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**ANNUAL REPORT
MARCH, 1991 - MARCH, 1992**

**IMPLEMENTATION OF THE
MALI LIVESTOCK SECTOR II PROJECT - 688-0218
&
DESIGN OF THE
ANIMAL PRODUCTIVITY AND EXPORT PROJECT - 688-0244**

CONTRACT NO. 688-0218-C-1014-00

USAID/BAMAKO, ADO/LIVESTOCK OFFICE

APRIL, 1992

**WASHINGTON STATE UNIVERSITY
UNIVERSITY OF WISCONSIN - MADISON
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I. Summary

The objectives of this contract are to: (1) provide the GRM with technical assistance to implement present program activities of the Mali Livestock Sector Project II (MLSII) from March, 1991 through July, 1992 (following Amendments 1 and 2 which extended final date of the contract through July, 1992), and (2) assist USAID/Mali and the GRM with technical assistance for the design of a follow-on project, the Animal Productivity and Export Project (APEX).

In April-May, 1991 (immediately following the abrupt change in government in Mali) the WSU Campus Coordinator and Deputy Coordinator undertook a TDY in Mali to plan with key GRM, Project, and USAID/Mali stakeholders how to best integrate the efforts of Washington State University (WSU) and its collaborating institutions with rapidly evolving project needs and priorities. As a result of this visit agreement was reached on immediate technical and management program support needs and on the need to organize a project planning meeting later in the year to discuss program development strategies for consolidating MLS II achievements and for designing the APEX project. In August, 1991 a financial management consultant completed a TDY to assess programmatic and technical assistance needs related to MLSII's financial management system. In October, 1991 a Planning Meeting was held at WSU with key Malian, USAID/Mali, and WSU-Collaborator Group staff. The objectives of this Planning Meeting were to: (1) develop a tentative schedule for major activities to enable an effective mobilization of resources by the WSU-Collaborator Group; (2) update technical assistance needs; (3) identify technical assistance needs and general scopes of work for design efforts; and (4) agree on an overall strategy, approach, and on the roles and responsibilities for all stakeholders in APEX design efforts.

APEX project design commenced in early December, 1991 with the arrival of the design team leader and design economist. During the period from mid-December through mid-February, 1992 eleven technical assistants were provided by the WSU-Collaborator group for APEX design efforts, in addition to a team of five, full-time Malian technical specialists, provided by the Ministry of Agriculture, Livestock, and Environment (MAEE). The APEX Project paper was approved by the Ministry and USAID/Mali in early March and a Grant Agreement was signed on March 31, 1992.

From March, 1991 through April 11, 1992 the WSU-Contractor Group provided 14.5 person months of in-country technical assistance for MLS II implementation and APEX design activities. During this same period collaborating institutions provided more than 3.7 person months of in-country technical assistance in support of MLS II implementation and APEX design efforts outside of contract funding. To date WSU on-campus logistical and technical backstopping have totalled more than 12 person months, 5.0 person months of which have been funded by the Contract. WSU also designed short-term training programs for two senior technical staff at the Central Veterinary Laboratory in the areas of clinical pathology and laboratory animal management. Training activities were funded outside of the Contract.

WSU on-campus support also provided programmatic input for the design and early implementation planning for the Strengthening Research Planning and Research on Commodities (SPARC - 688-0250) as well as developing linkages with the Anaplasmosis/Babesiosis Vaccine Development Project (12R-2949) and the Central Veterinary Laboratory (CVL) in Bamako, Mali. These efforts resulted in the selection of the CVL as one of two secondary vaccine test sites in Africa and the development of a Ph.D. training program in immunology for one of the CVL's senior staff which began in September, 1991.

Through March 1992, \$ 266,055 in contract funds have been disbursed, \$ 169,837 have been obligated but not disbursed, and unobligated funds amounted to \$ 18,240. (for more detail see Section Budget/Financial Report, page 5.)

II. Technical Program Support

A. Implementation and Support of MLS II Programs

The role of WSU-Collaborator group related to the implementation of on-going MLS II activities has been one of technical support. The WSU on-campus MLS II coordination team undertook a four-week TDY in

Mali during late April and early May, 1991. The dramatic political changes and resultant re-organizational changes within the GRM which were taking place at that time were having important practical and strategic implications for on-going activities during the consolidation phase of the MLS II Project.

This TDY enabled the WSU-Collaborator group to bring together all project stakeholders, GRM, MLS II, USAID/Bamako and achieve a consensus on program priorities and technical support needs during this consolidation phase and allow the WSU-Contractor Group to more effectively mobilize institutional resources to meet evolving MLS II program needs. The coordination team also discussed with Project, GRM, and Mission staff the need to prioritize Project studies based on both current and future program objectives in order to provide a solid and smooth transitional period between the conclusion of MLS II activities and those anticipated under the new APEX project. Areas of discussion included:

- **Identification of private sector feasibility studies;**
- **Recurrent cost studies;**
- **Impact and opportunity assessments of public sector decentralization and reorganization; and**
- **Identification of mechanisms to promote and support producer organizations and to establish and promote linkages among public, private, NGO/PVO organizations;**

Discussions also centered on developing a strategy for APEX design efforts which focused on:

- **Liberalization of marketing policies;**
- **A renewed commitment to addressing environmental issues;**
- **Ministerial re-organization and opportunities to better coordinate and integrate development efforts within the broad agricultural sector; and**
- **GRM commitment to decentralize decision-making and promote local, rural, and private sector initiatives.**

This TDY enabled project participants to reach a consensus on many major MLSII issues and agree in principle to the organization of a Program Planning Meeting in the Fall of 1991 at WSU. (note Annex A - Trip Report, WSU Campus Coordination Team). Financial management issues were also discussed related to the present financial management system in operation on the MLS II Project and to potential future needs within the Ministry. Consequently, a financial management consultant undertook a TDY in Mali in late July and early August to:

- **assess the strengths and weaknesses of the Project's financial management system and make recommendations for strengthening the financial management capacity of the National Livestock Service (DNE), the Sotuba Animal Research Center (CRZ), the Central Veterinary Laboratory (CVL), and the Administrative and Financial Division of the Ministry (DAF);**
- **assist the Project (MLS II) and MAEE staff assess the financial implications of the MLS II PACD extension and priorities for program development between January and July 1992;**
- **assist the Project (MLS II) and make recommendations on how the present project financial reporting system can be made a more effective financial management tool for the DAF and project service divisions (DNE, CVL, CRZ);**

- **begin to identify financial management issues which need to be addressed in APEX project design efforts.**

For details, see Annex B, Trip Report of Mr. Lloyd Mitchell, August, 1991.

A Program Planning Meeting was held at WSU from October 19 - 24 and included key Malian colleagues from the MAEE, from the MLS II Project, from USAID/Bamako, and from all WSU-Collaborator institutions. Several days of discussions resulted in:

- **developing a tentative schedule for major activities/TDYs to enable effective resource planning and mobilization and planning for both Malian and U.S. collaborators;**
- **updating technical assistance needs and resource allocations based on present and anticipated program needs for both the on-going project and the design needs for the new APEX project**
- **developing a list of anticipated discipline needs and revising SOW for APEX design team members; and**
- **assigning general roles and responsibilities for APEX design activities.**

A summary of the program and decisions of the Program Planning Meeting were distributed in a report. note Annex C - Planning Meeting, October 19 - 24, 1991, Washington State University).

B. Support of APEX Design Efforts

Design activities for the Animal Productivity and Export Project (APEX) began in early December, 1991 with the arrival in-country of the Design Team Leader and the Design Team Economist. During this period, design efforts were greatly assisted by technical support in the areas of environmental/ natural resource management and livestock economic from REDSO/WCA and AID/AFR/ARTS/FARA. In late December the MAEE nominated a Planning Committee, composed of an array of public and private organizations working in the livestock sector, and a group of Malian technical specialists which was assigned full-time to the APEX design team. In preparation for design, the University of Wisconsin supported an in-country TDY for a livestock marketing economist to begin gathering data and information for the livestock marketing and demand-analysis was considered an important element in the development of the APEX Project Paper.

Design efforts were undertaken throughout the design period as a collaborative effort among the Ministry (MAEE), the Mission, and the WSU-Collaborator/MAEE design team. Technical analyses for the APEX PP were completed in late February (note Annex D - Schedule of WSU-Collaborator Design Team Members), and the APEX Project Paper (PP) was completed in late March. (Washington State University provided the services of the Acting Director of International Development Cooperation for a period of one month, who was instrumental in completing the APEX PP). The Grant Agreement for the APEX Project was signed on 31 March, 1992. The Design Team Leader departed Mali on April 11, 1992. (Annexes D through

C. Institutional Management - WSU-Collaborator Group

An important part of U.S. institutional support for MLS II and APEX design activities has been the close collaborative relationships which have existed among cooperating institutions in support of MLS II and APEX programs. Although WSU has worked to strengthen communication linkages among its partner institutions (note Annex E - "Kibaru Newsletter), the success of the existing network has been in large part due to the supportive and pro-active manner in which all U.S. partner institutions have responded to in-country needs expressed by the Project (MLS II), the Ministry, and USAID/Bamako. The partnership that has been forged during past implementation and design efforts is expected to provide a mutually support and effective institutional network to support future implementation activities under APEX.

III. Administrative/Technical Program Support - WSU

Although procurement has been limited under the present contract, the International Development Cooperation Office (IDCO) at WSU has been effective in responding to organizational, logistical, and informational requests from MLS II. IDCO has served as a liaison office between MLS II units and U.S. suppliers, has provided technical specifications for equipment purchases, has provided technical backstopping in the areas of animal mineral deficiencies, laboratory animal housing and management, computer and peripheral technical support, training (in the areas of Clinical Pathology and Laboratory Animal Management), and travel support.

IV. Budget/Financial Report

The IDCO financial management unit has effectively tracked contract resources and has made financial resources available in a timely fashion in support of technical programs and activities. The following table illustrates the budgetary implication of Contract activities through March, 1992.

Line Item	Disbursed 31/3/92 (\$)	Encumbered 31/3/92 (\$)	Unencumbered 31/3/92 (\$)	Contract (\$)
Salaries and Wages	84,562	52,235	(19,879)	116,918
Fringe Benefits	11,607	10,997	5,572	28,176
Travel, Transportation & Perdiem	70,228	23,406	65,105	158,737
Supplies/Equipment	7,010	39,600	(39,610)	7,000
Other Direct Costs	14,007	10,757	(1,242)	23,522
Overhead	78,644	32,841	8,294	119,779
TOTAL	266,055	169,837	18,240	454,132

V. Continuing Program Priorities

1. Strengthening the capacity of the National Livestock Direction (DNE) and the Central Veterinary Laboratory (CVL) in the area of epidemiology has been an important programmatic thrust of MLS II activities and will likely continue to be an area of continued support under APEX. How to best strategically develop institutional capacity in this area while building capacity and participation of an expanding private veterinary sector is an on-going area of program development among WSU, its collaborating U.S. partner institutions, and Malian institutions and colleagues.
2. An important issue which resulted from APEX design activities and will be a focus of early Project implementation is the establishment of a system for ensuring the effective and fiscally responsible use of Project resources. Because of the array of institutions which will be involved in APEX implementation (public and private sector groups and institutions in Mali), the decentralized nature of Project management and program implementation, and the "autonomous" character of the Project due to its simultaneous support of both the public and private sector activities, the Project, the Ministry, and the Mission will have to develop and come to agreement on collective roles and responsibilities and on mechanisms for dispersing and tracking resources to this diverse group of Project beneficiaries. Mechanisms, which do date, have not been well-defined by the Mission.

ANNEX A

TRIP REPORT OF DRS. R. COOK AND J. NOEL, APRIL 1991

**SUMMARY REPORT OF THE INITIAL VISIT BY THE
WASHINGTON STATE UNIVERSITY CAMPUS COORDINATION TEAM
FOR THE MALI LIVESTOCK SECTOR II PROJECT**

22 April - 11 May 1991

**Richard H. Cook
Jan C. Noel
Washington State University**

LIST OF ACRONYMS AND ABBREVIATIONS

GRM	Government of the Republic of Mali
MDRE	Ministry of Rural Development and Environment
MDST	Management Development Support Team
ONG	Non-Governmental Organization
OMBEVI	Malian Office for Livestock and Meat
PACD	Project Authorized Completion Date
PVO	Private Voluntary Organization
REDSO/WCA	Regional Economic Development Support Office/W. & Central Africa (AID)
SOW	Scope of Work
TA	Technical Assistance
TDY	Temporary Duty (short-term technical assistance assignment)
WSU	Washington State University
USAID	United States Agency for International Development

INTRODUCTION

Washington State University (WSU) initiated implementation of its contractual activities on the Mali Livestock Sector II (MLSII) Project with a visit to Mali of the WSU campus coordination team, Dr. Richard Cook and Dr. Jan Noel, from 22 April to 11 May, 1991. The purpose of the visit was to explore with key project stakeholders how best to integrate the inputs of the TA Contractor--WSU and its collaborating institutions--with the ongoing and projected project needs and activities. The trip included a visit to the USAID Regional Office (REDSO/WCA, Abidjan, Côte d'Ivoire). Detailed terms of reference are included as Appendix I.

The activities consisted of a series of discussions and meetings with a broad range of institutions and individuals. A partial list of persons and institutions with which the team interacted are included as Appendix II. Apologies are extended to any whom we may have inadvertently failed to include. Because of the extensive and iterative nature of these discussions, no attempt has been made to summarize them in detail. Instead, for purposes of this report, the major findings and conclusions of the visit have been grouped into four categories:

- Issues relating to the implementation/consolidation phase of the present project;
- Issues relating to the design of the new project;
- Contractual issues associated with WSU participation in both phases; and
- Draft of a provisional calendar of activities.

These are summarized in the following sections. Additional details are provided in the attached appendices.

ISSUES CONCERNING THE IMPLEMENTATION OF THE PRESENT PROJECT

1. The recent and dramatic events concerning fundamental changes in the policies and organization of the Government of the Republic of Mali (GRM) have important practical and strategic implications for the extension of the present project consolidation phase. Programmatically such an extension should:
 - a) Review and re-prioritize project resources to enable an effective implementation of high priority activities during the transition period, from 1 January to 10 August 1992; and
 - b) Provide an opportunity to establish a multi-disciplinary planning committee to mobilize for the follow-on project. Composed of MDRE, USAID/Mali, and appropriate private sector/beneficiary groups, such a committee should begin identifying and clarifying those policy, institutional, and technical program issues between the GRM and the Mission necessary to effectively design and implement a new and more comprehensive development strategy for Mali's livestock sector.

Together, these activities should translate into operational terms how a new project can capitalize upon progress made to date to more effectively utilize the livestock sector as a major vehicle to generate broad-based economic development and policy reform to meet evolving GRM priorities and concerns. In order to take advantage of emerging opportunities, the present consolidation phase should also be used to mobilize interest and commitment by the spectrum of potential stakeholders to this broader based, but strategic approach to livestock development.

2. The changes referred to above have had important implications for the scope and timing of technical assistance inputs during the consolidation phase. In general, the changes made reflect the need to:
 - a) modify technical inputs to adapt to present project needs; and
 - b) meet the expressed desire by project stakeholders to have all technical assistance (TA) personnel assess both present and potential future technical needs and associated cost-benefits in program areas of their expertise. In some cases the TA timeframes specified in the contract for a given discipline area have been shortened to provide more flexibility within the specified contractual level of effort to meet evolving program design needs (see Appendix III for specific changes and modifications).
3. The project should review its present program priorities. Given the dynamic and rapidly evolving

political and institutional environment in Mali, the project must be more proactive in assisting MDRE identify opportunities to promote and increase economic impacts for beneficiary groups within the livestock sector. Examples include:

- Identification of private sector feasibility studies;
- Recurrent cost studies;
- Impact and opportunity assessments of public sector decentralization and reorganization issues;
- Identification of mechanisms to promote and support producer organizations and to establish and promote linkages between and among public, private, NGO/PVO organizations; and
- Identifying criteria for prioritizing among alternatives.

Such initiatives could begin under the present project and be logically expanded programmatically in the project design efforts. It is clear from discussions with MDRE staff that a priority for the Ministry is to provide for continuity in effort and maintain momentum between the two projects. Accordingly, the present project cannot afford to adopt a passive approach to the transition between present and future programs. As a result of ongoing as well as projected changes, the project must be proactive and aggressive in exploring how to move from doing old things in old ways to doing old things in new ways and to doing new things. Presently, there is a critical window of opportunity to support and assist the new GRM to meet the needs and aspirations of the Malian people. It is important that project management be proactive in exploring with project volets and MDRE staff those policy and institutional options which could be supported in new and creative ways in the new project.

4. Participant Training: WSU does not have contractual obligation for the provision of selected short-term participant training in the U.S. under the present MLSII project, as was originally projected in the RFTP. However, the University and its partner institutions are committed to assisting, as needed and appropriate, with the remaining human resource development activities. Therefore, discussions with GRM and USAID addressed both the status of the training programs and desired modifications in planned programs. Some changes have been made to the MLSII training programs outlined in the Project Paper Amendment and Request for Technical Proposal. A number of the projected short-term training programs overseas have already been completed, while others have been or will be carried out in Mali. Projected remaining needs identified during the visit are summarized in Appendix IV.

ISSUES REGARDING DESIGN OF THE NEW PROJECT

1. Overall Strategy: Livestock development is a key strategic element in the Mission's country development program to help the GRM maintain its commitment to the structural adjustment program and support the fundamental democratization efforts presently being undertaken. Significant changes, offering significant new opportunities for impact for the new project are in process. These include:
 - Liberalization of marketing policies;
 - A renewed commitment to addressing environmental issues;
 - Ministerial re-organization, including the fusion of the ministries charged with agriculture, livestock and the environment, offering new opportunities to better coordinate and integrate development efforts within the broad agricultural sector; and
 - GRM commitment to decentralize decision-making and promote local, rural and private sector initiatives.

Collectively, these provide a political climate supportive of fundamental economic and political change. New development efforts for Mali's livestock sector must provide a balanced approach between appropriate public and private sector investments and between the promotion of production

for domestic and export markets. As regional export opportunities are enhanced there is always a risk that domestic supplies may be put in jeopardy and a balanced development strategy should promote exports while protecting domestic supplies. Livestock represent both an important cash and food crop for a vast number of Malians. Consequently, development efforts within the sector offer a unique opportunity to contribute to the dual agenda of promoting economic development and ensuring food security. Recent policy changes, including the removal of price controls, elimination of export taxes, and broad popular support for private sector development provide a supportive climate for new initiatives which will promote sustainable sector development.

Significant changes in domestic and regional policies regarding livestock marketing and trade also offer new development opportunities within a regional context. For example:

- Ongoing changes in pricing policies for livestock products in Ivory Coast will favor locally and regionally produced meat and livestock products;
- Macro-economic and demographic trends in Ghana and Guinea appear supportive of developing future markets for Sahelian, and specifically Malian, livestock and livestock products;
- Recent studies indicate that significant opportunities exist for export of small ruminants from Mali to Senegal; and
- The recent inclusion of the livestock industry to the list of preferential industries in Mali's foreign investment code could provide new opportunities for promoting joint ventures and the development of value-added small businesses.

2. We recommend that the Project Zone (geographic focus/location of project activities) be addressed as a part of the design process. This should be approached for the new livestock project through the identification of criteria which will be used to identify the area(s) of desired improvements and those interventions from which these are most likely to result. Significant changes have occurred during the past 10 years in the nature of livestock production systems and in environmental issues and priorities associated with these changes. Consequently, opportunities for sustainable development of the livestock industry on a national scale should figure prominently in determining the zones of intervention for a new livestock project. This strategy should identify opportunities for high impact interventions, building upon existing and emerging policy, infrastructural and technical needs and capacities, wherever they may be located. This is now a highly feasible approach due in large part to the success of previous USAID development efforts which have targeted management and technical capacity building in key public sector institutions. Now is the time to capitalize on these successes by focusing resources directly on interventions which result in enhanced production, income generation, and sustainable productivity of natural resources.

3. USAID/GRM collaboration should address key issues and build upon the broad common agenda between USAID/Mali and the GRM. This includes a strong shared commitment to promote economic development while ensuring food security and the well-being of those segments of the population who are most vulnerable to potential negative social and economic impacts of ongoing structural adjustment efforts. Issues for consideration include, among others:

- Mechanisms to implement and monitor impact at the producer level;
- Evolving roles of public and private sector - strategically how these sectors can work together to ensure integrity and safety of the system in the short-term, while building toward new long-term roles in ensuring consumer protection, while facilitating and catalyzing private sector development;
- A need to be strategic and creative in selection of private sector initiatives in order to show initial success.
- Development of an effective project management system; including consideration of:
 - The future role of MDST;
 - The need for an entrepreneurial and flexible management structure that will forge an effective partnership and cooperative effort between the public and private

sectors. Project management must bring together an array of diverse groups, both public and private, to produce, over the medium and long-term, a coherent and complementary set of development impacts;

How best to capitalize on one of the major success of the present project, that of the recognized benefit of integrative program planning.

- **How to effectively integrate a continuing and evolving series of institutional and policy issues into project design - many of which are likely to occur after elections in early 1992.**
 - **How to effectively maintain continuity and stability of on-going project activities while addressing a dynamic political and economic environment.**
 - **How to develop an effective human resource development program in the new project which can address all target groups (public and private), and contribute to continuing positive impacts of the project.**
4. **It will be important to include in design considerations the role of research in the new livestock sector project and opportunities to better integrate related efforts for AID's agricultural sector development strategy (ie. the farming systems, support to agricultural research/commodities, development of Haute Vallée, and the new livestock project).**
 5. **Land tenure and land use issues in Mali's agro-pastoral areas are key elements which must be incorporated into the design approach.**
 6. **Interventions in the area of commercialization should stress opportunities beyond the traditional focus on export of live animals, especially cattle. The development of both small ruminant and poultry enterprises are important examples. Recent developments also suggest that commercial opportunities relating to milk and milk products and hides and skins merit further investigations during design process.**
 7. **An effective project management system must be developed and utilized to enhance and coordinate the participation of a diverse set of project stakeholders. Such would build upon successes and lessons learned from Mali Livestock I and II and other activities in the sector. The establishment of a planning committee (suggested in the section on Issues Concerning Implementation of the Present Project--1.b.), is one step toward the development of such.**

Another is the Joint Project Design Planning Meeting, included in the WSU technical assistance contract and tentatively scheduled to be held at Washington State University, Pullman, Washington, in September 1991. It is recommended that participants include:

- **Key members of the Planning Committee (Mali);**
- **USAID, Bamako representative/s;**
- **Key WSU personnel**
- **Key resource persons representing the WSU collaborating universities and institutions; and**
- **Others as appropriate.**

This meeting will provide a forum, away from day-to-day responsibilities, for:

- **Malian and AID stakeholders to become familiar with resources and capacities of U.S. organizations and individuals available to support the new project;**
- **Updating of U.S. participants with progress, activities and any changes in the ongoing project and of the Planning Committee;**
- **Identification and mutual exploration of issues and strategies necessary for the successful design of the new project, and**
- **Joint planning for design management including objectives, roles, responsibilities, schedules, and others.**

CONTRACTUAL ISSUES

1. **Because of the proposed revision of the PACD and evolving nature of technical and programmatic needs of the design effort, it has been noted that the present WSU contract does not fully address these issues. Discussions with USAID/Bamako identified the need to address these further, in concert with the Regional Contracting Officer.**

2. **A visit to the REDSO/WCA/Abidjan was undertaken from May 1 through May 3. The objectives were:**
 - a) **To ensure concurrence with the Regional Contracting Office of administrative and contracting procedures to facilitate an efficient and effective mobilization of resources by Washington State University and its collaborating institutions to meet evolving project needs; and**
 - b) **To discuss with REDSO technical staff opportunities for integrating regional marketing, trade and other programmatic issues into project design efforts. It was agreed that:**
 - **The WSU contract contains a clause authorizing modifications in TA inputs. Therefore, no amendments to the Title XII contract would be necessary to modify either SOWs or duration of short-term assignments, provided the level of effort and basic technical scope remain the same as outlined in the contract. Modifications and/or new SOWs will be transmitted to REDSO/WCA once approved by MDRE and USAID/Mali.**
 - **The extension of the PACD will have budgetary implications for the TA contract, as well as for project activities in Mali. Therefore, once extension of the PACD has been formally approved, a contract amendment should be made reflecting the new PACD; any other resulting contract modifications as agreed to by MDRE, USAID/Mali, and WSU; and minor corrections identified in the original contract.**
 - **The Regional Contracting Office will review the proposed format for WSU Task Orders to be issued under the existing Memoranda of Understanding with WSU Partner/Cooperator institutions and identify any issues or concerns which should be addressed prior to issuing Task Orders.**

**APPENDIX I.
REVISED TERMS OF REFERENCE
SHORT-TERM TECHNICAL ASSISTANCE - IMPLEMENTATION**

EPIDEMIOLOGIST (1 person month)

The objectives of this short-term technical assistance assignment are two-fold. The primary responsibility will be to conduct a training seminar for appropriate technical staff at the Central Veterinary Laboratory (CVL) and the National Livestock Direction (DNE). Utilizing data already collected by CVL and DNE staff, the objectives of this seminar will be to assess various analysis techniques and their relation to field sampling methodologies; to interpret the results of these analyses and their epidemiological implications; and to discuss the use of survey results in determining future disease control strategies and in orienting applied animal health research activities. The training program is expected to result in: 1) the improvement of technical and analytic skills of CVL personnel in the area of epidemiology; and 2) selected analytic results and/or approaches--specific to the available data and local conditions--appropriate for use in the design effort.

Based on discussions with GRM, USAID/Mali, and representatives from collaborating Title XII and other institutions at a program planning meeting to be held in Pullman, Washington in September 1991, the epidemiologist will also develop an epidemiological needs assessment which will be included in program development efforts during the design of the Mali Livestock Sector III project.

Proposed dates for the TDY are approximately 15 September - 15 October 1991.

¹CLINICAL PATHOLOGY (3 person weeks)

The primary responsibility will be to assist the CVL to develop the necessary technical capacity in clinical chemistry and hematology to support its diagnostic program. Specifically, the TA will assist CVL technical staff to put into operation a spectrophotometer which is presently on order and to train several technicians in the pathology section in routine clinical biochemistry analyses, including common macro-elements, and in routine hematology procedures. The clinical pathologist will also assist management at the CVL in developing a plan for identifying future clinical pathology needs and assessing and projecting human resource development and recurrent cost requirements to support these needs.

Based on discussions with GRM, USAID/Mali, and representatives from collaborating Title XII and other institutions at a program planning meeting to be held in Pullman, Washington in September 1991, the clinical pathologist will also develop an plan for assessing the technical and potential recurrent costs needs associated with establishing a toxicology/environmental monitoring capability for the CVL which may be included in program development efforts during the design of the Mali Livestock Sector III project.

Tentative dates for the TDY are July 1-July 21, 1991. (Final dates to be determined once equipment has been received by CVL).

¹VIROLOGY (1 person-month)

The TDY activities of the virologist will focus on sustaining and strengthening the capacity of the diagnostic virology unit in CVL to meet current and emerging needs of the livestock sector. Important

¹ indicates a reduction in duration of assignment from that originally anticipated.

elements include the broadening of capacity to serve other species of importance to the livestock sector, including poultry and small ruminants. Technical capacity in the laboratory is currently limited, with the exception of one highly trained individual. To ensure continuity in the event of turnover, the technical assistance activities will be closely coordinated with a companion training program for technical staff of the CVL virology unit. The training program will focus on the acquisition by three CVL technicians of a broad base of essential virology laboratory skills and techniques and their application to present and future needs of Mali's livestock sector. The training will be carried out in part in the U.S. (2 months), to allow for a broader access to teaching and diagnostic materials, and partly in Mali, to ensure adaptation of procedures to the CVL's program.

Following the completion of training activities and the program planning meeting in the U.S., the Virologist will provide technical assistance to the Virology unit in Mali for 1 person-month to assist the CVL to: 1) ensure technical and management procedures are adapted to and sustainable under local conditions; 2) assess future needs and priorities in the areas of diagnostic virology and related areas; and 3) assess human resource and recurrent cost issues associated with sustaining a virology capacity consistent with Mali's livestock sector needs.

It is anticipated that the training activities in the U.S. will be funded primarily under the training portion of the MLSII project, which is not a portion of the WSU technical assistance contract.

Tentative dates for this TDY are approximately 30 December 1991-30 January 1992. Actual dates will be determined in association with final training schedules and related discussions.

'IMMUNOLOGY (1 person month)

Primary responsibility will be to assist the CVL in developing improved diagnostic techniques for identification, monitoring (incidence and levels of protection against), prioritization, and development of effective control strategies for economically important diseases in Mali. The consultant will work with CVL senior technical staff, and other senior technical staff in the National Livestock Direction as appropriate, to assess the diagnostic needs of the CVL and develop cost-effective techniques for the production of diagnostic reagents and for diagnostic protocols. An important objective of the consultant's program development efforts with the CVL will be to identify opportunities for establishing long-term linkages for the CVL with veterinary research and diagnostic institutions in the U.S.

Preliminary discussions, focusing on two diseases (Anaplasmosis and Babesiosis), will be carried out in Mali between the CVL and the WSU Veterinary Immunology Unit in May, 1991. This activity is funded outside the WSU MLSII contract.

The consultant's in-country support of the CVL's immunologic diagnostic program will be further defined during detailed discussions with GRM/CVL staff during a project program planning meeting which will be held at Washington State University in September 1991. These discussions will provide the basis for the consultant to assist the CVL to develop a strategic, cost-effective diagnostic program which will be used during program design efforts for the Mali Livestock Sector III project.

This TDY is tentatively scheduled for December 1991. Final dates will be determined following the May visit of Dr. Steve Hines to the CVL and the subsequent joint program planning activities in Pullman.

FINANCIAL ANALYST - (Implementation - 3-4 person weeks)

(At the time of preparation of this draft report, the terms of reference for the implementation-related activities of the financial analyst are still under revision, but are scheduled for approximately 3-4 weeks in July 1991.)

LIVESTOCK MARKETING SPECIALIST (1 person-month)

Due to activities completed and ongoing in association with USAID programs in the Region and in Mali, this TDY assignment is now projected to relate primarily to the design of the follow-on project. Therefore, terms of reference will be defined in detail in association with the other design activities. Marketing-related design studies are tentatively projected to take place in September/October 1991.

**APPENDIX II.
PARTIAL LIST OF
ORGANIZATIONS/PROFESSIONALS CONTACTED**

USAID/Mali

Mr. Dennis Brennan, Director
Mr. Tracy Atwood, ADO
Mr. David Atwood, ADO/Economics Division
Mr. Doral Watts, ADO/Livestock Division
Mr. M. Cheick Drame, ADO/Livestock Division
Ms. Anna Diallo, Controller's Office
Mr. Brahim Sangare, Controller's Office
Dr. Vic Duarte, Program Economist, EPRP
Ms. Monica Stein, Financial Analyst
Mr. John Breslar, Program Office
Dr. Tadesse Kibreab

USAID/REDSQ/WCA

Mr. Steve Wisecarver, Regional Contracting Officer
Ms. Christine Farhat, Contracting Specialist
Mr. Fidele Sarassoro, Planning/Evaluation Division
Dr. S.K. Reddy, Program Development Office

Ministry of Rural Development and Environment

Dr. Bocar Diallo, Director of Cabinet
Dr. Ousmane Guindo, Technical Advisor
Dr. Gagny Timbo, Director General, DNE
Dr. Boubacar Seck, Director General, CVL
Mr. El Hag Omer Tall, Director General of IER, nominated Technical Advisor MDRE
Mr. Bafotigui Sacko, Technical Advisor, Economics, MDRE
Dr. M. Goita, Director DRSPR, nominated Director General of IER
Mr. M. Dicko, Director, Division of Animal Production Research, IER
Mr. Racine Ly, Researcher, CRZ
Dr. Traore, Research Coordinator, CRZ
Dr. A. Sow, Deputy Director General, DNE
Dr. A. Diallo, Chef, Division of Projects/Programs, DNE
Mr. M. Diallo, Chef, Pasture/Natural Resource Division, DNE
Dr. Boubacar Kouyate, Chef, Diagnostic and Research Division, CVL
Dr. C.F. Simbe, Deputy Director General, CVL
Mr. Mechell Jacob, Director of Operations, MDST, Livestock Sector Project
Mr. C. Bagayoko, Financial Director, MDST, Livestock Sector Project
Mr. Bonfing Koite, Administrative Director, MDST, Livestock
Sector Project (nominated Chef de Cabinet du Premiere Minister)
Dr. M. Coulibaly, Chef, Division of Animal Health, DNE
Dr. Camera, Director General, Veterinary Pharmacy
Dr. Samasoko, Chef Division of Marketing/Commercialization, CVL
Mr. Modibo Sangare, Director General, OMBEVI
Dr. Sadou Oumar Ba, Deputy Director General, OMBEVI
Mr. S. Maiga, OMBEVI
Mme. Oumou Coulibali

CMDT

Dr. Mukhtar Traore, Director Animal Production Division

Peace Corps

**Ms. Karen Woodberry, Director
Mr. Oumar Cissé, Agricultural Specialist**

Africare

Mr. Dan Gerber

Others

**Ambassador Donald Herbert Gelber
Dr. John Staatz, Michigan State University
Dr. Michael Weber, Michigan State University
Dr. Siegfried Debrah, ILCA (CIPEA)
Dr. Gerti Hesselring, CILSS/Club du Sahel
Dr. Jack Hyde, Chemonics
Dr. Steve Hines, WSU
Dr. Ron Kincaid, WSU**

**APPENDIX III.
PROVISIONAL CALENDAR OF ACTIVITIES/EVENTS
POTENTIALLY INVOLVING/AFFECTING WSU
APRIL 1991 - SEPTEMBER 1992**

ACTIVITY/EVENT	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Initial visit WSU Cook and Noel ¹	X	X							
Immunology TDY - Hines ¹		X							
Animal Nutrition TDY - R. Kincaid ¹		X							
PACD Amendment		X							
P.I.D. Submission to AID Washington D.C.			X						
Clinical Pathology TDY - J. Kramer				X ²					
Financial Management Analysis TDY - L. Mitchell				X					
P.I.D. Approval Washington D.C.				X					
Title XII Contract Amendment/PACD, etc.					X				
Virology Short-term Training (2 in U.S.)						X	X	X	
Project Planning Committee in Mali					X	X	X	X	X
Recurrent Cost Study Completed (CVL, etc.)					X	X			
Jt. Project Planning Meeting, Pullman, WA						X			
Epidemiology TDY - J. Homan						X			
TA Design Team - K. Shapiro R. Cook						X	X X	X	X
Immunology TDY - T. McGuire									X

¹ Sponsored by WSU

² Pending arrival of necessary laboratory equipment

**PROVISIONAL CALENDAR OF ACTIVITIES/EVENTS
POTENTIALLY INVOLVING/AFFECTING WSU
APRIL 1991 - SEPTEMBER 1992 (CONTINUED)**

ACTIVITY/EVENT	JAN 1992	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
T.A. Design Team - (Continued) R. Cook P. Bloch L. Mitchell Others??	X X	X X	X X	X					
Project Planning Committee Continues Activities in Mali	X	X	X	X	X	X	X	X	X
Virology TDY: - J. Evermann	X								
Project Paper Completed				X					
Project Paper Approved (USAID/Mali and GRM)				X					
Project Agreement Completed/Signed (USAID/GRM)				X	X				
Mobilization for Project Implementation				X	X	X	X		
Project Implementation Contract Signed						X			
Project Implementation Start-up						X	X	X	X
PACD Mali Livestock Sector II (10 August 1992)								X	

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**APPENDIX IV.
SHORT-TERM TECHNICAL TRAINING
CENTRAL VETERINARY LABORATORY**

Prioritized List of Training:

1. Virology:

A. For technicians: Training will emphasize the following areas: (1) cell culture techniques; (2) preparation and conservation of cell culture media; (3) sample handling; (4) maintenance of laminar flow hoods; (5) maintenance of laboratory equipment; and general operational procedures for a virology laboratory.

B. For scientists: Training will emphasize the following areas: (1) cell culture techniques; (2) viral isolation and identification techniques; (3) antigen preparation for serological tests; and (4) procedures for basic serological testing, eg. VN, CF, HA, HI, and ELISA.

2. Immunology: Training will focus on scientific staff and will emphasize the following areas: (1) immunization techniques for production of antisera; (2) techniques for globulin preparation; (3) techniques for the preparation of fluorescent and enzymatic conjugates; and (4) conjugation titre techniques.

3. Epidemiology: Training will be focused on scientific staff and will emphasize the following areas: (1) statistical methods; (2) sampling techniques; (3) surveys and precision assessment; (4) methods for comparing and evaluating observed and theoretical percentages; and (4) standard distribution principles and theories, means and variance.

