

QUARTERLY REPORT FOR JANUARY - MARCH 1997

Component One - Catchment Monitoring

As in previous years, regular and timely disbursement of funds to the line agencies was problematic due to difficulties in receiving non project assistance funds from Treasury. As reported under the NATURE component, considerable time was spent in trying to obtain a commitment to fund MEMP activities, to no avail.

Following the recommendations for the format of sectoral reporting from the Watershed Monitoring Report (October, 1996), the MEMP agencies met in Salima for a workshop to present their results for the 1995/96 monitoring season. Details on the findings from this workshop are presented under component for environmental research and training by the Environmental Scientist who attended the workshop along with the MEMP Technical Advisor.

At the Salima workshop, both the Environmental Science Advisor and MEMP Technical Advisor were appointed to the Core Committee to evaluate the sectoral reports presented by the agencies. The composition of this committee was evaluated and some substitutions were made for members who previously had not been able to participate on the committee. The Environmental Scientist was proposed to chair the committee. He visited all four catchments for which data has been collected over the past three years with staff from MoREA's Monitoring and Management Division. A report on the findings from these field visits is to be presented during the next quarter.

The Salima workshop coincided with the opening of the Systematics Lab for the GEF Lake Malawi/Nyasa Biodiversity Project at Senga Bay. The ESA and MEMP TA attended the opening with the Deputy Director of the Meteorology Department. The GEF project is building on the monitoring capacity that has been developed at the Chilindamadji Catchment in Nkhata Bay. There are additional linkages of interest to both the MEMP and GEF project which were discussed after the opening with the Research Coordinator for the GEF Project. The GEF project is to acquire SPOT imagery for a major watershed to monitor the impact of land based change on Lake Malawi's ecosystem. The project is also in the process of re-establishing the NOAA satellite receiving station that was installed by the U.K. based Natural Resources Institute (NRI) as part of the SADC Fisheries Project at Senga Bay. Finally, the GEF project has acquired three automatic weather stations similar to the one recommended in the Watershed Monitoring Report which were demonstrated to the Deputy Director of the Meteorology Department.

The NATURE Project Officer requested that the MEMP TA discuss how the environmental monitoring program may provide information on the biophysical impact(s) of the soil and water conservation (SWC) programs funded by USAID and the European Union. An initial meeting was held at the office of the Malawi Agroforestry Extension Project (MAFE) which was attended by individuals from the Ministry of Agriculture's Monitoring Section, LR&CB, and MAFE. This meeting provided the opportunity for the different programs to brief others on their current or planned monitoring activities. The MEMP TA and LR&CB provided a background on the concept behind and use of the pilot area sample frame to monitor environmental change, crop production and SWC program impacts.

In another potential link of monitoring activities, Dr. Phiri of International Institute of Biological Control was referred to the MEMP TA to discuss the possibility of monitoring the advance of water hyacinth using remote sensing. Dr. Phiri who is based in Nairobi indicated that

he would locate references on methodologies employed in other countries to monitor the spread of water hyacinth.

Quarterly activity results and indicators

- *develop synthesis reports for integration of sectoral data (annual report)* Sectoral reports from the 95/96 monitoring season were provided to the Core Committee whose membership was modified at the Salima Workshop. The Environmental Science Advisor prepared standardized evaluation forms to be used by all committee members to evaluate the reports. These reports will be used to prepare a synthesis report for the 95/96 monitoring season. Based on the experiences gained from preparation of this report and a critical review of the data 95/96 season, recommendations will be made for how to analyze, interpret and report on this year's data.

Component Two - Development of an Environmental Information System

Short term technical assistance was provided from January 15th - 31st to support the development of an Environmental Information System (EIS) Design Strategy and an Information Management Strategy for the National Documentation Center. Dr. Charles Hutchinson, Principal Investigator of the MEMP Project, University of Arizona, and Dr. Ron Eastman, Clark University provided guidance to the design team in Malawi.

The participants working with the technical advisor on the information management strategy attempted to find means to 1) increase cooperation to promote continuous flow of information between all target units; 2) facilitate the sharing of resources and suggest standards for compatibility; and 3) identify and assess report generation options. In addition to the strategy development sessions, the technical advisor visited the National Statistics Office, National Archives, Center for Social Research, Chancellor College, Dept. of Surveys, Meteorological Department, LR&CB and Bunda College to assess their documentation centers and meet with some Environmental Focal Points. One of the main findings from these visits is that due to staff shortages in the documentation centers and a lack of the means to track internal documents at the focal points institutions, that MoREA and the National Documentation Center will have to take the lead in creating further networking opportunities.

In January the EIS Design Team prepared a report outlining a strategy which proposes a 'learning based' approach following three steps to reach the objective of a functioning EIS for Malawi:

1. **Assessment** Plan, organize, and carry out a situation analysis for the Shire River catchment which will identify the causes for the increased sedimentation of the river and make recommendations for possible solutions.
2. **Pilot EIS** Based on the experience gained during the situation analysis, plan and implement a functioning Shire monitoring program that will serve as a pilot EIS.
3. **National EIS** Experience with the pilot EIS will guide the development of a plan to establish a national EIS.

The long-term objective is to develop a national capacity to meet the data needs for effective environmental management and reporting for all of Malawi. The strategy satisfies the immediate objectives of gradually building on specific information needs and using existing analytical, institutional and financial resources in Malawi.

