results compared.

D. Invasive tree species and biodiversity

PRA tools, i.e. time lines, trend diagrams and the problem tree, were used to assess changes in biodiversity in the Shai Hills Game Reserve in participation with staff of the Wildlife Division.

E. Seedling growth response to light

Neem seeds were germinated and 200 seedlings transferred into polythene bags at the two-leaf developmental stage. Fifty seedlings per treatment will be placed in shade houses with the following light intensities: 10%, 25% and 100% ambient full sun. Seedling growth measurements will be carried out at four-week intervals after the commencement of the light trial. Height, stem diameter, and oven dry weight of leaves, stem and roots will be measured.

F. Seed predation experiment

Seed predation trials were set up comparing (a) neem fruits with pulp, and (b) neem fruits with pulp removed. Experiments were set in two different habitats: in open grass vegetation and under pure neem stands. Four seeds per treatment were randomly placed on the ground along a 100m transect in each site. Seed stations were established at 4 x 4m intervals (i.e. there were 25 stations per treatment). In all, 104 seeds per treatment were exposed. Seed disappearance was assessed daily for 28 days (when most seeds are expected to germinate if they are not predated on).

Results

A. The competitive ability of neem

No results currently available

B1. Regeneration from stump re-sprouts

Five months data on the regeneration of neem after cutting is currently available. An analysis of this data reveals that coppicing ability varies with different diameter size trees. It has been observed that medium (diameter 20-40mm) and large (diameter >40mm) trees produce the highest number of coppice shoots per stump, with small diameter trees producing the smallest number of shoots. Cutting height appears to have little effect on coppicing ability.

B2. Lateral roots coppicing ability

Initial observations suggest that roots of varying size (diameter 4-50 mm) cut from the plant but left in the soil, produce shoots and can regenerate vegetatively. The effect of cutting lateral roots was

investigated based on farmer's observations that neem roots re-sprout after stump clearance from agricultural land. This initial experiment is to be repeated in 2002.

C. Species recovery after fire

No results currently available

D. Invasive tree species and biodiversity

Participatory M&E with staff of the Wildlife Division and Shai Hills Game Reserve led to observations surrounding the changes in biodiversity observed in the reserve (using a timeline and trend diagram). Problems and advantages associated with these changes were recognised and discussed. It was felt that before the Reserve was gazetted in 1971, there were few game animals due to excessive hunting. Neem was present in the Reserve, but was not considered invasive. By the 1980's, neem was found mainly at the base of the hills in the Reserve. The baboon population had also increased because the Wildlife Division protected the reserve. During the early 1990's, a dramatic increase in the neem population was experienced, and as a management strategy, some of the neem trees were cut. By 2001, the Wildlife Division staff felt that there was more neem as compared to native trees in the reserve, and the spread of neem is contributing to a reduction in the native plant population. Control measures were felt to be vital to prevent the further colonisation of the Reserve by neem.

E. Seedling growth response to light

No results currently available

F. Seed predation experiment

Seed predation rate was higher in neem stands (mean 65.4%) than in open grassland (mean 22.1%) during the period of study. Few seeds germinated (mean 6.3%) during the period of the experiment was conducted: 6.3% in neem stands, and 3.35% in open grass vegetation. Most seeds found at seed stations in open grass vegetation had the kernel eaten leaving the coat, whereas, those in pure neem stands were more often removed from seed stations.

Conclusions

The experimental work of this part of the project will continue throughout 2002, but there have been some important preliminary results on the ecology of neem and its response to various management practices. Draft indicators of invasiveness include: trees that are under-utilised or not utilised; heavy seed production; seed not collected or utilised; presence of an effective long-range seed dispersal agent (i.e. birds and baboons); ability to re-sprout after pruning; and regeneration from cut roots of various sizes. Draft management and control measures could include: pruning to below 0.5 m prior to or during seed production¹; monitor vulnerable areas in the Reserve; develop a market for seed products; cultivate fields for as long as possible using organic manures to maintain soil fertility; plant native trees in vulnerable areas; and remove all the roots as well as stems when clearing land of invasive trees.