ANNEX B

TRIP REPORT OF MR. L. MITCHELL, AUGUST, 1991

D R A F T

STRENGTHENING FINANCIAL MANAGEMENT

IN THE LIVESTOCK SECTOR PROJECT

A REVIEW PREPARED FOR THE GRM AND USAID/MALI

BY

LLOYD M. MITCHELL

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CONTRACT No. 688-0218-C-00-1014-00

**Bamako, Mali
July 15 - August 3, 1991**

EXECUTIVE SUMMARY

Washington State University (WSU) has signed a contract with the U.S. Agency for International Development (AID) for selected implementation/design activities of the Mali Livestock Sector II Project or "MLSII" (AID Contract No. 688-0218-C-00-1014-00), the "Prime Contract." The Mitchell Group, Inc., as a collaborator with WSU, has entered into an agreement with WSU to assist in the financial management portion of the Project. Simply stated, this financial management review is being conducted to examine an approach that will maximize the use of local resources to contain management costs and promote sustainability. Since the new livestock project may involve a wide spectrum of in-country collaborating entities, eg. PVOs, NGOs, private sector groups, etc., new financial and program management procedures will have to be developed. Of particular interest will be the effective programmatic integration of the public (MAEE) and private sectors.

Considerable progress has been made in the management of funds for The Mali Livestock Sector II Project over the past three years. To measure this progress and evaluate the financial management system in place, this evaluation focuses primarily on improving the existing policies and procedures at the Ministry of Agriculture, Livestock, and Environment/Government of Mali (MAEE/GRM), U.S. Agency for International Development/Mali (USAID/Mali), and at individual national service divisions for their completeness, adequacy and internal consistency. The objective of this evaluation is to identify opportunities for improving coordination, communications, and efficiency, while streamlining the system for development during phase III of the project.

The follow-on project to the Mali Livestock Sector II Project will involve adapting management procedures and technologies to the Malian environment. Tight monitoring and feedback mechanisms need to be built into the design of the new project to help guide implementation. The following recommendations, at both the policy and program levels, represent opportunities to strengthen resource allocation capacity with the MAEE and promote the sustainability of future project efforts. These opportunities should be reviewed by the design team, the MAEE/GRM, and USAID/Mali.

A. Policy Recommendations:

1. The GRM/MAEE and USAID/Mali should transfer the supervision of MDST to the Administrative and Financial Division (DAF), which then should assume overall responsibility for the management of all aspects of project local currency funds.
2. The GRM/MAEE needs to clarify the legal and administrative status of the Central Veterinary Lab (CVL), i.e. public, semi-public, or private enterprise. This clarification is essential in order to identify future development strategies for the CVL and to design appropriate programs in the new project.
3. The new accounting system being designed and implemented at the CVL should be reviewed in mid 1992 to determine its effectiveness and applicability for other projects in the MAEE.

B. Programmatic Recommendations:

1. The MAEE/GRM and USAID/Mali need to improve communications. One method to do this would be through the creation of a quarterly newsletter, distributed to all service/division levels, which contains policy and procedural issues, analyses of quarterly financial and activity reports, and up-to-date information concerning progress towards achieving program objectives.

- 2. Additional training in financial management systems and procedures and in computer use is needed for MAEE accountants. Such training would facilitate the adoption of improved financial management procedures by the MAEE.**
- 3. There is a need to re-examine criteria for approving cash advances. Under certain circumstances it may be necessary to provide 60-day advances. In this regard it is suggested that the procedures for transferring funds to the field be reviewed to improve the efficiency of disbursement and facilitate the timely execution of project programs and activities.**
- 4. Procedures should be improved for monitoring equipment and supply purchases. In the future, the project with Title XII assistance should develop a more efficient procurement process that better responds to project/MAEE needs.**

Further discussion concerning the above recommendations can be found in the recommendation section of this report.

SECTION I - INTRODUCTION

1.1. Background

Livestock is important to Mali economically and culturally. Mali's livestock sector generates approximately 50% of export earnings and accounts for approximately 20% of GNP. Livestock serves as a source of income, a reserve for savings, and a tangible measure of status and security for producer households.

Major support for the livestock sector began in response to the conditions created by the 1974 drought, as part of the overall U.S. and world-wide donor community response to the Sahelian crisis. In addition to continued support for the Central Veterinary Laboratory (CVL), USAID/Mali has provided significant support to improve livestock production technology.

Since 1974, USAID/Mali has responded to livestock sector problems with a series of projects designed to address animal health, management, production and marketing constraints. The first of these projects, Mali Livestock Development, provided credit for animal purchase and introduced controlled grazing and feedlots. The second, Mali Livestock II, introduced range management programs as well as supporting tsetse-fly control research to permit the use of new pasture land.

The current Grant Agreement for the Mali Livestock Sector II Project, the third USAID/Mali livestock project, was signed in 1982 for \$17.5 million over five years. Subsequent amendments have brought the total funding to \$23.2 million and extended the PACD to 1991. The Mali Livestock Sector II Project represents the first phase of a 20-year collaborative effort between the GRM and USAID to bring about sustained improvements in the income and well-being of livestock producer and others dependent on the livestock sector.

The purpose of the project is to:

1. Expand activities that have brought about increased production
2. Continue testing activities that show potential
3. Identify improved technologies for extension through on-farm research
4. Develop the institutional capacity of the public and private sectors to identify, plan and evaluate viable livestock sector investments

The following institutions are involved in project implementation:

- MAEE.** The GRM Ministry of Agriculture, Livestock and Environment
- DNE.** The National Livestock Directorate responsible for the delivery of inputs and the conduct of disease surveillance programs to monitor and maintain the health and productivity of the national livestock herd, including vaccinations, treatment and extension.
- CVL.** The National Veterinary Laboratory which serves as a national diagnostic resource center and implements an applied animal health research program. A separate CVL unit is responsible for vaccine research and production.
- INRZFH.** The National Institute for Zoologic, Forestry and Hydrobiologic Research, was the Malian institution responsible for animal production research. The institute serves as the source of research and extension information for the DNE. INRZFH has recently been integrated into the Institute of Rural

Economy (IER) which is now the executing agency for Mali's national agricultural and livestock research program.

MDST. The Management Development Support Team is responsible for project implementation activities such as budget preparation, financial management, local and international procurement, contracts, training, vehicle maintenance and control, fuel control, inventory systems, clearance of annual work plans, preparation of JMC documents and minutes, and quarterly progress reports. MDST is the main liaison between USAID and the GRM. It coordinates the implementation of all the project activities. High level policy, program guidance, and management coordination are provided to the project through the Joint Management Committee (JMC), which meets twice yearly and is co-chaired by the Minister and the Director of AID.

1.2. Scope of Work

The scope of work or terms of reference for this consultancy is being undertaken as a complimentary part of the Final Evaluation which was conducted in October, 1990. The evaluation recommended that activities be undertaken to strengthen the financial management capacity of the Administrative and Financial Division (DAF) of the Ministry of Agriculture, Livestock, and Environment, as well as of project service divisions (DNE - National Livestock Service, CVL - Central Veterinary Laboratory, and CRZ - Center of Animal Husbandry Research) within the Ministry. Based on discussions with MAEE service divisions and USAID/Mali, and in the light of evolving project priorities, the following terms of reference were developed.

1. In collaboration with project staff assess the strengths and weakness of the project's financial management system and make recommendations for strengthening the financial management capacity of the DNE, CVL, CRZ, and the DAF. These recommendations should provide areas for further assessment and potential program development during future design efforts.
2. Assist project and MDRE staff to assess the financial implications of an extension in the project's PACD (until August 10, 1992) and to plan critical program needs during the period from 1 January through 10 August 1992.
3. In collaboration with project staff (DAF and MDST) make recommendations on how the present project financial reporting system can be made a more effective financial management tool for the DAF and project service divisions (DNE, CVL, CRZ).
4. Undertake discussions with project, MDRE, and AID/Mali staff to begin identifying financial management issues which will need to be addressed in project design efforts. Since the new project will hopefully involve a wide spectrum of in-country collaborating entities, eg. PVOs, NGOs, private sector groups, etc., new financial and program management procedures will have to be developed. Of particular interest will be the effective programmatic integration of the public (MDRE) and private sectors.

Prepare a draft report, in both English and French, to be made available to the project, MDRE, and AID/Mali staff prior to departure from country. It is understood that the Livestock Office, AID/Mali, will forward all comments on the draft report to Washington State University (WSU) within two weeks after departure of the consultant. A final report will be completed and transmitted by WSU to USAID/GRM within 30 days.

SECTION II - RATIONALE FOR STRENGTHENING PROJECT'S FINANCIAL MANAGEMENT SYSTEM

2.1. Introduction

The existing USAID and public accounting and financial management system at the level of the MDST is good. However, it should be improved to enhance its effectiveness in estimating the benefits and costs associated with future development programs. Most, if not all, decisions have a financial impact. For example, to diversify into a new area of service, such as marketing a new product, requires the dedication of resources, ie. manpower, equipment and facilities. Resources cost money, and even if available they will have competing uses, such that the revenue gained from any new use will have to be offset against the revenue foregone on the existing uses. The result is that financial factors play a determinant role in decision making.

The availability of appropriate financial data is likely to direct management towards necessary operational decisions. For example, a vigorous analysis of the costs associated with the activities of an institution may indicate that certain ones are not justifiable given their revenue generating capability. In essence, financial management is concerned with the provision of accounting information and its use to make and/or evaluate decisions.

Financial management can be sub-divided into a number of interrelated topics. An outline of these topics and examples of how they can apply to the operations of service institutions is given below. The illustrations are specific to institutions providing service to the private sector and are intended to illustrate the practical importance and relevance of financial management in the general operation of such institutions.

2.2. Financial Management

A. Business Planning:

All organizations have to prepare plans for their future activities. A business plan for a service institution will include:

- the type of service offered,
- the frequency of the service,
- the price of the service,
- the resources, human and non-human, required to provide the service,
- technical services offered and related resources required,
- research and other activities to be undertaken.

This business plan is then converted into a financial plan. The financial plan identifies the revenues and expenses associated with each activity contained in the business plan. The business planning process must involve the interaction of activities and their financial implications. The business plan and the financial plan is the result of an integrative process. The business plan cannot disregard financial implications, while financial plans cannot be allowed such dominance that management decision are made based only on financial criteria.

B. Financial Planning and Control:

The financial plan (budgets) is a prediction of the fiscal implications of financial resource allocation for future activities. The process of financial planning is an iterative process, requiring managers to quantify, in monetary terms, the estimated impact of proposed future resource allocations, while the financial plan itself provides a framework for assessing the validity or consequences of management decisions related to resource allocations.

For example, a desire to develop an new type of vaccine will require the commitment of resources. The financial plan predicts the future cost implications of producing the new vaccine and hence the financial resources necessary to cover those costs. The objective of the financial plan is to enable management to effectively allocate resources and monitor their use over time.

Management must then decide the source of financing, ie. from a grant, government subvention, an investor, or whether the new activity will have to generate sufficient revenue so as to be self-supporting.

The financial plan, once prepared and accepted by management, then becomes a measure against which actual performance can be monitored. Thus, if an activity is to be undertaken with planned future costs and revenues, the actual future costs and revenues can be compared with those predicted in the plan. The plan enables management to continually refine assumptions and review decisions, as necessary, based on actual performance. If, for instance, the revenue from an activity greatly exceeds expectations, then management may choose to devote more resources, at an additional cost, to the activity. Comparing actual performance against planned performance identifies operational weaknesses and focuses management's attention on key decision making areas. In practice, decision making is a complex process involving an array of options where business, humanitarian, social, and political considerations may be as important in determining success as financial factors.

An institution needs a variety of financial plans, depending on its administrative and organizational structure and the nature of its activities. Described below are some of the financial plans that can be prepared, with an indication of their usage.

(1) Operating Plans (The Operating Budget)

The operating plan is a forecast of the expected revenues and costs for a defined period in the future, normally twelve months.

Typically, the operating plan will include an analysis of revenue by activity type; operating costs, research fees, sale of services etc.; or by the source of revenue, government subvention, grant, earnings from activities etc. Major items of expenditure are likely to be analyzed according to:

- type of expenditure (salaries, sub-contracted costs, rent, supplies, etc),**
- activity (costs attributable to services, research, travel etc.),**
- nature (costs which are fixed for the period or costs which vary according to the activity on which they are dependent).**

The operating budget may be in a format prescribed by law or by the institution. To be used as a management tool, operating budgets must present analyses of revenue and cost data in a format which enables operational decision making. Once the programmatic and production demands of the institution have been met the budget should then be re-analyzed, if necessary revised, to reflect the programmatic priorities of the institution.

Operating budgets are normally for one year. However, they can be for shorter or longer periods depending on management needs. Operating budgets can also be produced for specific projects or activities without a time limit. For instance, if support funding is available to enable an institution to commence a research programs, it may be useful to prepare an activity budget showing the costs related to the activity as other sources of revenue for the activity during the life span of support funding.

Operating budgets are not totally accurate since they are based on reasonable assumptions which are frequently outside the control of the institution's management. Excessive precision or attention to detail is not necessary when preparing the budget and may, in fact, make the preparation of the budget too time consuming, reducing staff interest and commitment to the budgeting process. In most instances only reasonable estimates are required in the preparation of operating budgets, since actual variations from budget estimates will only receive management attention when they are significantly different from budget estimation. An important result of the budgeting process is the promotion of management by exception, i.e. management attention is

concentrated only in those areas which differ significantly from planning estimates.

(2) Capital Budgets

Operating budgets are normally concerned with the revenues and costs associated with the day to day activities of the institutions. A capital budget is concerned with the acquisition of significant assets and consists of a plan for major expenditures such as the purchase of buildings, equipment and vehicles.

A capital budget may be prepared for a period of several years. A three or five year rolling budget is often very useful. The capital expenditure budget for year one generally includes a commitment for year one together with estimates for years two to five. In year two the expenditure for that year is fixed and a provisional estimate for years three to six is then included in the budget. Capital budgets are only concerned with major expenditures and generally include the available financing to cover the expenditure and the source of this financing.

The capital budgeting process requires the institution to plan long-term operations and to express in financial terms the resources it will require to operate in the future. Thus, the capital budget can help to identify potential funding needs and the early identification of needs can help ensure that funding is available when it is needed. For example, it can be fiscally risky to finance capital purchases out of normal operational revenues. Generally, it is more advisable to arrange for the financing separately and then seek to service the repayment of that financing out of operating revenues.

(3) The Cash Flow Forecast

The cash flow forecast seeks to translate the contents of the operating budget and the capital budget into receipts and payments. The main purpose of the cash budget is to indicate the size and duration of cash deficits. If the institution does not have overdraft facilities or if facilities are limited, then the cash flow forecast can identify periods of cash shortage. Such information is essential so that decisions can be made to delay certain expenditures, or to advance revenues, such that periods of cash deficits can be avoided or managed within the overdraft limits.

Clearly the need for the cash flow forecast will vary depending upon the nature of the institution. An institution which operates as a government or para-statal entity probably has little need for a cash flow forecast. However, an institution which is operating as a private enterprise with its own bank account may have a critical need to forecast its receipts and payments and to control them accordingly.

C. Cost Analysis and Control:

The identification, analysis and control of cost is a major component of financial management. Decision making often requires the availability of cost data, and fully identifying and assessing costs is a very difficult task. Costs can, and often will vary, depending on the decision being made. An understanding of the nature and behavior of cost is a pre-requisite to financial analysis and decision making.

Cost data is used in many different types of decisions, for example:

- pricing of services;
- allocation of scarce resources to competing uses;
- discontinuation of unprofitable activities;
- investment in new resources;
- diversification of activities.

There are many ways of analyzing costs, though in all cases, the ability to perform cost

analyses depends on accurate accounting information. The accounting system of the institution must be designed so that it is capable of producing information in a format which can be used for cost-analysis based decision making. For example, if the institution is engaged in a number of activities, the accounting system must be able to provide an analysis of costs for all activities being undertaken.

(1) Relevant and Non-Relevant Cost Analysis

Relevant and Non-relevant Cost Analysis seeks to identify those costs which will change as a result of a decision and hence only takes account those costs when making the decision. Accordingly, the selective use of accounting data is essential.

(2) Fixed and Variable Costs Analysis

Fixed cost will not change during a fixed period of time, typically, one year, while variable costs, or unit costs, vary as a function of some other factor.

Examples of fixed costs are:

- depreciation of equipment;**
- staff wages for permanent staff;**
- insurance payments;**
- long term contract cost such as lease payments for motor vehicles or equipment;**
- and**
- rents.**

Eventually a decision will have to be made to renew a contract to staff members, replace a building, buy new equipment, renew insurance premiums, etc., at which point the fixed cost is eliminated or is revised.

Examples of variable costs are:

- printing of information which will vary with the number of copies desired;**
- payments to external consultants or temporary hire which will vary with the need to employ them;**
- hire of equipment such trucks, audio visual equipment which will vary the frequency of the activity for which they are required;**
- catering costs which will vary with the number persons attending a workshop etc.**

One of the main uses of fixed and variable cost analysis is to calculate the break even point for a particular activity.

The "break even point" is when total revenue equals total cost, i.e. when revenues cover all the costs of that activity. Since revenues and costs vary, a "break even" graph or table is one way to compare investments with economics of scale. If an activity has a high level of fixed cost, a high volume has to be achieved if break even point is to be reached. If most of the costs are variable costs, the "break even" point can be achieved at a lower volume. Break even analysis does not specify which decision should be made, but it does enable greater understanding of the financial risks involved.

(3) Direct and Indirect Cost (Overhead) Analysis

A direct cost is a cost which can be directly attributable to a particular activity. For example if the institution establishes a micro-computer room, the cost of air-conditioning, the price of equipment and the cost of computer supplies are examples of direct costs attributable to the computer room.

Indirect cost are more commonly known as overhead. Indirect costs are costs which are not capable of being directly attributable to a specific activity. An example of such costs are administrative staff salary costs, depreciation of office equipment, the cost of maintaining buildings, and even the salary of the head of the institution.

Cost which are shared between a number of activities may be analyzed so that they become direct costs for each specific activity. For example, an agent may be involved in training, doing research, undertaking special assignments, etc. In analyzing the amount of time he/she spends on each activity the total cost of employment can then be allocated as direct cost to each of those activities.

Direct and indirect cost analysis is often used as a basis for pricing or for assessing the profitability of a particular activity. The precision attached to the analysis is generally a matter of judgement. The analysis necessary to identify direct costs, indirect costs and calculate overhead rates can be time consuming. Hence this type of analysis is normally only justifiable for the major activities undertaken by an institution.

(4) Opportunity Cost

Opportunity cost is not a cost which will arise in the set of accounting records. However, it can be extremely important in financial decision making. When assessing decisions, the real cost of an activity is the total costs of any other activities necessarily foregone. Opportunity cost analysis can be particularly important in situations of resource constraints and rationing.

D. Resource Rationing:

The preparation of financial plans and an understanding of the nature of costs can assist an institution in deciding where to allocate scarce resources. Most development institutions have a limited number of trained professionals. Hence the allocation of staff time to running particular programs, undertaking special assignments, or managing research activities represents an important component of the total resource allocation effort. The preparation of operational plans and budgets may indicate which activity is more financially viable and, therefore, a more profitable use of scarce human resources. Judgement must, however, take into account the certainty attached to the revenue and cost predictions. Possibly, the project with the highest rate of return also has the highest degree of uncertainty regarding revenues and costs and hence may be rejected in favor of a project with a lower but more certain return.

E. Pricing for Private Sector Support:

The price an institution is able to charge for a service to the private sector may be determined by market conditions, by statutory requirements, by guidance from a funding agency, etc. As a rule, however, the price will initially be based on the costs incurred in providing the service. There are two principal approaches that can be taken when pricing based on cost: (1) full cost pricing and (2) marginal cost pricing.

Full cost pricing involves the identification of all costs which arise in providing the service. Such costs will include the salary and other costs of labor, the cost of the facilities used, the cost of equipment, and the cost of any materials used and an amount to cover overhead. Overhead will be calculated at some predetermined overhead rate as discussed above in Section 2.4.

Marginal cost pricing is based on only those costs which change as a result of undertaking the activity. For example, if the institution decides to offer a new vaccine, the vaccine will be priced based on additional costs which are incurred in producing it. Hence, if the vaccine is produced using existing laboratory facilities and resources the vaccine can be initially sold at a very low price.

Diversification into new activities or services is often justifiable on a marginal cost basis. However, care must be taken with marginal cost pricing to constantly review the resources being committed to the activity. If a point is reached where the activity has resources dedicated to it which are no longer being used for other activities then the full costs of those resources must be factored into the price.

What has been stated above has not been intended to give a course on accounting, but rather provide basic understanding of financial management criteria which may be important in design efforts for the follow-on project of Mali Livestock. This design should focus greater attention on market forces, pricing, effective management, and the recovery, where feasible, of project costs to ensure effective implementation and long term sustainability.

SECTION III - ASSESSMENT OF CURRENT SYSTEM

3.1. Accounting Records and Accounting System

The current accounting system used by the project meets the minimum standards required by 121(d) for local currency funded projects. Those standards are:

1. The system identifies accurately the receipts and expenditure of project funds;
2. Accounting entries are supported by back-up documentation, which is filed in such a way that it can easily be retrieved;
3. The project is providing detailed, and current financial reporting information, including quarterly financial reports as required by USAID, detailing actual expenditures against approved budget line items;
4. Monthly bank and cash reconciliations are prepared and signed to ensure agreement between the project's accounting ledgers and bank statements;
5. Adequate inventory control and fixed assets control are in-effect; and
6. The Project has a manual of procedures.

In addition to the above USAID/Mali has a bi-annual project certification plan for all projects using local currency.

Functionally, the accounting system should:

1. Help the project adopt and implement a financial management system that assures basic accountability for all project funds;
2. Lay the foundation of systems, records, and skills to institutionalize improved financial management;
3. Involve Project Directors and Project Officers in financial data analysis, priority setting, and development of a financial management plan;
4. Initiate a process of institutionalizing improved financial management at the national service divisions and ministry levels; and
5. Create an operational framework which the MAEE/GRM can use to develop more effective financial management strategies.

3.2 The Major Strengths and Weakness of the System

The major strengths of the accounting system are:

- 1. USAID/Mali is able to account for the disbursements of project funds to The Mali Livestock Project.**
- 2. Internal controls in effect at the project level assure the efficiency and integrity of the system.**
- 3. The system of control for project funds ensures the support of development objectives of the AID Mission in Mali.**

The weakness or areas for improvement are:

- 1. Administration of project funds is very management intensive (too many players involved) and expensive. Excessive U.S. and Malian staff time is required to assure the efficiency and integrity of the system. The system should be streamlined to respond in a more efficient manner to project and management requirements.**
- 2. The process of allocating funds needs to be clarified for project managers.**
- 3. There is a need to improve communications concerning policy and procedural matters to staff at all levels.**
- 4. Project and MAEE accountants need additional training, particularly in cost and managerial accounting procedures including financial and quantitative analysis.**
- 5. The system has evolved to a point where there is a need to change the organizational structure. The DAF should have more direct role in the management of the system.**
- 6. The accounting system used does not permit a detailed analysis of costs and benefits to the GRM. There is a need for an accounting system that can produce a balance sheet, income statement, and cash flow for making adequate financial appraisals and to support sound management decisions.**
- 7. There is a general absence of long term planning. This probably reflects uncertainty about GRM and donor financing. However, as a result there is a failure to look beyond the annual expenditure cycle. When donor funds are known to be available for several years, then a plan exist for that period, but there is little evidence of developing plans beyond this timeframe.**
- 8. Lack of Project or Activity Budgets. As already stated, budgets tend to be statements of expenditure by type.**

SECTION IV - TYPICAL PROBLEMS ENCOUNTERED IN THE MDRE

There is a problem in understanding USAID terminology and its implications for financial management transactions (PIO/T, PIO/C's purchasing procedures etc...) by MAEE staff. This is an issue that could be improved with more efficient communications.

There is a need for project and institution directors to have all the financial information concerning the project and/or their institution or administrative unit. All GRM institutions are required by law to complete an annual financial statement concerning their operations. Currently the financial statements do not reflect input by USAID and other donors. This makes it impossible to determine the costs for goods and services provided, and therefore to effectively plan and budget for different programs and activities.

For the project, cash flow advances for (30) days of operations does not allow for the time it takes to justify expenditures. It may be necessary to allow some advances for 60 days for certain operations that can not be delayed until funds are received.

The question of decentralization should be examined to expedite the flow of funds to the field. In this regard, if there is a bank located in the geographic area of activity, then funds should be transferred to the bank rather than cash being obtained in Bamako and transported to activity sites. Action on this should be taken as soon as possible.

There is a need to improve the procedures for monitoring equipment and supply purchases. In addition, the management of stock could be improved, which in turn would improve internal control.

There is a need for additional financial management training, especially in the use of computers, for the MAEE accounting staff. Such training would facilitate efforts to identify opportunities to integrate the project's accounting system with that of the Ministry.

There is a need to strengthen the capacity of MAEE staff to plan, manage and implement projects more efficiently. Developing a more effective financial management system would not only assist in implementing ongoing projects (presently activities scheduled for the end of a given fiscal year may be forfeited because funds are exhausted by overruns in the early part of the year) but also in designing and planning future efforts.

SECTION V - RECOMMENDATIONS FOR STRENGTHENING THE FINANCIAL MANAGEMENT CAPACITY OF THE DNE, CVL, CRZ, AND THE DAF

Recommendation 1. That the GRM and USAID/Mali consider transferring the supervision of MDST's operations to the DAF which would oversee all aspects of project local currency funds for the next phase of The Livestock Project.

MDST could serve as the focal point for all activities relating to the efficient management of the funds, including policy, budgeting, programming, controlling, monitoring and reporting on their use. This would expand the knowledge base to all individuals and thereby reduce the reliance on any one individual for management of the system. In addition, coordination with the GRM would improve with a better flow of information and with more collaborative involvement of MDST and the DAF.

MDST should maintain its current positions and initially, oversight responsibility for accounting and training be contracted to a private firm. Each person assigned to MDST would have to meet the qualifications detailed in each job description.

Recommendation 2. That the GRM and USAID/Mali improve communications in the MDRE by creating a quarterly newsletter for distribution to all levels of the MDRE.

This could include an analysis of quarterly financial and activity reports as well as up-to-date information concerning the achievement of objectives. In general, there seems to be a lack of structured communications channels whereby the GRM and USAID can exchange pertinent information regarding financial management. With a new government in Mali and the emphasis on transparency, it appears that this would be a useful vehicle to keep all parties informed.

Benefits:

- Reduce confusion over responsibility and keeps all parties informed.
- Improve informal relationships and reinforce the formal administrative channels.
- Prevent misunderstanding and conflicts.
- Provide information concerning training and guidance on new products and procedures.

Recommendation 3. That the MDRE clarify the status of The Central Veterinary Laboratory. What will be its status be for Phase III of the project (Public, Semi-public, or Private Enterprise).

The accounting system put in effect by the CVL must be accepted by the Ministry of Finance and approved by the GRM to ensure it conforms to legal requirements.

Recommendation 4. That a review of the accounting system approved for use by the CVL be evaluated in June-July 1992 to determine its effectiveness and applicability to other projects in the MDRE.

A request for a local accounting firm to design and install a computerized accounting system based on the 1982 Accounting Plan for Enterprises in Mali is very appropriate at this time. All proposals from private consulting firms were to be received by MAEE by July 31, 1991. The scope of work for this system is well written and the Director of Finance, MDST, should work in close collaboration with the selected firm to ensure that the system complies with the CVL's and MAEE's requirements and that he is fully informed on the operational implications of the system.

APPENDIX A - PERSON CONTACTED

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Wayne McDonald, AG. Dev, Livestock, USAID/Mali
Cheick Mady Drame, AG. Dev, Livestock, USAID/Mali
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Mme Tapo Touga Nadio, Chief of Cabinet, MAEE/GRM
Dr. Ousman Giundo, Special Assistant, MAEE/GRM
Dr Gagny Timbo, Director of DNE/GRM
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Dr. Boubacar Seck, Director, CVL/GRM
Sadio Coulibaly, Comptable, Project Sectoriel, GRM
Sambala Sissoko, Chief Comptable
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Madina Tall, Directrice du CEFIB, Bamako, Mali
Aliou Traore, Assistant, DAF
Daouda Diarra, Directeur Regional Elevage, Koulikoro, Mali
Boubacar Conde, Accountant, Koulikoro, Mali
Mamadou Fafana, Technician, Pharmacie Privée, Koulikoro, Mali
Meme Togola, Director of CRZ
Amadou Sow, Assistant Director of DNE

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ANNEX C
PLANNING MEETING REPORT, OCTOBER 1991

ANNEX C

**REUNION DE PLANIFICATION
PLANNING MEETING**

**PROJET SECTORIEL DE L'ELEVAGE AU MALI ET
PROJET SECTORIEL POUR L'AMELIORATION
DE LA PRODUCTIVITE ET L'EXPORTATION**

**MALI LIVESTOCK SECTOR PROJECT AND
ANIMAL PRODUCTIVITY AND EXPORT PROJECT**

October 19 - 24, 1991

Washington State University, Pullman, Washington

**SOMMAIRE DES RECOMMANDATIONS DE
LA REUNION CONJOINTE ENTRE LA
DELEGATION DU GRM, USAID/ BAMAKO, ET
L'EQUIPE DE GESTION DU PROJET
SECTORIEL DE WSU**

Participants:

Dr. O. Guindo, Conseiller Technique, MAEE,
Président du Comité Restreint du Projet
Sectoriel
Dr. G. Timbo, Directeur Général de la DNE
Dr. B. Seck, Directeur Général du LCV
Mr. C. Dramé, Assistant du Projet Sectoriel,
USAID/Bamako
Dr. Jan Noel, Directeur/PI, IDCO, Coordinateur
Adjoint du Projet Sectoriel de WSU
Dr. D. Cook, Coordinateur du Projet Sectoriel
de WSU

Date: 24 Octobre, 1991

Introduction:

Suite à la réunion de planification à Pullman avec les responsables du Ministère d'Agriculture, d'Elevage, et d'Environnement, USAID/Bamako, USAID/Washington, et les responsables des institutions américaines, il avait été décidé d'avoir un entretien sur les points suivants:

- développer un calendrier provisoire des activités afin de mobiliser les ressources maliennes et américaines (voir Annexe I)
- mettre à jour les besoins en assistance techniques en fonction de priorités présentes relative aux programmes du projet actuel et à la

**SUMMARY RECOMMENDATIONS OF JOINT
MEETING BETWEEN THE DELEGATION OF
THE GRM, USAID/MALI AND WSU TITLE XII
MANAGEMENT TEAM FOR THE SECTOR
PROJECT**

Participants:

Dr. Ousmane Guindo, T.A. MAEE, President of
Restricted Committee
Dr. Gagny Timbo, Director of the National
Livestock Service (DNE)
Dr. Boubacar Seck, Director of the Central
Veterinary Laboratory (CVL)
Mr. Cheick Dramé, Deputy Livestock Project
Officer, USAID/Bamako
Dr. Jan Noel, Acting Director, IDCO, Deputy
Coordinator, Title XII - Mali Livestock Sectc:
Project
Dr. Dick Cook, Coordinator, Title XII, Mali
Livestock Sector Project

Date: 24 October, 1991

Introduction:

Following the planning meeting among representatives of the Ministry of Agriculture, Livestock, and Environment, USAID/Bamako, USAID/Washington, and key resource people representing all collaborating U.S. institutions, it was decided to have a meeting on the following points:

- develop a tentative schedule for major activities/TDYs to enable effective resource mobilization and planning both for Malian and U.S. collaborators (see Annex I)

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conception du projet APEX.

- développer les grands axes pour les termes de référence des membres de l'équipe de conception du projet APEX selon les préoccupations du GRM/MAEE et l'AID

- identifier les responsabilités du Ministère, de l'AID, et de Titre XII pour la rédaction du document du projet APEX (voir Annexe II)

A. Assistance Technique/Allocation des Ressources

Il a été recommandé:

1. à cause des retards dans l'approvisionnement des équipements pour le laboratoire de pathologie clinique, la mission du Dr. John Kramer est reportée. Cette mission sera évalué dans l'avenir en fonction de la livraison des équipements au LCV et la disponibilité des ressources du projet actuel
2. dans la venir les assistants techniques vont ventiler un draft de leur rapport de mission à tous les concernés avant leur départ du Mali
3. le contrat du WSU a été prolongé au Août 1992 sans changements budgétaires. Les changements seront faits en fonction des besoins programmatiques et les priorités
4. à cause des besoins changeants du projet actuel et de la conception du nouveau projet APEX, il a été décidé de laisser 2.5 personnes-mois libres dans le contrat du WSU pour l'assistance technique
5. la formation en virologie diagnostique est toujours une priorité du LCV, donc il a été décidé que le LCV prendra contact avec l'ESDG/Comité Restreint pour dégager les fonds nécessaires. WSU restera en contact avec LCV, et les autres volets du projet, pour les aider programmer les stages de formation aux Etats Unis.
6. la DNE et le LCV vont élaborer les nouveaux termes de référence pour la mission prévue en épidémiologie. La nouvelle mission va durer environ deux mois et mettra l'accent sur

- update technical assistance needs and resource allocations based on present and anticipated program needs for both the on-going project and the design needs for the new APEX project

- based on program priorities and strategies of both the GRM and AID/Mali, develop a general list of anticipated discipline needs for undertaking project (APEX) design efforts and for assessing/revising SOWs for design team members

- based on AID's PP requirements, assign general roles and responsibilities for each section in the APEX PP (see Annex II)

A. Technical Assistance/Resource Allocation

It was recommended:

1. due to delays in the procurement of essential equipment for the CVL clinical pathology program the scheduled TDY for Dr. John Kramer, WSU, be canceled. Future needs for TA in clinical pathology will be assessed (a) once equipment arrives at the CVL and (b) depending on program priorities and resource availability in the present project
2. future consultants will provide all interested parties (both AID and MAEE) with draft trip reports before leaving the country
3. WSU's contract has been extended until August 1992 without any budgetary modifications. Modifications will be examined based on programmatic needs and priorities
4. because of evolving needs for both the on-going project and design efforts for the new project, 2.5 months be maintained uncommitted in the TDY level of effort presently contained in the Title XII
5. because training in diagnostic virology remains a priority at CVL, and because training is not included in the Title XII contract, CVL will discuss with MDST/Restricted Committee the availability of resources to finance short-term training in this area. WSU will assist the CVL, and other project volets, in identifying future

l'élaboration d'un système de surveillance pour la DNE et le LCV. Le Département communiquera ces termes de référence à WSU qui va trouver un assistant technique qualifié.

7. la mission du Dr. Jim Evermann en virologie est programmé pour Janvier, 1992.

8. la mission du Dr. T. McGuire en immunologie est reportée. Elle est remplacée par une mission qui mettra l'accent sur le marketing. LCV élaborera les termes de référence pour cette mission qui impliquera une entreprise privée. WSU travaillera avec le LCV pour programmer cette mission.

B. Les Ressources Nécessaires pour l'Equipe de Conception du Projet APEX

1. Le Ministère va mettre en place un comité de planification comprenant les représentants des groupes bénéficiaires du projet APEX. Ce comité va travailler étroitement avec l'équipe de conception du projet APEX.

2. Chef d'Equipe - Dr. R. Cook: les termes de référence comprennent parmi autres: (1) la santé animale, le secteur public aussi bien que le secteur privé, pour dégager les besoins, opportunités, et les programmes appropriés; (2) la production animale, le secteur public aussi bien que le secteur privé : pour dégager les besoins, opportunités, et les programmes appropriés - ce programme sera élaboré avec le programme de gestion des ressources naturelles; et (3) les analyses institutionnelles en fonction de leur impact sur le développement et l'exécution des programmes du projet APEX. (3 personnes-mois)

3. Agro-économiste - Dr. Ken Shapiro: les termes de référence comprennent parmi autres: (1) le développement d'une approche pour évaluer les marchés domestiques et régionales en fonction de leurs besoins et les opportunités afin de les développer (stratégie pour promouvoir la commercialisation); (2) une approche pour identifier les besoins institutionnels et renforcer leur capacité de promouvoir et travailler avec le secteur privé; et (3) aider l'économiste dans les analyses

U.S. long and short term training opportunities and programs

6. the epidemiology TDY for Dr. Jane Homan should be modified to emphasize the development and design of an animal health surveillance system which will include the needs of both DNE and CVL. This TDY should initially be for 2 months. DNE and CVL will provide an initial SOW to WSU. WSU will then identify an appropriate consultant.

7. the TDY of Dr. Jim Evermann, scheduled for January 1991 be undertaken as planned

8. the TDY scheduled for Dr. T. McGuire in assisting the CVL plan its future needs and capabilities in immunologic diagnostic methods be postponed. At the present time the CVL considers that efforts in the area of pharmaceutical marketing, involving public and/or private sector commercial firms is of higher priority. The CVL will develop a SOW for this TDY. Based on this TDY, WSU will assist the CVL in identifying and programming this TDY.