The Shire River assessment is designed to meet two short-term objectives. First, it is intended to produce an analysis of the current environmental situation in the watershed, identifying the major

environmental problems and their likely causes, and suggesting actions that might be taken to mitigate them. This assessment will not duplicate the work initiated to identify sources of siltation in the mid Shire (*A Study to Identify Sources of Siltation in the Middle Shire River Catchment Area, Green 1996*) rather it will build on this initial assessment to develop a better understanding of the underlying causes of environmental problems in order to provide appropriate recommendations for mitigation. Second, it is meant to establish a problem-oriented environmental information system that might serve as a prototype for a national EIS.

Immediately following the EIS Design Mission, a World Bank mission to finalize the Project Implementation Plan (PIP) for the Environmental Management Program (EMP) arrived in Malawi. The output from the previous visit by the Bank's consultant in November, 1996 consisted largely of project planning software output which in the case of the EIS, was significantly modified by the input of the EIS Design Mission in January. As project planning software often consists of graphical presentations of tasks and scheduling output, the MEMP TA and the Chief Documentation Officer (CDO) prepared a narrative which included text to support the modifications from previous work by the World Bank consultant.

As part of the World Bank mission, the Task Manager arrived in Malawi for a brief period before having to depart unexpectedly for personal reasons. Prior to his departure, the Director of the Environmental Affairs Department, CDO and MEMP TA met to discuss the Prototype EIS. Concern was expressed that the output from the EIS wouldn't lead to recommendations for interventions in any Shire River Catchments and that the Design Strategy largely ignored the recommendations from the *Sources of Siltation Report* prepared in April, 1996. It was agreed that the EIS Design Strategy recommendation for an EIS Advisory Group would be changed to a broader Shire River Sub-committee of the Technical Committee for the Environment (TCE). That the currently inactive Task Force for the Shire River would report to this sub-committee along with the EIS Analysis and Dissemination Teams. In addition, some funds from the micro projects would be set aside to cover mitigation activities targeted for the Shire River catchments.

Currently more data on socio-economic parameters is gathered in Malawi on a regular basis than is gathered on biophysical parameters. Much of this data is analyzed, interpreted and reported on by the FEWS project. With FEWS reporting the relationships between increasing levels of poverty and increasing demands on the natural resource base, changes in socio-economic indicators could be used to flag potential changes in the status of natural resources without undertaking costly and time consuming resource surveys. This link could potentially provide a major source of data to the EIS.

Separate from the MEMP project, but through the University of Arizona's Office of Arid Lands Studies (OALS), short term technical assistance was provided to the Malawi FEWS office to develop computer based statistical analysis routines to group regions within Malawi by similar income earning strategies or resource use patterns. The MEMP TA and Monitoring and Management Environmental Officer, met with the consultant and FEWS Field Representative to discuss the results of their initial analysis of the Malawi data sets. Follow-ups will be made during the next quarter after the analyst has had more time to review the results of the analysis.

Quarterly activity results and indicators

- *Data needs survey (data base)*, Not started again this quarter due to delays in securing funds.
- *Creation of an effective and efficient environmental data management system with national level implications (national level data archiving standards established and adopted, mechanism established and utilized for data retrieval)* Consultancy for these activity was completed in January.
- *Assess and document current status of information centers (Report detailing existing accomplishments, capacity, and constraints of key information centers)*. Consultancy for these activity was completed as part of the activity above.

- *Develop preliminary situation analysis report based on existing data (Preliminary environmental report for the Shire River)* Requires funding from the Environmental Management Program which may not be available until June, 1997.
- *Perform technical design of EIS application for Shire River Catchment (Design Paper)* Completed this quarter.

Component Three - Expansion of Environmental Monitoring Technologies

Area Sample Frame

As was noted in the previous quarterly report, the consultant for the area sample frame was requested to modify the questionnaire that was used at the December training in Mangochi. These requests were made to reduce the amount of field measurements by the enumerators for soil and water conservation practices and to include more information of environmental change. The MEMP TA in consultation with LR&CB, the Supervisory Agriculture Development Officer at UDAID and email dialog with the U.S. based consultant, completed much of the modifications to the questionnaire.

Once the questionnaire was modified, a target date for implementation of the field work was set for no later than the end of March. Administrative delays in transferring funds to Machinga ADD or LR&CB Headquarters postponed the field implementation of the survey instrument until the April.

Quarterly activity results and indicators

- *Area Sample Frame - Secondary sampling units (report presented)*, A report was presented from which a request were made for modifications to the questionnaire and data entry programs.
- *GoM line agencies and environmental researchers have applied and evaluated intensive and extensive environmental monitoring technologies (ASF implemented in one ADD and evaluated)* Development of the sampling units, survey strategy and data collection instrument completed.
- *Analysis of data, review of results and evaluation of ASF (a) Report presenting quantitative and qualitative analysis of data, b) evaluation of ASF)*

Public Lands Utilization Study (PLUS)

Objectives vs. Data Availability: Reassessment of Resources and Goals

In January 1997 the Arizona Remote Sensing Center (ARSC) at the University of Arizona (UofA) began a reassessment of all Level 1 activities based on serious data acquisition problems¹. Original PLUS objectives called for a coarse-scale analysis for all protected areas in Malawi of a) land suitability based on the Land Resource Evaluation Project for all of Malawi's protected area, and b) land cover analysis derived from 1984 and 1994 satellite imagery for all protected areas. The data acquisition problems meant that PLUS resources (both time and money) would be adequate only

¹ In summary, soils and physiography, agro-climate, and land suitability layers of the LREP data set had been digitized from 1994-96 by IFDC. In December 1996 it was discovered that these data were no longer available. Secondly, satellite imagery for 1984 and 1994 obtained last year turned out to be corrupt in a number of cases and had to be reordered, causing serious delays in image processing.

to cover the top priority sites (these are the five Level 2 reserves selected by government which were intensively studied in the field).