4.3.3 Summary of research and training implemented by UK staff

Sensitisation, training and project planning

Sensitisation workshops

Felicity Harris (FH) implemented sensitisation workshops in Kumasi and Wa during July 2001. The aim of the workshops was to provide an opportunity for staff from CNRD, GOAN, Suntaa-Nuntaa and FORIG to consider some of the key issues that the project was addressing. In addition there was opportunity for feedback from the baseline surveys conducted in the Accra Plains by GOAN, and in the Upper West Region by Suntaa-Nuntaa.

Key points arising from the workshop were as follows:

¹ This could potentially be carried out by local communities to assist meet their fuelwood/charcoal needs and reduce or control the incidence of neem in vulnerable areas of the Shai Hills. A suitable agreement between the Wildlife Division and the local communities would have to be made concerning access and mutual benefits.

- Tree species may be determined as invasive as a result of both natural factors e.g. ability to regenerate, and human perception factors e.g. when a community regards control as a problem, where trees occur in areas that have been determined environmentally sensitive.
- There are a number of invasive tree and plant species in Ghana. For all tree species identified the origin was thought to be exotic. *Broussonetia papyrifera*² and *Cassia siamea* were thought to be a problem in the humid transitional zone. *Azadirachta indica* and *Leucaena leucocephala* were identified as problems in semi-arid areas e.g. Upper West Region and Accra Plains.
- A consensus was reached on a definition of biodiversity in which it was thought components and interactions between those components were indicators of healthy biodiversity.
- A number of ways in which communities may become aware of changes in biodiversity were identified. These were categorised under the following headings: climate, soil status, crops, husbandry, species composition, use of natural resource base, water and hazards.
- Members of the community who would be affected by changes in biodiversity were considered and included: herbalists, traditionalists, landless people, farmers, chiefs, hunters, families, consumers, wildlife departments and those involved in tourism.
- Richard Ninnoni from the Forestry Department commented that the project and its outputs would be extremely useful to the Forestry Department and that members of his department would be extremely interested in the dissemination workshop and uptake of results.

Training

Anna Lawrence (AL) and FH gave training on participatory methods to GOAN and Suntaa-Nuntaa staff in July 2001, and worked with both organisations to:

- Gain a greater understanding of the issues faced by communities dealing with invasive tree species;
- Sensitise communities to the project and;
- Gain an idea of how various communities wished to be involved in the project.

Communities in the Upper West and Accra Plain were visited and it was possible to set up some meetings for subsequent visits in July when PLA methodologies could be tested. The Shai Hills Reserve has been selected to carry out research on the natural regeneration of neem. The Reserve was also visited at this time, and informal discussions about invasive trees and the effects on biodiversity (both flora and fauna) took place with Wildlife Division and Reserve staff.

Joanne Chamberlain (JC) gave training and reviewed research on the natural regeneration of neem during February 2002 with BK (FORIG). The Shai Hills Game Reserve was visited, observations were made, the research on natural regeneration was reviewed and discussions took place with regard to new research, indicators of invasiveness and potential control measures.

Method development

Participatory research: A basic participatory approach is being used by the project. The methods have been selected from the PRA repertoire, but used specifically to focus on the research topics relevant to the project, i.e. **change** (especially environmental change) and **impact**. The basic list of tools was expanded through a participatory testing process, to include those known to project collaborators, and tools which help to familiarise the community with the research theme (i.e. mapping and timelines). The final range of tools selected and appropriate ways of using them, are summarised in Annex 1. This is a 'living' document and will develop during the project, through the experience of all collaborators.

Natural regeneration research: A range of experiments were designed to elicit in a relatively short time frame information on how neem naturally regenerates, and what the impacts on regeneration farm management practices are. The latter was felt to be important in understanding how

² Dr Victor Agyeman, of FORIG, is studying the effects of this species.

communities might modify their existing practice to reduce the incidence of invasiveness, but still gain products and environmental services from trees.