B. Discipline/Resource Needs for APEX Design

1. The Ministry (MAEE) will establish a planning committee, comprising representatives of potential beneficiary groups of the APEX project, which will collaborate with the design team during project paper development.

2. Team Leader - Dr. R. Cook: SOW needs to include four general areas: (1) animal health: including both public and private needs, opportunities, program development, and management; (2) animal production: including both public and private sector needs, opportunities, program development and management - this area should be closely integrated with natural resource management issues and programs; (3) institutional issues as they impact on the development and implementation of APEX project programs in the areas of animal health, animal production, and natural resource management. The team leader will also be responsible for coordinating the

économiques pour le document du projet APEX
(1 personne-mois)

4. Economiste - Dr. Peter Bloch: les termes de référence comprennent parmi autres: (1) l'assistance à l'économiste de l'AID dans l'analyse économique du projet APEX; (2) une approche pour exécuter et évaluer l'impact économique des activités sur la gestion des ressources naturelles; et (3) la contribution dans l'analyse sociale du document du projet APEX. (1.5 personne-mois)

5. Gestion Financière - Mr. Lloyd Mitchell : les termes de référence comprennent parmi autres: (1) une stratégie et une approche pour la mise en place d'un système de gestion financière pour bien gérer les programmes du projet APEX (en fonction des besoins des structures d'exécution du projet); (2) une stratégie et une approche pour renforcer la capacité en gestion financière du Département et des opérateurs économiques du secteur de l'élevage (1 personne-mois)

6. Spécialiste en développement rural (sociologue) : les termes de référence comprennent parmi autres: (1) le développement d'une approche et une stratégie pour promouvoir la création des associations villageoises et renforcer leur capacité pour mieux gérer leurs ressources; (2) compléter l'analyse sur les bénéficiaires du document du projet APEX; (3) le développement d'une approche stratégique pour mieux impliquer les femmes dans les programmes de développement; (4) l'évaluation des institutions sociales

7. Il pourra être demandé après l'AID/W les appuis suivants:

7.1 Gestion des Ressources Naturelles - Dr. Mike McGahuey : les termes de référence seront élaborés en collaboration avec l'AID/Bamako, l'AID/Washington, le MAEE, et WSU, mais ils comprennent parmi autres: (1) l'élaboration d'une approche pour la conception et la mise en oeuvre des actions destinées aux producteurs pour l'amélioration des ressources naturelles; (2) l'élaboration d'un programme de

design team and ensuring close collaboration with appropriate MAEE and USAID/Mali staff, and the Planning Committee (see 1. above). (3 p.m.)

3. Livestock Marketing - Dr. Ken Shapiro: the SOW needs to include: (1) development of an approach to assess both domestic (inputs, market access, production costs) and regional (export restrictions, tariffs, taxes, etc.) market needs and opportunities ; (2) identification of institutional development needs and opportunities to promote commercial opportunities for a broad array of livestock products for domestic and regional markets; (3) assist economist in preparation on economic analysis (1.00 p.m.)

4. Economist- Dr. Peter Bloch: the SOW needs to include the following areas: (1) provide assistance to USAID/Mali economist (who has overall responsibility) for the preparation of the PP economic analysis; (2) provide analytic input in economic aspects of proposed land tenure and natural resource management needs, opportunities, and proposed interventions; and (3) assist the sociologist in the social soundness analysis as needed (1.5 p.m.)

5. Financial Management - Mr. Lloyd Mitchell: the SOW should include: (1) development of a strategy and approach for the effective implementation financial management system for APEX programs (including specific needs for various potential structures participating in the project; (2) development of a strategy and approach for strengthening and promoting financial management capacity in MAEE and in the private sector; and (3) assist in the development of a project management which will provide both effective project implementation while building public and private sector management capacity. (1.00 p.m.)

6. Rural Development Specialist (social scientist(s)) : the SOW needs to emphasize (1) beneficiary analysis with an emphasis on the social environment related to the promotion and organization of village/producer level groups and associations; (2) assessment of opportunities to implicitly include women in

suivi permanent qui nous permettra d'évaluer l'impact des ces actions; (3) l'élaboration une stratégie basée sur la conservation des ressources naturelles qui nous permettra d'entamer les actions durables pour développer le secteur privé (la commercialisation). En cas de nécessité WSU proposera Dr. Kjell Christophersen, une économiste spécialisé en gestion des ressource naturelles.

7.2 Privatisation - Dr. Ken Swanberg: en plus que les actions précises dans le secteur privé, il est nécessaire d'élaborer une stratégie globale qui nous permettra d'identifier les opportunités pour le secteur privé, aussi bien que renforcer la capacité des institutions privées et publiques pour capitaliser sur les opportunités émergentes dans le secteur privé.

7.3 En cas de nécessité un appui en analyse institutionnelle et un appui en secteur privé seront demandé.

N.B.

8. L'université d'Etat de Virginie a proposé de fournir un expert en développement rural et en vulgarisation

9. L'université de l'Etat d'Etat de Washington a proposé de fournir plusieurs experts selon les besoins identifiés pendant la conception du projet APEX.

Les termes de référence des experts seront soumis à l'appréciation du Département (MAEE) et de l'AID dans les meilleurs délais.

C. Calendrier pour La Conception du Projet APEX

Il a été propscé que la conception devait commencer début Décembre, 1991 et d'être terminée vers mi-Mars, 1992. (voir Annexe I)

D. Rôles et Responsabilités

1. voir l'Annexe II pour la répartition des taches pour la rédaction du document du projet APEX

2. l'AID devait informer WSU et le Département

producer/private sector initiatives; and (3) social soundness (impact) analysis. (2.0 p.m.)

7. The following specialist support could be requested from AID/W:

7.1 Natural Resource Management Specialist - Dr. Mike McGahuey: the SOW will be developed collaboratively with MAEE/USAID/Mali/WSU and USAID/W/AFR. Design efforts will emphasize (1) development and elaboration of an approach for developing project interventions in the natural resource management areas; (2) designing a cost-effective monitoring program for evaluating short and long term impacts of project interventions (in collaboration with all team members); and (3) develop an approach (identify criteria) that will implicitly include environmental factors in opportunity identification for private sector initiatives. (Supported by AID/AFR/ARTS) [if a natural resource economist is necessary WSU proposes Dr. Kjell Christophersen - CV was provided to Dr. Guindo]

7.2 Privatization - Dr. Ken Swanberg: the SOW must emphasize the development of an approach to privatization that will be appropriate for a broad spectrum of activities and will strengthen institutional capacities, both public and private, to capitalize on emerging/evolving opportunities. (Support by AID/AFR/MDI)

7.3 If required, support in the areas of institutional and private sector analysis will be requested

N.B.

8. Virginia State University proposed to provide an expert in rural development and extension.

9. Washington State University proposed to provide several resource staff, depending on needs identified during design.

SOWs for design team consultants will be submitted for review to MAEE and AID by WSU as soon as possible.

sur les besoins en données pour compléter les analyses du document du projet APEX.

3. Le Comité de Planification identifiera les cadres maliens qui seront impliqués dans la conception du projet APEX.

C. Scopes of Work and Schedule for Design Team

It was recommended that design effort commence as early as possible in December and be completed on or before the middle of March, 1992. (see Annex I)

D. Roles and Responsibilities

1. primary responsibility for preparation of the APEX Project Paper is outlined in Annex II.

2. USAID/Bamako should inform both the Ministry and WSU of the data requirement needs for completing the various required analyses required for the Project Paper

3. The Planning Committee (to be established by MAEE) will be responsible for identifying Malian colleagues who will be responsible for APEX project design efforts.

**REUNION CONJOINTE DE PLANIFICATION
20 AU 22 OCTOBRE**

(Voir Annexe III - Liste des Participants)

Perspective Globale de la Réunion

Introduction

L'Université d'Etat de l'Etat de Washington et l'équipe y compris les institutions collaboratrices, le Ministère de l'Agriculture, de l'Elevage et de l'Environnement du Gouvernement de la République du Mali, et l'Agence des Etats Unis pour le Développement International ses sont engagés dans le développement du secteur de l'élevage du Mali pour soutenir les programmes de développement du GRM. Le GRM et ses programmes de développement sont en phase de transition. Aussi, l'AID est dans une phase de réorganisation et de planification. Egalement, les universités américaines sont en train de revoir comment elles peuvent être plus efficace dans l'exécution des programmes développement. Afin de mieux intégrer les efforts de divers institutions pour soutenir les programme de développement du secteur de l'élevage du Mali, une réunion de planification sera lieu à Pullman, Washington, de 19 au 22 Octobre, 1991, avec la participation des responsables des institutions clés.

Au début de la planification pour cette réunion, on avait souhaiter qu'elle serait basée sur la programmation des activités pour l'élaboration du document du nouveau projet. Cependant, le document d'identification de ce projet (Projet Sectoriel de l'Elevage pour l'Amélioration de la Productivité et l'Exportation) n'est pas encore approuver par l'AID/Washington. Donc, cette réunion a été modifié pour mettre l'accent sur les besoins techniques et en gestion pour le nouveau projet et sur les options pour mieux intégrer les activités du projet actuel avec celles du nouveau projet.

Objectifs de la Réunion:

Le but global de cette réunion: obtenir une utilisation optimale des ressources disponibles au secteur de l'élevage du Mali à travers le

**JOINT PLANNING MEETING
20 TO 22 OCTOBER**

(See Annex III for list of Participants)

Workshop Overview

Introduction

Washington State University (WSU) and its team of collaborating institutions, the Government of the Republic of Mali (GRM), and the United States Agency for International Development (USAID) are committed to the continued development of Mali's livestock sector in support of Mali's development goals. Mali's government and its programs are in an exciting stage of transition. Likewise, USAID is undergoing reorganization and is planning and implementing new development strategies. In addition, the U.S. university community is exploring new ways to be more effective in development cooperation. This is truly a time of change and opportunity. In order to best harness the efforts of these diverse institutions in support of Mali's current and projected livestock development activities, a Joint Program Planning/Strategy meeting will be held in Pullman, Washington, October 19-22, 1991, with the participation of representatives of key involved institutions.

At the time the planning/strategy meeting was initially planned, it was anticipated that it would focus upon the preparation of a detailed "plan for design" for development of the Project Paper for the new livestock sector project. However, this project, now entitled Animal Productivity and Export (APEX), has encountered some unanticipated delays in the official approval of the Project Implementation Document (PID). As a result, the meeting has been modified somewhat to incorporate greater attention to technical and management strategies and options for APEX and the interface of current MLSII project activities with the design and implementation of future activities.

Objectives of Planning/Strategy Meeting:

The overall goal of the planning meeting is to contribute to the optimal use of the resources

projet actuel et futur.

L'objectif globale de cette réunion: développer d'une connaissance et un plan préliminaire pour les collaborateurs de sorte qu'ils peuvent mieux contribuer aux activités actuelles et à l'élaboration du nouveau projet.

Les Objectifs détaillés sont:

1. une meilleur connaissance entre les institutions collaboratrices et les collaborateurs du Mali
2. une meilleur connaissance du secteur de l'élevage du Mali - les contraintes et les opportunités pour développer le secteur
3. évaluer le nouveau projet (cadre logique du document d'identification) afin de clarifier les aspects techniques, les besoins en gestion, et la relation entre les objectifs du projet actuel et du projet futur.
4. développer un plan pour clarifier et gérer la contribution des collaborateurs tel que leurs rôles et leurs responsabilités, les activités techniques, le développement d'un plan de gestion, et l'élaboration d'un calendrier des actions.

Le Comité de Coordination

La planification de cette réunion a été fait par un comité y compris le Ministère de l'Agriculture, de l'Élevage et de l'Environnement, l'AID/Bamako et l'Université d'État de l'État de Washington. Aussi, les institutions collaboratrices et l'AID/Washington (le Bureau pour l'Afrique et le Bureau de Science et de Technologie) ont contribué à cette réunion. Cependant, les participants eux-mêmes qui détermineront le succès de cette activité.

available to Mali's livestock sector through the vehicles of the current and projected USAID Mali livestock sector projects.

The **purpose** of the workshop is to develop a shared understanding and preliminary plan for key stakeholders of the current and projected Mali livestock projects to contribute to ongoing activities and design of the follow-on project.

Specific objectives of the meeting include the following:

1. For major stakeholders and potential participants in collaborative Mali livestock sector development activities to better know each other, as individuals and institutions.
2. To better understand the context of Mali's livestock sector—including past, present, and potential future constraints and opportunities for enhancing the performance of Mali's livestock sector.
3. To explore the proposed APEX project, using AID's project tools and processes, to clarify technical and management issues, strategies, objectives and relationships with regards to the present and proposed AID Mali livestock sector projects.
4. To develop a draft plan for managing the inputs of the various stakeholders, including roles and responsibilities, potential resource needs, schedules and management mechanisms.

Coordinating Committee

Overall direction and planning of the workshop is provided by a committee representing Washington State University, Mali's Ministry of Agriculture, Livestock and Natural Resources, and USAID/Bamako. WSU's U.S. Collaborators and AID/Washington D.C.'s African Bureau and Bureau of Science and Technology have also contributed to the design of the meeting.

1ERE JOUR:

Chacun des participants s'est présenté et a exprimé ses attentes de cette réunion:

- Mieux comprendre l'environnement de développement au Mali et le secteur de l'élevage
- Mieux définir et élaborer un projet de succès pour le développement
- Etablir les liaisons coopératives pour l'avenir, après la période du projet
- Qu'est-ce que nous pouvons faire dans la phase de transition du projet actuel afin de renforcer la conception et l'impact du nouveau projet ?
- Mieux comprendre la stratégie pour le développement du secteur de l'élevage au Mali - ses contraintes et ses opportunités
- Mieux savoir les ressources disponibles et comment ils peuvent être mobiliser au court terme et au long terme pour soutenir le secteur de l'élevage au Mali
- Etablir une compréhension commune sur laquelle nous pouvons faire en ensemble
- Développer une perspective globale sur le secteur de l'élevage
- Comment établir les liaisons entre les NGOs/OPV et le projet APEX ?
- Comment pouvons nous mieux impliquer les producteurs et les villageoises dans les actions du nouveau projet ?
- Examiner comment nous pouvons mieux exécuter la recherche collaborative avec le LCV - la santé animale, le diagnostic, le contrôle de qualité - pour renforcer les liaisons de la recherche
- Mieux comprendre les besoins pour mieux soutenir la gestion financière - les informations pour la prise de décision
- Quelles sont les opportunités supplémentaires pour la collaboration institutionnelle ?
- Comment nous pouvons mieux utiliser l'expertise du Département d'Agriculture (USDA) - Est-ce qu'il y a un rôle pour l'USDA dans le nouveau projet ?
- Mieux comprendre le secteur de l'élevage au Mali et comment chaque institution peut contribuer au nouveau projet (la santé animale, le diagnostic, la privatisation de la médecine vétérinaire)

1ST DAY:

Each participant introduced him/herself and expressed his/her expectations of the meeting.

- Better understand Mali's environment and the livestock sector
- Better define and elaborate a successful development project
- Establish cooperative linkages for the future, beyond the project time-frame
- What can we do for the 1991/92 transition period of the actual project to strengthen the design and impact of the new project ?
- Begin to work together to design and implement the new project
- Better understand the strategy for the development of Mali's livestock sector
- Better understand the resources available and how they can be mobilized in the short and long term in support of Mali's livestock sector
- Establish a common understanding of what we might do cooperatively
- Develop a global view of Mali's livestock sector
- How can linkages be forged between NGOs/PVOs and the APEX project ?
- How can we more effectively involve producers/grassroots level in the new project ?
- Explore how to better carryout collaborative research with CVL - animal health, diagnostics, and control - reinforce research linkages
- Better understand the needs to support financial management - decision making information
- What are the opportunities for additional institutional collaboration ?
- How can we better utilize the expertise of USDA - is there a role for USDA in the new project ?
- How can AID natural resource management efforts support the new project ?
- Better understand Mali's livestock sector and how each institution can contribute to the new project (animal health, diagnostics, privatization of veterinary medicine)
- Understand Mali's development environment and activities that can contribute to Mali's emerging needs
- Understand opportunities for developing Mali's private sector - what can be done ?

- Comprendre les opportunités pour développer le secteur privé au Mali -qu-est-ce que peux être faire ?
- Examiner les possibilités pour développer la filière lait au Mali

La perspective globale de la réunion a été présentée, et l'ordre de jour a été approuvé.

En suite, les représentants du GRM ont présentés la stratégie et les actions de développement pour le secteur de l'Élevage au Mali.

LA POLITIQUE DU GRM LE PROGRAMME D'ADJUSTEMENT DU SECTEUR AGRICOLE

La stratégie globale adoptée par le GRM pour promouvoir le développement soutenable du secteur de l'élevage du Mali est basée sur trois éléments clés: (1) la décentralisation; (2) la participation du monde rural dans la conception, l'exécution, et l'évaluation des activités de développement; et (3) les actions destinées d'améliorer la gestion des ressources naturelles comme un composant clé dans tous les programmes de développement pour le secteur agricole-élevage au Mali. Le sommaire ci-dessous donne les grands axes et les stratégies globales du GRM pour le développement du secteur agricole-élevage. Aussi, il donne les grandes orientations qui ont été présentées par la délégation du GRM (Dr. B. Diallo, le Directeur de Cabinet, MAEE; Dr. O. Guindo, Conseiller Technique, MAEE; Dr. G. Timbo, Directeur Général de la DNE; et Dr. B. Seck, Directeur Général du LCV) qui a participé dans la réunion de planification pour le Projet Sectoriel de l'Élevage et le nouveau Projet Sectoriel pour l'Amélioration de la Productivité et de l'Exportation (APEX).

A. Aménagements Pastoraux et Gestion des Pâturages

1. La politique d'hydraulique pastorale est un élément importante dans une stratégie de conservation et de gestion des ressources naturelles et dans l'avenir doit se faire aux termes d'enquête sociale, économique, et écologiques précises et répondre aux besoins des groupes d'éleveurs.

- Explore possibilities for developing Mali's milk marketing sector

Then representatives of the GRM then presented an overview and strategy of livestock sector development in Mali.

GRM POLICY STRUCTURAL ADJUSTMENT PROGRAM FOR AGRICULTURAL LIVESTOCK SECTOR

The general strategy adopted by the GRM for promoting sustained development of Mali's livestock sector is based on three basic elements: (1) the policy of decentralization; (2) promoting the active participation of beneficiary groups in all phases of the design, implementation, and evaluation of development initiatives; and (3) the implicit inclusion of natural resource management initiatives in all development programs to promote a sustained, conservationally sound development of Mali's natural resource base, and consequently its agricultural-livestock sector. The following provides an outline of specific GRM program priorities and approaches and summarizes, within a general context, information presented by Dr. B. Diallo, Director of Cabinet, MAEE; Dr. Ousmane Guindo, Technical Advisor, MAEE; Dr. Gagny Timbo, Director of the National Livestock Service; and Dr. Boubacar Seck, Director of the Central Veterinary Laboratory.

A. Range and Natural Resource Management:

1. Policies regarding water development are a key element in natural resource management programs, in the future these efforts will include studies, technical, economic, legal, and social, to ensure that new watering points will meet the real needs of beneficiary groups
2. In order to take into account producer risks, a permanent monitoring system needs to be implemented. Actions in: producer association

2. Prise en compte des Risques Naturels: il est nécessaire de disposer d'un système de suivi permanent au sol. Des mesures de réponse à cas situation de risque naturel doivent être inventoriées et testées dans les domaines de: la réglementation et des cahiers de charge des associations pastorales; les déplacement des troupeaux; l'apport d'aliments complémentaires; et la commercialisation du bétail brutalement déstocké.

3. Stabilisation des terroirs pastoraux et des mouvements de transhumance: les problèmes à résoudre: la mobilité des éleveurs et de la population pastorale; la superposition fréquente des droits d'usage sur les ressources naturelles; et l'imbrication de plus en plus marquée des espaces pastoraux et agricoles.

4. Compétition et Complémentarité Agriculture-Elevage: la stratégie est de mieux intégrer élevage et l'agriculture qui peut être obtenue de diverses manières: utilisation de la fumure animale; production d'animaux pour la culture attelée; utilisation des sous-produits de la récolte et des sous-produits agro-industriels.

5. Promouvoir la constitution d'associations pastorales dans les zones où ces associations auront gérer un domaine pastoral.

6. Régime foncière: le problème institutionnel et législatif le plus souvent mis en avant pour justifier les difficultés d'une gestion rationnelle des ressources naturelles dans le cadre d'une organisation des éleveurs est celui de l'inadéquation de la législation domaniale et foncière dans le domaine pastorale. Le problème est réel, mais la question se pose autant sans doute de savoir à qui attribuer des droits que de fixer le droits qui doivent être attribués.

7. Participation des Eleveurs: dans le plan financier (la mise en place des fonds de garantie) et dans le plan de gestion, c'est à dire, favoriser leur participation aux processus de décision relative au développement de l'élevage et à la gestion des ressources naturelles.

8. Modes d'Intervention des Services de l'Elevage: pour mieux répondre aux différentes

regulations and stocking rates, herd movements, provision of feed supplements, and destocking.

3. Stabilization of pastoral areas and transhumant movements: overuse and rights regarding the use of the natural resource base; increased overlapping/crowding of pastoral and cropping areas maintenance of water equipment

4. Competition and Complementarity of Agriculture-Livestock: the strategy is to better integrate livestock and agriculture in various ways: use of animal manure, animal traction, improved utilization of crop residues and agro-industrial by-products.

5. Promote the formation and organization of pastoral associations in regions where these associations will manage pastoral areas.

6. Land tenure: generally considered the primary institutional and legislative problem impacting on pastoral management of natural resources. It is a real problem, but the question is to understand who should have the rights, rather than simply deciding what rights should be assigned.

7. Participation of producers in development activities: they should contribute financially (establishment of guaranteed funds) and in the management and decision making regarding natural resources.

8. Modes of Intervention of the National Livestock Service: in order to better respond to the problems noted above, national and regional services must give precedence to the approach of using producer associations/village associations, as representatives in dealing with rural development issues. This is not to forget the importance of local development organizations as well as the private sector, to whom the national services will progressively transfer service responsibility.

B. Intensification/Diversification of Animal Products

1. Animal Health:

problèmes la Direction Nationale de l'Élevage, les services nationaux et régionaux, doit privilégier une nouvelle approche abordés par l'intermédiaire des associations d'éleveurs ou des associations villageoises, ainsi que des organismes locaux de développement, sans oublier le secteur privé, auxquels seront progressivement transférés une partie de ses fonctions actuelles.

B. Intensification et Diversification des Productions Animales

1. La Santé Animale

a. La protection sanitaire contra les grandes épizooties de l'espèce bovine, surtout la péripneumonie contagieuses bovine, et les maladies intercurrentes

b. Renforcer le programme sanitaire pour les petits ruminants contra les maladies pulmonaires et parasitaires

c. Renforcer le programme sanitaire pour la volaille, surtout la maladie de Newcastle et les maladies parasitaires

d. Renforcer le programme de diagnostic du le LCV et des laboratoires régionaux

- améliorer le gamme et la qualité de médicaments vétérinaires

- promouvoir le marketing et la vente des produits vétérinaires du LCV

- améliorer le service de diagnostic destiné aux producteurs et au privé

2. La Production Animale

a. Améliorer la filière lait (augmenter la production laitière de bovin, caprine, et mouton), la filière viande; améliorer la nutrition animale - quantité et la qualité d'aliment bétail; l'amélioration génétique et l'intensification de la production.

b. Augmenter la production de viande, surtout pour les espèce à cycle court

a. Health protection for cattle against epizootic, especially CBPP, and sub-clinical diseases

b. Strengthen animal health programs for small ruminants, particularly against pneumonia and parasitisms

c. Strengthen animal health programs for poultry, especially for Newcastle Disease and parasitisms

d. Strengthen the diagnostic capacity of the Central Veterinary Laboratory and regional laboratories

- improve the spectrum and quality of veterinary pharmaceuticals

- expand marketing and sales of veterinary pharmaceuticals produced by the Central Veterinary Laboratory

- improve diagnostic services available to private veterinarians and producers

2. Production Animal:

a. Milk production: improve feed and feeding; genetic improvement; organization of milk distribution system. Also improve milk production for small ruminants

b. Increase meat production, focusing on fast maturing species, small ruminants and poultry

c. Promote development of processing enterprises

d. Improve information gathering and flow at all levels within the sector.

3. Modernization of Commercial Sector:

a. promote on-farm cattle feeding credit program

b. Improve market information system

c. Training for butchers and others involved in hides and skins production

d. Promote private sector initiatives

c. Promouvoir la transformation des produits animaux

d. Améliorer le système d'information aux tous les niveaux dans le secteur de l'élevage.

3. La Modernisation de la Commercialisation

a. Promouvoir le programme du crédit pour l'embouche paysanne

b. Améliorer le système d'information pour les marchés de bétail

c. La formation pour les bouchers et autres dans le secteur privé

d. Promouvoir les opportunités pour le secteur privé

e. Améliorer les infrastructures des marchés ruraux

f. Le rôle du secteur public: organiser la diffusion des informations pour les marchés de bétail, pour la formation, pour la vulgarisation, et pour la promotion des organisations et des associations des producteurs, opérateurs économiques, etc. et les aider d'avoir l'accès au crédit.

C. Programmes Prioritaires

1. Programme d'organisation et d'animation des populations

- **les objectifs:** l'organisation des pasteurs et des agro-pasteurs, les associations pastorales, les associations villageoises, les coopératives, les Tons villageois

- **les actions prioritaires:** promouvoir la création d'associations responsabiliser les éleveurs et agro-pasteurs; exploiter et gérer rationnellement les ressources naturelles; mettre l'accent sur le développement et la commercialisation des animaux et produits animaux.

e. Improving infrastructures of rural markets

f. **Public Sector role:** provide market information, training, conduct and extension of research results relating to the transformation/processing of animal products; promote private professional organizations and assist them to establish credit capabilities.

C. Priority Programs

1. Program to organize and mobilize the population and village groups:

- **Objectives:** organization of livestock and agro-pastoral producers, ie. producer associations, village associations, cooperatives, and "ton villageois "

- **Priority actions:** promote the creation of associations, identify their responsibilities, promote a responsible management of the natural resource base, and emphasize the development and commercialization of animals and animal products.

2. Range and natural resource management program:

- **Objectives:** elaborate a plan and program of natural resource management for local and regional efforts; open up new rangelands by establishing new watering points; develop forage production extension programs and elaborate a policy for the supply of concentrated animal feed; establish a system to monitor impact on pastoral ecosystems; establish management programs to improve and regenerate degraded rangelands.

- **Priority actions:** study to determine appropriate natural resource management schemes; establish an ecological monitoring system for pastoral areas; undertake an inventory of indigenous forage resources; identify programs to regenerate degraded pastures; develop a forage production program; strengthen and improve water development programs in priority zones with high animal densities.

2. Organisation et Gestion des Ressources Naturelles

- **les objectifs:** élaborer des plans et schémas locaux et régionaux d'aménagement; ouvrir les pâturages par la mise en œuvre des actions d'hydraulique pastorale; développer la vulgarisation des cultures fourragères et élaborer une politique d'aliment bétail; suivre l'évolution des écosystèmes pastoraux; restaurer et régénérer les pâturages naturels dégradés.

- **les actions prioritaires:** étude sur les modes de gestion des ressources naturelles; la mise en place d'un système d'évaluation et de suivi des écosystèmes pastoraux; l'inventaire des ressources fourragères; la régénération des pâturages dégradés; l'élaboration et mise en place d'un programme de cultures fourragères; le renforcement des programmes d'hydrauliques dans les zones prioritaires à forte densité animale.

3. Promotion et Développement des Filières de Production et Commercialisation des Produits Animaux

- **les objectifs:** diversifier les productions animales; améliorer la productivité dans les différentes filières pour la satisfaction de besoins intérieurs et extérieurs; améliorer la compétitivité des produits sur les marchés extérieurs par une meilleure organisation de la commercialisation.

- **les actions prioritaires:** étude sur le coût de la promotion laitière et guide des gestion de troupeau laitier types; amélioration de la qualité des cuirs et peaux; amélioration de la production laitière (bovins, autres espèces); le développement de l'élevage des espèces à cycle court; la mise en place d'un système d'information dans le secteur de l'élevage; la mise en place d'un forum d'échange communautaire.

4. Production et Renforcement d'Unités de Transformation des Produits Animaux

- **les objectifs:** rendre accessible aux consommateurs davantage de produits

3. Program to promote and develop a more effective production and marketing system for animal products:

- **Objectives:** diversify the production of products of animal origin; improve productivity in the different marketing channels (meat, milk, eggs, etc.) for domestic and foreign markets; improve the competitiveness of Malian products through improvements in the production-marketing-distribution system.

- **Priority actions:** undertake a study of milk production costs and a guide for managing different types of milking herds; improve the quality of hides and skins; improve milk production; develop the production of rapidly maturing species, i.e. poultry, swine, small ruminants; establishment of a livestock market information service; establish community discussion forums.

4. Program to promote and reinforce processing enterprises for animal products:

- **Objectives:** increase the availability of animal products for consumers; increase the level of consumption; increase the income of producers

- **Priority program:** Develop and promote processing technologies for milk

5. Programs that focus on strengthening logistical infrastructures, policies and procedures, and institutional capacities:

- **Objectives:** assure protection of national herds against the grand epizootic diseases; improve the protection for small ruminants, camels, and beast of burden; improve health care for young animals, i.e. calves, lambs, etc., especially against internal parasitisms; improve the control of zoonotic diseases; strengthen epidemiological and surveillance programs needed to plan and coordinate effective, cost-benefit animal health programs (strengthen diagnostic capacity of CVL (and regional laboratories) and establish an epidemiological/surveillance unit at DNE.

- **Priority programs:** Control programs for

d'élevage; augmenter le niveau de consommation; augmenter le revenu des producteurs

- **l'action prioritaire:** promotion des technologies de transformation du lait

5. Le Renforcement de la Couverture Sanitaire et de la Surveillance Epidémiologique

- **les objectifs:** consolider les acquis en matière de lutte contre les grandes épizooties; assurer la protection sanitaire des espèces à cycle court; renforcer les capacités de diagnostic et d'épidémiologie-surveillance; rédynamiser les laboratoires régionaux; l'appui au LCV et création d'une unité épidémiologique au niveau de la DNE.

- **les actions prioritaires:** lutte contre les principales maladies. PPCB, brucellose bovine, tuberculose, maladies parasitaires, maladies des petits ruminants, maladies des volailles; rédynamiser les laboratoires régionaux; création d'une unité épidémiologique

6. Mesures Législatives, Réglementaires et Institutionnelles

- **les objectifs:** préparer les conditions d'un développement continu et auto-entretenu; assurer toutes les conditions de succès pour les programmes prioritaires et les actions tests

- **les actions prioritaires:** élaborer une loi d'orientation en matière d'exploitation et de gestion des pâturages naturels; étude d'harmonisation de la participation des populations à la réalisation des ouvrages d'hydrauliques villageoises et pastorales; la reconversion des services de l'élevage et des agents; les fonds de développement laitier; l'appui au LCV; l'appui à la commercialisation des produits et médicaments vétérinaires; l'appui au secteur privé.

Le cadre institutionnel dans lequel les activités du secteur de l'élevage doivent fonctionner est illustré en Annexe IV.

major animal diseases - CBPP, brucellosis, tuberculosis, internal/external parasitisms, small ruminant and poultry diseases

6. Legislative and Regulation Actions, Institutional Development:

- **Objectives:** establish a conducive policy environment for development activities and programs; promote sustainable development actions;

- **Priority programs:** elaborate a land use policy for extensive rangelands; study to define village level programs focusing on the management of village and pastoral water development programs and equipment; reconversion of livestock service; support for the CVL; support for commercialization of products and veterinary pharmaceuticals; and support for the private sector.

The institutional framework within which livestock sector activities will function is outlined in Annex VI.

L'ARRIERE-PLAN POUR LA REDACTION DU DOCUMENT D'IDENTIFICATION DU PROJET APEX

Un sommaire de la présentation du Mr. Cheick Dramé de l'AID/Bamako

Ce document (le document d'identification) a été fait en collaboration entre l'Aid/Bamako et le Ministère de l'Agriculture, de l'Élevage et de l'Environnement. À chaque étape dans la conception et la rédaction de ce document, les consultations et les discussions ont été faites pour assurer que les programmes qui se trouvent dans ce document ont répondu à les préoccupations du Ministère et de l'AID, selon les conditions politiques, sociales, et économiques qui existent au Mali.

- Le premier objectif du projet APEX est la promotion de la commercialisation et le renforcement de la filière viande et lait. Ces filières améliorées devaient augmenter l'accès au marché aux producteurs, promouvoir la croissance du revenu des producteurs et les opérateurs économiques du secteur; et faciliter la diffusion temps des informations du marché de bétail aux opérateurs du secteur.
- Le deuxième objectif est d'améliorer la productivité animale. Pour ce faire, il faut améliorer la production et l'accès d'aliments bétail de bonne qualité et en bonne quantité.
- Le troisième objectif est le renforcement du service sanitaire par une amélioration de l'efficacité des actions de l'Etat et par la promotion et la mise en place des privés.
- Finalement, le projet devait renforcer et améliorer les associations d'éleveurs, des associations villageoises, et l'efficacité du système de vulgarisation. Pour ce faire, il faut renforcer la capacité humaine au tous les niveaux, c'est à dire, au niveau de village, d'éleveur, des vétérinaires, des opérateurs économiques, et des cadres des services nationaux. Le Ministère et l'AID pensent que si le projet APEX arrive à faire un impact importante sur ces axes principales, le projet va

BACKGROUND FOR THE PREPARATION OF THE APEX PID DOCUMENT

Summary of Presentation made by Mr. Cheick Dramé, USAID/Bamako, ADO/Livestock Office

This document represents a close collaborative effort between USAID/Bamako and the Ministry of Agriculture, Livestock, and Environment. At every stage in the development of this document, consultations and discussions were made to ensure that programmatic areas emphasized in the PID represented priority concerns and addressed priority needs for both the Ministry and USAID/Bamako, within the political, economic, and social context of Mali.

- The first major objectives of the APEX project is to improve commercialization and to assist in the development of a more effective and efficient livestock marketing system. This improved marketing system should result in improved market access for producers, provide greater opportunities to generate and increase revenues related to livestock and livestock product sales, and provide timely and reliable livestock market information to a broad spectrum of producers, traders, and other commercial operators.
- The second major objective is to increase animal production and productivity. An important strategic element in this programmatic thrust is the required improvement in inputs, particularly as concerns animal feeds, and in the production of higher quality feed alternatives.
- The third major objective is to strengthen animal health services through increased efficiency of public sector services and developing a greater capacity and reliance on the supply of services and inputs from the private sector.
- The last major objective is the strengthening and improvement of producer groups, associations, and cooperatives, strengthening and improving the efficiency of extension activities through institution building and human resource development. The assessment made by the Ministry and USAID/Bamako is that if

beaucoup aider le GRM résoudre les contraintes majeures du secteur et donc beaucoup contribuer au développement économique du Mali.

Le GRM a entamé un programme qui met l'accent sur la coordination des bailleurs de fonds pour le programme national du développement rural. Dans ce cas, le GRM a complété un document (Schéma Directeur) qui servira comme un guide pour toutes les actions de développement destinées au monde rural du Mali.

ORIENTATION DES PROGRAMMES VERS DES ACCROISSEMENTS SOUTENABLES DE LA PRODUCTIVITE GRACE A UNE MEILLEURE GESTION DES RESSOURCES NATURELLES

Sommaire de la présentation du Dr. Mike McGahuey, AID/AFR/ARTS

Le présent document offre un schéma provisoire pour la définition d'indicateurs en matière de gestion des ressources naturelles (NRM). Tenant compte du laps de temps prolongé qui s'écoule entre nombre d'intrants relevant de la gestion des ressources naturelles, et les impacts qu'ils produisent, la Division des ressources naturelles et agricoles (ANR) du Bureau de l'Afrique a mis au point ce schéma pour tracer l'ordonnancement des indicateurs intermédiaires dans le cadre de l'objectif visé par le Bureau, c'est-à-dire la "pérennité" définie comme suit:

"accroissements soutenable des revenus et de la productivité par le biais d'une meilleure gestion des ressources naturelles".

Pour la mise au point de ce schéma, le Service des ressources naturelles (ANR/NR) a analysé un certain nombre d'études de cas pour lesquels l'on avait atteint l'objectif de pérennité, ou qui semblaient en offrir la promesse. En remontant aux sources à partir des impacts, on

these four key points can be effectively addressed in the new APEX project, then they will go a long way to help resolving many of the major constraints presently limiting the development of the sector and therefore its economic impact for Mali.