This adjustment solved immediate scheduling problems, but did not fully address the effect on original PLUS objectives. Since that time, the impact of this reduced scope has been discussed in several meetings involving the UofA, USAID, and the Ministry of Lands and Valuation (MoLV). ARSC is now evaluating the following questions which came from those meetings:

- Where does PLUS now stand relative to the objectives outlined in the last workplan (1996-1997)?
- What would it take (time, budget, etc.) to meet the original objectives so that questions about land suitability of Malawi's public land could be addressed?
- If the scope must be reduced, how can the outputs of PLUS be prioritized in a way that maximizes the expertise and interests with the MoLV PPU and the Lands Steering Committee?
- Will USAID/UofA consider a "training seminar" for both the SPSS data set and the ArcView GIS, and will they consider a two day "closing workshop?" (This question arises out of the closing strategy pursued by ELUS which was considered very effective and led MoLV to request similar database training and closing seminars which were not originally part of the PLUS work plan.)
- Based on each of the previous questions, how will this impact the overall Cooperative Agreement?

As PLUS is one component of a larger Cooperative Agreement with between the UofA and USAID – questions 2 and 4 above pose considerable logistic and budgetary challenges. These questions (and others associated with UofA activities) are being carefully evaluated as the new Annual Workplan is being completed.

All progress on activities reported below are based on the reduced-scope proposed to the Steering Committee in January, as this consumes the limits of PLUS resources. If alternatives (and resources for addressing those alternatives) are found, revisions to the activities and schedule will be provided in the next monthly report.

Level 1. Physical Characterization of Public Lands (national, digital level of analysis)

Spatial Data Collection and Base Mapping

Table 1. National data available: data preparation complete on layers with a "√".

Data Layer	Complete
<i>Administration</i>	
Country boundary	√
Boundaries of Forest Reserves, National Parks, Wildlife Reserves	√
Boundaries of Agricultural Schemes (only 75% of maps available to date)	√
Agriculture Development Division boundaries (ADDs)	√
Extension Planning Area boundaries (EPAs)	√
Population Density by District	√

<i>Infrastructure</i>	
Major Cities	√
Airports	√
Transportation Network	√
<i>Environment</i>	
Stream Drainage Network	√
Major Lakes	√
1973 Forest Vegetation Map	√
1991 Forest Vegetation Map	√
*1984 Land Cover Map (for protected areas)	
*1994 Land Cover Map (for protected areas)	
*Agro-climate Zones (from LREP)	
*Soils and Physiography (from LREP)	
*Land Cover and Vegetation (from LREP)	
Temperature at the End of Growing Period (by district)	√
Average Temperature During Growing Period (by district)	√
Average Minimum Temperature (by district)	√
Average Annual Temperature (by district)	√
Average Annual Precipitation (by district)	√
Precipitation/Potential Evaporation (by district)	√
Number of Dry Months per Year (by district)	√
<i>GIS Analysis</i>	
*Land Suitability (derived from LREP)	
*Change from 1984 to 1994 for Malawi's Protected Areas	
Digital Elevation Model	√
Shaded Relief Map	√
*Coarse Potential for Soil Loss Model on Malawi's Protected Areas	

* These layers are affected by the data acquisition problems mentioned earlier – their status will be decided in April 1997.

Only the reserve boundaries and the schemes were digitized – all other layers came from sources within Malawi (which are cited for all digital and hard copy outputs).

Table 2. Level 2 sites: digitizing (and attributing) has been completed on data layers with a “√”

Source & Resulting Data Layer	Mulanje	Zomba	Liwonde	Dzalanyama	Vwaza
<i>1:50,000 Survey Sheets</i>					
Reserve Border	√	√		√	√
Streams	√	√	√	√	√
Villages	√	√	√	√	√
Roads	√	√	√	√	√
250 ft Contours	√	√	√	√	√
<i>LREP</i>					
Soils	√	√	√	√	√

Agro-climate zones	√	√	√	√	√
Land Suitability					
<i>Satellite Imagery</i>					
*Land Cover 1984					
*Land Cover 1994					
*Cover Change 1984 - 1994					
<i>GIS Analysis</i>					
Digital Elevation Model		√			
Slope Map		√			
Aspect Map		√			
Shaded Relief Map		√			
Potential for Soil Loss-simple model					
<i>Fieldwork</i>					
Participatory Maps Scanned	√				

*These maps are derived from extensive image processing. The status on completing these procedures are in the next table.

Other than the missing maps for approximately 25% of the Agricultural Schemes, digital data collection is complete. The boundary for Liwonde National Forest is incorrect on the 1:250,000 map (per DNPW) and is being redigitized from the 1:50,000 sheets.

Classification and Change Detection.

Table 3. Image processing activities: if complete for both 1984 and 1994 images, “√” .