Joint planning workshops

Joint planning workshops were held in July 2001 and February 2002 that involved all project partners, served to review and agree on project activities and methods and covered the following points:

1. general objective of the project
2. purpose of the meeting
3. project outputs
4. summary of activities completed to date
5. review of activities needed to achieve the outputs
6. timetable for activities
7. reporting procedures
8. communication pathways
9. tools to be used

4.4 Significant difficulties encountered during the year

The major difficulty encountered this year has revolved around the changes in staff at both GOAN and SNA. This resulted in training being given to lead field staff in July 2001 who subsequently left the organisations to pursue alternative career opportunities. The impact of these staff losses has been mitigated to some extent by the retention of more junior extension staff who also received the training, and were able to go on and implement the project activities with informal support from the staff members who moved on. The major impact of this has been a slippage in meeting the project activity milestones by GOAN. A revised activity timetable was agreed with GOAN in February 2001.

4.5 Changes to the project in the last year

The main change has been the revision of project activity milestones for GOAN in order to bring them back on track in terms of meeting the overall project deadline and its outputs.

4.6 Activity timetable for the next reporting period

Month	GOAN	SNA	FORIG	UK staff
2002				
April	Obtain qualitative and quantitative indicators.	Synchronise indicators.	Continue with burning research (late)	
May	Synchronise indicators	Feedback to communities Exchange of community information		

Month	GOAN	SNA	FORIG	UK staff
June	<p>Feedback to communities</p> <p>Exchange of community information</p> <p>Dissemination of results with communities</p> <p>Report on feedback to communities (15th June)</p> <p>Distribute report to all project partners</p>	<p>Dissemination of results with communities</p> <p>Report on feedback to communities (15th June)</p> <p>Distribute report to all project partners</p>	<p>Interim report (June 15th)</p> <p>Distribute report to all project partners</p>	<p>Distribute report to all project partners</p>
July	<p>Impact assessment on communities</p>	<p>Impact assessment on communities</p>	<p>Final scientific report</p>	<p>Visit to talk about analysis (FH)</p> <p>Planning of manual (FH)</p>
August	<p>Impact assessment on communities</p> <p>Report writing on conclusions</p>	<p>Impact assessment on communities</p> <p>Report writing on conclusions</p>		<p>Compiling list of participants for validation workshop and dissemination workshop.</p> <p>Summarise new tests by farmers of invasive spp. control (AL)</p> <p>Draft journal papers (AL)</p>
September	<p>Start planning for both workshops</p> <p>Final report (15th Sept)</p> <p>Distribute report to all project partners</p>	<p>Start planning for both workshops</p> <p>Final report (15th Sept)</p> <p>Distribute report to all project partners</p>	<p>Present report to UK, Suntaa-Nuntaa, GOAN</p> <p>Distribute report to all project partners</p>	<p>Writing manual (FH)</p> <p>Distribute report to all project partners</p>
October	<p>Provide inputs for workshop</p> <p>Provide inputs for GOAN newsletter</p>	<p>Provide inputs for workshop</p> <p>Provide inputs for GOAN newsletter</p>	<p>Provide inputs for workshop</p>	

Month	GOAN	SNA	FORIG	UK staff
November	Workshops	Workshops	Workshops	Workshop for validation of methodologies. Dissemination (2 day) workshop (JRC, AL and all Ghana partners)
December	Workshop report (15 th Dec) Distribute report to all project partners	Workshop report (15 th Dec) Distribute report to all project partners	Workshop report (15 th Dec) Distribute report to all project partners	Distribute report to all project partners
2003				
January				Plans of action for workshop participants (JRC) Journal papers written (all)
February				Publication of manual and final report to Darwin