An important area which has been addressed by the GRM concerns the coordination of donor activities within the rural development sector. The GRM has begun to organize and coordinate with international donors, all donor-funded activities within this sector through an effective policy dialogue and through the elaboration of comprehensive general development strategy and guide for rural development programs in Mali - Schéma Directeur du Développement Rural au Mali.

PROGRAMMATIC ORIENTATIONS FOR SUSTAINABLE INCREASES IN THE PRODUCTIVITY RESULTING FROM IMPROVED NATURAL RESOURCE MANAGEMENT

Summary of Presentation by Dr. Mike McGahuey, USAID/AFR/ARTS

Following is a presentation of a provisional outline to define indicators for natural resource management. Taking into consideration the long time between successive interventions in most natural resource management efforts, and their impacts, the Division of Natural Resources and Agriculture of the Africa Bureau have perfected this outline in order to follow the logical order of intermediate indicators in the process of achieving the Bureau's objective of sustainability, defined as follows:

" sustainable increases in the income and productivity through a better management of the natural resources"

In order to perfect this scheme, the service of natural resources (ANR/NR) has analyzed a number of case studies which have achieved sustainability or who offer the possibility of achieving success. In the analysis of these case studies it appeared that there were at least five (5) well-defined levels during the entire process. Each level contains various elements

a remarqué que le processus qui conduit à la réalisation de l'objectif revêt la forme d'un continuum accusant au moins cinq niveaux bien marqués. Chaque niveau comporte divers éléments ou conditions qu'il faut avoir produits pour pouvoir atteindre le niveau suivant. La description qui suit donne la suite hiérarchique de ces niveaux, avec quelques éléments fournis à chaque niveau, à titre d'illustration.

V. Impact au niveau des populations: accroissements soutenable des revenus et de la production grâce à une meilleure gestion des ressources naturelles (le progrès est mesuré en termes de revenus et/ou de productivité).

IV. Modification des ressources naturelles: pour arriver au niveau V, la capacité de production de la base de ressources naturelles est maintenue ou améliorée sur une longue période ainsi qu'à court terme (le progrès est mesuré en termes biophysiques).

III. Adoption de meilleures pratiques culturelles: pour arriver au niveau IV, les petits propriétaires adoptent des pratiques culturelles ayant des effets à court, moyen et long terme, sur la fertilité des sols, la gestion forestière et l'aménagement des parcours, le contrôle phytosanitaire, l'amélioration des variétés, et dans certains cas, le maintien de la biodiversité. Le progrès est mesuré en termes du nombre de petits propriétaires adoptant les pratiques, ou du nombre d'hectares affectés.

II. Mise en place des conditions de diffusion: pour arriver à l'adoption généralisée de la série de pratiques convenant bien à la situation, le gouvernement hôte doit mettre en place l'ensemble des conditions nécessaires et suffisantes devant augmenter judicieusement les encouragements et/ou réduire les risques liés à une telle adoption. Cet ensemble "nécessaire et suffisant" de conditions doit comporter probablement, sans s'y limiter, les facteurs suivants:

- droits d'usage/régimes fonciers permettant aux produits d'une meilleure gestion de revenir au bénéfice du gestionnaire des ressources;

or conditions that is necessary to produce in order to attain the next level. The description that follows illustrates the progression of these levels, along with several illustrative factors at each level.

V. Impact at the level of the population: sustainable increases in income and production resulting from improved natural resource management (progress is measured in terms of income and/or productivity).

IV. Biophysical Changes: in order to achieve level V, the capacity of production based on the natural resource base is either maintained and/or improved for both long and short periods of time (progress is measured in biophysical terms

III. Adoption of Improved Practices: in order to achieve level IV, limited resource producers adopt production practices having short, medium, and long term effects on soil fertility, forest management, range management, improved varieties, and in certain cases the maintenance of bio-diversity. Progress is measured in terms of the rate of adoption of improved practices and/or the number of hectares affected.

II. The establishment of effective extension conditions: in order to achieve wide-spread adoption of a series of improved and effective production practices, governments must provide the spectrum of necessary and sufficient conditions to provide reasonable incentives and/or reduce the risks related to the adoption. This collection of necessary and sufficient conditions must include, though not limited to, the following:

- land use/tenure rights that will enable products from conservationally sound production systems to produce an income that will revert to the land use manager

- market access, access to credit, as well as all other conditions reduce the risk and increase profits in response to the adoption of appropriate practices;

- accès aux marchés, aux crédits, à la répartition des charges, etc, ainsi qu'à toute autre conditions qui vienne diminuer le risque et augmenter la rentabilité, en réponse à l'adoption des pratiques appropriées;

- accès à des connaissances telles qu'elles permettent aux petits propriétaires de prendre des décisions bien documentées en ce qui concerne les conséquences de l'adoption de ces pratiques;

- accès à une assistance technique compétente et dispensée en temps voulu;

- des organisations locales ayant l'autorité et la capacité voulues pour gérer des entreprise agricoles; et enfin;

- le recours possible à des pratiques appropriées.

I. Actions entreprises pour mettre en place les conditions productrices d'encouragements vont contribuer à la mise en place des conditions de diffusion. Ces actions servent de base à nombre de programmes de l'USAID.

Comment se servir du schéma lors de l'établissement de programmes de gestion des ressources naturelles (NRM).

Etant donné les principes établis ci-dessus, la démarche primaire des planificateurs de programme, en matière d'analyse, est de collaborer avec le personnel du gouvernement hôte, pour définir les liens entre les éléments des niveaux I à IV, et les impacts au niveau des populations qui forment le niveau V. Dans le cadre de cette analyse doit figurer une analyse d'impact aux fins suivantes:

- validation ou modification des cinq niveaux du schéma;

- identification, à chaque niveau, des jeux d'éléments nécessaires et suffisants pour atteindre le niveau suivant, et pour arriver en fin de progression aux impacts au niveau des populations;

- conduite d'une analyse "gagnants-perdants"

- access to information and knowledge that will allow limited resource producers to make sound decisions as regards the consequences of adopting certain practices;

- access to competent and timely technical assistance

- availability of local organizations and associations that have the authority and necessary capacity to manage agricultural business, and finally

I. Actions/interventions that will create conditions to encourage producers represent the basis of a number of programs of USAID. This is the basic scheme for the development and establishment of natural resource management programs.

Given the above, the initial planning steps are based on establishing contact with host country governments to define the linkages among the elements indicated at levels I through IV, and the impacts at the population level which constitutes level V. In this analytic outline, impact analysis must be included and includes:

- verification or modification of the five levels of the scheme

- the identification, at each level, the elements that are necessary and sufficient to achieve the following level, and finally, an assessment of the impacts on the population

- undertake an analysis of "winners-losers" in order to identify who will be the segments of the population that are a risk due to policy changes and changes in the institutional directions

- undertake a provisional cost-benefit analysis, including at the same time the perspective of limited resource producers and those of the government regarding the overture of political and institutional reform. (A given production system will require a future costs and benefits analysis for a period of 10-20 years following the introduction of each change.)

This approach is illustrated in Annex V

pour identifier quels seront les segments de la société qui risquent d'être les perdants dans les changements de politiques et la réorientation des institutions (c'est-à-dire), les éleveurs sont-ils destinés à perdre si les exploitants agricoles obtiennent la pleine jouissance foncière avec usufruit, etc.);

● conduite d'une analyse provisoire coûts-avantages, en partant à la fois de la perspective des petits propriétaires et de la perspective du gouvernement hôte, concernant la mise en oeuvre des réformes politique et institutionnelle. (Une telle entreprise nécessitera la formulation de "conceptions d'avenir" portant sur le type de coûts et de revenus pouvant être prévus au cours d'une période de 10 à 20 ans après l'introduction de chaque changement).

Cette approche est illustrée dans l'Annexe V

PRIVATISATION:

Sommaire brève de la présentation du Docteur Ken Swanberg, AID/AFR/MDI:

Objectif: accroître la productivité et le revenu des producteurs pour améliorer leur bien-être. Elle peut être fait si le demande augment pour les produits animales.

● Le demande peut augmenter si les coûts de transactions et les inefficacités du marché diminuent ou par la croissance des marchés d'exportation, par la production des nouveaux produits animales, ou par l'application d'une politique de substitution.

● Les efforts de privatisation dans le secteur agricole-élevage au Mali peut aboutir à les suivants:

- la privatisation du TAMALI
- la privatisation de l'Abattoir Frigorifique du Bamako
- la privatisation de l'ULB
- le développement de l'industrie pour l'alimentation de bétail
- la privatisation du LCV
- la privatisation de la médecine vétérinaire

PRIVATIZATION:

Brief summary of a presentation given by Dr. Ken Swanberg AID/AFR/MDI:

Purpose: to increase productivity and income to improve the well-being of producers. This will occur if the demand for livestock products increases.

● Derived demand can increase by reducing marketing costs and inefficiencies or by expanding market demand with new export markets, new processed products, or substituting for imports.

● Potential outputs from privatization efforts in Mali's livestock sector include, but not limited to

- Privatization of Tamali Tannery
- Privatization of Bamako Slaughterhouse/ Meat processing development
- Privatization of ULB
- Development of Animal Feeds Industries
- Privatization of CVL
- Privatization of Veterinary Services

● Inputs:

● Intrants:

- la formation des cadres en gestion, les nouvelles technologies de production et le marketing. Ces intrants peuvent être réalisés par: la mise en place des contrats de gestion ou un bail à long terme ou la vente d'entreprise. A l'heure actuelle le dernier serait difficile.

- les contraintes pour la privatisation sont: les coûts élevés pour le transport, pour l'électricité et l'énergie en général, le manque du crédit sur le système bancaires local, et le manque d'un cadre bien formé.

● La promotion de la privatisation au Mali nécessitera la mise en place des moyens de soutenir:

- les voyages d'invitation
- les analyses du marché
- les coûts de démarrage des nouvelles entreprises
- la formation des cadres
- une subvention pour les coûts d'énergie
- financement
- une subvention pour les coûts de transport
- l'assistance technique
- les contrats de gestion
- les études diagnostiques
- la mise en place d'un système pour identifier les entreprises appropriées à l'étranger

Il serait souhaitable que le projet APEX élabore un programme pour la promotion de la privatisation y compris les éléments ci-dessus.

COMMERCIALISATION:

● Extrants:

- améliorer la disponibilité des intrants comme l'aliment bétail et le service vétérinaire; renforcer l'organisation de la population et ces associations; améliorer l'accès du crédit pour l'achat des animaux, la vente des produits animaux, les baux pour l'utilisation des pâturages et les parcours; et l'amélioration et renforcement du système de vulgarisation.

● Le projet APEX a besoin d'élaborer une mécanique pour fournir ces extrants.

- human resource development in management, technology and marketing. Three ways to provide this: management contracts, leases, or sell businesses, though private buyers may be difficult to find

- constraints to privatization include: high transport costs, high utility and energy costs, lack of local financing, lack of trained personnel - under these circumstances private operation is not feasible.

● Requirements for promoting privatization in Mali will involve incentives specifically targets to need such as:

- invitational travel
- market analyses
- business start-up costs
- staff training
- utility subsidizes
- financing
- transportation subsidies
- technical assistance
- management contracts
- diagnostic studies
- firm identification searches

It would be possible to provide this type of assistance in a business development component to provide training, technical assistance, and financing.

COMMERCIALIZATION:

● Outputs:

- input supply - animals feeds, market information, development of village associations, credit: animal purchases, animal/milk sales, veterinary services, feed and/or pasture, extension services

● The APEX project needs to design instruments and techniques for providing the above outputs.

THE APEX PROJECT

The last draft of the Project Identification Document (PID) was given to participants to help them prepare for discussions the next day

LE PROJET APEX

of design-related activities

Le dernier brouillon du document d'identification du Projet APEX (PID) a été donné aux participants pour leur permettre de se préparer pour examiner les activités relative à la conception du projet APEX le lendemain.

2EME JOUR / 2ND DAY:

Etant donné le contexte, les priorités, et les approches qui ont été examinés pendant le premier jour, les discussions en groupe pendant le deuxième jour ont mis l'accent sur les objectifs, les activités, les ressources pour les programmes futurs.

Being given the context, priorities, and approaches which were examined during day one, during day two group discussions focused on objectives, activities, and resources for future programs.

SOMMAIRE DU TRAVAIL DES GROUPES

GROUPE A

Objectifs Potentiels du Projet Sectoriel

- Améliorer la productivité animale
- Maintenir les programmes qui vont contribuer aux programmes futurs
- Améliorer les ressources naturelles dans un cadre global
- Accroître la valeur des produits animaux pour l'exportation
 - la valeur de production
 - l'exportation
- Renforcer la participation du secteur privé dans les activités associées
- La décentralisation et la responsabilisation de la population rurale
- L'intégration des femmes dans le développement
- Promouvoir la transformation des produits animaux
- Améliorer la santé animale
- Sécuriser l'accès aux ressources naturelles - régime foncier
- Accroître la commercialisation et le marketing
- Faire face aux problèmes sociaux et celles relative à la politique

SUMMARY OF GROUP PRODUCTS

Group A

Potential Objectives of the Livestock Sector/Project

- Enhancing productivity of herd flocks
- Maintaining programs that are working well to contribute to future programs
- Conserving or improving the natural resource base within a global or holistic context
- Increasing the value of livestock products for export
 - value of production
 - export
- Enhancing the private sector in associated activities
- Decentralization the responsabilization of the rural population
- Integration of gender issues and opportunities
- Increase value added by food processing
- Improved animal health
- Security of access to natural resources (land tenure)
- Increase commercialization and marketing
- Social and political issues need to be

Parmi ces objectifs le groupe a identifié quatre objectifs majeurs objectives:

- **L'amélioration des Ressources Naturelles**
- **La Décentralisation**
- **L'intégration des femmes dans le développement**
- **Le développement du secteur privé et la promotion des produits animaux**

Ressources - à court terme

- Un sondage de base sur les besoins doit être fait
 - La Création d'un centre pour le conduit des activités
 - La participation du peuple local
 - Un bon système de vulgarisation relative à la gestion des ressources naturelles
 - Les conflits sur l'utilisation des terres
- Les droits de la propriété de l'eau, du terre, du bétail
- Identifier les approches spécifiques des autres pays et le Mali - tenir en compte les contraintes d'accès, etc.
- Projet test avec la participation du peuple local
 - identifier/élaborer un projet test qui peut se réussir
- Le suivi continu et à long terme
- La politique sur la gestion du terroir et du régime foncier
- l'amélioration des ressources naturelles y compris les pâturages, les forêts, le sols, etc.
- Faire face au problème de la désertification
- Renforcer la formation et les infrastructures de l'encadrement

La Décentralisation

- Un soutien pour la politique du GRM, les impôts et les services de l'Etat
- La formation pour les cadre du GRM aussi bien que la population rurale
 - technologie, privatisation, médecine vétérinaire (ces activités seront confiées au secteur privé)
- Liée aux programme de la privatisation

addressed

From this major list of objectives the four following major objectives were prioritized:

- **Natural resource improvement**
- **Decentralization**
- **Integration of women in the development process**
- **Private sector development and livestock products**

Resources - short term

- **Baseline inventory needs to be established**
 - Creation of a center to conduct activities
 - Participation of local people
 - Good extension NRM use practices
 - Land use conflicts
- **Ownership of water, land, forage/tenure, who owns the cattle**
- **Identify specific approaches from other countries and Mali - keep in mind restrictions of access, etc.**
- **Model project with involvement of local people**
 - identify/design a model project that has higher likelihood of success that can be passed on to other areas in the country
- **Continuous long-term monitoring**
- **Policies for land use and management**
- **Improvement of natural resources including range, forest, soils, etc.**
- **Desertification needs to be addressed**
- **Enhance training/extension infrastructure**

Decentralization

- **Support for government policies, i.e. taxes and all government services**
- **Training of various groups, both government and rural people**
 - technology, business privatization, vet medicine (these things are in the central government now and they need to go to privatization)
- **Related (intimately) with privatization and associated activities**

- **et les activités associées**
- **Un système local pour inciter la population et la récompenser pour ces acquis**
- **L'établissement d'un réseau entre différents groupes locaux pour renforcer la communication et promouvoir la formation**
- **La communication avec le Ministère**

La Mise en Place D'un Programme Pour Promouvoir La Participation des Femmes

- **Accroître le revenu des femmes**
- **L'éducation - l'agriculture, de droits, le commerce, petits ruminants, les micro-entreprises pour les femmes**
- **Les coopératives et les associations - la formation/l'éducation**
- **La participation des femmes dans les programmes du secteur publique, l'encadrement, la vulgarisation, etc.**
- **Renforcer les ressources, le revenu, l'accès aux services**
- **Faire face aux issues sociaux et politiques**

Le Développement du Secteur Privé Relative A La Production des Produits Animaux

- **Développer les marchés et la mise en place d'un système d'information pour les marchés de bétail**
- **Améliorer la qualité des produits animaux**
- **La mise en place des projets pilotes pour montrer les bénéfices potentielles à travers l'amélioration de la qualité des produits animaux, c'est à dire, les filières**
- **Utiliser les ONG pour exécuter les actions en formation**
- **Les politiques relative à la législation juridique, au taux de change, à l'exportation, etc.**

GROUPE B

- **La participation active de la population rural en tant que exécutantes aussi bien que bénéficiaires dans le développement**

- **Local incentives and reward systems for accomplishments**
- **Networking between & among local groups - communication to share and learn**
- **Communication with the Ministry**

Introduction of Women's Involvement

- **Income generation for females, identity, mechanization**
- **Education - agriculture, law, business, small ruminants, small business development for women**
- **Cooperative and association - education**
- **Involvement - participation of women in service activities, i.e. extension, loans, others**
- **Identify, strengthen money/resources, income, storage, access**
- **Social, political issues need to be addressed**

Private Sector Development in Livestock Products

- **Market development and information systems for the markets**
- **Improved product quality**
- **Pilot project to show benefits of improving quality/vertically integrated(?)**
- **Use PVOs for training**
- **Licensing, foreign exchange, export, other - policies and implementation**

Group B

- **Involvement of rural people as participants and beneficiaries of the livestock development process**
 - Potential actions:
- **involve village organizations and other potential beneficiaries and participants in setting the objectives and priorities for the programs**
- **strengthen existing rural social organizations such as farmer associations, etc.**
- **establish, improve, capitalize on successful credit programs taking into**

du secteur de l'élevage

Actions potentielles:

- la participation active des associations villageoises et autres bénéficiaires potentielles dans l'élaboration des objectifs et les priorités des programmes de développement
- renforcer les organisations locales comme les associations des producteurs, etc.
- établir, améliorer, capitaliser sur les acquises des programmes du crédit, tenant en compte les accords avec les associations des producteurs et autres
- Améliorer le système de vulgarisation pour le rendre plus efficace pour la population rurale - poster en permanence les agents locaux dans les villages et remplacer les équipes de vulgarisation avec un agent polyvalent
- APEX doit établir un mécanisme pour la mise en place d'une liaison efficace (système de communication) entre la population rurale et le Ministère
 - les discussions à table ronde
 - entretien périodique, échange des informations
 - l'utilisation des ONGs comme facilitateurs
 - la formation est considéré comme un élément clé pour tous des ces activités

● Commercialisation

Les opportunités pour promouvoir la commercialisation seront évaluées pour tout l'étendue du Mali afin d'identifier celles qui ont le potentiel de se réussir

Les Actions:

- réduire les coûts de transaction
 - nombre de documents requises
 - les frais payables au GRM
 - les " taux sauvage "
- déterminer comment gérer la concurrence du marché Européen
- entamer les actions qui sont pour but de renforcer la coopération régionale

consideration contracts with producer groups

- make the extension system more effective/responsive to village needs - have local extension agents located in the village and replace the multiple specialists from each of the sub units in the Ministry with persons with more general training
- link or establish mechanisms to formally continue to link APEX administration or the project activities with organizations at the grassroots level
 - roundtable discussions
- periodic meetings or exchange of information
- utilizing the non governmental organizations (NGOs) and private voluntary organizations (PVOs) as facilitators
 - training was considered an important element of the above activities

● Commercialization

- Commercialization activities were expected to be assessed with the whole country context, i.e. looking for opportunities wherever they could be located and trying those that look like they have the highest likelihood of success.

Actions:

- decrease transaction costs
 - number of documents needed
 - amount of fees payable to government
 - tax sauvage or informal and now illegal taxes
- determine how to deal with European market competition - competition may be decreasing
- undertake activities to increase regional and sub regional cooperation among countries in West Africa to enhance preference for consumption of African meat
- enhance/find methods to make credit more available to:
 - traders
 - butchers
 - others

entre les pays de l'Afrique de l'Ouest afin de favoriser l'achat de la viande d'origine africaine

- améliorer l'accès du crédit pour:
 - les opérateurs économiques
 - les bouchers
 - autres
- l'établissement des fonds garanties
- réduire les coûts de transportation
- la formation en matière de gestion du crédit
- un autre point clé- le développement d'un système d'information pour le marché de bétail

La productivité animale y compris surtout la gestion des ressources naturelles et l'alimentation bétail

Les Actions:

- la gestion des ressources naturelles
- l'amélioration de la nutrition animale
 - Le projet APEX se concentrera dans la 1ère, 2ème, 4ème régions et le District de Bamako.
- Quelle est le rôle du Projet APEX dans la recherche zootechnique ?
 - chercher les alternatives pour que les éleveurs peuvent couvrir les besoins de base et au même temps entamer les actions en gestion des ressources naturelles
- Contrôler les contraintes de production
- Inciter les producteurs de vendre leurs animaux
- diversifier les entreprises (c'est à dire, inclure la production fourragère et l'agro-sylviculture)
- promouvoir la gestion locale des ressources, l'investissement locale, récompenser à la population locale pour leurs efforts
- intégrer les aspects locales et régionales
- développer les accords et les méthodes pour faire respecter les droits de chaque utilisateur des ressources naturelles, c'est à dire, les transhumants, les cultivateurs, et les agro-pastoralists
- identifier, définir, et exécuter un stratégie pour résoudre les conflits relative à l'accès du terre, de l'eau, etc.

- guaranteed credits or the issue of accountability for credit was considered very important
- decrease transportation costs or make credit available to alleviate the problem of excess transportation costs
- training to manage and utilize credit should be provided
- another key issue - develop market information systems interior and exterior to the system (define actual need and implement market information system)
- **Livestock productivity which includes natural resources and focuses on nutrition and natural resource management**

Actions:

- natural resource management
- improving nutrition
 - there has been a decision to focus on regions 1 and 2 which is the Ohv region, region 4, and the district of Bamako
- question of the role of APEX in research on animal production
 - find alternatives/means for farmers/eleveur to meet his/her basic needs while hand-in-hand with conserving the resource base
- control production constraints
- incentives for offtake
- additional diversification of enterprises (integration with forage/agroforestry)
- local management of resources, local investment, giving local rewards
- integrate the local with the regional aspects
- develop contracts and methods to enforce or entice the agropastoral and transhumants and sedentary farmers for access to forage and water
- identify, define, and implement means of conflict resolution
- define policies for use of the land
- **Privatization**

Actions:

- start at Ohv in regions 1 and 2 looking at infrastructure, schools, etc.

- définir un régime foncier
- **Privatisation**

Les Actions:

- démarrer dans la zone de l'OHV pour voir les infrastructures, les écoles, etc.
- médecine vétérinaire et pharmacie vétérinaire
- l'aliment bétail, la production fourragère et la fourniture des compléments nutritives
- le transport des produits
- la valeur ajoutée
- la modernisation de la profession vétérinaire
- identifier les opportunités en plus que la médecine vétérinaire
- l'identification, étape par étape, d'un processus/stratégie pour la mise en place d'un programme de privatisation
- identifier les rôles et les responsabilités du secteur publique et du secteur privé

La formation des éleveurs, des producteurs, des vulgarisateurs, des zootechniciens, et des privés

Les Issues

- quelles sont les mécanismes qui marchent au niveau des villages ?
- la recherche - quel est le rôle du Projet APEX
- comment inciter la population rurale de jouer un rôle active dans les efforts de développement
- les associations pastorales, les organisations villageoises, les comité local de développement)
- la gestion du crédit et la conception des systèmes pour ce faire
- élaborer les plans adaptés aux systèmes de production
- agro-pastorale, transhumant
- les zones du Projet et les interventions du Projet
- par exemple: les zones 1, 2, 4, et le District de Bamako
- identifier les rôles et les responsabilités du secteur publique et

- vet medicine, pharmacy functions
- animal feeds, production of forage feeds & supplements
- transportation of product
- value added
- there are studies underway for vet modernization
- identify opportunities other than vet systems
- step-by-step identification of where/how to go about privatization
- identify roles of public and private sector and interactions
- **Need to train producers, extension agents, animal scientists, private sector operators**

Actions:

- structure and function of gestion
- **Issues**
- who or what mechanisms are working in place now at grassroots level
- research - what is role of APEX
- how to better involve rural population in its own development efforts
- pastoral associations, village structure organization (local development committees)
- specific contracts/means to manage credit-accountability
- recognize and devise plans adapted to systems of production
- intensive crop/livestock, extensive agropastoral
- zones/locations for which interactions
- for example: zone 1, 2, 4, and district of Bamako
- identify public vs. private sector roles

du secteur privé

Suite à la synthèse des discussions en groupe, les participants ont été d'accord sur des thèmes communs relative aux efforts futurs pour le secteur de l'élevage au Mali.

Following synthesis of group discussions, participants agreed to the following common themes regarding future development of Mali's livestock sector.

- **VIEW THE LIVESTOCK SECTOR IN A GLOBAL CONTEXT
VOIR LE SECTEUR DE L'ELEVAGE DANS UN CONTEXTE GLOBAL**
- **ROLES OF PUBLIC SECTOR INSTITUTIONS MUST EVOLVE TO BETTER
PROTECT THE WELL-BEING OF THE POPULATION AND SUPPORT THE PRIVATE
SECTOR**

**LES ROLES DES INSTITUTIONS PUBLIQUES DOIVENT EVOLUER POUR MIEUX
PROTEGER LE BIEN-ETRE DE LA POPULATION ET POUR SOUTENIR LE
SECTEUR PRIVE**

- **SUPPORT THE RURAL POPULATION TO BE MORE RESPONSIBLE AND BETTER
INVOLVE THEM IN LIVESTOCK SECTOR DEVELOPMENT ACTIONS**

**RESPONSABILIER LA POPULATION RURALE ET LES MEIUX IMPLIQUER DANS
LES ACTIONS DE DEVELOPPEMENT DU SECTEUR DE L'ELEVAGE**

- **DIVERSITY ANIMAL PRODUCTION AND VALUED-ADDED BUSINESSES**

**DIVERSIFIER LA PRODUCTION ANIMALE ET LES ENTREPRISES DE
TRANSFORMATION**

- **PROTECT AND IMPROVE NATURAL RESOURCES TO PROMOTE SUSTAINABLE
INCREASES IN ANIMAL PRODUCTIVITY**

**PROTEGER ET AMELIORER LES RESSOURCES NATURELLES POUR
PROMOUVOIR LA CROISSANCE SOUTENABLE DE LA PRODUCTIVITE ANIMALE**

- **DEMONSTRATE A POSITIVE IMPACT OF LIVESTOCK PROGRAMS IN THE
SHORT TERM AND OF HUMAN AND INSTITUTIONAL CAPACITY IN THE LONG
TERM**

**DEMONTRER UN IMPACT POSITIF DES PROGRAMMES D'ELEVAGE AU COURT
TERME ET DE LA CAPACITE HUMAINE ET INSTITUTIONNELLES AU LONG
TERME**

À la suite d'une revue des discussions relative à les opportunités pour développer le secteur de l'élevage au Mali, une synthèse sur le processus pour la conception d'un projet de développement de l'AID a été présentée. (voir Figure 1)

Following a review of discussions relating to opportunities for developing Mali's livestock sector, a synthesis of AID's project development process was presented. (see Figure 2)

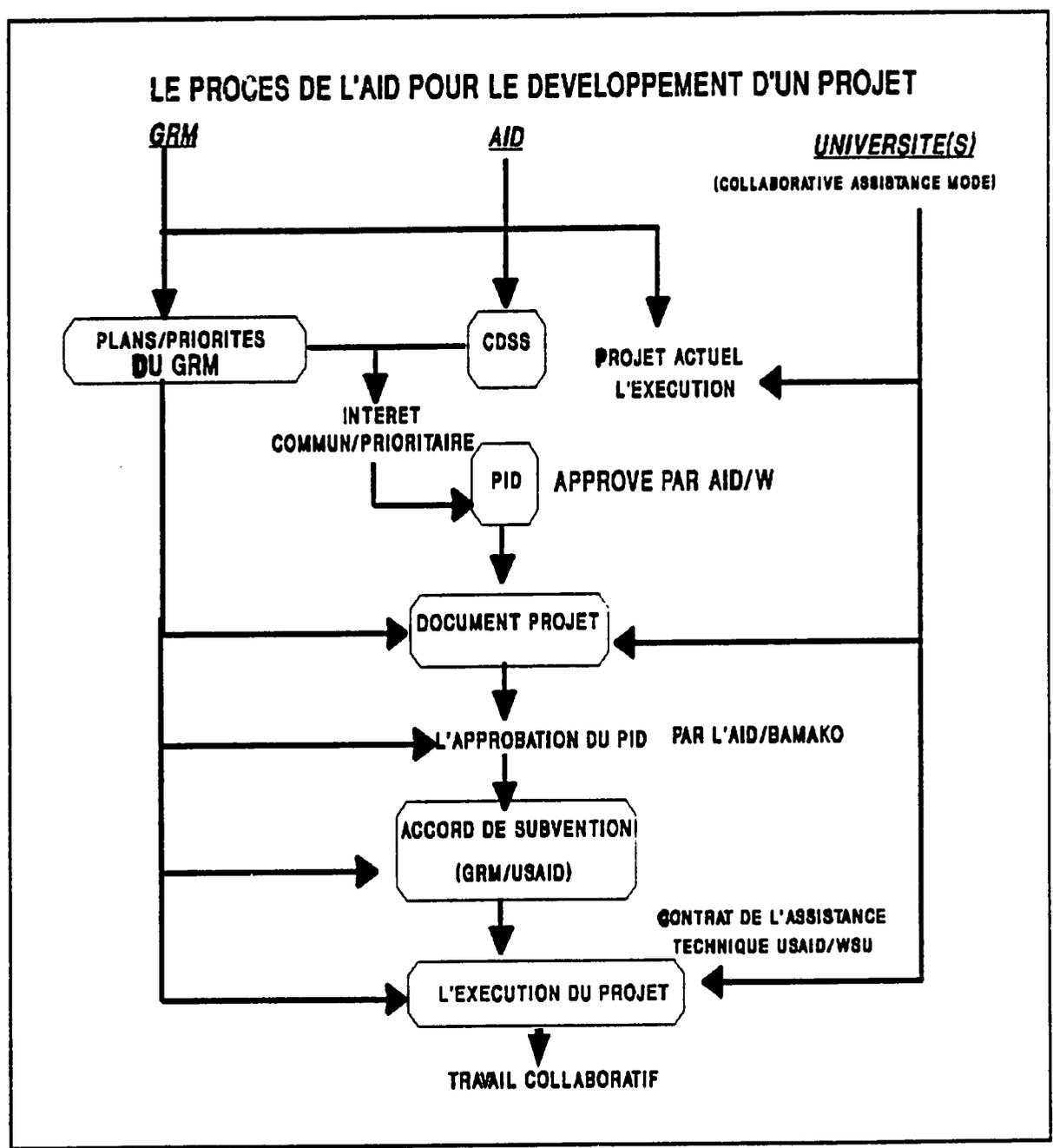


Figure 1

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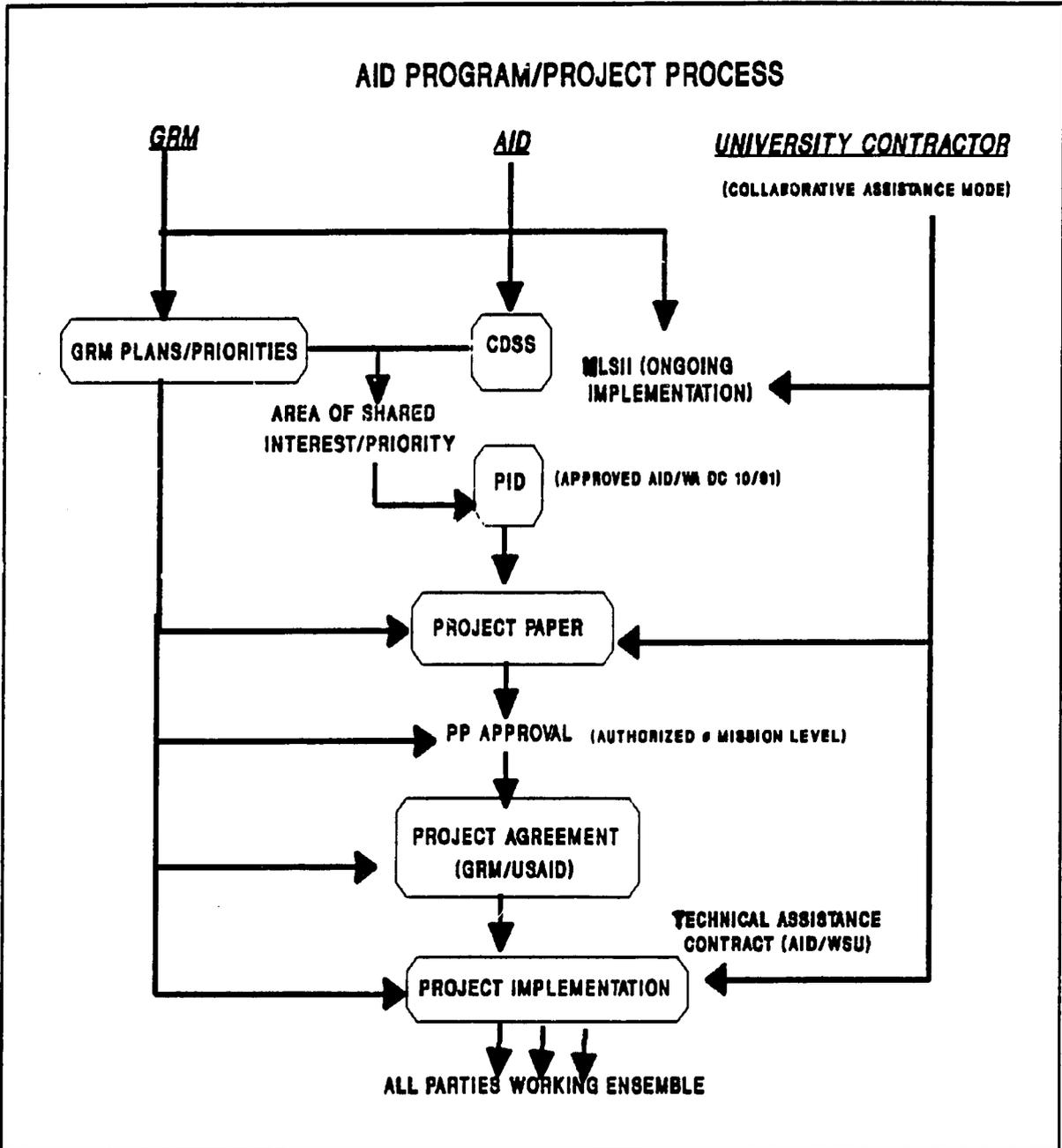


Figure 2

**CHAQUE PROJET DE DEVELOPPEMENT!
EST UN ESSAI**

(La présentation du Cadre Logique)

Le cadre logique est un outil qui montre clairement cet essai en développement à travers les hypothèses de liaison causative entre ce qu'un projet peut achever (les extrants) et ce qu'un projet peut obtenir comme résultats (l'objectif du projet).

Nous gérons les ressources d'un projet pour achever les extrants désirés.

Quand nous avons achevés les extrants, nous estimons que certains résultats auront lieu (l'objectif du projet).

Nous pensons que ces résultats sont importantes parce que ils sont nécessaires pour achever le but du projet.

EVERY PROJECT IS AN EXPERIMENT!

(Presentation of the Logical Framework)

The logical framework is a tool which clearly states this development experiment by hypothesizing the causal linkages between what the project can accomplish (outputs) and the results that can be expected (purpose).

We manage resources (inputs) in such a way that we produce or accomplish things (outputs)

When we have accomplished these things, we expect certain results to occur. (purpose).

We think these results are important because they are a necessary step to a larger goal.