Image Processing Step	Mulanje	Zomba	Liwonde	Dzalanyama	Vwaza
Atmospheric /Radiometric Correction	√	√	√		
Geometric Rectification	√	√	√		
Unsupervised Classification	√	√			
Modified Soil Adjusted Veg Index		√			
Texture Image		√			
Tasseled-Cap Transformation		√			
Supervised Classification					
Ground Verification					

The classification system is being developed as the processing progresses, with input taken from earlier schemes used in Malawi, and feedback from the Department of Forestry and the Land Resources and Conservation Branch of MoALD. The classes identified so far are:

- Tea estate
- Eucalyptus plantation
- Pine plantation
- Extensive agricultural
- Miombo woodland
- Miombo woodland/grassland transition
- Grassland

- Mopane dominated natural forest
- Rock outcrop / shadow

Bare Soil

Summary Data Extraction. The “GIS Analysis” portion of Table 1 outlines the spatial data extraction anticipated by PLUS. In addition, data tables derived from the spatial data are being produced. Those completed to date include:

- Area of (digitized) Agricultural Schemes
- Area of Major Lakes
- Area of Protected Areas (by type)
- Population by Administrative District
- Population of Major Cities
- Agro-climatic Characteristics of the five Level 2 sites

All spatial and tabular summary data extraction were expected to be completed in June 1997.

Creation Rationale. Park & Wildlife have completed their list. Forestry has submitted a copy of the “forest reserve register” to address this issue. The LRCB within MoALD is pursuing the Agriculture Scheme list through the ADDs, though a completion date is not currently available. These will be evaluated in April 1997 with key information being placed in a simple data base to be merged with the spatial data set.

Level 2. Land-use Characterization of Public Lands (field-intensive level of analysis)

Rapid Appraisal and Key Respondent Interviews Fieldwork is complete and the Bureau of Applied Research Anthropology (BARA) has commenced coding and qualitative analysis. The overall qualitative analysis will be completed in May 1997.

Participatory Mapping Fieldwork is complete and the maps (all 120 of them) are being scanned to add to the spatial data set. BARA will use these in the qualitative analysis.

Formal Survey Fieldwork and Data Entry are complete. While data cleaning, BARA has run into a serious, but apparently surmountable challenge with three of the variables for which data were collected. It is a problem in SPSS where long strings of numeric codes are not being read, and the solution will require some reorganization of the data set (i.e. some syntax programming to redefine, recode, or split the variables, as appropriate). The original projection of completion in early April must be pushed back a few weeks.

Species Consolidation FRIM has assisted in tackling the Latin identification of the very large (over 1,000) local names identified as species used by households in the formal survey. There are multiple entries, particularly where different local languages were encountered, making this process complex. The process is almost complete – a reevaluation will be conducted by FRIM in early April 1997.

Data analysis has been initiated on all cleaned files has been initiated and should be complete (if the above problem is solved smoothly) by the end of April 1997. Final write-ups will be by protected area, beginning with Zomba in March and finishing with Dzalanyama in late April. The overall quantitative analysis will be conducted in May 1997.

Resource Assessment Mulanje, Zomba, and Dzalanyama are complete. Vwaza and Liwonde are scheduled for April 1997. Data entry for the first three reserves has begun and all five should be completed by May, with analysis occurring in June 1997.

Integration of Level 1 and Level 2 June 1997.

Writing the Final Draft and Producing the Final Draft Digital Atlas July 1997.

Presentation of Results Format and venue under discussion. Anticipated for early August 1997.
Final Report and Digital Atlas Issued Late September 1997.

Framework for Decision Making

In May 1996, USAID requested that PLUS provide a means of making its final products more accessible to decision makers. Initially, this was conceived as a sort of matrix which would guide decision makers to consider the multiplicity of factors which all play a role in tenure and management decisions where protected areas are concerned. Increasingly, however, it is becoming clear that it is not only necessary to organize the data by such factors, but also to enhance the possibility that experts or stakeholders familiar with those factors be mobilized when such decisions are being made. These are only initial thoughts, though it is clear that the broad, consultative base of expertise provided by the Lands Steering Committee may be useful in such a framework. In addition, it has been suggested to explore the strategies recommended by the International Model Forest Network (IMFN) which supports an integrative, consultative management of natural resources at the landscape level, a local and yet multi-sectoral approach which involves communities as well as ministries, often with a protected area as a point of focus. By May 1997, we hope to submit a draft of what this framework might be for consideration by the MoLV PPU and the Lands Steering Committee.

Overall Progress Summarized

Activity	Progress	Expected
Spatial Data Collection		<i>completed December</i>
Base Digital Mapping (Level 2 sites)	65% complete	May 1997
Base Digital Mapping (PL boundaries)	80% complete (missing some)	May 1997
Land Cover Classification (Level 2 sites)	20% complete	June 1997
Change Detection (Level 2 sites)	testing	June 1997
Summary Data Extraction (Level 2 sites)	building tables; testing simple GIS	June 1997
Building the "digital atlas"	80% of national, 30% of Level 2	June 1997
Creation Rationale	70% collected, analysis necessary	May 1997
Secondary Data Collection	on-going, analysis necessary	May 1997
Rapid Appraisal		<i>completed December</i>
Participatory Mapping		<i>completed January</i>
Key Respondent Interviews		<i>completed February</i>
Formal Household Survey		<i>completed February</i>
Resource Assessment	60% field work & data entry	April 1997
Socio-economic Data Entry		<i>completed March 1997</i>
Socio-economic Data Cleaning	40% complete	April 1997
Socio-economic Analysis	initiated	May 1997
Linking Level 2 and Level 1 results	design in progress	July 1997
Framework for Decision Making	conceptual design in progress	May 1997 (draft)
Final Draft Report & Presentation		July-August 1997
Final Report		September 1997

Quarterly activity results and indicators

- *PLUS - Produce set of spatially referenced maps and associated data for physical characterization of public lands. (From UA/CU Workplan) Ongoing activity, delays described above.*
- *PLUS - Conduct field intensive study of land use and resource use patterns of selected areas in and adjacent to public lands (From UA/CU Workplan) Ongoing activity on schedule.*

Component Four - Environmental Training and Research

GIS Training

The second of a series in geographic technologies trainings was conducted at Bunda College from January 13th to 24th. A total of twenty participants from a number of different ministries and departments attend the course. Prior to the course a three day intensive introductory crash course was given to four participants who could not participate in the introductory course in September. The intermediate two week course focused on analyzing land cover change and soil erosion modeling techniques in the mid Shire Valley.