5. Partnerships

Overall, the collaboration between UK and Ghanaian country partners has been good. The main problem for the project has been the loss of trained staff from both GOAN and SNA as outlined in section 4.3. Partnerships have been facilitated where there have been more reliable communication methods, i.e. email, fax and phone. FORIG has the most reliable email and telecommunication service, and SNA the least reliable. Hence, communication and the exchange of information has been greatest between the UK staff and FORIG. The project has developed a good collaboration with the Wildlife Division with regard to developing possible control measure for neem in the Shai Hills Game Reserve. The project has also been able to communicate and share ideas with Dr Victor Agyeman of FORIG who is studying the effects of the invasive exotic, *Broussonetia papyrifera*.

6. Impact and Sustainability

The project has a high profile within the Wildlife Division, and the project approach and preliminary results have been discussed with the Head of the Wildlife Division and the Director of the Forestry Department. The project has targeted communities where invasive tree species are a particular problem and the opportunities for scaling up these activities and building upon lessons learnt exist for GOAN and SNA beyond the lifetime of the project. The current exit strategy is based upon promoting awareness of the impacts of invasive tree species and the framework for monitoring with other donors (e.g., DFID and the EC) and NGOs, increased capacity within the Ghanaian project partners, and the recommendation and subsequent implementation of control measures for neem in the Shai Hills Game Reserve. At the present time, this exit strategy is felt to be adequate.

7. Outputs, Outcomes and Dissemination

Table 1. Project Outputs (According to Standard Output Measures)

Code No.	Quantity	Description
6A	3 people	Training on PRA methods and natural regeneration
6B	7 person weeks	Training on PRA methods and natural regeneration
8	7 person weeks	Visit to Ghana by UK staff
14B	1	Tropical Agriculture Association Biodiversity Seminar

Differences between actual outputs and those agreed in the 'Project Outputs Schedule'

An additional person was trained on PRA methods due to the involvement of Suntaa-Nuntaa Agroforestry in the project. Fewer weeks than expected (seven as opposed to nine) were spent in Ghana by UK staff on training on natural regeneration due to the excellent capacity of FORIG staff to implement the natural regeneration research. A broadcast on local radio has yet to be made, but is being followed up for the coming year by Mr Bob Loggah of Suntaa-Nuntaa. An invitation to make a presentation on the Darwin research was received in February 2002 by the Tropical Agriculture Association. The seminar is on the 18th April 2002 and a short paper will accompany the presentation made.

No publicly accessible dissemination material has been produced by the project in the last year.

8. Project Expenditure

Table 2: Project expenditure during the reporting period

Item	Budget	Expenditure
Salaries		
JRC		
AL		
FH		
EA		
SA		
BK		
Rent, rates, heating, lighting, etc		
Office administration costs		
Capital items/equipment		
Travel & subsistence		
Total	38023	38023

9. Monitoring, Evaluation and Lessons

The main method used to monitor the progress of the project has been the participatory drafting and agreement of a project activity timetable, which gives clear milestones for the achievement of project activities and outputs. The timetable has been a useful tool for project management and is a transparent means of ensuring that any member of the project team can monitor another member's progress. Indicators of achievement include regular and timely reporting, and the project outputs themselves, e.g. visits to Ghana, dissemination activities, training and the final manual.

The main lessons learnt from this years work are the importance of good communication between project partners, and the importance of capacity building in the context of institutional memory. During the project meeting in February, it was recognised that our communication channels were not always as good as they could be and strategies/new methods of communication were discussed and suggested. The way in which the training was implemented in July 2001 allowed all relevant staff of SNA and GOAN to participate. This approach has been invaluable in retaining institutional memory with respect to the project and its objectives, and ensuring that staff are available who can implement the project activities in the absence of others. Additional top-up training will be given to SNA and GOAN staff in July 2002 to allow them to continue to effectively implement the project activities.

10. Author(s) / Date

Joanne Chamberlain – first draft 10th April 2002; reviewed by all project partners; second draft 8th July 2002.