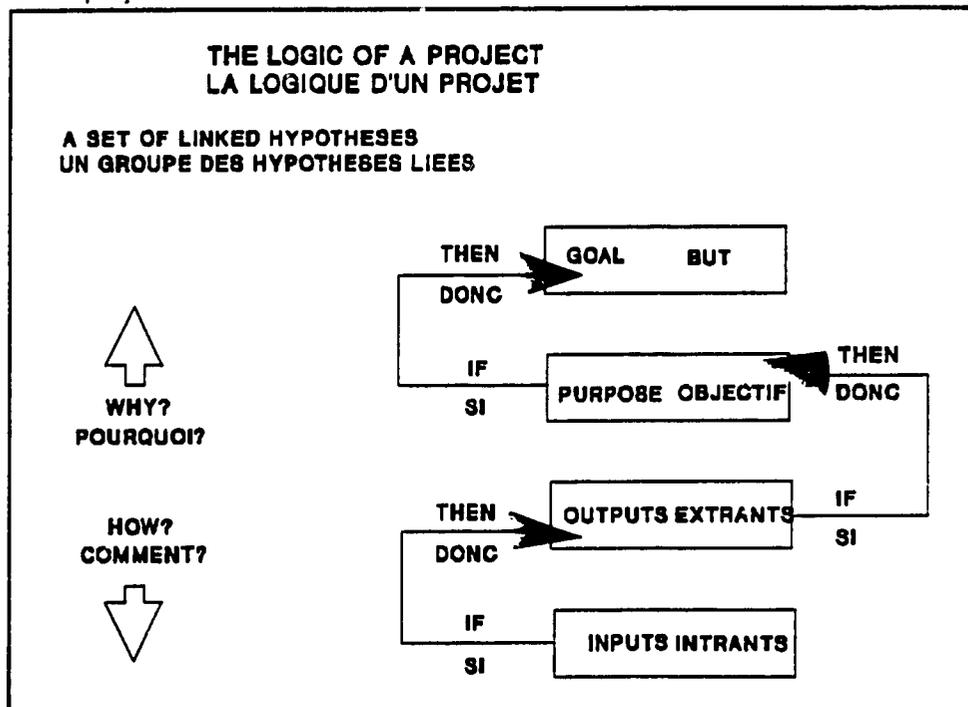


Figure 3

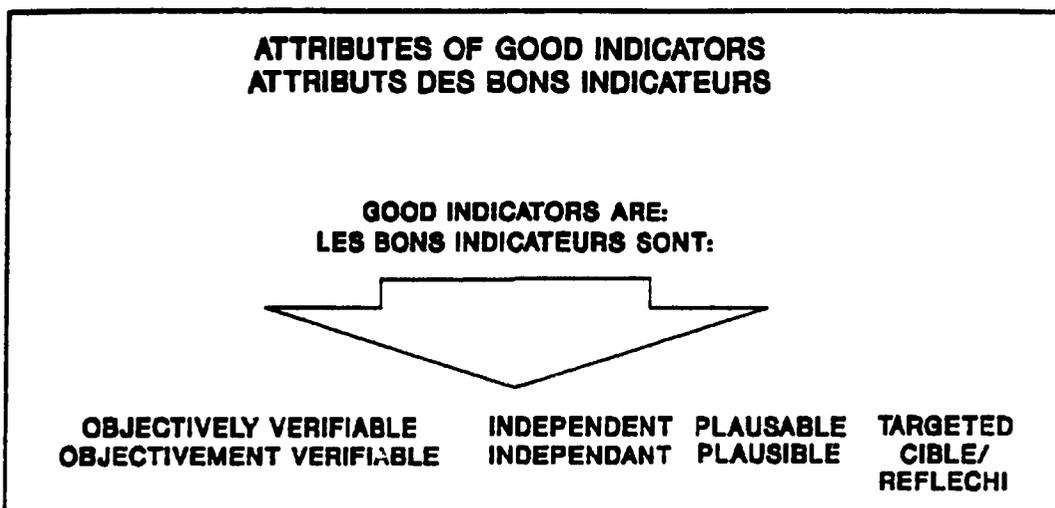


Figure 4

3EME JOUR:

LA STRATEGIE ET LA APPROCHE DU PROJET APEX

Suite à les informations qui se trouvent dans les divers documents et à plusieurs discussions pendant la réunion de planification, les éléments suivantes ont été identifiés comme les points clés pour la conception du projet APEX:

1. La participation des bénéficiers comme, comme un composant clé de la politique de décentralisation jouera un rôle important dans la conception et l'exécution du projet APEX.
2. Les activités de planification seront basées sur les investissements rentables étant donné celles du Projet Sectoriel.
3. Le projet mettra l'accent sur l'accroissement de revenu, le développement économique, les bénéfices pour les femmes et les autres bénéficiers, et la continuité des activités proposées.
4. La conception du projet aura besoin d'une large gamme d'expertise et de connaissance sur le Mali, les autres pays en voie de développement, aussi bien que sur l'USAID.

3RD DAY

APEX STRATEGY AND APPROACH

Based upon the information contained in the various documentation and the very fruitful discussions during the meeting, the following have been identified as the key elements of the design strategy for APEX:

1. Participation by beneficiaries based upon decentralization will be required and will be a central feature of the project design and later implementation.
2. The planning activities will build upon current and past investments emphasizing MLSII.
3. The project will emphasize income generation, economic development, benefits to women, and other beneficiaries and sustainability of the proposed activities.
4. The design process will access as needed the broad spectrum of expertise and experiences in Mali and within the consortium of institutions in the U.S. and within USAID.
5. The activities of the project will evolve over time.

5. Les activités vont se évoluer dans le temps.
6. Le procès de la conception et de l'exécution du projet variera au fur et à mesure que les circonstances évoluent.

6. The process of an evolving design and implementation will be iterative with the incorporation of lessons learned and experiences providing useful information for change as appropriate and needed.

Un tableau provisoire des Rôles et des Responsabilités a été développé et ventilé (version Anglaise). Ce tableau va servir comme un cadre général pour la planification future des activités de conception. Un calendrier des activités a été élaboré (voir Annex I), et les besoins en assistance technique ont été discutés et les termes de référence relative à ces besoins ont été résumés dans les décisions du comité de gestion.

A preliminary table of Roles and Responsibilities was developed and distributed (English version), as a departure point for further design planning. A calendar of events was developed (see Annex I), and the human resource needs were discussed and are reflected in the Management Committee's SOW.

LES PROCHAINES ETAPES

- développer les termes de référence détaillés pour les membres de l'équipe de conception et les envoyer à l'AID/Bamako et au Ministère - WSU
- envoyer les profile des sociologues à l'AID/Bamako et au Ministère - WSU
- identifier les membres du comité de planification - Ministère
- faire la rédaction du document de la Réunion de Planification et le envoyer aux participants

NEXT STEPS:

- Develop SOW for design team members and send to USAID/Bamako and Ministry WSU
- Send CV for rural sociologist to USAID/Bamako and Ministry - WSU
- Identify Planning Committee Members - Ministry (MAEE)
- Complete and distribute Meeting Proceedings - WSU

COMMUNICATION

Les responsables du WSU - Dick Cook, Jan Noel
Le responsable de l'AID - Doral Watts
Le responsable du Ministère - Dr. O. Guindo

Les Termes de Référence Révisés

Jane Homan - la priorité est la mise en place d'un système de surveillance pour la DNE et le LCV. La DNE (Dr. G. Timbo, DG) et le LCV (Dr. B. Seck, DG) vont élaborer les termes de référence pour une mission court terme (en épidémiologie) pour la conception de tel système.

John Kramer - sa mission est reporté et remplacer à l'heure acutelle par une mission d'une entreprise pharmaceutique privée qui va travailler avec le LCV dans la mise en place d'un système de marketing et production plus performant. Le LCV va élaborer les termes de référence.

Travis McGuire - sa mission est reporté.

COMMUNICATION

Contact Person(s), WSU - Dick Cook, Jan Noel
Contact Person, USAID/Bamako, - Doral Watts
Contact Person, MAEE - Dr. O. Guindo

Modifications In Terms of Reference/TDYs for:

Jane Homan - priority need is the development of a disease monitoring/surveillance system - to be developed by DNE (Dr. G. Timbo, DG) and CVL (Dr. B. Seck, DG)

John Kramer - to be replaced at present by a consultation with a private pharmaceutical firm (Upjohn - to be coordinated with Dr. Ed Mather, MSU)

Travis McGuire's TDY to be postponed

ANNEXE I
CALENDRIER DES ACTIVITES DU
PROJET SCTORIEL ET DU PROJET APEX
AVRIL 1991 - SEPTEMBRE 1992

ACTIVITE	AVR	MAI	JUN	JUL	AOUT	SEPT	OCT	NOV	DEC
LA MISSION DES DRS COOK AND NOEL ¹	x	x							
IMMUNOLOGIE - DR. S. HINES ¹		x							
LA NUTRITION ANIMALE - DR. R. KINCAID ¹		x							
AMENDEMENT DU PACD DU PROJET		x							
DOCUMENT D'IDENTIFICATION SOUMIS A L'AID/WASH, D.C.							x		
L'ANALYSE DE LA GESTION FINANCIERE - L. MITCHELL				x					
L'APPROBATION DU DOCUMENT D'IDENTIFICATION PAR AID/ WASHINGTON D.C.							x		
CONTRAT DU TITRE XII EST AMENDE							x		
LA MIS EN PLACE D'UN COMITE DE PLANIFICATION								x	x
ETUDE(S) SUR LES COUTS RECURRENTS (LCV)									X/4-6 mois
REUNION CONJOINTE POUR LA PLANIFICATION A PULLMAN, WA. (WSU)							x		
TERMES DE REFERENCE POUR LA MISSION EN MARKETING - LCV								x	x
TERMES DE REFERENCE POUR LA MISSION EN EPIDEMIOLOGIE - DNE/LCV								x	
L'EQUIPE D'ELABORATION - R. COOK P. BLOCH SOCIOLOGUE M. MCGAHUEY (AID/AFR/ARTS) K. SWANGERG (AID/AFR/MDI)									x x x x x

¹ FINANCE PAR WSU

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**CALENDRIER DES ACTIVITES
DU PROJET SECTORIEL ET DU PROJET APEX
AVRIL 1991 - SEPTEMBRE 1992 (CONTINU)**

ACTIVITE	JAN 1992	FEV	MAR	AVR	MAI	JUI	JUL	AOUT	SEPT
L'EQUIPE D'ELABORATION - R. COOK P. BLOCH L. MITCHELL K. SHAPIRO K. SWANBERG (AID/AFR/MDI) AUTRES	X X X X X X	X X X	X						
EPIDEMIOLOGIE - TERMES DE REFERENCE D'ETRE ELABORES PAR LA ONE ET LE LCV									
LA MISSION	X	X							
APPUI SUR LE MARKETING - TERMES DE REFERENCE D'ETRE ELABORES PAR LE LCV		X							
LE FONCTIONNEMENT D'UN COMITE DE PLANIFICATION AU NIVEAU DU PROJET	X	X	X	X	X	X	X	X	X
VIROLOGIE: DR. J. EVERMANN	X								
DOCUMENT DU PROJET EST COMPLETE			X	X					
DOCUMENT DU PROJET APPROUVE PAR L'AID/MALI ET LE MAEE (GRM)				X					
ACCORD D'SUBVENTION SIGNE (AID/MALI ET LE GRM)				X	X				
CONTRAT DE WSU POUR L'EXECUTION DU PROJET APEX SIGNE (TITRE XII)					X				
LA MOBILISATION POUR L'EXECUTION DU PROJET APEX					X	X	X	X	X
LE DEMARRAGE DU NOUVEAU PROJET							X		
LA FIN DU PROJET SECTORIEL II (10 AOUT 1992)								X	

**APPENDIX I.
CALENDAR OF ACTIVITIES/EVENTS
OF LIVESTOCK SECTOR AND APEX PROJECTS
APRIL 1991 - SEPTEMBER 1992**

ACTIVITY/EVENT	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Initial visit WSU Cook and Noel ¹	X	X							
Immunology TDY - Hines ¹		X							
Animal Nutrition TDY - R. Kincaid ¹		X							
PACD Amendment		X							
P.I.D. Submission to AID Washington D.C.							X		
Financial Management Analysis TDY - L. Mitchell				X					
P.I.D. Approval Washington D.C.							X		
Title XII Contract Amendment/PACD, etc.							X		
Project Planning Committee in Mali established and functioning								X	X
Recurrent Cost Study - CVL									X/4-6 MOS.
Joint Project Planning Meeting, Pullman, WA							X		
SOW for Marketing TDY - Elaborated by the CVL								X	X
SOW for Epidemiology monitoring system TDY - Elaborated by DNE & CVL								X	
TA Design Team - R. Cook P. Bloch Rural Development Sp. - Sociologist M. McGahuey (AID/AFR/ARTS) K. Swanberg (AID/AFR/MDI)									X X X X X

¹ Sponsored by WSU

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**CALENDAR OF ACTIVITIES/EVENTS
OF LIVESTOCK SECTOR AND APEX PROJECTS
APRIL 1991 - SEPTEMBER 1992 (CONTINUED)**

ACTIVITY/EVENT	JAN 1992	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
T.A. Design Team - (Continued)									
R. Cook	X	X	X						
P. Bloch	X								
L. Mitchell	X								
K. Shapiro	X	X							
K. Swanberg (AID/AFR/MDI)	X								
Others	X	X							
TDY for Epidemiology Monitoring System	X	X							
TDY in Marketing (CVL)		X							
Project Planning Committee Continues Activities in Mali	X	X	X	X	X	X	X	X	X
Virology TDY: - J. Evermann	X								
Project Paper Completed			X	X					
Project Paper Approved (USAID/Mali and GRM)				X					
Project Agreement Completed/Signed (USAID/Mali and GRM)				X	X				
WSU (Title XII) contract negotiated and signed					X		X		
Mobilization for Project Implementation - WSU (Title XII), MAEE, USAID/Mali					X	X	X	X	X
Project APEX Implementation Start-up							X		
PACD Mali Livestock Sector II (10 August 1992)								X	

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**ANNEXE (ANNEX) II
ROLES ET RESPONSABILITES POUR
ROLES AND RESPONSIBILITIES FOR
LA REDACTION DU DOCUMENT DU PROJET
THE PREPARATION OF THE PROJECT PAPER**

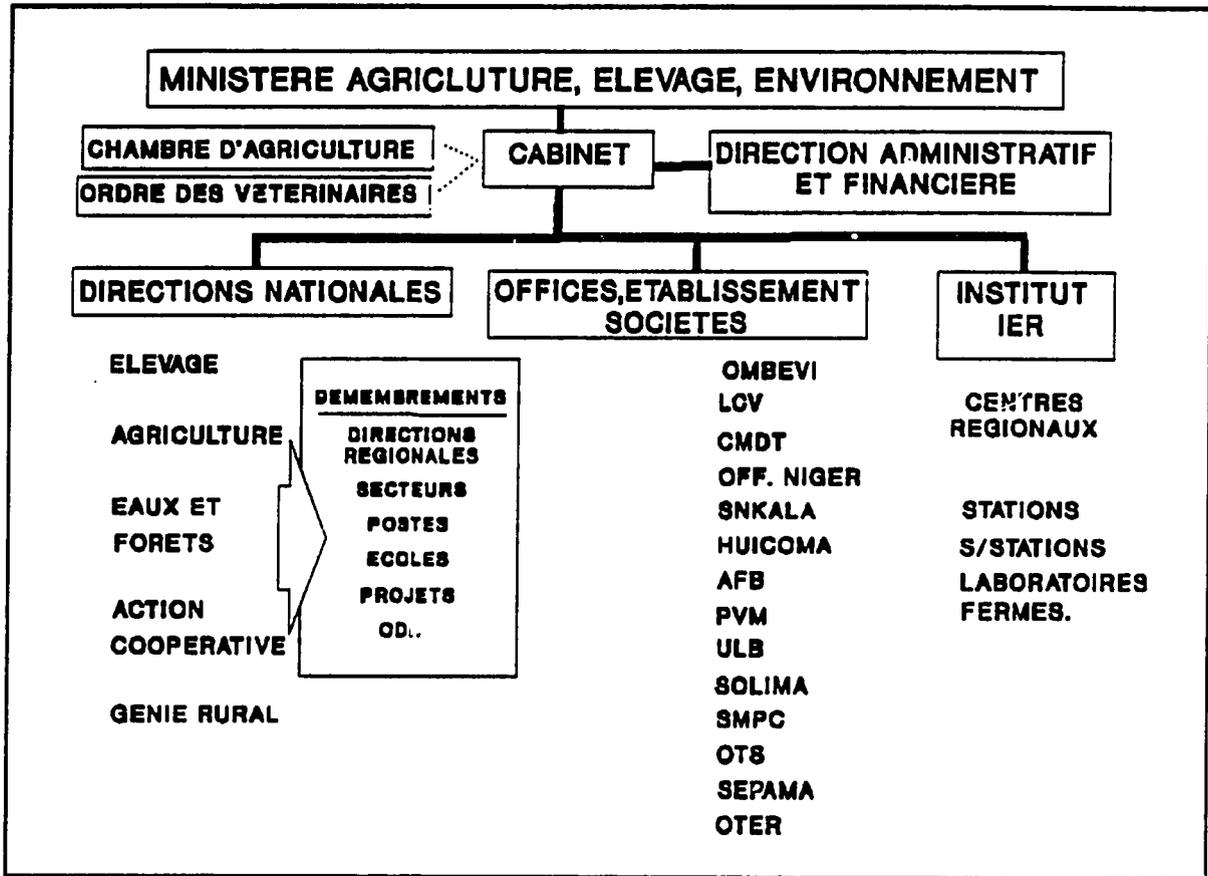
TACHE/ACTIVITY	RESPONSABLE
1. Project Data Sheet Feuille des Données du Project	USAID/Bamako
2. Draft Project Authorization Brouillon d'Approbation du Projet	USAID/Bamako
3. Project Rationale and Description Description et Rationale du Projet	Design Team - Equipe de Conception
4. Cost Estimate/Financial Plan Evaluation de Coût/Plan Financier	Design Team/MAEE/AID - Equipe/MAEE/AID
5. Implementation Plan Plan d'Execution	Design Team-Equipe de Conception
6. Monitoring Plan Plan de Suivi	Design Team - Equipe de Conception
7. Summaries of Analyses Sommaires des Analyses	Design Team/USAID - Equipe de Conception/AID
8. Conditions and Covenants Conditions Préalables	USAID/MAEE-GRM
9. Evaluation Plan Plan d'Evaluation	Design Team - Equipe de Conception
10. Annexes:	
a. PID Approval Message Approbation du PID	USAID/Washington
b. Log Frame Matrix Cadre Logique	Design Team - Equipe de Conception
c. Statutory Checklist Liste des Statues	USAID/Bamako
d. B/G Request for Assistance Réquete du GRM pour l'Assistance	MAEE/GRM
e. FAA, Section 611	USAID/Bamako
f. Analyses:	
Technical/Technique	Design Team - Equipe
Financial/Financière	Design Team - Equipe/USAID
Economic/Economique	USAID/Des.Team/ Equipe
Social Soundness/Sociale	Design Team - Equipe
Administrative/Administratif	Design Team - Equipe
Environmental/Environnemental	Design Team - Equipe-USAID/REDSO-USAID/W
Women in Development Les Femmes dans le Développement	Design Team - Equipe de Conception

**ANNEXE (ANNEX) III
PARTICIPANTS
Program Planning Meeting
Mali Livestock Sector Project
October 19 through October 22, 1991
Washington State University, Pullman WA**

Dr. Bocar Diallo, Director of Cabinet, Ministry of Agriculture, Livestock, and Environment, Government of the Republic of Mali (GRM)
Dr. Ousmane Guindo, Technical Advisor for Livestock, Ministry of Agriculture, Livestock, and Environment (GRM)
Dr. Gagny Timbo, Director General of the National Livestock Service (DNE - GRM)
Dr. Boubacar Seck, Director General of the Central Veterinary Laboratory (CVL - GRM)
Mr. Cheick Dramé, Livestock Project Associate, Agricultural Development Office, USAID/Mali
Dr. Mike McGahuey, AID/ARTS/FARA, USAID/Washington
Dr. Ken Swanberg, AFR/MDI, USAID/Washington
Dr. Peter Bloch, Economist, Land Tenure Center, University of Wisconsin-Madison(UW -M)
Dr. Winfrey Clarke, Director of International Programs, Virginia State University
Mr. Lloyd Mitchell, Financial Management Specialist, President, The Mitchell Group, Inc.
Dr. Ed Mather, Professor/Director Large Animal Clinical Medicine, Michigan State University
Mr. Ralph Montee, Assoc. Director PVO/University Center, N. Carolina State University
Ms. Helen Nelson, International Programs, Land O'Lakes, Inc.
Dr. Jim Goodwin, Director of International Agricultural Programs, Texas A&M University
Dr. Dan Miller, College of Veterinary Medicine, Texas A&M University
Dr. Jim Henson, Director of International Program Development, Washington State University
Dr. Jan Noel, Director (act.) of International Development Cooperation Office, WSU
Dr. Lance Perryman, Professor/Assoc. Dean for Research, College of Veterinary Medicine, WSU
Dr. Travis McGuire, Professor/Team Leader, Hemoparasitic Disease Research, WSU
Dr. John Kramer, Professor of Veterinary Clinical Pathology, WSU
Dr. Jim Evermann, Assoc. Professor of Diagnostic Virology, WSU
Dr. Steve Hines, Assist. Professor of Immuno-Pathology, WSU
Dr. Ron Kincaid, Professor of Animal Science, WSU
Dr. Will Goff, Senior Research Associate, Hemoparasitic Diseases, USDA/ARS, WSU
Dr. Dick Cook, Assoc. Professor, Departments Vet. Path./Animal Science, Int. Dev. Coop., WSU
Dr. Gordon Rodewald, Professor, Ag. Economics/International Development Cooperation, WSU
Mr. Dan Hardesty, Project Program Specialist, International Development Cooperation, WSU
Dr. Jim Maguire, Professor, Dept. of Agronomy & Soils
Dr. Jim Carlson, Chair, Dept. of Animal Sciences

ANNEXE (ANNEX) IV

LE CADRE ORGANIQUE DU MINISTRE DE
L'AGRICULTURE, L'ELEVAGE, ET L'ENVIRONNEMENT
ORGANIZATION DIAGRAM OF THE MINISTRY OF
AGRICULTURE, LIVESTOCK AND ENVIRONMENT

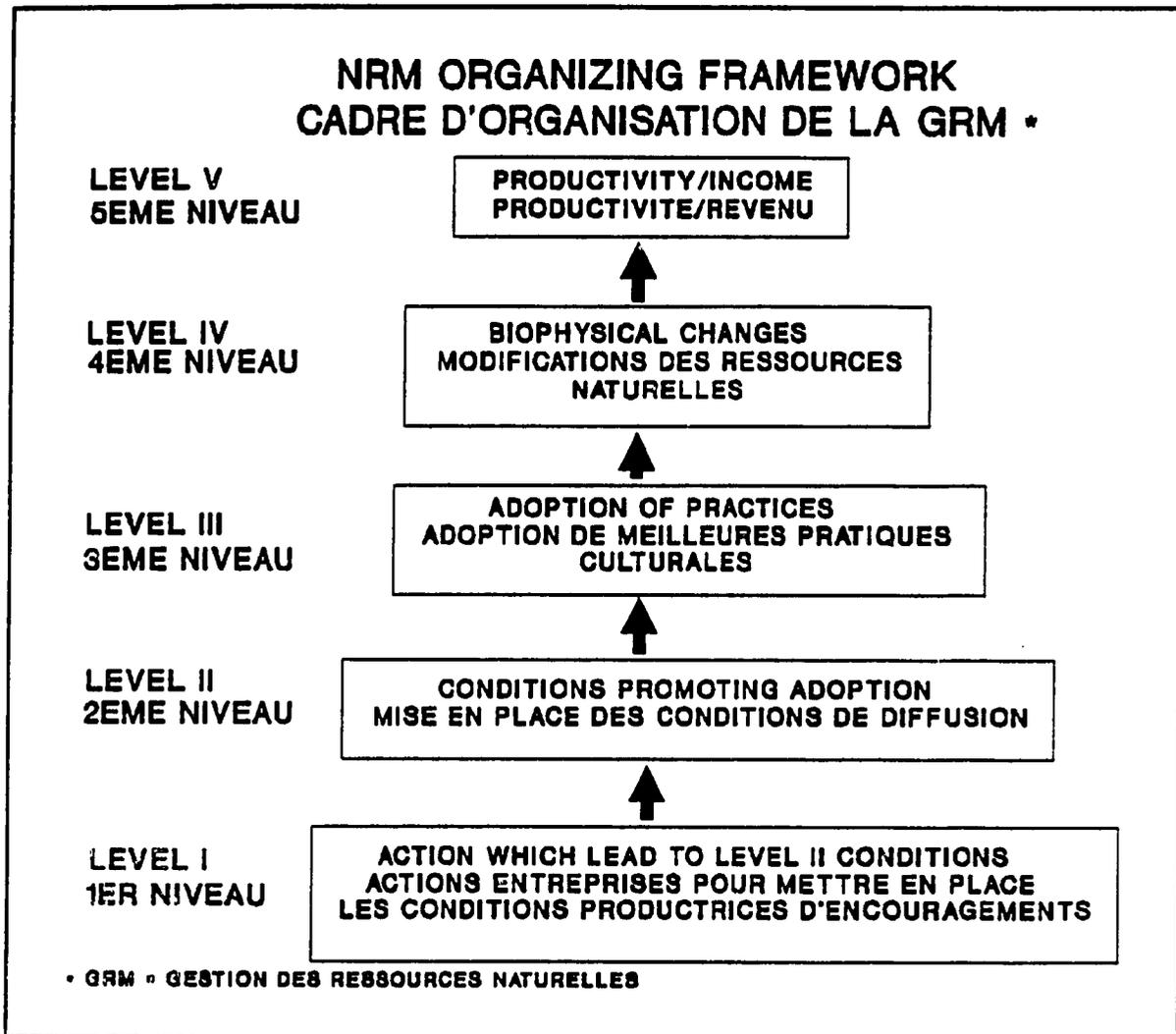


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ANNEXE (ANNEX) V

**LA GESTION DES RESSOURCES NATURELLES
L'USAID/AFR/ARTS**

**NATURAL RESOURCE MANAGEMENT
USAID/AFR/ARTS**

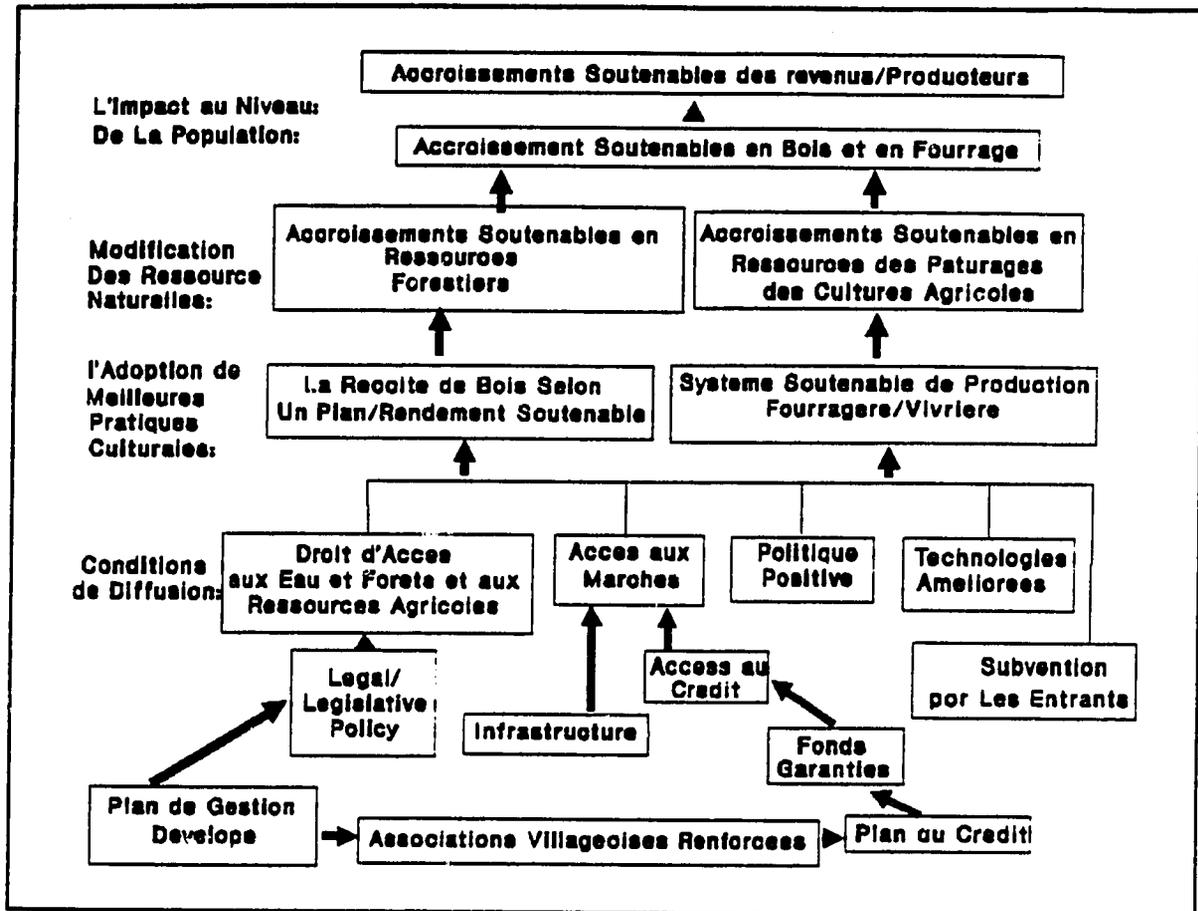


**TRACKING PROGRESS
LE SUIVI DU PROGRES**

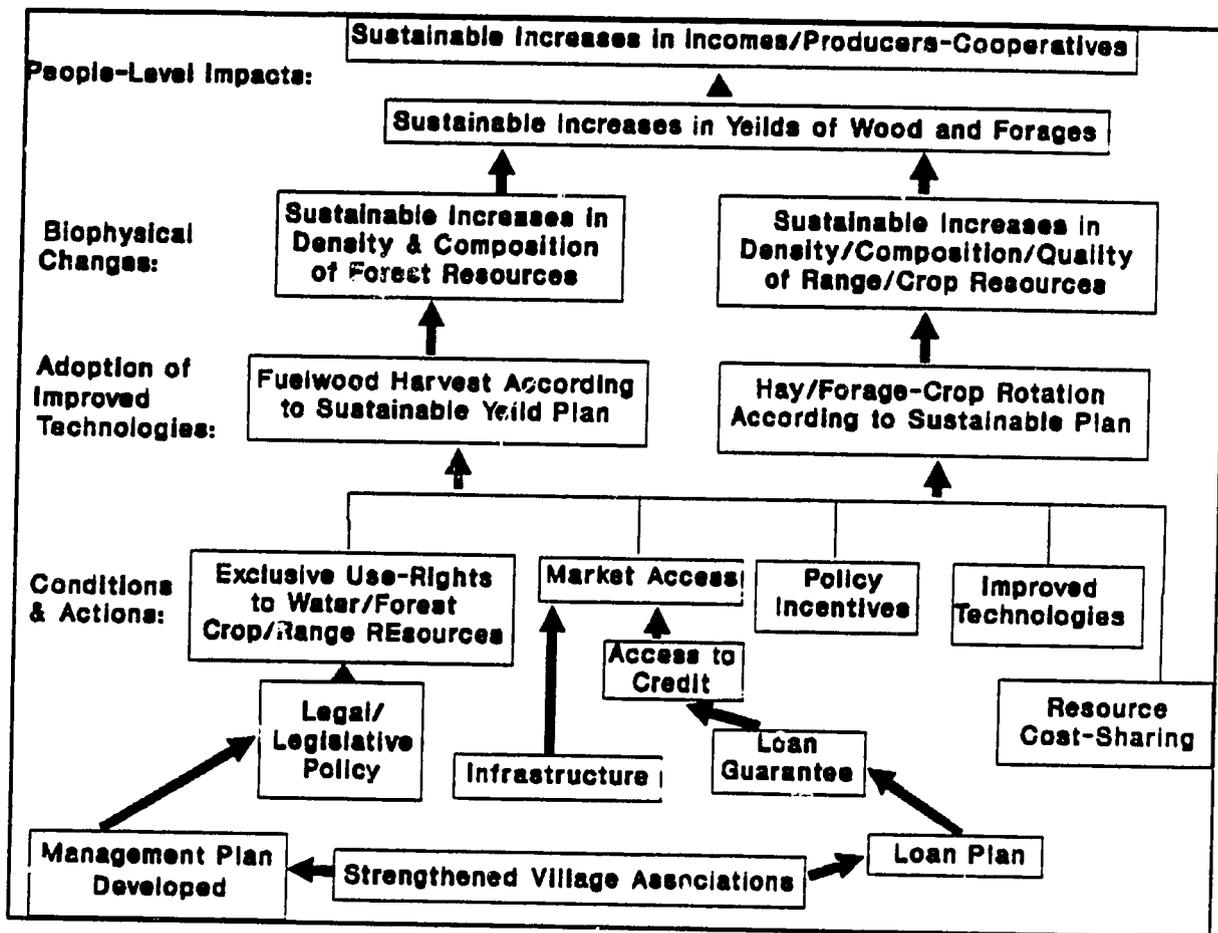
- 1. A LONG TIME LAG BETWEEN INPUTS AND IMPACTS REQUIRES
UNE LONGE DUREE ENTRE INTRANTS ET L'IMPACT NECESSITE:**
- 2. QUANTIFIABLE SHORT-TERM INDICATORS FOR LT IMPACT REQUIRE:
INDICATEURS DU COURT TERME ET QUANTITATIVES QUI
PEUVENT MEASURER L'IMPACT A LONG TERME NECESSITENT:**
- 3. LOGICAL CORRELATIONS BETWEEN PROGRESSIVE LEVELS IN
LOGFRAME INDICATORS
CORRELATION LOGIQUE ENTRE LES INDICATEURS QUANTITATIVES
DE CHAQUE NIVEAU SUIVANT DU CADRE LOGIQUE**

**NEED A MONITORING & INFORMATION ORGANIZATIONAL TOOL
UN OUTIL POUR LE SUIVI ET L'ORGANISATION
DES INFORMATIONS EST NECESSAIRE**

ANNEXE (ANNEX) V (CONTINU)



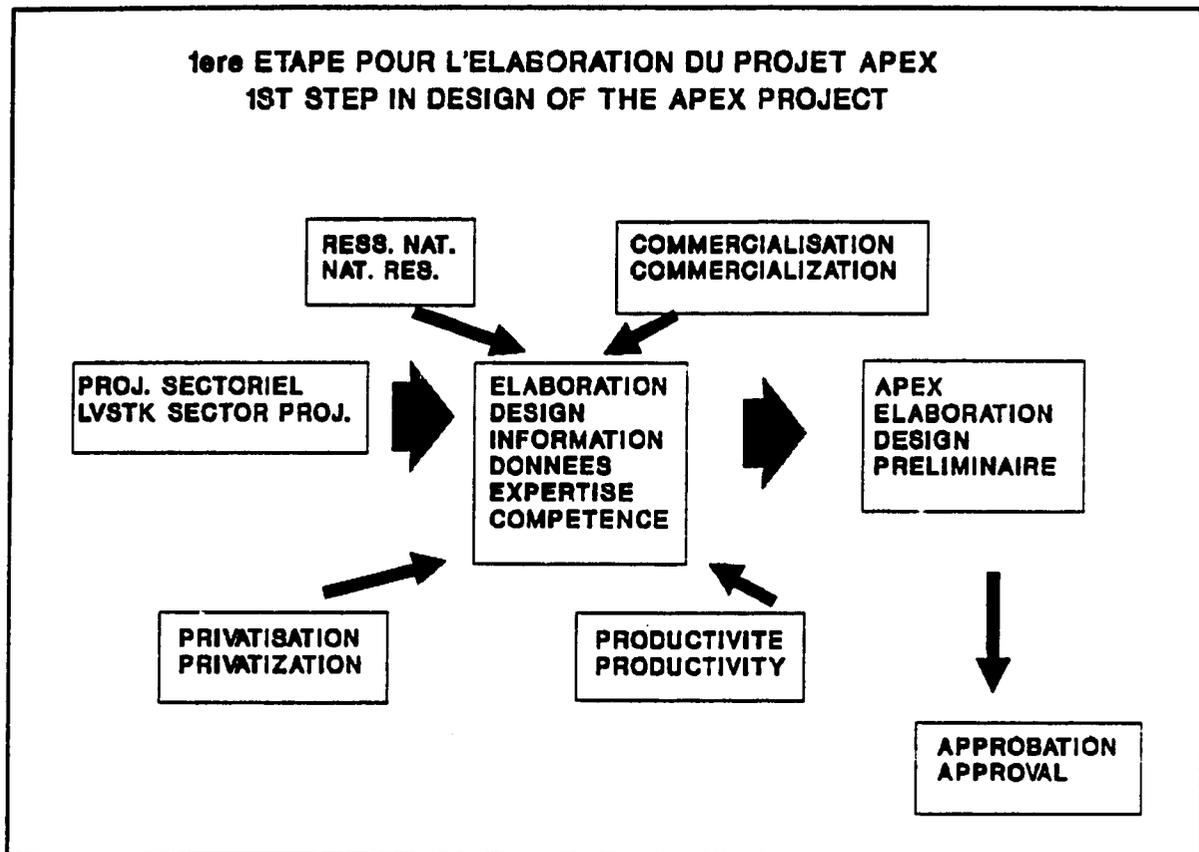
ANNEXE (ANNEX) V (CONTINU)



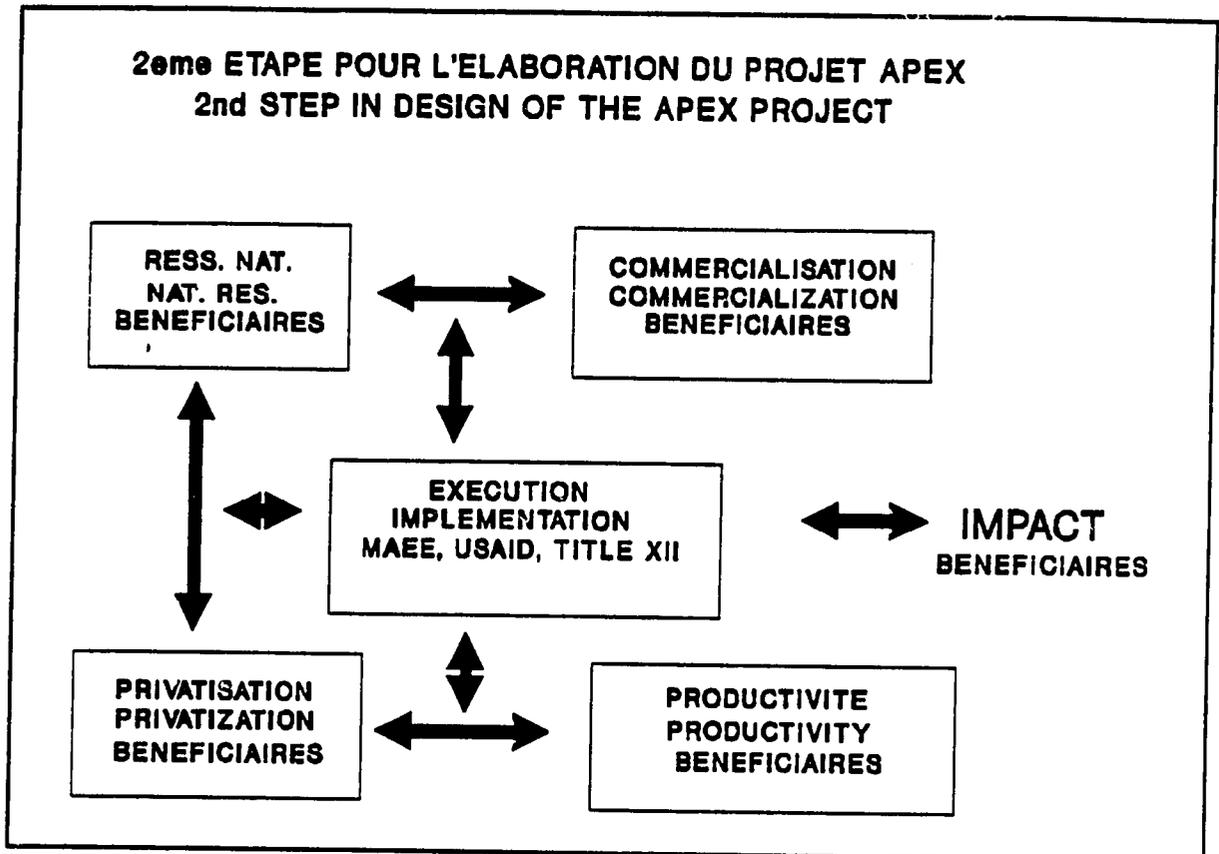
285-

ANNEXE (ANNEX) VI

**LA STRATEGIE DE CONCEPTION DU PROJET APEX
THE DESIGN STRATEGY FOR THE APEX PROJECT**



ANNEXE (ANNEX) VI (CONTINU)



ANNEXE (ANNEX) VII
L'ORDRE DE JOUR / AGENDA

WORKING AGENDA

**Program Planning/Strategy Meeting
Mali Livestock Sector Project
October 19 through October 22, 1991
Washington State University, Pullman, WA**

Saturday, October 19

**2:59 PM
Afternoon**

Arrival of colleagues from Mali
Discussions on agenda, program issues, and preparation of necessary documents; working dinner of Meeting Planning Committee with Noel, Henson, Cook.