After the training, a number of follow-up activities were completed at several departments and ministries relating to their ongoing work with GIS. The Forestry Department will be analyzing vegetation cover change in a number of forest reserves through the use of coarse AVHRR data. Further assistance was also provided to the Department of National Parks and Wildlife in a study using GIS to analyze land cover changes and elephant migration patterns in Liwonde National Park.

The trip report prepared by the technical advisor from Clark referred to problems with the georeferencing of the Landsat images provided by the University of Arizona. Follow-up discussions between Clark and Arizona resolved this operator error. Neither the University of Arizona, nor the data supplier provided mistakenly georeferenced images.

Environmental Scientist

The Environmental Scientist, Dr. Yusuf Mohamoud arrived in Lilongwe on January 6, 1997. He participated in the Intermediate Level GIS workshop which was held at APRU from January 13 to January 25, 1997. During the same period, he participated in the Environmental Information Systems (EIS) workshop which was held at the Sheila Lodge in Lilongwe.

During his trip in December 1996, he completed a brief report on the state of environmental research and teaching activities in Bunda, Chancellor and Polytechnic. A tentative workplan for 1997/1998 was drafted which were discuss with the Principal Investigator, Dr. Hutchinson.

Curriculum Development

As part of the curriculum development effort, a syllabus for an environmental science course was developed. The syllabus is only for one course but it will fit into the curriculum development needs of both Bunda and Chancellor Colleges. This is the first step towards building an environmental science curriculum and more courses will be selected and more syllabi will be developed in the coming quarter.

Literature Review and Data Search

To learn more about the existing courses with aspects of environmental education and research activities of some of the faculty members in Bunda, the Environmental Science Advisor met with staff in the Agricultural Engineering Department to discuss their research and teaching activities. In addition, he met with several line agency personnel to discuss with them about the availability of climatic, hydrologic, and water quality data from major rivers in Malawi.

Environmental Monitoring Activities

Workshop

On February 14-15 the ESA participated in a workshop on MEMP catchment monitoring held in Salima. The meeting was chaired by Mr. R. Kabwaza and the objective of the meeting was to present sectoral reports using data collected by MEMP participating agencies during 1995/96 season. Unfortunately, only the Meteorology Department presented reports from two of the four catchments. Some agencies presented some data but not reports. The Chairman urged the agencies to complete the reports and selected a core committee to review, evaluate, and prepare a synthesis report for MOREA. The ESA was nominated to be the Chairman of the Core Committee.

Field Visits

As the chairman of the core committee, the ESA familiarize himself with the catchments and the field plots where the data is collected. The ESA and Mr. Phiri, MEMP Environmental Officer, traveled to Chulu and Chilindamaji catchments on February 21, 1997. The trip lasted for two days. They continued their trip to Njolomole and Kamundi catchments on February 27, 1997. This field trip also lasted for two days. Observations on the data collection methods will be presented in a forthcoming report in which both the problems of the current monitoring activities and recommendations for a modified monitoring strategy will be presented.

Small Grants Research Program

On March 17, the ESA met with Drs. Chilembwe and Phiri of the Agricultural Sciences Committee (ASC) in MOREA to discuss the common problems and solutions associated with administering research grants in Malawi. They provided some invaluable insights that will be useful for supervising the Small Grants Research Program. They also expressed their willingness to provide advice on issues related to the Small Grants Research as needed.

All the proposals submitted by researchers for the Small Grants Research in 1994 were handed over to me by the MEMP Technical Advisor. The research needs have been prioritized according to NEAP and MEMP objectives.

Future Action

Review the 1994 proposals and propose key themes for new proposals as soon as information about the availability of funds for the program during the upcoming workplan.

Environmental Monitoring Activities (MEMP Catchments)

Field Visits

As all the sources of data (field plot pits, control plots, wells, and streams) at Chulu Catchment weren't visited during the first trip, another trip to Chulu on March 19, 1997 was made. With this trip, ESA completed the field visit exercise.

Sectoral Report Evaluation

As Chairman of the Core Committee, evaluation sheets were prepared for the reports so that committee members could use standardized criteria for objectively evaluating the reports. Because the agencies were unable to complete the reports and send them to the Core Committee, no evaluation and review activities were conducted.

Future Actions

The report review process will begin on the second week of April and a meeting will be held on April 17 at Mzuzu. In this meeting, the recommendations made by the Core Committee will be presented to participants from the line agencies and hopefully a decision will be reached on how the current catchment monitoring activities could be improved.