Arrival of collaborators from U.S. institutions (no program for the evening)

Sunday, October 20

9:00 AM - 10:00 AM

Working Breakfast (all collaborators @ Michael's Restaurant)

10:30 AM - 11:15 PM

Program Planning Meeting I (Room 232 CUB)

- Introductions/Expectations
- Overview and Meeting Objectives
- Agenda

11:15 AM - 12:00 PM

Overview and Context of Livestock-Related Efforts in Mali:

- Overview of GRM Rural Development (Dr. Diallo)

1:00 PM - 1:45 PM

Lunch (individual)

2:00 PM - 4:30 PM

Overview and Context of Livestock-Related Efforts in Mali (Continued):

- Overview of GRM Livestock Sector Development - PASA II (Dr. Guindo)
- Overview of GRM Veterinary Development Program - Privatization (Dr. Timbo)
- Overview Animal Health Research Program (Dr. Seck)
- Overview of AID Perspectives: Natural Resources (Dr. McGahuey)
- Overview of AID perspectives: Private Enterprise Development (Dr. Swanberg)
- Overview of USAID Perspectives, USAID/Mali (Mr. Dramé)

Handout of newest draft of APEX PID

(Dinner will be the responsibility of individuals)

Monday, October 21

- 8:30 AM - 10:30 AM **Program Planning Meeting II (Room 232 CUB) - "Moving from Mali Livestock Program Context, Needs and Priorities to Building Solutions: APEX Project Design"**
- 8:30 - 8:45 ● Yesterday in Review
- 8:45 - 10:45 **Working Group Sessions:** "Alternative Approaches, Actions, and Interventions (what can we do), within the context of a project, to capitalize on the emerging opportunities, deal with existing constraints and move toward meeting the priority objectives of the sector."
- 10:45 - 11:00 **Break**
- 11:00 - 11:30 ● Review of USAID Project Development Process and status of AID's existing and projected livestock sector project - where are we in the process and what will need to be done between now and implementation start-up.
● Brief Review AID/donor Design Tool - The Logical Framework - Vertical and Horizontal Logic
- 11:30 - 12:00 **Working Group Sessions:** "Clarifying of Objectives and Causal Relationships: the Vertical Logic in Draft PID (APEX Project)"
(Groups will go from break out room to lunch, and continue informal discussions over lunch)
- 12:00 - 1:15 PM Working lunch (hosted by Dr. Larry Schrader, Dean CAHE) (CUB cafeteria with dining in Rooms 108 & 109).
- 1:15 PM - 3:15 PM **Working Groups return to break out rooms to:**
- Complete vertical logic discussions, and clarify approach/design issues; and
 - Address issues of targeting project objectives/monitoring progress, assessing results (APEX horizontal logic)
- 3:15 - 4:30 PM Group reports to Plenary session - Plenary discussion on design issues, needs.

(Dinner will be the responsibility of individuals)

Tuesday, October 22nd

- 8:30 AM - 12:00 AM **Program Planning Meeting III (Room 232 CUB) "Further Exploration of Technical and Management Capacities and Approaches for APEX Design: the Major Potential APEX Objectives (Outputs)"**
- Livestock Productivity Improved (for economic benefit/well-being of the people and conservation of the natural resource base)
 - Natural Resources Better Utilized, Conserved and Improved
 - Commercialization Opportunities Identified, Implemented, and Result in

Improvement of Commercial Performance of Livestock Sector, for Benefit of the Producers/Consumers of Livestock and Products, and Contribution to National Economy.

- **Selected Public Livestock Enterprises/Services Privatized, (e.g. Veterinary Health Delivery), and Evolving Roles of Public and Private Sector Institutions Assessed and Supported.**

12:00 AM - 1:15 PM Lunch (individual responsibility)

1:15 PM - 4:30 PM **"Managing the Design Process and Related Efforts"**

- Design Management Approach and Strategy
- Roles and Responsibilities - Individual/Institutional
- Schedules
- Resources: Issues and Questions for Resolution
- Coordination, Communications, etc.

"Next Steps"

6:30 PM - 8:30 PM *Wrap-up Reception/Dinner (hosted by Provost Tom George and Dr. Borje Gustaffson, Dean, College of Veterinary Medicine)*

6:30 PM - 7:15 PM *Reception - (CUB Faculty Lounge)*

7:15 PM - 8:30 PM *Northwest Buffet Dinner (CUB Cascade Room)*

Wednesday, October 23rd

7:00 AM - 11:00 AM U.S. colleagues depart for home

8:30 AM - 4:30 PM Field Trip (colleagues from Mali) Bus departs Quality Inn @ 8:15 A.M.

- A.M. Greg Schlomer Ranch, LaCrosse
- Lunch enroute (LaCrosse or Washtucna)
- P.M. Pat Barker Ranch, Lyons Ferry

Thursday, October 24th

6:20 AM Drs. Diallo, Guindo, and Mr. Drame depart for Paris

9:00 AM - 11:00 AM Discussions of TA issues, Project Volets/WSU

12:00 AM - 1:00 PM Informal lunch with J. B. Henson & J. C. Noel

Afternoon: Flexible Program: Tour of Veterinary School, other WSU facilities

Friday, October 25th

6:20 AM Drs. Timbo and Seck depart for Minneapolis for visit to SOLVEY Veterinary Pharmaceutical Co. (Dr. Mike Gill, Director of Research)

ANNEX D
SCHEDULE OF WSU-COLLABORATOR T.A. TDYS

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Annex D

**Schedule of WSU-Collaborator Technical Assistant TDYs
In Support of MLS II and APEX Projects
April, 1991 - April, 1992**

Technical Assistant	Purpose	Dates In Mail	Funding Source³
Dr. Peter Bloch	Design Team Economist	1/12/91-20/12/91	Contract - UW/M
Dr. Peter Bloch	Design Team Economist	13/2/92-23/2/92	Contract - UW/M
Dr. Lorna Butler	Design Team Soc. Sci.	22/1/92-16/2/92	Contract - WSU
Ms. Martha Cashman	Design Team Privatization	8/1/92-15/1/92	Land O'Lakes
Dr. K. Christophersen	Design Team Nat. Resources	8/1/92-30/1/92	Contract - WSU
Dr. Richard Cook	Campus Coordinator	21/4/91-17/5/91	Contract - WSU
Dr. Richard Cook	Design Team Leader	30/11/91-11/4/92	Contract - WSU
Dr. Jeremy Flotz	Livestock Marketing	21/8/91-4/9/91	UW/M
Dr. Larry Herman	Design Team Lvstk. Mkt.	25/12/91-13/1/92	Contract - UW/M
Dr. Steve Hines	Biotechnology, CVL	15/5/91-1/6/91	WSU
Dr. Ron Kincaid	Animal Nutrition, CVL	4/5/91-19/5/91	WSU
Dr. David Miller	Design Team Anthropologist	6/12/91-14/12/91	Contract - WSU
Dr. David Miller	Design Team Anthropologist	24/1/92-29/2/92	Contract - WSU
Mr. Lloyd Mitchell	Financial Management	13/7/91-4/8/91	Contract - M.Group
Mr. Lloyd Mitchell	Financial Management	8/1/92-10/2/92	Contract - M.Group
Dr. Jan Noel	Project Management	21/4/92-18/5/92	WSU
Dr. Jan Noel	Design Team PP Preparation	19/2/92-20/3/92	WSU
Ms. Kristen Rens	Design Team Privatization	8/1/92-15/1/92	Land O'Lakes
Dr. K. Shapiro	Design Team Lvstk. Mrkt.	23/1/92-8/2/92	UW/M

³ UW/M - University of Wisconsin/Madison
M.Group - The Mitchell Group, Inc.
WSU - Washington State University

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ANNEX E
" KIBARU " NEWSLETTER



K I B A R U

Newsletter of the Mali Livestock Sector Project - July 1991

A Unique Window of Opportunity

by Dick Cook

Yielding to popular pressure to institute a more representative national political process, the Government of the Republic of Mali changed on March 24, 1991. This change represents a fundamental commitment by the Malian people to move their nation towards a more democratic political process and to promote social and economic opportunities for a greater number of Malian citizens.

As events throughout the world have demonstrated during the past two years, the move from centrally controlled political systems to those which are more democratic and decentralized is a difficult and slow process. It is a process that requires governments to be both pragmatic in implementing necessary political and economic reforms while at the same time instituting measures that will minimize the traumatic social and economic consequences that such reforms often have on significant sectors of society. To be successful the reform process requires not only the political will of the government and people directly involved, but also the commitment and support of the international community.

Within this dynamic setting the GRM and the international donor community are developing strategies and options for putting Mali firmly on the road to sustainable economic development. It is an exciting time, where tremendous possibilities exist to examine and explore new ways of doing old things and of doing new things. It is a time of tremendous hope that will shortly be tempered with the realization that resources are still very scarce and providing equity for all in the development process will be practically impossible. It will be a difficult time, when scarce resources allocated to satisfy immediate needs and desires must be weighted against the necessity to allocate resources for programs that will ensure long-term, sustainable development.

In late April, during the early, euphoric stages of this transition period, Jan Noel and I visited Bamako. The

purpose of this visit was to begin program planning efforts for the consortium of U.S. universities and institutions which are supporting the Mali Livestock Sector Project. The visit provided an opportunity to assess first hand, and discuss with Project, Ministry and USAID staff, Project needs and priorities, and to get a sense and feeling of the "climate of change".

Although the civil unrest that preceded the change in government, and which continued sporadically during our visit, was somewhat unsettling, we were, without exception, impressed and even moved by the positive and constructive attitude of the people with whom we met and talked. Even in the face of limited civil disorder, there was a certain atmosphere of calm and order. People inside and outside of government all expressed their hope and determination that things had changed, and changed for the better.

For us it was an exciting time, and it will be an exciting and challenging time for all of us involved in supporting present and future development efforts for Mali, and more specifically for Mali's livestock sector. The change in government has brought the fusion of the Ministry of Agriculture and the Ministry of Livestock and (cont. pg. 2, col. 1))

Mali Selected As Secondary Site

Mali has been chosen as the secondary site in Africa for the Anaplasma-Babesia Vaccine II Project after consideration that involved several candidate countries. The selection criteria included location, capacity for research, problems with target diseases, interest in research collaboration and interest by faculty at Washington State University (WSU). A major consideration was that WSU already has another livestock development project in Mali and the university is interested in continuing its involvement.

Dr. Stephen Hines in the Department of Veterinary Microbiology and Pathology will take primary responsibility for coordinating WSU's involvement with Mali on the vaccine II project. Officials in Mali also expressed their interest in their selection and in continuing collaborative efforts with WSU. Dr. Boubacar Seck, Director General of the Central Veterinary Laboratory (CVL) and Dr. Ibrahim Diallo, principal investigator for the project in Mali were enthusiastic about their forthcoming participation in the project.

The project is moving ahead with plans for training a graduate scientist from the CVL and with efforts to expand research on hemoparasitic diseases in Mali. Mr. Issa Baradji, a scientist at the CVL, will begin his course work at WSU in the Fall of 1991. While at WSU Issa will complete his formal course work and develop his thesis research problem. Issa will undertake his thesis research at the CVL.

Submissions:

Collaborators wishing to submit brief articles and announcements can send typed copy to:

International Development Cooperation Office
221 Hulbert Hall
Washington State University
Pullman, WA 99164-6226; FAX: 509-335-2982

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Environment into a single ministry, the Ministry of Rural Development and Environment (MDRE). This change presents an opportunity to improve the integration, cooperation, and coordination of development activities for Mali's agricultural-livestock sector. The renewed interest and commitment of the GRM to forge an effective partnership with regional and local groups and organizations and to promote private sector development offer a unique opportunity for international development agencies to support new and creative initiatives that will meet the social, economic, and environmental needs of Mali.

This period of dynamic change has, and will continue to have, important practical and strategic implications for the present consolidation phase of the Livestock Sector Project, as well as for future design efforts. In operational terms, the on-going Project must be more proactive in assisting the MDRE identify opportunities to promote and increase economic impacts for beneficiary groups, while refining activities and programs that can be logically expanded in future design and implementation efforts. Strategically, the new development project for the sector must identify how continued efforts can capitalise upon the progress made to date to more effectively promote the livestock sector as a major vehicle to generate broad-based economic development and policy reform to meet evolving GRM priorities and needs.

Finally, we were encouraged and enthusiastic by the commitment and common agenda expressed by Project, MDRE, and USAID/Mali staff. It was clear from our visit that all our Malian partners are looking to their U.S. collaborators for support. We remain convinced that there is presently a window of opportunity to assist our Malian colleagues undertake sustainable efforts that will have an important, positive impact on Mali's future development.

Lloyd Travels to Bamako

Mr. Lloyd Mitchell, President of The Mitchell Group, Inc., will be undertaking a two-week TDY in Bamako for the Mali Livestock Sector Project beginning on or about July 12th. During his trip to Bamako, Lloyd will stop off in Abidjan to meet with staff in the Program Development Office of REDSO to discuss with USAID regional financial management program development needs. He will also meet with Mr. Fidele Sarassoro, an economist working for REDSO/WCA who has recently completed several studies focusing on livestock marketing in Mali, to explore potential issues for future design efforts.

Lloyd's primary focus during this TDY will be to work with Project and MDRE staff to strengthen financial management procedures, particularly reporting procedures, to make them a more effective management tool for national service divisions within the project as well as the Financial and Administrative Division of the Ministry. He will also undertake discussions with project, MDRE, AID/Mali, and others to begin identifying financial management issues which will need to be addressed in project design efforts. Since the new project may involve a wide spectrum of in-country collaborating entities, eg. PVOs, NGOs, private sector groups, etc., new financial and program management procedures will likely have to be developed.

Potential Links with MSU Program

During their recent TDY to Bamako Dick Cook and Jan Noel met briefly with John Staatz, Department of Agricultural Economics at Michigan State University (MSU), to discuss potential needs and opportunities for initiating a livestock market information program in Mali. Having extensive experience with MSU efforts to develop and implement a cereal's market information system in Mali, John will be an important resource during project design efforts when this, and other livestock marketing issues, will need to be addressed.

Planning To Start Now

Although there have been some delays in completion of the Project Identification Document (PID) for the new livestock sector project, it is likely that the Program Planning Meeting, to be held at WSU, will take place in mid-October.

Discussions with project, MDRE, and AID/Mali staff have indicated considerable support for this meeting and it appears that in addition to the two MDRE representatives programmed in our contract budget, additional representatives from Malian institutions will attend if additional financing can be secured. As discussed with our collaborating institutions, it is hoped that each institution will be able to send at least one representative.

The purpose of the meeting will be to identify programmatic needs and priorities which will focus design efforts for the new project. In addition, the meeting will provide an opportunity to meet both U.S. and Malian collaborators and begin a dialogue that will hopefully lead to long-term, collaborative relations among individuals, as well as their respective institutions. It is planned to have participants at WSU for 3-4 days. Although some time will be structured in a team building format, loosely structured events that will promote and facilitate individual exchange of ideas, needs, future activities, etc. will be emphasized. Provisions are also being made to provide an opportunity for MDRE and other visitors to visit collaborating U.S. institutions during their return to Mali. Collaborators are encouraged to forward suggestions to I.D.C.O., 221 Hulbert Hall, WSU.

Institutional Contacts:

WSU: Dick Cook / Jan Noel, Tel: 509-335-2980, FAX: 509-335-2982

UW-M: Jane Homan, Tel: 608-262-4874; FAX: 608-262-8852

The Mitchell Group, Inc.: Lloyd Mitchell, Tel: 202-745-1919, FAX: 202-243-16971

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TAMU: Linda Cleboski, Tel: 409-845-0706, FAX: 409-845-5663

Center for PVO / University Collaboration in Development: Phyllis Stiles, Tel: 704-227-7492; FAX: 704-227-7422

Land O'Lakes, Inc.: Martha Cashman, Tel: 612-481-2222, FAX: 612-481-2022



K I B A R U

Newsletter of the Mali Livestock Sector Project, Sept.' 91

An Historical Event Held in Bamako

During mid-August the Government of the Republic of Mali organized a five-day national conference on political reforms to identify procedures and policies for the constitution of political parties and the organization of presidential elections which are scheduled for January, 1992. The conference was chaired by the president of the Republic, Lt. Col. Amadou Toumani Touré, assisted by Mr. Soumana Sacko, the prime minister and head of the transitional government which took power on March 26, 1991. This conference provided an opportunity for Malians from all walks of life, both for those residing in Mali as well as those residing in countries from around the world, to come together, air their grievances and ideas and decide on an appropriate process for implementing the democratic reforms spelled out in Mali's new constitution. During the conference President Touré stated that he would leave the Office of President on January 20th to make way for his democratically elected civilian successor. Moreover, the President stated that any member of the military was welcome to participate in the political process, provided he/she was prepared to officially quit the military. The conference was a success, defining a general framework for the people of the Republic of Mali to begin the long process of democratization.

IER Designs New Research Project

Design efforts for a new USAID/Mali sponsored agricultural research project for the Institute of Rural Economy (IER) will formally begin in mid-September. The Strengthening Research Planning and Research On Commodities Project (SPARC) will support IER's efforts to restructure Mali's national agricultural research program to more effectively contribute to the economic development of Mali's agricultural-livestock sector. The purpose of the project will be to strengthen the capacity of IER to develop and disseminate sustainable, productive, and income-generating technologies for small farmer use. (p2, col. 1)

Submissions:

Collaborators wishing to submit brief articles and announcements can send typed copy to:

International Development Cooperation Office
221 Hulbert Hall
Washington State University
Pullman, WA 99164-6226; FAX: 509-335-2982

Program Planning Meeting for October

Efforts are underway to organize a program planning meeting for collaborators on the Mali Livestock Sector Project. This meeting will be held in Pullman, WA. It will provide an opportunity for all partners to begin a dialogue for mobilizing individual and institutional commitment to address the development needs of Mali's livestock sector and for building collaborative linkages between Malian and U.S. institutions. It is expected that the Ministry of Agriculture, Livestock, and Environment (MAEE) will be represented by Dr. Bocar Diallo, Director of Cabinet and Dr. Boubacar Seck, Director General of the Central Veterinary Laboratory. USAID/Mali will be represented by Mr. Doral Watts, ADO/Livestock Project Officer and Mr. Cheick Drame, ADO/Project Associate, Livestock Sector Project. It is hoped that representatives from all collaborating institutions will be able to attend the meeting which is scheduled for **October 20th through October 23rd., 1991**. Plans will be finalized within the next two weeks and institutional representatives will be contacted and provided with travel and meeting agenda information.

Improving Financial Management

Lloyd Mitchell recently completed a three-week TDY in Bamako. The objectives of his visit were to assess the overall operation of the project's financial management system and make recommendations to improve the effectiveness of the system as a management tool for the Ministry of Agriculture, Livestock, and Environment (MAEE). He also had discussions with MAEE and USAID/Mali staff concerning opportunities and strategies to strengthen financial management development efforts in the design of the new livestock sector project. The following summarizes his findings.

Considerable progress has been made in the management of funds for the Mali Livestock Sector Project over the past three years. To measure this progress and evaluate the financial management system in place, efforts have focused on identifying opportunities to improve existing policies and procedures at the Ministry (MAEE) and at individual national service divisions, in regards to their completeness, adequacy, and internal consistency. The new livestock sector project will involve adapting management procedures and technologies to the Malian environment. Tight monitoring and feedback mechanisms will need to be developed and built into the design of the new project (p.2., col.1)

((Michell p.1 col.2)) to help guide implementation. The following are recommended:

A. Policy Recommendations: (1) MAEE should more closely integrate MDST's project financial responsibility under the supervision of Administrative and Financial Division of the Ministry; (2) The GRM/MAEE needs to clarify the legal and administrative status of the Central Veterinary Laboratory (CVL); (3) The new accounting system being designed and implemented at the CVL should be reviewed in mid-1992 to determine its effectiveness and applicability for other projects in MAEE.

B. Programmatic Recommendations: (1) Communications need to improve within MAEE and between the Ministry and USAID/Mali; (2) Additional training is needed for MAEE accountants in financial management systems and procedures, and in the use of computers; (3) Procedures need to be improved for monitoring equipment and commodity purchases.

Prime Minister Visits Washington, D.C.

Because of Mali's critical economic situation, Mr. Soumana Sacko, the Prime Minister, visited Washington D.C. during the third week of July to discuss foreign aid needs with the Bush administration, as well as to negotiate modifications in the present conditionality of Mali's structural adjustment loans with the IMF and the World Bank. During his visit Sacko buttressed his appeal for aid by saying that under the new democratic government, Malians would be willing to accept the financial sacrifices necessary to move to a more free market economy and balance its national budget. Continued international support for the changes presently underway will be essential for the Malian people to continue efforts that will achieve real and sustained broad-based economic development for the country.

(SPARC - page 1, col.1)

U.S. institutional support for design efforts is being coordinated by Texas A & M University (TAMU), with support from the University of Wisconsin-Madison (UW-M), Michigan State University (MSU), Washington State University (WSU), Virginia State University, The Mitchell Group, Inc., Ciba Geigy, and INTSORMIL. Dr. Andrew Manu, Chief of Party for the TAMU TROPISOILS Niger Project, will be the coordinator of the design team which will include, in addition to numerous IER and USAID/Mali staff, Jim Bingen-MSU, Jerry Johnson-WSU, Mike Roth-UW-M, John Scheuring-Ciba Geigy, Barbara Cashion-TAMU, Lloyd Rooney-TAMU, Ed Runge-TAMU, and Tim Schilling-INTSORMIL. Design efforts are expected to be completed in mid-November to allow for finalization of the project paper by IER and USAID/Mali and implementation of the new project during the 1992 calendar year. It is hoped that design efforts will identify opportunities for developing collaboration between the SPARC project and the new livestock sector project, particularly since both projects will be addressing production constraints of beneficiary groups within Mali's agricultural-livestock sector.

TSM/PROSOILS Activities In Niger and Burkina Faso - An Opportunity for developing collaborative research linkages in Mali

The main purpose of the Technology for Soil and Moisture Management (TSM) project is to improve the economic and nutritional status of the poor and to protect and enhance the quality of the natural resources throughout the developing world. Within this context, the objectives of the TSM project are to assist developing countries and donor agencies in promoting the adoption of sustainable agricultural practices through the development of technologies aimed at overcoming soil moisture and fertility problems and at identifying strategies for increasing the productivity of dryland areas.

Washington State University's (WSU) contribution to the TSM project has examined economic issues related to soil and water management in dryland areas. WSU researchers have begun a collaborative research and training program with Burkina Faso's National Institute of Studies and Agronomic Research (INERA) and USAID's Agricultural Research and Training Project (ARTS). Efforts will focus on developing whole farm production models based on technological innovations developed by INERA and the ARTS project.

Another collaborative program is in the planning stages with Niger's National Institute of Agricultural Research (INRAN) and the TROPISOILS project. WSU researchers will work with host country and TROPISOILS staff to develop integrated models of agricultural production systems in the TROPISOILS project area using both individual and aggregate crop growth models.

These two collaborative research programs, involving staff from WSU and other TSM/PROSOIL participating institutions, could provide a basis for exploring opportunities to include Mali in a regional research network. For further information on these programs contact: Dr. Walt Butcher or Dr. Daniel Debye, Department of Agricultural Economics, Hulbert Hall, WSU, Pullman, WA 99164-6210.

Institutional Contacts:

WSU: Dick Cook / Jan Noel, Tel: 509-335-2980, FAX: 509-335-2982

UW-M: Jane Homan, Tel: 608-262-4874; FAX: 608-262-8852

The Mitchell Group, Inc.: Lloyd Mitchell, Tel: 202-745-1919, FAX: 202-243-16971

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Virginia State: Winfrey Clarke, Tel: 804-524-5613, FAX: 804-524-5638

TAMU: Linda Cleboski, Tel: 409-845-0706, FAX: 409-845-5663

Center for PVO / University Collaboration in Development: Phylis Stiles, Tel: 704-227-7492, FAX: 704-227-7422

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ANNEX F.1
ECONOMIC ANALYSIS

ANNEX F. 1 - ECONOMIC ANALYSIS
Dr. Peter Bloch

Introduction

It has long been recognized that Mali has a strong comparative advantage in all aspects of livestock production: meat, milk and hides and skins. Recognizing this, USAID has provided continuous support to the livestock sector for thirty years; the bulk of that support has been to improve animal health by financing vaccine production and the immunization delivery system of the DNE, along with significant but unevenly successful assistance to animal production research and extension.

It is generally agreed that the cattle vaccination campaigns have achieved a fairly sustainable level, and for the past decade there have been few outbreaks of the principal diseases and very low mortality rates. The national herd has returned to close to its pre-drought size. Thus cattle health status is no longer the principal constraint to productivity increases in the livestock sector (if it ever was). For small ruminants, the situation is similar in spite of a much smaller incidence of veterinary services. On the other hand, mortality in the first year of life is still high for both ruminants and poultry, causing low returns on investment in animals and constraining cross-breeding with exotic varieties. On balance, animal health remains a concern, but it is now one of many rather than the principal one.

Increased and more sustainable income generation in the livestock sector is constrained by a variety of institutional, social, ecological and economic factors. The principal economic constraints are the following:

a. Animal Productivity

- poor quality and great seasonality of animal feed resources;
- limited access of producers to known intensification technologies;
- non-economic pricing and distribution of animal health services.

b. Commercialization, Marketing and Export

- high transactions and transport costs;
- shortage of capital;
- inadequate market information.

The APEX project will attempt to address all of these, although to varying degrees.

A. Comprehensive Project Analysis

It is not possible to conduct a comprehensive ex ante cost-benefit analysis of the APEX project, for several reasons. First, because of the project's dependence on regionalized decisions on project interventions during the startup phase, outputs and the costs of achieving them are uncertain. Second, the likely diversity of project interventions and, therefore, of beneficiaries means that a summary net present value or internal rate of return would make little sense. Third, it is difficult to allocate some of the project's costs, especially long-term TA, among the various components. Fourth, the project's emphasis on allowing people to do new things -- locally manage natural resources, increase exports, become private veterinary service providers -- rather than providing them with specified inputs, technologies, or services, means that the anticipated benefit stream is remote from the actual project inputs. In other words, to take an example, supporting the passage of a law which permits villages to organize for better, more intensive natural resource management should create an environment in which people can respond positively and sustainably, but it is difficult to anticipate their response, at least

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quantitatively.

On the other hand, properly designed research and monitoring activities will provide the means to conduct valuable ex post economic analysis on many project elements which are unpredictable ex ante: how will improved marketing policy and infrastructure affect offtake and livestock sales values? how will decentralized, regionalized project planning influence the appropriateness and profitability of specific activities? how will the filière concept promote market efficiency? how will greater security of access to natural resources affect their sustainable use? APEX can, therefore, be an ideal laboratory in which to generate fact-based answers to questions which heretofore have usually had only axiomatic answers.

There is, however, one type of ex ante comprehensive analysis that can be useful: to ask the question, "how large would the project's benefits have to be in order to justify the project's costs?" This approach is not standard; usually costs and benefits are calculated independently, and their difference -- Net Cash Flow -- is discounted at an appropriate discount rate (generally between 10 and 15 per cent to reflect the opportunity cost of capital in developing countries). Here, we specify the costs, and then search iteratively for the benefit stream which results in an acceptable net present value and internal rate of return. In the next section, we present microeconomic cost-benefit analyses of the types of specific interventions the project is likely to attempt, and give an estimate of the magnitude of benefits they could generate under a variety of assumptions about scale.

Table A2-1 illustrates the method of what could be called "reverse" cost-benefit analysis. In the absence of a detailed project budget, total costs (estimated at \$18.8 million) are distributed equally throughout the six years of the project. The benefit stream shown in the table is entirely arbitrary, and is chosen to demonstrate the order of magnitude needed to make the project as economically profitable as the Livestock Sector II Project was predicted to be. Benefits are assumed to increase slowly during the project period, and to reach a plateau in the last year of the project. Note, by the way, that annual benefits never attain a value as high as annual project costs.

TABLE A2-1
"Reverse" Cost-Benefit Analysis:
Size of Benefit Stream Required to Justify Project Costs

YEAR	COSTS			Rest of Project	TOTAL	GROSS BENEFITS	NET CASH FLOW
	LTTA	STTA	Trng.				
0	500	217	100	2017	2833	0	-2833
1	525	228	300	1781	2833	500	-2333
2	551	239	300	1743	2833	1000	-1833
3	579	251	300	1704	2833	1500	-1333
4	608	263	200	1762	2833	2000	-833
5	319	277	100	2138	2833	2500	-333
6						2500	2500
7						2500	2500
8						2500	2500
9						2500	2500
10						2500	2500
11						2500	2500
12						2500	2500
13						2500	2500
14						2500	2500
15						2500	2500
16						2500	2500
17						2500	2500
18						2500	2500
19						2500	2500
20						2500	2500
TOTAL	1877	668	771	13683	17000	IRR	14.2%
						NPV@15%	-500
						NPV@10%	3559
						NPV@12%	1616
						BCR@15%	0.96
						BCR@10%	1.26
						BCR@12%	1.12

NOTES:

LTTA = long-term technical assistance @ \$250,000 py, inflation added.
STTA = short-term technical assistance @ \$250/da + travel, overhead
trng.= overseas degree and short-term training
rest of project = 1/6 of \$17 million less the above
IRR = internal rate of return
NPV = net present value of net cash flow @ given interest rate
BCR = benefit-cost ratio @ given interest rate

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At the end of the project, benefits attributable to project activities will have to reach a sustainable rate of about \$2.5 million per year if the project is to achieve the economic returns predicted for the Livestock Sector II Project. This apparently large number should be put in perspective by comparing it to various indicators of the scale of the targeted sector. Table A2-2 shows the magnitude of the target animal and human resources.

1. There are approximately 2.3 million head of cattle and 5 million small ruminants in the Project Zone (Regions I, II, IV and the District of Bamako); at a conversion ratio of 10:1, the small ruminants are equivalent to 500,000 head of cattle. Thus the total cattle equivalent is about 2.8 million head, about 45% of the national herd. The benefit stream required to justify the project economically amounts to less than \$1.00 per head.
2. Offtake in the Zone is approximately 300,000 head of cattle and 1.3 million small ruminants per year, for a total cattle equivalent of 428,000 head per year (representing over 50,000 tons of meat). Milk production is about 280,000 MT, of which only about one-half is available for human consumption. The total value of the Zone's meat and milk production is around \$171 million (not including poultry or hides and skins). Thus the benefits required to justify the APEX Project economically amount to about 1.5 per cent of the Zone's value of meat and milk production.
3. The Zone's human population is over 4 million, about half of Mali's population. The required benefits are therefore around 60 U.S. cents per capita.
4. The capital value of the Zone's cattle, sheep and goats is over 160 billion FCFA (\$600 million). The gross return on that capital from meat and milk alone is \$171 million, or 28.5 per cent; the net return, while lower because of labor and feed costs, taxes, etc. is still likely to be substantial (on the order of 20 per cent?) because of the low-input nature of most Malian livestock activities. Both the asset and the income stream are worth protecting; and \$2.5 million per year represents only 0.4 per cent of the asset value and 1.5 per cent of the gross return.

In comparison to the total target populations of humans and animals, the APEX Project is relatively insignificant, as is the benefit stream the project must generate. It is, of course, inconceivable that every human and every animal in the three Regions and the District will benefit during the life of the project. The most successful interventions in the Malian livestock sector, the annual vaccination campaigns, appear to reach fewer than half the cattle and a minor proportion of small ruminants, in spite of the clear and well-known advantages of this relatively inexpensive "maintenance". This is in part due to the very inadequate financial resources of the DNE, which must operate with a recurrent budget of only about \$500,000 per year, most of which is for salaries.

It is more likely that the project will affect a small proportion of participants in the livestock sector. If 10 per cent of the animal population or 10 per cent of the human population were to benefit from project interventions, all of the figures above would have to be multiplied by 10:

TABLE A2-2
The Scale of Animal and Resources in the Project Zone
around 1990

	HERD SIZE		OFFTAKE			1987 HUMAN POPULATION	
	Cattle ('000)	Small Ruminants ('000)	Cattle ('000)	Small Ruminants ('000)	Milk ('000 T)	('000)	
KAYES	774	1436	100.6	373.4	84.5	1067	
KOULIKORO	832	2173	108.2	565.0	92.5	1198	
SEGOU	672	1420	87.4	369.2	101.5	1340	
BAMAKO	9	7	1.2	1.8	2.7	653	
TOT. ZONE	2287	5036	297.3	1309.4	281.2	4258	
NATION	4826	12172	627.4	3164.7	899.9	8322	
ZONE %NATION	47.4%	41.4%	47.4%	41.4%	31.2%	51.2%	

	Cattle equivalent on the hoof		Offtake for meat			Total Value	
	number ('000)	value (10^6 F)	number ('000)	value (10^6 F)	Milk value (10^6 F)	FCFA (10^6)	US\$ (10^6)
KAYES	918	55056	138	10347	4225	14572	54
KOULIKORO	1049	62958	165	12349	4625	16974	63
SEGOU	814	48840	124	9321	5075	14396	53
BAMAKO	10	582	1	101	135	236	1
TOT. ZONE	2791	167436	428	32118	14060	46178	171
NATION	7260	435624	1260	94524	44995	139519	517

Assumptions

Conversion ratio small ruminants to cattle equiv.: 1:10 (13 kg vs 130 kg meat)*

Offtake rates: 13% for cattle, 26% for small ruminants, same in all regions.**

Value of cattle on the hoof: 60,000 FCFA/head, same for offtake.#

Value of milk: 100 FCFA/kg. (on the one-half that is consumed by humans)##

Exchange rate FCFA/\$US: 270

- * World Bank Livestock Sub-Sector Study, 10/31/90. The meat equivalent was chosen rather than the per-head price ratio, which is closer to 1:6. This therefore is, if anything, an underestimate of the contribution of small ruminants to the value of production.
- ** OMBEVI, average of 1989-1991 rates.
- # Conservative estimate based on recent sales prices of over 80,000 F for steers and 50,000 F for heifers.
- ## Conservative estimate of farmgate price (urban retail price is 250 F/liter).

- \$10.00 annual benefit per head of cattle equivalent (see #1);
- 15 per cent of the annual value of production (see #2);
- \$6.00 per beneficiary person per year (see #3);
- 4 per cent of asset value (see #4).

These numbers are no longer insignificant. They illustrate the challenge facing the implementers of APEX: can the project really affect to that degree about 250,000 animals on the hoof of which offtake is 40,000, or 400,000 people? can it provide greater average benefits to an even smaller proportion of the herd and the population? or can it affect even larger numbers? To address these questions, the next section assesses the economics of a range of probable project activities.

B. Which APEX Activities are Economically Promising?

Because of Mali's comparative advantage in livestock production, there are a great number of attractive interventions which APEX can undertake. Previous projects and research programs in Mali and elsewhere in the region have identified a range of animal and forage production techniques and community resource management strategies that are technologically and financially feasible. On the other hand, some previous sector interventions were technically and financially attractive to the individual participants, but failed for institutional reasons. The most notable example was the embouche bovine et ovine program under APEX's predecessor project, where difficulties with the credit program (low reimbursement rates, for a variety of reasons) made the program's sustainability impossible. Thus ideas which should work often do not. APEX's task is to ensure the adoption of those techniques and strategies that make socioeconomic sense to participants, and that have the necessary institutional support.

Some of the more promising project interventions are:

1. Embouche

Here, farmers and herders are intertemporal arbitrageurs who buy undernourished cattle at low prices after the dry season begins, and feed the animals until the end of the dry season, when prices are significantly higher. Average net returns in the last years of the USAID-financed program were about 20,000 FCFA per steer and 10,000 FCFA per sheep, with economic rates of return of over 20 per cent. Alternatively, farmers can feed traction oxen for two to five months before the growing season, to increase their plowing capacity and therefore plant either more area to crops or -- more sustainably -- plowing more quickly to improve the timing of planting.

Individual profitability is practically certain (as the economic analysis of the previous project also showed), but credit and reliable feed supplies are the problems to be solved. The previous project's embouche program failed because of low rates of credit reimbursement, partly because relatives of government officials were among the principal beneficiaries of the program. A credit program modeled, at least in part, on the CLUSA approach in the OHV zone -- to arrange lines of credit to village associations through the formal banking system with gradually diminishing government guarantees -- may solve the credit problem. The APEX project Economist should work with the banks to broaden village associations' access to formal credit, and with CLUSA or other NGOs to ensure sound financial management of the associations.

Forage supplies will inevitably have to be locally-grown to a great extent; the demand for industrial byproducts such as Huicoma's cottonseed cake already greatly exceeds the supply (although at an official price which is doubtless much below the market price). Urea, which must be imported, apparently does not suffer the same supply constraint. Table A2-3 shows two possible embouche programs: one for draft animals for 60 days, and one for dry-season meat animal fattening over 5 months. The annual rate of return is substantial just on the basis of the increased meat value -- i.e. excluding the likelihood that without the feeding the animals would have lost weight as well as the fact that

prices are higher at the time of sale.

TABLE A2-3
Illustration of the Economics of Embouche
example: Urea-enriched straw
(Cost per kg: 34 FCFA)*

Rate of	Weight	no. of	feeding		Meat
<u>Return/yr</u>	<u>gain (kg)</u>	<u>days</u>	<u>rate</u>	<u>Cost</u>	<u>Value</u>
Draft animals 106.3%	11.7	63	3 kg/da	6426	7605
Meat animals 65.8%	30	150	3 kg/da	15300	19500

* including labor involved in gathering straw, and labor and materials for constructing pit silos.

Source: CRZ Sotuba 3/90

The previous project's on-farm success depended on a reliable source of feed supplements made available at low prices to livestock owners; this is unlikely to be possible under APEX because the supply of Huicoma and other feeds has not risen as fast as private demand. Thus the success of an embouche program will depend on the success of a natural-resource management program such as improved fallow using forage legumes (see below).

Potential returns from stall feeding are extremely high, so that it would not take a very large program to yield a substantial share of the benefit stream that APEX requires. Assuming that 3,000 steers were fattened annually, a level reached by the previous project, the net returns would be 60 million FCFA, or about \$220,000. 5,000 sheep would yield another 50 million, or \$180,000. When draft animals are added, the total could approach \$500,000, or 20 per cent of the required benefit stream.

2. Mortality reduction in young animals

Calf mortality has been estimated to be between 15 and 30 per cent before age one; between 70,000 and 140,000 calves die each year in the Project Zone. Lamb and kid mortality is about 30 per cent, representing perhaps 450,000 deaths per year in the Zone. 30 per cent of chicks, over one million per year in the Zone, die because of Newcastle disease, and an infected flock can be wiped out overnight. Inexpensive vaccines and pharmaceuticals are available which could virtually eliminate Newcastle victims and drastically reduce ruminant mortality and morbidity. The CVL program to be supported by APEX will enable the production of a greater variety of vaccines, including Newcastle vaccine, and improved animal health delivery services will make them more widely available.

Table A2-4 shows that the annual economic benefits from reducing young animal mortality by one percentage point in the Project Zone (i.e. from 30 to 29 per cent for small ruminants), would amount to:

- about \$200,000 for poultry;
- about \$130,000 for sheep and goats; and
- about \$200,000 for cattle.

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**TABLE A2-4
Gains from Livestock Mortality Reduction In Young Stock**

Assumptions	Poultry	Sheep & Goats	Cattle
Mortality Rate	20%	30%	15%
Number of animals 0-12 months of age dying annually in APEX project zone	1,320,000	377,000	45,740
Net Present Value of saving one animal*	1 216 FCFA	2 865 FCFA	13 275 FCFA
Conclusions:			
Value of reduction of mortality by one percentage point in the project zone	\$ 198,196	\$ 133,587	\$ 112,441
<p>* Calculated as the NPV of bringing an animal from birth to slaughter age (1 year for poultry, 2 years for sheep and goats, 6 years for cattle), including animal health, modest feed and labor costs. The relatively high NPV for poultry is explained by the large number of eggs laid by hens; these are valued at 20 FCFA each, as compared to a market price of 50 FCFA.</p>			

Thus an exceedingly modest APEX impact in animal health, the reduction of mortality of animals between birth and age one by one percentage point, could yield another \$400,000 in annual benefits.

3. On-farm natural resource management

As detailed in the Natural Resource Annex, there is huge scope for improved on-farm resource management practices in the Project Zone. Leguminous forage production on fallow land can not only increase digestible biomass and nutrient availability, but also enhance the regeneration of the land for crop production as well as protecting against erosion. The modest, but purely illustrative, quantitative assumptions on which the Natural Resource intervention analysis is based show that if about 3,000 farmers successfully introduce dolique, stylosanthes or some other annual or perennial forage crop on their fallow land, benefits could reach several hundred million FCFA by the end of the project, and continue to grow thereafter via spread effects. Because the analysis in the Natural Resource Annex is complex and comprehensive, there is no point in restating it here. Suffice it to say that the economics of most classic on-farm natural resource interventions are very favorable.

There are several important considerations, however. First, most of the benefits are not "final" but rather are derived from the production of inputs to meat, milk and crop production. Some of these have already been counted in a., above. Second, land tenure issues, both between and within families, may become more important and intractable as fallow are eliminated from the

community's "land bank," available for grazing year round and for population expansion. Third, there is a risk of unknown magnitude that increased year-round forage availability will generate the perverse effect of increasing resident cattle numbers even more quickly, so that the feed situation deteriorates. Finally, all of the interventions require farmer investment in both inputs and labor; this means that in the first year (or more for perennials), net farmer disposable income will likely be lower than it would have been without the intervention. Since farmers are risk-averse -- as the Natural Resource Annex recognizes by applying a 40 per cent discount rate to its benefit-cost analysis -- the future benefits will have to be very obvious and very large to induce them to reduce current consumption. Furthermore, farmers with insecure tenure will be even less likely to forego current income for the promise of future income which might accrue to someone else.

APEX will clearly have to take these considerations into account. On balance, however, the economic arguments for on-farm natural resource management are so compelling that it is very likely to be a major component of the project's realized benefit stream. An income increase of \$1 million per year, or 40 per cent, is not an unreasonable projection.

4. Export marketing

Mali's past narrow and passive focus on the export of cattle to Côte d'Ivoire, combined with that country's severe economic difficulties, has contributed to "export pessimism." As the Technical Analysis shows, however, the pessimism is valid for at most a few years, after which coastal population growth and the probably drop in competitors' supply capacity will combine to keep that market buoyant. There are reasons, therefore, for APEX to devote project resources to increasing the efficiency of that marketing chain.

This is especially true because there exists some scope for reduction of marketing costs. The biggest item, transport costs, represents about half of all marketing costs (Row C. in Table A2-5), and is probably not very compressible. But informal taxes and quasi-official taxes (see AMIS for definitions) together account for about 20 per cent of marketing costs and, as Table A2-5, rows I.-K. shows, from the trader's point of view they represent a huge percentage of his net return. Even taking only the Malian informal taxes (row G.) as possible targets for elimination, traders would increase their net return by 20-30%. Overall, the elimination of 1300 FCFA/head of informal taxes would imply a transfer of income from government officials to traders of over 234 million FCFA, or nearly \$1 million, at recent rates of export of 180,000 head from Mali to Côte d'Ivoire. While these cannot be considered to be net economic benefits, but only a transfer, they do increase the incomes of people in the livestock sector.

TABLE A2-5
"Tracasseries Administratives"
in Marketing Cattle to Abidjan
(FCFA/head)

	II/1991		IV/1989	1976-77
	Segou	Douga-boulou	Kolokani	Koutiala
A. Purchase Price	84565	62500	86770	43500
B. Total Marketing Costs	21187	22600	30423	11655
<u>Of which:</u>				
C. Transport Costs	11586	11909	14436	4375
D. Official Costs	2740	2510	7703	4980
E. Quasi-Official Taxes	2071	2106	385	0
F. Informal Taxes	2786	2903	6936	50
G. of which in Mali	1300	1418	1756	?
H. Net return at final sale	4248	6567	12615	5838

<u>Tracasseries as % net return</u>				
I. (F./H.)	65.6%	44.2%	55.0%	0.9%
J. (E.+F.)/H.	114.3%	76.3%	58.0%	0.9%
K. (G./H.)	30.6%	21.6%	13.9%	?

Source: AMIS 1991

There are also other markets, as most studies have pointed out but to which no attention has been paid either by the government or by economic analysis. APEX could make one of its biggest contributions by working on the identification of other markets, especially small ruminants for the Tabaski season and to North Africa and Saudi Arabia year-round. Import substitution, which has the same effect on the trade balance as export expansion, appears to be economically profitable for eggs and, if dumping of powdered milk diminishes, for milk.

It is very difficult to estimate the potential benefits from export expansion. It is possible that producers and traders will gain because of higher volume (if supply is elastic) or higher prices (if it is less so). But in the latter case existing, lower-priced markets may receive fewer animals, so that only the change in price counts.

Let us take just one example. The existing market for Tabaski sheep exports to Senegal from the Kayes region (and probably further: there were Senegalese buyers in Niger last year) is on the order of 35,000 animals, at premium prices. This could surely be expanded. If only 10,000 more were added through APEX-supported export promotion -- licensing facilities, market information and structures, transport policy and so on -- that would mean an additional export revenue of \$500,000 at a very conservative estimate of \$50 (13,500 CFA) per head. On that scale, there would probably be little effect on local-market prices, especially if animals were mobilized from many markets. Furthermore, the extensive, low-input nature of small ruminant production means that virtually all of that revenue is national value added, i.e. beneficiary income. While the market is seasonal, the season changes every year since Tabaski is set by the shorter Muslim year; some years could be more problematic than others.

5. Other Activities

With only four project elements, we have developed a portfolio of investments which add up to the requisite \$2.5 million in annual, sustainable benefits (plus perhaps \$1 million of additional trader income due to the elimination of informal export taxes). APEX will, of course, do much more. For example, the hides and skins market has some promise; quality control and private-sector partnerships -- possibly with U.S. firms -- could generate significant benefits from the 300,000 hides and 2 million skins produced per year. "Semi-privatization" of the CVL will enable CVL to take advantage of real, tangible export opportunities to neighboring countries. Forage seed and agroforestry seedling production can provide large amounts of value added. Improvements in security of access to natural resources, including land, may induce agropastoralists to invest in maintenance and improvement of the resources they use.

C. The APEX Approach: Monitorable Filières

Typically, economic analysis deals with either the economics of production or the economics of marketing, but not both simultaneously. The advantage of APEX's filière approach is that one can identify the benefits (and the beneficiaries) of project interventions throughout the chain, from the birth of an animal to the final sale or even consumption of its products. Thus, for example, the benefits from the reduction of first-year mortality, due either to veterinary health or nutritional improvements, may accrue not only to the animal's owner and her or his family, but also to the government (through taxation), to veterinarians and the CVL (through increased demand for their services), to various

intermediaries in the marketing chain, and to final consumers. Similarly, greater marketing efficiency may increase incomes not only of traders, but also of producers and processors, and consumers may benefit through lower prices.

Here we trace the flow of incomes and costs for two of the important filières: the Bamako market for beef, and the market for cattle export to Abidjan. The data for the other filières, reflecting the cattle bias of previous livestock work, is too rough to justify formal analysis Table A2-6 shows a simplified version of the Bamako beef market filière, with some of the basic assumptions. At the top of the filière, standard production economics indicates the annual costs incurred by the owner of the animal from birth to sale at the age of 6. These costs are incomes to other agents: the herder who cares for the animal (who may be the same person as the owner), the government through taxation, and the providers of veterinary services. This particular formulation assumes that

Table A2-6
Bamako Beef Market Filière
(data from AMIS 1990)

Case of Herder/Extensive Grazing

	Year	Costs	Returns	NCF
	0	3125	0	-3125
	1	5550	0	-5550
0-1 Mortality	2	5550	0	-5550
Health Cost/yr	3	5550	0	-5550
Herder W/yr/head	4	5550	0	-5550
Sale @ 6 yr	5	5550	0	-5550
Manure value	6	0	48000	48000
Tax/yr.				
	NPV	23132	24318	1187
			IRR =	13.6%

SHARE GOING TO:	Nominal Margin	NPV @ 12%	Share of NPV	Marketing Margin
Owner		1187	2.4%	--
Government		921	1.8%	--
Vets		2302	4.6%	--
Herder Labor		19908	39.8%	--
			<u>subtotal</u>	48.6%
(Ranchgate price)	48000			
Collection Market	7000	3546	7.1%	14.6%
(Terminal Market price)	55000			
Regional Market	10000	5066	10.1%	18.2%
(Regional Market price)	65000			
Terminal Market	14000	7093	14.2%	21.5%
(Terminal Market price)	79000			
Butcher/Meat Market	7000	3546	7.1%	8.9%
(Butcher/Meat Market Price)	86000			
Retail Market	12670	6419	12.8%	14.7%
(Retail Price)	98670			
			<u>subtotal</u>	51.4%
TOTAL VALUE	98670	49989	100.0%	

the animal's feed is entirely composed of freely available natural pasture -- probably the case for most

Malian animals; it could easily be modified to include forage production and/or purchase of marketed feed supplements. It also does not include mortality, or the possibility of purchasing the animal rather than acquiring it from the owner's herd; these too are easily added. Finally, it does not include the benefits from the animal's manure or hide: all this would have to be taken into account in a more complete analysis at the monitoring stage.

The result of the production process is that the owner, in spite of rather large annual costs (most of which are herding labor), receives an annual rate of return (IRR) of 13 per cent on his investment in the animal. As the bottom half of the table shows, the animal is then sold at the "ranchgate" to a buyer who takes it to a collection market; it then is resold on the hoof several times. Note that because the animal's original owner incurs costs over six years, but all of the marketing activities occur within the sixth year, all the nominal values must be discounted back to the animal's year of birth. The shares of total NPV of the animal are shown; in this calculation the owner receives only 2.4 per cent of it, but probably much of the herder labor charges are for family labor. The participants in the marketing chain receive over half the value added, and -- according to the AMIS data -- have substantial gross marketing margins. As with the production part of the filière, the marketing chain represented here is simplified and based on fixed coefficients. It could, however, easily be "parameterized," using supply and demand elasticities once these are known to predict the effects of changes in marketing and production costs on marketing margins.

A similar exercise is conducted for the Abidjan live-cattle filière in Table A2-7. Both Table A2-6 and Table A2-7 are based on AMIS data for the marketing side. Because the Kulibaba-Holtzman-Stathacos study does not give details on market margins upstream from the terminal market, we have applied the same margins as the 1990 study did at the regional and collection markets. The result is remarkably similar: the producer, the herder and the other beneficiaries of the production stage receive virtually the same returns on animals for the Bamako beef market and those for export.

Construction of similar tables for the other filières, and improvements in the data for all filières, should be a major component of the project monitoring duties of the project Economist.

1/0-

TABLE A2-7
Abidjan male cattle filière
(Marketing data from AMIS 1991: II/91 ave.)

			Year	Costs	Returns	NCF
			0	3125	0	-3125
0-1	Mortality	0.2	1	5550	0	-5550
	Health	500	2	5550	0	-5550
	Herder	4850	3	5550	0	-5550
	Tax/yr	200	4	5550	0	-5550
	Manure	0	5	5550	0	-5550
			6	0	47899	47899
			NPV	23132	24267	1136
					IRR =	13.5%

SHARE GOING TO:	Market Price	Nominal Margin	NPV	Share	Market Margin
Owner			1136	2.2%	--
Government			921	1.8%	--
Vets			2302	4.5%	--
Herder Labor			19908	39.0%	--
(Ranchgate price)	47899				
Collection Market		6985	3539	6.9%	14.6%
(Collection Market price)	54884				
Regional Market		9979	5056	9.9%	18.2%
(Regional Market price)	64863				
Terminal Market		13970	7078	13.9%	21.5%
(Terminal Market price)	78834				
Buyer		1229	622	1.2%	
Trader		4908	2486	4.9%	
Trekker		500	253	0.5%	
Government (official taxes)		2600	1317	2.6%	
Other Intermediaries (inc Transport)		12764	6467	12.7%	
TOTAL VALUE		100834	51085	100.0%	

ANNEX F.2
MARKETS AND MARKETING

ANNEX F. 2 - MARKET DEMAND AND COMMERCIALIZATION

Dr. Ken Shapiro, Dr. Larry Herman and Mr. Abou Doumbia

The APEX project design is guided by the following assumptions about the coming two decades:

1. West African demand for animal products will continue to grow, and in 10 and 20 years it will be much greater than it is today. Population is increasing rapidly. Income may be stagnant or falling in some countries now, but only the most pessimistic projections would indicate a complete regional decline for the next two decades. Structural adjustment, liberalization, democratization, and privatization are expected to cause short term problems but yield long term benefits. (That is certainly the premise behind World Bank and AID strategies.) It is of course impossible to predict precisely the nature and location of this greater demand, nor can one fully anticipate the competition Mali will face in satisfying it. However, that does not justify inaction. The inevitable growth in West African demand for meat represents an important opportunity for Mali to increase income and foreign exchange earnings over the next two decades. The APEX project can enhance the ability of producers and traders to take advantage of that opportunity.
2. There will be much greater pressure on the natural resource base. Malians will have to cultivate more land with shorter fallow to feed their own larger population and to generate more income. Land use conflicts will increase between herders and farmers and between livestock and crop enterprises in the same farms or villages. The areas now in production will be in greater danger of degradation, and cultivation may be extended with very damaging results. At present, many farmers are able to intensify their operations in an ecologically sound manner by integrating livestock and cropping. However, the greater population pressure of the future requires research and adjustment now to improve current agricultural systems -- to preserve the resource base and to permit greater, more efficient production of livestock (and crops) to take advantage of future increases in demand.
3. There is unlikely to be much change in two basic conditions -- the importance of agriculture (crops and livestock) to the national economy, and the fluctuating environment (physical, economic, and political) in which agriculture must operate and thrive. Thus Mali must continue to pursue an agriculturally-based strategy, but that strategy must build in greater flexibility.

This Technical Analysis has two sections: (1) markets and marketing; and (2) resource management and productivity.

I. MARKETS AND MARKETING

"The expected rapid urban population and income growth in Cote d'Ivoire, Ghana, and Guinea is expected to give rise to vigorous meat demand."

While this pronouncement might be questioned today, it was the best judgement of World Bank economists only 15 months ago when it appeared in the Bank's Mali Livestock Subsector Review (p.16). The rapidly changing fortunes of African economies are well known. They are extremely susceptible to variations in weather, global economics, commodity prices, western agricultural policies, donor strategies, and domestic politics. Countries involved in intra-African regional trade (and donors wishing to promote it) must develop policies, programs, and projects that take account of this reality. Long run investments must be guided by long run prospects, not by short run fluctuations. What then is the market situation facing Mali's livestock sector?

This section attempts to answer that question by considering the following:

- A. Malian animal exports and the demand for meat in coastal West Africa**
- B. Competition from coastal production and other exporters**
- C. Availability of Malian export animals**
- D. Constraints to export and domestic marketing**

A. MALIAN ANIMAL EXPORTS AND THE DEMAND FOR MEAT IN COASTAL WEST AFRICA

1. Historical Patterns

Malian livestock exports have undergone very large changes in quantity and destination over the last 20 to 30 years. Table 1 shows estimates of total cattle exports going from 220,000 head in 1972, down to 102,000 in 1977, up to 300,000 in 1983, and then down to 185,000 in 1990. Estimates of small ruminant exports (perhaps one-third the value of cattle exports) went from 280,000 head in 1977 to 134,000 in 1978, up to 537,000 in 1982, and then stayed between 480,000 and 390,000 through 1990 (OMBEVI). During the 1960s, Ghana was the main export market for Malian livestock, but by the mid-1970s only negligible amounts were going there and more than two-thirds were going to Ivory Coast. In the latter 1980s, the Ivoirian market received over 90% of Malian cattle exports.

These fluctuations had various causes:

- the rise of inefficient state importing mechanisms and the decline of purchasing power in Ghana;
- the long run rise and recent decline of purchasing power in Ivory Coast;
- the Sahelian droughts of the 1970s and 1980s (resulting first in greater exports as herders destock and then lower exports as they rebuild their herds);
- the surplus of world beef in the mid-1970s (filling the gap left by lower Sahelian exports after the drought); and
- the dumping of European meat in the latter 1980s (undercutting the price of Sahelian meat).

Tables 3 - 8 show total meat and fish supply for the all important Ivoirian market from 1980 to 1990. Fish accounts for about two-thirds of combined meat and fish consumption, beef for about 20%, and poultry, pork, and small ruminants account for the remainder. Mali is the Ivory Coast's most important source of cattle imports, with Burkina Faso second, as shown in Table 9.

The recent European dumping can be seen in Tables 3, 4, and 7. Total meat and offal imports, almost all from Europe, skyrocketed from about 12,000 tons in 1984 to almost 60,000 in 1988 (Table 3). The effect on Sahelian cattle exports is striking. They fell from almost 40,000 tons (of carcass and offal equivalent) in 1985 to less than 23,000 in 1988 (Table 4). Sahelian cattle imports accounted for two-thirds of Ivoirian beef in the 1970s and early 1980s, but only about one third by the late 1980s. On a smaller scale, Table 7 shows dumped poultry meat jumping from about 5% of all poultry supply in 1985 to 25% in 1989, mainly at the expense of domestic Ivoirian production.

2. Current Situation

Ivory Coast continues to be the main destination for Malian livestock exports, and hence this section

focuses on that market. The next section, on future prospects, expands the discussion to other countries.

There are two major issues regarding the Ivoirian market -- protection against European dumping and declining purchasing power. Ivory Coast imposed a ban on poultry imports in mid-1989 to protect its own poultry industry. In January, 1991, Ivory Coast imposed a countervailing levy against beef imports to protect its own cattle industry, but that also protects Sahelian exporters of live animals, i.e., Mali and Burkina Faso.

The countervailing levy has fallen primarily on CAPA, the deboned frozen meat with 10% to 30% fat content. The levy is 200 CFA/kg. For CAPA with relatively low fat, about 10% to 15%, the levy has meant an increase of price from 325 CFA to 525 CFA per kilo, or 68%. For higher (25% - 30%) fat CAPA the increase has been from 169 to 369 CFA/kg, or 118% (USAID and World Bank, "Liberalizing Regional Markets for Livestock Products: An Action Plan for the Mali, Burkina and Cote d'Ivoire Corridor," October, 1991, p. 59). No levy is applied to hindquarter imports, which sell for about 600 CFA/kg, considerably below Sahelian beef, which sells for about 800.

CAPA imports have fallen to negligible levels as a result of the countervailing levy. This has mainly affected low income consumers, who had been able to increase their animal protein consumption with cheap CAPA since the mid-1980s. They are shifting to fish, which sells for about 300 CFA/kg. They are unlikely to shift to the much higher priced Sahelian beef in the foreseeable future.

"Given price levels of West African red meat (800 - 1000 CFA per kilo) and poultry (800 CFA per kilo), consumption is likely restricted to middle and upper income Ivoirians (and expatriates) who can afford higher prices for animal protein." (Ibid., p.61).

Despite this, the USAID/World Bank Action Plan expects that,

"effective implementation of the countervailing duty should have positive welfare effects on livestock producers in Cote d'Ivoire and the Sahel, especially in the long term, depending on the efficiency of internal marketing channels. ... The magnitude of welfare effects depends on cross price elasticities of demand between costly domestic and Sahelian livestock products and cheaper imported meat of non-African origin" (Ibid.)

Good estimates of those cross price elasticities are not available.

In addition to the dumping issue, Malian exports have also been affected by the weak Ivoirian economy. From independence to the mid-1970s, the Ivory Coast's real GNP grew at an average rate of 7.7% per year. In 1975 - 1977 there was a boom in the prices of coffee and cocoa, the economy's mainstays. Following this boom, the country undertook a massive public investment program. But then coffee and cocoa prices fell and import prices rose. The government obtained large foreign loans to maintain the investment program. By 1980 there were major problems with foreign debt and balance of payments. In 1981 Ivory Coast, with assistance from the IMF and World Bank, initiated a structural adjustment program to deal with these problems. But by 1990 conditions had hardly improved. The government was thus forced to make "draconian" cuts in public expenditures, and it will have to continue its adjustment program at least for the medium term. The World Bank expects that this will cause a further reduction of 30% in consumption per person between 1990 and 1994 on top of the 13% decline from 1987 to 1990. If this harsh program succeeds, the Bank expects that the Ivoirian economy could start to grow at 4% per year in 1996 (World Bank, *Republique de Cote d'Ivoire Revue du Secteur de l'Elevage*, Vol. I, 1991, pp. 1-2).

Table 10 shows how Ivoirian per capita consumption of meat and fish have fared from 1975 to 1990.

There was an increase in meat and offal consumption from 10.5 kg/cap in 1975 to 13.2 in 1988. This 1988 peak coincides with the peak of non-African meat imports, i.e., the European dumping. Consumption of meat and offal then declined to 10.0 kg/cap in 1990. (The drop in fish consumption from 1980 (20.9 kg/cap) to 1987 and 1988 (14.2 and 15.6) and then its rebound in 1989 and 1990 (19.6 and 19.2) seems to support the above hypothesis about substitution between fish and CAPA). Table 11 shows total consumption from 1980 to 1989.

3. Projections and New Markets

Detailed assessments of the future of the Ivoirian market and of potential new markets are significant undertakings that APEX will help support. For the purposes of the Project Paper, this Technical Analysis Annex is limited to reviewing the broad picture and comparing several existing projections.

In general terms, demand depends on population and income. The following formula, though simple, captures the dynamics of the situation:

$$\% \text{ Change in } D = (\% \text{ Change in Population}) + (\% \text{ Change in Income}) \times N$$
where D is quantity demanded ("demand") and N is the % change in the quantity that consumers buy (demand) when they experience a 1% change in their income, i.e., $N = \text{income elasticity of demand} = (\% \text{ Change of Demand}) \text{ divided by } (\% \text{ Change of Income})$. For meat, the income elasticity of demand is typically over 1.0 in developing Africa. In projections discussed below, the World Bank uses elasticities from 0.8 to 1.2.

With this framework, one must then ask what the prospects are for population and income growth for the next 10 to 20 years in West Africa. Tables 12 and 13 assemble some indicative figures. They show very rapid population growth (above 3% per year) for the next decade and beyond, and they show very weak income growth, or declines, from 1965 to 1989.

If income per capita in Ivory Coast and in potential markets is the same in 2002 as it is today, demand for meat would still be more than 30% higher. If Ivory Coast really does turn the corner by 1996, as discussed above, and if Ghana and Guinea improve significantly, demand may be much higher. Beyond 2002, population growth will still be high, and if current structural adjustment programs do have the advertised long term payoff, then demand for meat in West Africa will grow very rapidly. In sum, the long term demand prospects for a preferred food like meat are quite good in developing areas like West Africa. Demand for imported meat and animals may grow even more rapidly if, as expected, more economies open up and more currencies become convertible.

For the shorter term, both the World Bank and the African Development Bank have projected Ivoirian demand for meat. Tables 14 and 15 summarize their findings. For the year 2000, the African Development Bank's high, medium, and low scenarios project total demand for meat and offal at 190,000 tons, 140,500, and 120,000, respectively. This compares with 1990 consumption of 117,300. The difference among the scenarios is the assumed annual growth rate of consumption per capita -- +1%, -2%, and -3%. Thus the high case winds up with per capita meat consumption of 11.0 kg. The pessimism in all these scenarios is clear since the high case projects lower per capita consumption than was true throughout the 1980s until the sharp contraction from 13.2 in 1988 to 10.2 in 1989 (see Table 10). The medium and low scenarios assume even lower levels, down to 8.2 and 7.0, respectively.

The World Bank offers high and low projections to 1997. These come out to be 106,704 and 86,240, respectively. This compares with the African Development Bank's 1997 projection (by interpolation) of 164,600, 133,100, and 119,500. The Bank's two cases are driven by different income elasticities of demand applied to income projections ($N = 1.2\%$ for the low case and 0.8% for the high case -- the

higher the income elasticity, the sharper demand will fall as income falls). It is of course striking that the African Development Bank's lowest projection is 12% above the World Bank's high projection, and that its highest projection is 55% greater than the World Bank's high.

Two factors are at play here, and they show how sensitive these exercises are to seemingly slight differences, i.e., differences that are probably within the margin of error of surveys on which the estimates of variables are made. First, the African Development Bank estimates population growth at 3.9% while the World Bank uses 3.5%. Note that still a third estimate, 3.8%, appears in the World Bank's Annual Development Report for 1991, as shown in Table 12. Second, the two sets of projections estimate future per capita consumption with different methods and from different initial conditions. As a result, the World Bank estimates 1997 per capita consumption at 7.3 and 5.9 kg in its two cases, while the African Development Bank gets 10.7, 8.7, and 7.8 in its three.

While accurate projections of meat demand in Ivory Coast may not be possible, it is clear that short term demand will be affected by low world prices for coffee and cocoa, and by consequent national economic problems and the strong measures taken to resolve them. The African Development Bank's scenarios do not show any decline in total meat consumption, just lower per capita consumption and slower growth; while the World Bank's scenarios show declines to 1995 and then a recurrence of growth by 1996. The world market picture for coffee remains bleak, with prices 75% their 1977 peak. However, cocoa futures prices, which had fallen even further and are still also 75% below their 1977 peak, surged up about 50% since this summer to \$1,245 per metric ton (International Herald Tribune, January 25-26, p.14). Further complicating the picture is the Ivorian political situation. In the 1970s, the stable political environment helped attract foreign investment. Just the opposite has been true for some years now. If Boigny retires or dies in office in the next few years, that may lead to greater instability or it may clarify and stabilize the situation.

The above discussions make it clear that meat demand is subject to frequent fluctuations and that the short term future is hard to predict. For the purposes of planning APEX, one should look to the longer term. As discussed above, meat is likely to experience much greater demand in the medium to long run as population continues to grow and as West African economies and citizens start reaping the expected benefits of structural adjustment programs.

One thing that APEX will do to strengthen Malian export prospects is to facilitate the search for new markets. As shown in Table 12, most of the coastal countries have population growth rates above 3.0% per year. Expectations for the economic performance of some of those countries are more optimistic than in decades past. Ghana is a case in point. GNP per capita has been growing faster than 2% per year since 1984 and is expected to continue to do so. While a first, rapid study did not indicate strong import demand for meat in the short term (see Josserand, 1991), surely this once strong market warrants further study. Similarly, the Senegalese market for small ruminants must be considered. APEX will develop a more complete set of potentials that call for analysis, and the project will sponsor a variety of activities to pursue them, e.g., economic studies, trips by traders, liaison with butchers in coastal cities, and so forth.

B. COMPETITION FROM COASTAL PRODUCTION AND FROM OTHER EXPORTERS

The Ivory Coast has been attempting to expand its meat production for at least a decade, and new projects are being proposed. The African Development Bank estimates future growth of Ivorian production based on the past record. They conclude that domestic sources will cover between 37% and 46% of the demand by 2000, which is about the situation in 1990 (African Development Bank, op. cit., p. 31). The World Bank proposes a livestock development plan for Ivory Coast. If successful, and if the Bank's lower estimates of demand are valid, domestic sources would cover between 63% and 84% of demand in 2000 (World Bank, op. cit., p. 67). Given the Ivory Coast's difficult economic situation, a

major new livestock program may not be a high priority for the government or donors.

Table 16 shows production and consumption levels in six other coastal countries. As usual, Nigeria looms very large. Its domestic meat production covers only 75% of consumption, leaving almost 120,000 tons to be obtained from other sources. (That is more than total Ivoirian consumption from domestic and external sources.) Furthermore, per capita consumption in Nigeria is the lowest in the group, only 5 kg of meat and 3 kg of fish per year.

Competition for Malian livestock export markets comes from fish exporters, other Sahelian animal exporters, and non-African meat exporters. Fish prices are well below those for Sahelian beef. USAID/World Bank (Liberalizing Regional Markets ... , 1991, pp. 60 -61) seem to indicate that two different consumer markets are being served. Cross price elasticities have not been well estimated. The disappearance of CAPA led to increased fish consumption in Ivory Coast, as poorer consumers switched. However the USAID/World Bank report (Ibid., p. 61) notes that the ability of the fish sector to boost supplies of frozen fish for local consumption (and to help meet the protein gap) may be limited by certain marketing constraints (i.e., cold storage capacity and availability of credit).

Burkina Faso and Niger are the major competitors for coastal markets. A recent study by the French Fonds d'Aide et de Cooperation and the Communauté Economique du Betail et de la Viande (Approvisionnement et Relance des Echanges Communautaires en Betail et Viande des Pays Membres de la CEBV, 1991) makes two projections of the availability of export animals in Burkina and Niger to 2000 (see Table 17). In both of them, availability in Burkina falls sharply. This is especially important for Mali because Burkina is the number two exporter to Ivory Coast. Availability of export animals in Niger falls in one scenario and rises in another. The total for Burkina plus Niger falls in one scenario and stays about level in the other. Thus, other Sahelian exporters are not likely to pose significantly greater competition for Mali, and they may become much smaller exporters.