Report on Small Catchment monitoring: problems and recommendations

The main activity of this quarter was to evaluate the MEMP catchment monitoring activities and to recommend changes that could enhance both the quality of the data collected from the MEMP catchments and the interpretation of the results. Being the Chairman of the Core Committee and having seen all the catchments, the ESA was able to identify some problems associated with the current monitoring activities and propose recommendations for future monitoring strategies. However, before finalizing a report on the problems of the field data collection methods, he will examine the raw data from MEMP catchments in order to comment on all aspects of the catchment monitoring activities. He has prepared a draft report on problems of the data collection methods based on field observations. Because of these problems, a proposal that the catchment monitoring activities be distinguished into research and monitoring activities has been made similar to those in the Watershed Monitoring Report. As part of the report, a modified monitoring strategy where the data can be collected by the field assistants and analyzed and interpreted by the Land Resources and Conservation Branch officers of the Ministry of Agriculture will be presented.

Future Actions

A report that presents the problems of the existing monitoring activities and will make recommendations for future monitoring and research activities in some of MEMP catchments will be prepared. The report will also provide recommendations for future MEMP catchment monitoring and research activities. Some of the recommendations of the report are included in the workplan. The report will be finalized on May 15, 1997.

Curriculum Development

The curriculum development activity is an ongoing activity which requires thorough discussions with university officials. On March 21, 1997, the ESA met with the Dean of the Bunda College of Agriculture and APRU Management. In this meeting, the Dean of Bunda College expressed the need for establishing a Faculty of Natural Resources with several departments that include department of environmental sciences. However, it was agreed that such a task is indeed a long-term activity and may not fit into the curriculum development activities under MEMP II. The development of a curriculum for an environmental science option was also proposed. Under this option, students will earn a Bachelor of Science degree with an environmental science option.

Future Actions

The environmental science advisor will develop a curriculum for the option. There will be a Curriculum and Syllabus Committee meeting on April 16, 1997 at Bunda College. The introduction of Environmental Sciences option is one of the agenda of the meeting. The Chief of Party and the Environmental Science Advisor will meet with Chancellor and Polytechnic officials On April 7 and 8 to discuss with them about issues related to curriculum development needs, GIS and Small Grants Research program.

Workplan

A workplan that closely links the environmental research and training activities to the needs of the MEMP participating agencies has been prepared. The training component focuses on building the capacity of the line agencies in analyzing, interpreting, and reporting environmental data as well as the use of soil erosion models for conservation planning. The research component of the workplan focuses on the need for developing monitoring methodologies that does not require intensive data collection. As a tool for monitoring and managing natural resources, the use of models will be introduced.

Quarterly activity results and indicators

- *Facilitate in-service training* - The first GIS course was held. Twenty four participants were proposed by the institutions, seventeen arrived and fifteen completed the first course.
- *Liase with Environmental Scientist to develop research applications and environmental monitoring products* As no assurance was provided on the availability of local currency funding for this component, little action was taken.

Component Five - Environmental Policy, Legislation, and Institutional Development

This was a difficult quarter, with the optimism attending the release of the first tranche of NATURE funding giving way to frustration as time passed without any financial support passed on to the participating agencies, and Ministry of Finance officials - the Secretary to the Treasury and the Deputy Secretary (Budget) - persistently unavailable for meetings or comment. Morale among the agencies is low, and the major task of the NATURE policy advisor towards the end of the quarter has been to try to maintain some level of commitment to the planned program of policy and legal reform.

Fulfillment of NATURE tranche one conditionality

The early part of 1997 saw intensive activity towards satisfying all of the tranche one conditions of the NATURE Program. Efforts were focused primarily on the publication of guidelines for performance-based budget programs in natural resource management (responsible agency: MEP&D), the staff establishment requirement for the Environmental Affairs Department (responsible agency: MoREA) and the assembly of documentation supporting the GOM's fulfillment of tranche one conditions.

The PBBS guidelines were published by MEP&D late in January 1997. Unfortunately, the version printed was not the most current draft, and a revised version was made available by the end of the month.

Although MoREA had not recruited the required 15th professional into the Environmental Affairs Department, it was decided that since the recruitment process which had been initiated would, when completed, provide for an establishment in excess of that required in the NATURE Program Agreement, a case would be made to USAID that the GOM had complied with the spirit, if not the letter, of this condition. An associated issue was that of housing: three of four newly-recruited professionals in EAD remained un-housed because of Government's restriction on leasing accommodation. The danger existed that the department might for this reason lose one or more of its new recruits: its compliance with the EAD establishment condition was therefore seen as insecure. The NATURE policy advisor worked with MoREA officials to secure agreements with the Ministries of Lands, Housing and Finance which would grant a waiver of the blanket restriction on new leasehold agreements and would also put in place the necessary financing to

secure accommodation for four EAD officers in Lilongwe. These agreements were summarized in a letter from the MoF dated January 27th.

By January 23rd all of the necessary documentary evidence of the GOM's compliance with tranche one conditions had been assembled, and were presented to USAID under cover of an explanatory letter from the Secretary to the Treasury. Since a lawyer from USAID/Washington was in Lilongwe for the whole of the following week it was possible to finalize the approval process quickly, resulting in the disbursement of the first tranche of NATURE NPA support (US\$5 millions) before mid-February.

Development of a Composite Action Plan for review and reform of policies, institutional roles and legislation for E/NRM.

The consolidated action plan and monitoring schedule for the policy, institutional and legal reform process was completed in draft by mid-October 1996 and approved by the Ministry of Finance early in December. As explained in the last quarterly report, finalization of the time scheduling and subsequent implementation of the plan could not commence until such time as the Ministry of Finance made funds available to the participating agencies. This was expected to follow swiftly after the release by USAID of the first tranche of NATURE NPA funding. However, the disbursement by USAID had not, by the date of reporting, resulted in any further payment by the MoF (an initial allocation had been made in March 1996), and at the end of the quarter two clear impacts of this further delay were discernible:

- Agencies were beginning to ignore the action plan and were seeking other, more affordable, ways to accomplish those activities which were seen as most urgent. The principal risk here is that the goal of an integrated and harmonized set of sectoral policies and laws, developed through a process of broad participation, will not be achieved. Instead, policies and laws will be developed in isolation: they may fail to achieve consensus or may be incompatible with the existing framework legislation. Potentially, this could lead to the grounding of the NATURE Program. Attempts to deal with this problem are outlined below.
- The other impact relates to the growing difficulty of coordination with other donor-funded initiatives, most importantly the UNDP/UNEP Environment and Law Programme and the Presidential Commission of Inquiry on Land Policy Reform. The former requires technical assistance proposals (for legal review and reform) to be lodged with UNEP before the end of March: after that date the flexibility on timing will become much more restricted. The latter has a tight time schedule - the slower the NATURE-supported sectoral policy reforms the less they will be able to feed into the process of developing a new land policy.

The status of the Action Plan, by agency, is summarized below:

Ministry of Lands and Valuation: No funds carried over from initial allocation. Action plan not yet rescheduled but commitment to implementing the plan still secure.

Department of National Parks and Wildlife: No funds carried over from initial allocation. Action plan not yet rescheduled but commitment to implementing the plan moderately secure. An agreement has been secured with GTZ to provide "bridging finance" to enable initial community consultations to commence.

Forestry Department: No funds carried over from initial allocation. Action plan not yet rescheduled but commitment to implementing the plan moderately secure. The draft Forestry Bill is expected to be presented to Parliament during the March/April budget session, and UNDP/UNEP support to finalizing the forestry policy and reviewing the new legislation will be rescheduled to late 1997.

Fisheries Department: Little finance carried over from initial allocation. Action plan not yet rescheduled and commitment to implementing the plan uncertain. A draft Fisheries Conservation and Management Bill was scheduled for presentation to Parliament during the March/April budget session. Examination of this bill revealed serious deficiencies: it was an out-dated statute developed in 1993 by an FAO consultant and had been only marginally amended since. After an intervention by MoREA, and an eleventh-hour meeting with the Minister for Natural Resources on March 26th, the Department withdrew the bill. The MoREA lawyer and the NATURE policy advisor will assist the Fisheries Department to develop a more suitable draft in time for the next sitting of Parliament.

Water Department: No funds carried over from initial allocation. Action plan not yet rescheduled but commitment to implementing the plan moderately secure.

Irrigation Department: No funds carried over from initial allocation. The department is proceeding with a program of policy-related studies financed by other donors (FAO, Danida). Action plan not yet rescheduled but commitment to implementing the plan moderately secure.

Ministry of Agriculture and Livestock Development: Substantial funding carried over from the initial allocation. The Action Plan was rescheduled at the first meeting of the MoALD policy and legal Task Force held in Salima on February 10th-11th, in which the NATURE policy advisor participated. Implementation is now in progress.

Ministry of Local Government and Rural Development: No initial allocation was made to this Ministry, which joined the program in mid-1996. Action plan not yet rescheduled but commitment to implementing the plan remains secure.

Ministry of Research and Environmental Affairs: Some funding carried over from the initial allocation. The Action Plan is being implemented with a delay of approximately three months and with certain items deferred pending (a) funding, and (b) the rescheduling of other sectoral plans.

The UNDP/UNEP Environment and Law Programme (ELP) plays an important part in the GOM Action Plan, specifically by providing for a considerable amount of local short-term technical assistance in support of legal reform. The NATURE policy advisor attended meetings of the National Legal Task Force and the ELP National Steering Committee on January 12th and February 12th respectively, and participated in a working sub-group to prioritize sectoral needs for ELP support on February 13th. The policy advisor later presented the recommendations of the working group to a two-day workshop of the Environment and Law Programme held in Zomba on February 20th-21st. At the end of the quarter the MoREA legal officer, Mr. Ernest Makawa, and the NATURE policy advisor collaborated in the drafting of a program for the remaining ELP inputs totalling 31 person-months of local consultancy and 10 person-months of international consultancy.

Donor Co-ordination

The donors' E/NRM coordination group met in the USAID conference room on January 9th, February 11th and March 14th, 1997. In addition to regular updates on program planning and activities the group received presentations on:

- food for work issues bearing on natural resource management (WFP);
- the National Council for the Environment (Ralph Kabwaza, Director of Environmental Affairs);
- a proposed Renewable Energy Project (UNDP/Ministry of Energy and Mining), and

- water resources of Malawi (Osborne Shela, Ministry of Irrigation and Water Development).

Meetings of the donors E/NRM Protected Areas Sub-committee were held on January 8th and March 13th at the South African High Commission.

Although the donor meetings form an invaluable forum for the exchange of information, the main thrust of Government activity in NRM coordination has been towards the finalization of the Environmental Support Programme as a comprehensive and prioritized approach to investments in E/NRM. To this end, MoREA has initiated a series of workshops to improve the conceptual basis for the ESP using the Results Framework planning methodology. The first of these, centered on Community-based NRM (CBNRM), was held on March 5th-6th 1997: two further workshops will focus on protected area management and pollution/waste management. The March CBNRM workshop was very ably facilitated by Mark Renzi of the USAID/NRMP LIFE project team (Namibia), and was a direct follow-up to the work he undertook with MoREA and other agencies during December 1996.

It is envisaged that the final outcome from the three workshops will be:

- a finalized (although periodically updated) ESP document;
- a clearly defined framework for monitoring GOM, NGO and donor interventions in the E/NRM sectors, and thus for coordinating or giving guidance to such interventions, and
- a detailed job description for an officer to be recruited into MoREA's Policy and Planning division with specific responsibility for coordination.

The environmental policy advisor will give active support to the continuation of this process and the production of the necessary documentation.

Sustainable financing for E/NRM programs

Following the decision made by the Endowment Fund Working Group on December 10th 1996 to merge the proposed **NATURE Endowment Fund** with the **National Desertification Fund**, Terms of Reference for a working group coordinator were drawn up and the position advertised in the local press. The environmental policy advisor assisted in the preparation of selection criteria, and also in the short-listing of prospective candidates. 20 applications were received, and three of five short-listed candidates were interviewed in Blantyre on March 10th. A meeting of the Working Group March 11th accepted the recommendations of the interview panel, and subsequently a six-month contract was offered to Mr. Wiseman Belo, with the cost of this contract and associated support services to be borne by UNDP. A working program for the coordinator is currently in preparation.

Initiation of a study into Community-Based Natural Resource Management (CBNRM) in Malawi.

The ULG study was finalized by the end of January following a very lively half-day meeting on January 10th to discuss the first draft report. A final draft report was received before the end of February, with broad recommendations essentially similar to those described in the last quarterly report.

Status of NATURE tranche one conditionality

- the publication of guidelines for performance-based budget programs in natural resource management (responsible agency: MEP&D), and
- the recruitment of a fifteenth professional staff member into the Environmental Affairs Department (responsible agency: MoREA).

Other activities

Land Policy

The NATURE policy advisor attended a meeting of the Land Utilization Studies Steering Committee on February 3rd, but was unable to attend meetings on January 7th or March 5th because of prior commitments. Other engagements in the field of land policy included:

- attendance of two day-sessions (January 27th-28th) of a 10-day seminar to brief the newly-inaugurated Presidential Commission for Land Policy Reform. The policy advisor also prepared background material for a paper on the environmental implications of land policy presented to the Commission by Mrs. E. M'mangisa, Assistant Director of Environmental Affairs, on January 28th. Discussions during the seminar highlighted some of the issues to be considered by the Commission, most notably pressure to de-control protected areas in order to make more land available for smallholder agriculture.
- attendance of two days (March 10th, 12th) of a three-day regional workshop to introduce the International Model Forest Network to Southern Africa.
- attendance of the final presentation of the Estate Lands Utilization Study (March 11th). This session invited broad participation, including most of the Land Commission, and generated heated debate. The intensity with which the study's findings, particularly those related to the low efficiency of land utilization on the medium-sized tobacco estates, amply illustrated the political sensitivity of land issues, and in retrospect it was clear that a single-day session was insufficient to allow controversial issues to be explored in depth. Following the presentation the ODA team felt obliged to extend the study by a further three months in order to address the more serious concerns raised.

Development of recommendations arising from awareness-raising workshops for politicians

The recommendations resulting from three awareness-raising workshops held for politicians during the third quarter of 1996, refined in a two-day meeting chaired by the Minister for Research and Environmental Affairs in Zomba during November 1996, were endorsed by the inaugural meeting of the National Council for the Environment on January 17th, 1997. They will be presented to Cabinet during the second quarter of 1997.

Liaison with other donor initiatives

The environmental policy advisor has maintained an active liaison with the following donor programs with specific reference to E/NRM issues:

- UNDP 6th Country Programme: Sustainable Livelihoods and Food Security (national sub-programme). Contact person: Ganesh Singh, UNDP New York

- the World Bank/UNDP Growth Options Study (a search for new opportunities for rural-based economic growth). Contact persons: Gene Tidrick, Trina Haque, World Bank, Washington.
- Natal Parks Board: Investigation of Regional Trade in Wildlife Products. Contact person: Simon Pillinger, Natal Parks Board.

Personal security

Declining standards of security are very much part of the national picture, affecting rural areas as much as the cities. Among the UofA team Tony Seymour's house in Area 43 of Lilongwe has been subject to repeated night-time burglary attempts, and early in the evening of March 13th (1820 hrs) his house was entered by a gang of five thieves armed with one AK47. The thieves held Seymour's children and house staff prisoners until he returned from work, and later left the scene in the UofA Landrover (BK 4217) with a quantity of personal effects, including around MK14,000 in cash and a rifle with 100 rounds of ammunition. No-one was hurt in the incident, and very fortunately the vehicle was recovered (minus parts worth MK20,000) two days later. Within a week another robbery attempt was foiled by the security guard: altogether 6 incidents at this house in 7 months.

Armed robberies, particularly car thefts, have increased significantly over the past six weeks, and the police have no resources with which to defend the public - for the most part they do not even have vehicles to visit the scene of a crime. Tony Seymour's house has recently been inspected by the USAID General Services Officer, who made a number of recommendations for bringing the house up to USAID security standards.

Quarterly activity results and indicators

The NATURE programme does not appear in the GoM 3 year workplan.

- *Legal framework in place, policies revised, and public sector agencies able to interpret programs and activities (reports from sectoral policy and legislation review)* As noted above, many activities are on hold until release of local currency funds to support NATURE activities.