The wild card is, of course, non-African exporters, and especially European dumping. Non-African exports have varied widely in the past. The recent EC dumping led to a ban on poultry and a countervailing levy against CAPA meat in Ivory Coast. At the same time, the European meat surplus has diminished. That surplus can be traced to policies to cut the milk surplus and that in turn led to greatly increased slaughtering of dairy cows. Governments are less likely now to allow dairy surpluses to get out of hand. In addition, Europe may have found a new target for any subsidized meat exports -- Russia and the Commonwealth of Independent States. Thus Mali is not standing in the shadow of a mountain of European beef that will flood the coastal markets as it did in the late 1980s. However, EC meat production is so large relative to the West African coastal market, that small changes in Europe can have major impacts here. Exports from Oceania, South America, and the United States may also come into play. But this is just to say that Mali is in the world market, not in a sheltered regional one.

The World Bank (Mali Livestock Subsector Review, 1990, p.17) argues that Malian exports are quite competitive with unsubsidized non-African imports:

Both Mali and Burkina can favorably compete in the Ivoirian market if EEC exports are not subsidized. In 1988, wholesale meat price in Abidjan was about US\$3.24, while it was US\$2.04 in Bamako and US\$2.08 in Ouagadougou. Wholesale meat prices in Abidjan would have to surpass US\$4.85 before unsubsidized commercial exports from the EEC, Australia and South America can be profitable. Both Mali and Burkina Faso will continue to enjoy considerable comparative advantage in exporting livestock to Cote d'Ivoire not only in terms of prices, but also in terms of consumer preferences. Most of the consumers prefer fresh meat due to cultural and religious reasons. The livestock exporting Sahelian countries can also increase their competitiveness by streamlining the bureaucracy and reducing the cost of exporting cattle to the Cote d'Ivoire.

C. AVAILABILITY OF MALIAN EXPORT ANIMALS

Table 18 presents data on cattle herd size, domestic slaughter, and exports. The effect of drought on herd size is clear. From 1975 to 1982 the herd was being rebuilt from less than 4 million to 5.5 million following the drought of the late 1960s and early 1970s. Then the drought of 1982-1983 led to a very sharp decline to 4.3 million by 1985. Since then there has been a steady rise to about 5 million in 1990.

The 1982-1983 drought marks a dramatic change in offtake (percentage of animals sold or removed for domestic slaughter and export). From 1975 to 1982 the rate varied between 10.0 and 11.2. In 1983 it jumped to 13.9, presumably reflecting destocking, but then has since stayed between 14.2 and 15.8. This may reflect a major change in the commercial orientation of producers as well as (and perhaps related to) a change in where the animals are and who owns them. However, one must be cautious about the interpretation of questionable data.

Domestic slaughter numbers increase throughout the period, except for a brief dip after 1978. Large increases occurred in association with destocking following the 1982-1983 drought. In 1990 domestic slaughter was estimated at 540,000 head compared to 310,000 in 1975. This growth rate far exceeds that of population and income.

The pattern of exports was discussed above. The low number of animals exported from 1975 - 1978 reflects in part the after effects of the drought and the official prohibition of exports, which was lifted in 1978. Exports then rise rapidly to 300,000 in 1983, and then fall to 185,000 by 1990. The peak of 1983 is associated with post-drought destocking. The recent effects of European dumping and the weak Ivoirian economy have already be reviewed.

The proportion of offtake that has been exported was between 23% and 26% in 1975 - 1978, jumped to 43% - 46% in 1978 - 1983, and then fell steadily to 25% in 1990. Table 19 presents related data for Burkina and Niger. The comparison is not exact since Table 19 is for all meat, not just beef. We did not have the data to do the beef comparison.

Forecasts of future availability are not easy to make. Domestic slaughter seems to have been growing very rapidly. Average annual increases were 7.7% from 1980 to 1990, and 4.9% from 1975 to 1990. This is in comparison with average population increases of 2.5% from 1980 to 1989, and average increases of GNP per capita of 1.7% from 1965 to 1989. OMBEVI estimates 1984 per capita consumption of beef at 18.4 kg for urban populations and 4.2 kg for rural. Will the rapid growth of domestic slaughter continue?

The basic supply elements also raise interesting questions. Does the shift of animals to the south and to agropastoral owners imply a greater commercial orientation and a continuation of high offtake? Will APEX and other livestock development efforts ease the feed constraints and foster more efficient production so that the herd can continue to grow without degrading the environment?

Finally, availability will be affected by prices -- prices that stimulate producers to sell, and price differentials between export and domestic markets that stimulate traders to export. Abidjan - Bamako prices for meat were discussed above. Table 20 presents a rough indication of producer prices for a 300 kg bouef. One can note the sharp jump from 1985 to 1986 and the recent softening from 1989 to 1990. An analysis of producer incentives must await more detailed price data as well as information on production costs.

D. CONSTRAINTS TO EXPORT AND DOMESTIC MARKETING

The following part of this analysis, on resources and productivity, discusses production constraints such

as feed and health. This section considers marketing constraints. They can be discussed in three groups: (1) knowledge of potential export and domestic markets; policies; and infrastructure.

1. Knowledge of potential export and domestic markets

Traders and producers are usually quite knowledgeable about markets in which they regularly sell. This is unlikely to be true for other markets, especially those in different countries and for different commodities. The overwhelming dominance of the Ivory Coast as Mali's cattle export market makes this a particularly important constraint -- because there is hardly any trade with or knowledge of other outlets, and because Ivory Coast demand will be soft in the short to medium term.

The Ghana market is a good case in point. Ghana had been Mali's leading export customer in the 1960s. It now seems to be in a period of sustained growth. The most often cited study of Ghana's demand for meat imports (Josserand, 1991) is based on a one week mission in the country. While Josserand is an experienced, knowledgeable livestock expert, one would still like a more thorough study of market prospects. Such a study would consider current and potential demand and competition, but it also would start the process of connecting or reconnecting Malian exporters with Ghanaian importers and butchers. Other coastal countries also bear study as do possible North African outlets and markets for small ruminants.

Similarly, there is limited knowledge of potential domestic markets for poultry, dairy and, perhaps, small ruminants. If production is increased and if processing and distribution are improved, what are the market prospects? What new opportunities are presented by the growth of Segou, whose population more than doubled from 65,426 in 1976 to 135,765 in 1987, Mopti (53,322 to 84,095), and Sikasso (46,503 to 79,302)? Will these and other secondary cities become important markets for small scale, more intensive dairy, poultry, and small ruminant industries?

2. Policy

Commercialization of Malian livestock is constrained by a number of questionable policies, by limited knowledge (among producers and traders) of policy changes, and by incomplete implementation of policy changes. A list of policies warranting review is in the body of the Project Paper.

- Export licenses, fees, and regulations are being reduced. The export tax has been eliminated, documentation requirements reduced, and the process streamlined with "guichets uniques." However, remaining documentation requirements are still said to be intimidating for illiterate traders and so they feel compelled to pay high fees to "transitaires" or others to help them. These facilitators may even charge for services that are no longer required, since traders are unaware of recent changes in their favor.

Export-import licenses are so expensive that only large, general traders hold them. Smaller, specialized livestock traders only get domestic licenses and then are often forced to "rent" the use of one of the ex/im licenses. Customs brokerage and export/import certificates are required, but seem to serve no purpose and do not provide the trader with any services. Customs posts are said to still be manned but to no official purpose since the export tax was removed. Customs agent may use the checkpoints to extract illegal fees. Guichets uniques are needed outside Bamako, especially in the south and at Gau.

- Land policy is discussed in the next section on production, but it also bears on marketing. Trek routes are not marked for animals in transit to market (or elsewhere). This means shepherds are more prone to charges of damaging crops, and their animals have limited access to water and feed while in transit.

● Distribution of animal feed is under a quota system that leads to inefficient allocation and blackmarket rents. The whole feedstuff market is very poorly understood. Given the dominance of the feed constraint in production, feed marketing certainly warrants assistance.

● The Central Veterinary Laboratory may be constrained by government regulations that inhibit efficient servicing of nongovernmental requests for vaccines. Animal health care delivery may be improved with privatization.

● Dairy marketing in the Bamako area has been mismanaged for a long time. Subsidized powder imports have pushed down prices for fresh milk. A privileged few large producers have received price supports. ULB has not been willing to buy from all producers. ILCA has been studying the Bamako milk market, and their work should be important for APEX. (See Debrah, et. al. "Etude des Circuits de Commercialisation du Lait et des Produits Laitiers a Bamako," ILCA, 1991.) Beyond Bamako, small scale processing for smaller towns bears investigation.

● Transportation raises issues of policy and physical infrastructure. The Holtzman-Kulibaba studies document recent changes in modes and costs of moving livestock, the constraints posed by tariffs and regulations affecting truck and train transport, and the problems caused by predatory rent seeking, quasi-official taxation, and "taxes sauvages." USAID and the World Bank are formulating an action plan aimed in large part at these latter illegal charges. However, the attention devoted to them may be disproportionate to their importance.

In the worse of two Mali-Abidjan cases presented in the USAID/World Bank Action Plan (Liberalizing Regional Markets for Livestock Products: An Action Plan for the Mali, Burkina, and Cote d'Ivoire Corridor, October, 1991), informal taxes (bribes and extortion) account for 13.1% of marketing costs and "quasi-official" taxes account for 9.8%. However, when viewed as a share of total costs, i.e., including cost of the animal, then those items account for only 2.6% and 2.0%, respectively. The Bank and AID (op. cit., pp. 43-44, 53, 80, 82) assume that these costs can be cut almost in half, or by 2286 CFA per animal. If traders captured all of this cost reduction, their net return per animal would increase from 4% to about 6%. If, however, the cost reduction were shared equally among producer, trader, and consumer, the producer would see an increase of about 1% in the animal's sale price, the trader's net return would increase from 4% to just 5%. and the consumer would pay about 3 CFA less per kilo of carcass meat (or share that reduction with the butcher).

Bank and AID project greater savings (3333 CFA) in their second scenario with cuts of one third in (legitimate) transport and handling costs. However, even the authors of the "Action Plan" are not sanguine about the prospects for such cuts (USAID and World Bank, op. cit., p. 44)

Transport costs can be reduced most significantly through improved rail management and services and removal of impediments to a competitive regional trucking industry much of which could only be achieved over the medium term. Other measures affecting the cost of road transport that could have an eventual impact are reduced fuel costs and import taxes on vehicles and spare parts.

In sum, while transport certainly warrants attention, the current discussions about illegal charges seem out of proportion to the potential benefits. The largest components of the marketing bill are legitimate transport and handling costs, which will be slow and hard to reduce, even under optimistic scenarios.

Many of the transport issues are the domain of coastal governments or should be considered by regional groupings. The AID/World Bank Action Plan has a good discussion of regional

regulatory reform in which Mali must be involved. Other transport constraints, well outside the scope of APEX, call for major investment in railroad rolling stock and track improvement.

● Devaluation of the CFA is often discussed as one way to increase the competitiveness of Malian cattle (and other goods). This preoccupation is understandable since the exchange rate is the most important price in the economy. However, overvaluation may not be so intractable a problem as it appears, and devaluation is not the only tool at hand nor is it without significant risks. (The following discussion is based on Shapiro, Berg, Kristjanson, "The Competitiveness of Sahelian Agriculture," Paper prepared for the Club du Sahel, 1988, pp.26 - 31.)

The problem with an overvalued exchange rate is that it artificially makes exports more expensive and imports less expensive (at the expense of exporters and government), i.e., it decreases the competitiveness of exports and of domestic goods facing import challenges. A well known way to deal with this is through a mix of import tariffs and export subsidies that will affect competitiveness just as devaluation would. Thus, for example, since the mid-1980s several Sahelian countries have been subsidizing cotton and groundnuts, making them more competitive on the world market, and they have been protecting food grains. There are limits to such a strategy. It may lead to unsustainable political and/or fiscal problems, and it is prone to being undercut by smuggling.

A second alternative is to operate directly on the real exchange rate (the nominal rate adjusted for inflation). If Mali's nominal rate (e.g., 50 CFA = 1 Franc) stays constant but the country undergoes 50% inflation, then the real rate will have appreciated by 50%. For competitiveness, what matters is the "real effective exchange rate," which takes into account not just Mali's rate of inflation but also that of its trading partners and competitors. Monetary and fiscal policy have to be brought to bear to control inflation to rates below those of competitors. In the 1980s, with the help of structural adjustment programs, several CFA countries experienced declines in their real effective exchange rates -- -25% in Mali between 1976 and 1986; -29% in Niger between 1981 and 1987.

While devaluation is often a faster and more direct way to affect competitiveness, it carries risks that may cost the country more than it gains. First, in countries without a real option to devalue, the fixed rate imposes monetary and fiscal discipline. For example, AID has described Mali's reform programs as, "good, almost exemplary" (AID's Program in Mali, 1991, p.3). Second, devaluation after such a long tie to the French Franc would likely lead to capital flight and enhanced inflationary expectations. That would make control of the real effective exchange rate all the harder.

Third, without the devaluation tool, countries are forced to intensify the search for productivity raising reforms which are essential for increased competitiveness. Cost reductions in Sahelian cotton filieres after the decline of world prices are cited as examples of such beneficial actions. Finally, devaluation raises the issue of the survivability of the Franc zone. Each CFA state cannot define its own parity with the Franc without threatening the zone.

All of this is not to say that Mali should never consider devaluation. Rather, the full implications of devaluation must be considered, as must alternative measures to control the real effective exchange rate. It may turn out that the devaluation option is not better than its alternatives.

● Serious data problems hamper Mali's efforts at livestock policy analysis and reform. The data in virtually every table in this annex are very shaky. Official records of exports and domestic slaughter are one fifth to one third the totals. The multipliers that are used to go from one to the other have not been systematically developed. Table 2 shows the export multiplier varying

from 1.8 to 12.0. We have found no studies generating the data from which one could develop reasonable estimates of consumption (total and per capita), and of income and price elasticities of demand for meat. (The ILCA studies are valuable for dairy product consumption in Bamako.) We have found no detailed studies of the costs of producing animals in Mali. (ILCA has been studying the cost of producing milk in the Bamako area, but the data have not been fully analyzed.)

There must be major improvements in the government's ongoing livestock data collection, analysis, and distribution program. In addition, a number of careful production and consumption studies are needed. These latter are intensive, costly efforts that cannot be repeated frequently. But they are necessary now to provide solid baseline information on the current situation, to guide policy reform and other interventions in the short to medium run, and to allow for less intensive updates at regular intervals.

There are likely to be opportunities for cooperating with other organizations conducting cost of production studies. For example, APEX could assist in completing the analysis of the ILCA milk production studies, and may consider extending them. ICRISAT has an ongoing, multidisciplinary study of four villages that looks at all aspects of the farming system. The Michigan State Food Security Project is sponsoring a new farm level study focused on maize. APEX may be able to cooperate with such efforts and encourage greater coverage of livestock enterprises.

3. Infrastructure

Information about markets and market regulations is important to the livestock trade. Large traders are believed to have good information networks, especially in and around the markets they serve. However, smaller traders may be at a disadvantage, as may newly organized groups wishing to become involved in the trade. Therefore, the OMBEVI livestock market information service is valuable. It could be expanded and broadcast in several languages. A copy of a recent OMBEVI broadcast is attached.

In addition to price and quantity information, traders need to know about regulations, especially now when they are changing so rapidly. New policies have limited impact if the economic actors are unaware of them. Also, if only a few have the information, they gain an advantage over others.

Physical improvements in transportation are needed. Trek routes should be marked, protected, and provisioned. Simple investments in loading ramps are useful. The rail link to Dakar should be studied.

The growth of livestock populations in the south has not been accompanied by a commensurate increase in marketing facilities. Small investments in cattle markets or collection centers may encourage commercialization. Some producer and trader groups have identified this as a high priority. However, APEX clearly does not want to repeat other donor experiences (e.g., near Tahoua, Niger) with facilities that had elaborate fencing and scales but were not used at all.

Small scale dairy processing and marketing has been investigated in other countries by ILCA and should be considered in Mali. The rapid growth of Mali's smaller cities may offer considerable market potential. As mentioned above, the Bamako dairy market needs to be improved. While much of the problem lies in the policy realm, physical improvements may also be appropriate.

Credit is often mentioned as a major constraint to production and trading. We have not seen any recent, systematic research on this. Donor financed credit programs do not have a good record. Further study is warranted. This should include the possible merits of facilitating formation of credit unions.

ANNEX F.3
PRODUCTION RESOURCES

ANNEX F. 3 - PRODUCTION RESOURCES

Dr. R. Cook, Mr. R. Ly and Mr. A. Dagamaissa

I. Introduction

The increased competitiveness of livestock commodity production and marketing systems (filières) will be depend on the capacity of the existing biological resource base to support sustainable increases in livestock productivity and on the capacity of producers to efficiently allocate production resources in ways that will make their production systems more responsive to market demand and more cost-effective relative to and market prices.

The realization of APEX project objectives will depend not only on improving access to existing markets, while identifying new market opportunities, but also on better integrating livestock production activities with these markets. The strategy is to provide producers with improved production techniques, access to inputs, and improved natural resource management options which will increase the efficiency of market oriented livestock production systems based on a more efficient exploitation of locally available animal feed resources, within the context of more conservationally sound natural resource management practices.

Mali has the capacity, in terms of potential animal feed resources, livestock resources, and in terms of human and institutional resources to significantly improve its present level livestock productivity. This analysis will assess, in general terms, the potential these resources present, some of the major constraints limiting development, and opportunities for improving the productivity of the livestock sector.

II. Animal Feed Resource Base

A. Natural Pastures

Introduction

Mali's livestock and rangeland area represent a major national resource. The nutritional base for livestock production in Mali comes mainly from extensive, natural pastures. Mali has abundant arable land, a substantial portion of it receiving adequate and reliable rainfall (averaging in excess of 1,000 mm/year) and located outside of the Sahel ecologic zone. Of the 124 million hectares in the country, between 14 and 20 million are arable, of which in any given season between 10% and 15% is cultivated.

However, the productivity of natural pastures in three-quarters of the land area of Mali has significantly declined over the last 25 years. The major reason is open access and unregulated use, resulting from the breakdown in traditional land management systems and the extension of cultivation.

In general, degradation of rangeland vegetative cover is evident across all agro-climatic zones. In the northern areas it is characterized by a replacement of perennial species by annuals and in southern areas by the disappearance of grasses and tree cover. The extension of agriculture in the south is estimated at more than 100,000 hectare annually and the associated removal of tree cover and loss of pasture areas has substantially reduced dry season grazing, especially in the Segou region, and in the inland Delta area.

In addition to the generalized decrease in quality and quantity of herbaceous cover of natural pasture

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areas, the problems presently associated with use of these natural rangelands is only partly the result of their decreased productivity. Other major problems are related to: (1) the failure to secure trekking and access routes between major seasonal grazing areas; (2) the growth in agro-pastoral livestock numbers and their increasing use of dry season pasture areas which have traditionally been used by transhumant herds; (3) the extension of agriculture into areas which have removed, or severely limited livestock access to water; and (4) the absence of coherent land use management legislation and the adoption of conservationally sound land management practices.

The efficient use of these extensive pasture areas has traditionally been based on a system of seasonal exploitation. The effectiveness and sustainability of this system has in turn been predicated on utilization of rangelands across complimentary agro-ecological zones so that grazing practices could respond to the seasonal productive cycle of these rangeland areas. The system no longer works.

In the past the application of traditional systems of land use were facilitated by the homogeneity and production specialization of the tribes using the different, but complimentary agro-ecological zones. However, the displacement of tribes due to recurrent droughts and increased population pressures, and the imposition of post-colonial administrative arrangements which expropriated all lands for the State, undermined these traditional systems. The result has been the continual loss of dry season grazing areas to cultivation and the consequent over-grazing of many of the remaining pasture areas.

Mali is divided into four general agro-ecological zones, eg. Sahel north, Sahel south, Sudanian, and Guinean (Figure 1). The Sahel north constitutes more than one half of Mali's land area, the northern two thirds of which receive, on the average, less than 150 mm of rainfall annually. The southern one third of this zone receives an average annual rainfall of 150 mm to 300 mm, produces an estimated 10% of the total biomass of Mali's natural rangelands, and is resident to about 20% of the cattle and small ruminant population.

The Sahel south constitutes about one fifth of Mali's land area and is located in the 300mm-600mm rainfall zone. This zone contains most of the inland Delta region, where total biomass production is highly dependent on the degree of flooding. In average years this zone produces about 32% to the total biomass dry matter of Mali's

natural rangelands and contains approximately one third of Mali's ruminant herds and flocks.

The Sudanian zone constitutes approximately 14% of Mali's land area and is located in the 600mm-1000mm rainfall zone. A small part of the Delta flood plains are included in this zone, but in general this zone contains Mali's most productive crop and pasture lands. The zone produces approximately 36% of the total biomass dry matter of Mali's natural pastures. Cattle production is mainly undertaken in mixed farming systems, and the number of animals is rapidly increasing in rice and cotton producing areas. The zone contains approximately one third of the total ruminant population.

The Guinean zone constitutes approximately 11% of the country in the 1000mm or greater rainfall zone. Although the zone has extensively under-utilized pasture areas and high levels of biomass production, its use for livestock is limited by the presence of tse-tse and the relatively low nutritional quality of the natural vegetation.

Research activities in Mali, and elsewhere, have identified technical packages which offer the potential to greatly improve the productivity of pastures. Herbaceous species, already known to be well adapted to the different agro-ecological zones in Mali, have been tested. In semi-arid areas *A. gyanus* has been shown to produce more than 7 tons of dry matter per hectare, and *S. gracilis* has produced more than 2.6 tons of dry matter per hectare. In seasonal flood plain areas the planting of bourgou has the

potential to greatly increase available dry season forage, while tests on the installation of O. longistana and E. stagnina have been shown to produce between 12 and 20 tons of dry matter per hectare.

The major constraints limiting the quantity and quality of natural pastures are: (1) low nutritive value of herbaceous cover in most natural pastures, except in some cases for very short periods of time; (2) expansion of cultivation into traditional pastoral areas, in some southern areas at a rate of 7% annually; (3) range fires; (4) increasing population pressure resulting from southern migration of livestock (more than 50% of entire national herd is located south of the 750 isohyete, more than 1,400,000 head of cattle in the in the CMDT zone alone).

B. Feed Resources from Agriculture and Agro-Industries

Many of Mali's rangeland areas have an indigenous herbaceous cover that is of very high quality and a present productivity of, on average of more than 1 ton of DM per hectare. Maintaining and improving the productivity of these rangelands can be most strategically undertaken through better management of dry season grazing areas and increasing the quantity and quality of animal feed resources in these areas. This will involve a better use of existing crop residues, expanding the production of potential forages, and increasing the productivity of fallow land.

The greatest supplemental animal feed resource is Malian agriculture. The improved use of cereal stover from the production of millet, sorghum, maize, rice, and peanut forage, offers considerable opportunity to improve the animal feed resource base. Agronomic research efforts to evaluate the forage quality of cereal stover, particularly millet and sorghum, as part of variety screening trials offer the potential of developing alternative cereal varieties for extension to agro-pastoralist producers which could improve both the quality and quantity of crop by-products available for animal feeding.

The potential availability of crop residues is indicated by the estimated 1991/92 level of production: millet stover 1.9 to 2.4 million tons; sorghum stover 1.7 to 2.2 tons; maize stover 225,670 tons; rice stover 444,530 tons; fonio residue, 87,770 tons; and wheat residue 2,000 tons.

The strategy for developing improved animal feeding systems must be based on new feeding technologies/formulations which utilize locally available feed resources. Moreover, the technical packages extended to producers must be both technically sound and cost effective. The development of improved feeding techniques should be undertaken within the framework of minimizing production costs, so as to maximize competitiveness in the market place.

The inclusion of forage crops into agro-pastoral systems also offers significant potential to both stabilize cropping systems and increase the total production of digestible biomass for livestock feed (for 1991/92 harvest peanut tops was estimated at 98,950 tons and cowpea forage at 31,650 tons). Many species of both leguminous and non-leguminous forage species have been identified for a wide-spectrum of agro-climatic zones, ranging in potential yields from 2.7 to 4.5 tons DM/ha for cowpeas (annual, leguminous) to 20-25 tons DM/ha for P. maximum (annual, non-leguminous). The inclusion of leguminous species in crop rotations have been shown to provide up to 60-70 kg N/ha as a carry-over effect for subsequent cereal production. Total crop residue production for 1991/92 has been estimated at 4 - 5 million tons. (Ministry of Agriculture, 1992)

In addition to crop by-products, agro-industrial by-products offer an important, but limited resource base for developing improved animal feeds and for the development of a commercial animal feeds industry. One key factor in such efforts will be definition of marketing policies. Future marketing strategies for agro-industrial animal feed supplements and concentrates should promote an efficient allocation these limited, high quality feed resources, among the commodity production and marketing systems (filières)

within the sector.

The major agro-industrial by-products presently used in animal feeds include: cotton seed cake, molasses, rice bran, peanut meal cake, rice bran and rice hulls, and wheat bran. Presently, the most commonly sought after concentrate is "aliment huicoma".

The production of aliment huicoma (composed of 50% cotton seed cake, 45% cotton seed hulls, and 5% salt) increased from 51,000 tons in 1987 to over 80,000 tons in 1990. Huicoma is also planning on producing up to 35,000 tons of a fortified feed for lactating animals.

Though not a complete ration itself, aliment huicoma contains sufficient energy to substantially increase weight gains and milk production when combined with other forages. Feeding aliment huicoma at a level of 2-3 kgs per day can increase the average daily milk production during a 180 lactation period in improved local breeds of cattle by 30-40% and weight gains by 25-30%.

Because aliment huicoma is widely recognized by producers as an effective feed supplement, present demand far exceeds supply. This has resulted in the Ministry establishing a committee, chaired by the Minister, which is charged with establishing a price ceiling and quota system for its distribution. Quotas are established for regions as well as for certain rural development organizations such as the CMDT. Regional quotas are administered by the regional livestock service. Such a system, while attempting to provide some political relief for the GRM by ensuring some degree of general distribution, has in effect led to excessive speculation and inefficient allocation. In 1990, the official price established by the Ministry was 19,200 FCFA ton, yet some producers in the northern part of the first region were reported to have paid in excess of 50,000 FCFA per ton.

The production of molasses, presently used to increase the energy value in native hay and cereal stover rations, was 6.5 tons in 1989. In the fourth region molasses is a common ingredient used in increasing the energy value of rice stover. Past considerations by the company to convert all the molasses produced into alcohol to be used as a gasoline supplement have apparently been rejected, making future prospects for its continued use as an animal feed supplement more secure.

The Office du Niger produces between 1,600 and 2,000 tons of rice hulls and between 2,800 and 3,500 tons of rice bran/polishing per year. A peanut processing plant in Kita produces limited amounts of peanut meal cake, and wheat bran is produced by the grain mill in Koulikoro. Some companies import cotton seed cake from Ivory Coast, though only on a sporadic basis.

Significant increases in livestock productivity could be achieved, particularly in the Sudanian and Guinean zones, if improvements in the productivity of cereals and the expansion of fodder crops could be realized. In general, the successful diffusion of crop improvement technologies across these two zones will play an important role in determining the extent to which Mali can increase its livestock productivity.

III. Animal Resources

A. Livestock Resources/Numbers/Distribution/Offtake

The national livestock herd is estimated (DNE/DRE annual reports for 1990) at approximately 5 million head of cattle, over 12 million head of sheep and goats, and an estimated 20 million head poultry.

During the past 25 years the character of livestock production systems have changed. Reference to Table 1 illustrates the re-distribution which has occurred in cattle herds. During the period of 1977 through 1990, there has been a net displacement of more than 30% of the cattle population (over

1,200,000 head) from the regions of Kayes, Mopti, and Gao, into the regions of Koulikoro, Sikasso, and Segou. During this period the cattle population in Sikasso more than doubled and increased by more than 25% in Koulikoro and Segou.

TABLE 1: REGIONAL EVOLUTION OF CATTLE NUMBERS		
REGIONS	1977	1990
REGION 1-KAYES	1,006,000	774,000
REGION 2-KOULIKORO	476,000	832,000
REGION 3-SIKASSO	635,000	1,360,000
REGION 4-SEGOU	309,000	672,000
REGION 5-MOPTI	1,619,000	946,000
REGION 6-TIMBUCTOU	252,000	332,000
REGION 7-GAO	180,000	71,000
DISTRICT OF BAMAKO	-	9,000
TOTAL NAT. HERD	4,770,000	4,826,000

* Source; OMBEVI and DNE, 1991

In terms of absolute numbers, small ruminants, particularly sheep, still predominate in semi-arid pastoral production systems. However, reference to Table 2 illustrates that although overall small ruminant numbers during the past 15 years increased by approximately 16%, the regions of Sikasso and Koulikoro experienced an increase of more than 100%, Segou more than 80%, and Kayes more than 40%. Conversely, small ruminant numbers in Gao decreased by more than 60% and increased in the Mopti region by less than 30%.

TABLE 2: REGIONAL EVOLUTION OF SMALL RUMINANTS		
REGIONS	1977	1990
REGION 1-KAYES	833,000	1,436,000
REGION 2-KOULIKORO	971,000	2,173,000
REGION 3-SIKASSO	289,000	812,000
REGION 4-SEGOU	766,000	1,420,000
REGION 5-MOPTI	2,429,000	3,202,000
REGION 6-TIMBUCTOU	1,588,000 (1978)	2,100,000
REGION 7-GAO	3,244,000	1,022,000
DISTRICT OF BAMAKO	80,000 (1980)	7,000

TABLE 2: REGIONAL EVOLUTION OF SMALL RUMINANTS		
REGIONS	1977	1990
TOTAL NAT. HERD	10,200,000	12,172,000
* Source; OMBEVI and DNE, 1991		

The proposed APEX project zone (Regions of Kayes, Koulikoro, Segou, and the District of Bamako) presently contains approximately 47% of the estimated cattle and approximately 41% of the small ruminants in Mali (note Tables in the annex to this section).

Livestock productivity is dependent on breed type, agro-ecological zone, prevalence of disease, and livestock husbandry practices. In general, there has been a decline in the productivity of herds and flocks over the past decade due to decreased rainfall and a deterioration in the productivity of natural rangelands and pastures, and inadequate efforts to improve feeding practices based on crop residues and agro-industrial by-products.

The low productivity of traditional Malian herds and flocks is primarily a reflection of sub-optimal nutrition and disease rather than an expression of low genetic potential, though significant improvements in productivity have been recorded on research stations with cross-bred animals. However, productivity studies recorded at the Niono du Sahel Research Station indicate that considerable improvements in productivity are possible through improved nutrition and health care (Note Table 3).

TABLE 3 : SELECTED CATTLE PRODUCTION PARAMETERS				
PARAMETER	Bambara Agro- Past.	Peul Transhumant	Nomadic	Niono Research Station
Age 1st calving (months)	63	48	52	40
Calving Rate %	63	64	53	65
Calving Interval	19	18,7	22.8	14
Milk l/cow/day	0.8	0.7	1.0	2.5
Mortality %				
• Less 1 year	16	14	18	5
• All others	7	9.9	11.9	3
Offtake Rate %	6.9	10.1	3.0	-

Estimated cattle and small ruminant off-take during a fifteen year interval is illustrated in Table 4. Comparing off-take rates in 1977 with those in 1990 shows an increase of 43%, representing an increase of approximately 2,000 head of cattle (at 1990 herd levels). The drought in 1983-84 reduced the off-take during several subsequent years while producers were re-building their herds and flocks. In comparison to 1977, the off-take level in 1990 resulted in a net off-take increase of more than 200,000 head representing a comparative increase of 48% over 1977 levels. Conversely, small ruminant off-take

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decreased by approximately 24% during the same period, though since 1986 off-take rates have increased by 66%.

Estimations of total animal slaughters and levels of exportation and slaughter for 1977 and 1990 are illustrated in 5. Although considerable fluctuations occurred in both these parameters during the period (sales peaked in 1984 due to increased off-take from the drought), the data indicates that cattle slaughters and total cattle exports during the 15-year period, 1977-1989 increased by 56%, while small ruminant exports increased by 39%.

TABLE 4: CATTLE/SMALL RUMINANT OFFTAKE		
YEAR	ESTIMATED CATTLE OFFTAKE (%)	ESTIMATED SMALL RUMINANT OFFTAKE (%)
1977	9.5	41.7
1980	9.5	33.7
1983	11.4	21.24
1986	12.6	19.0
1989	12.4	23.1
1990	13.2	26.22
1991	13.6	31.5

* Source: OMBEVI, USAID/Livestock, 1991

Table 6 illustrates the evolution of cattle and small ruminant sales for 1986 and 1990. In 1986 53% of all recorded cattle sales occurred in the Regions of Koulikoro and Mopti. By comparison in 1990, these two regions only accounted for 33% of total sales. In 1990, the percentage of recorded sales for the region of Segou increased by 271% compared to 1986, representing 20% of recorded sales. The District of Bamako accounted for 31% and 33% of recorded sales in 1986 and 1990, respectively.

TABLE 5: EVOLUTION OF TOTAL (ESTIMATED) EXPORTS AND SLAUGHTERS				
	CATTLE 1977	CATTLE 1989	SMALL RUM. 1977	SMALL RUM. 1989
EXPORTS	102,000	230,000	279,982	460,000
SLAUGHTERS	323,000	375,000	3,284,000	2,100,000 ¹

* Source, OMBEVI, 1990

¹ Controlled and uncontrolled slaughters were estimated at 237,337 and 3,046,993 respectively in 1977, compared to 525,000 and 1,575,000 in 1989.

TABLE 6: EVOLUTION OF REGIONAL ANIMAL SALES (RECORDED)

REGIONS	CATTLE SOLD 1986	CATTLE SOLD 1990	SMALL RUMINANTS SOLD 1984	SMALL RUMINANTS SOLD 1990
KAYES	6,932	7,723	3,113	25,501
KOULIKORO	72,730	38,073	127,985	136,197
SIKASSO	13,280	16,694	53,750	103,390
SEGOU	17,740	65,655	84,477	326,026
MOPTI	78,196	76,168	203,142	278,159
TIMBUCTOU	8,091	21,599	65,123	117,775
GAO	316	4,998	16,110	43,210
BAMAKO	86,991	112,534	136,796	128,455
TOTAL	284,240	343,444	690,518	1,158,715

Note: data was not available for Bamako in 1984; the generally lower number of animals sold compared to the numbers exported/ slaughtered are the result of assumed levels of un-controlled exports and slaughters. Only major markets within the country are monitored and these figures have only been provided for comparison purposes among regions.

Small ruminant sales for 1986 and 1990 are illustrated in Table 6. Recorded sales in 1990 were 68% greater than in 1986. In 1986 and 1990 Segou and Mopti accounted for 42% and 62%, respectively of all recorded sales.

Animal health problems continue to be a major constraint limiting livestock production, especially in southern areas. The changing patterns of animal production have resulted in the emergence of new disease problems, some of which have important implications for the human population, eg. brucellosis and tuberculosis. Many of these disease problems are zone (agro-climatic) and/or production system specific and therefore do not lend themselves to treatment by traditional methods such as employed in mass vaccination campaigns. Animal health services need to evolve towards addressing individual producer, specific production system needs in order to derive the maximum economic benefit from animal health care services and make production practices as cost-benefit as possible.

To date the emphasis of national animal health services is on the control of the traditionally recognized contagious diseases. Though continued control of these diseases is important, the changes which have occurred in livestock production practices and in the agro-ecological zones increasingly being developed for livestock production purposes, have resulted in the emergence of a new spectrum of potentially economically important diseases. Effective control of these diseases will be a prerequisite to developing efficient and cost-effective production practices.

In terms of the control of traditionally recognized contagious diseases, Tables 7 illustrates the percentage of the cattle and small ruminant populations in each region vaccinated during 1984 and 1990. Table 8 illustrates, as an aggregate, the percent of these regional herds and flocks recorded as dying from the

diseases indicated in Table 7.

TABLE 7: VACCINATION/TREATMENT CAMPAIGNS							
REGIONS/ VACCINATIONS % OF EST. HERD	REG I	REG II	REG III	REG IV	REG V	REG VI	REG VII
Rinderpest (1984)	72	76	36	90	34	4	51
Rinderpest (1990)	46	45	35	51	47	55	19
C.B.P.P. (1984)	10	43	36	44	26	1	5
C.B.P.P. (1990)	52	45	35	41	49	49	18
Anthrax (1984)	.1	1	.1	-	.4	2	11
Anthrax (1990)	-	2	1	1	1	8	.2
Blackleg (1984)	10	10	12	12	4	6	11
Blackleg (1990)	16	22	15	15	9	1	1
Pasteurellosis - Bovine (1984)	5	17	15	4	3	-	16
Pasteurellosis - Bovine (1990)	15	26	18	15	10	4	1
Pasteurellosis - Small Ruminant (1984)	1	2	1	4	4		.2
Pasteurellosis - Small Ruminant (1990)	4	2	5	10	4	1	1
* Source, DNE annual reports, 1984, 1990							

Table 7 illustrates the relatively small percentage of the total livestock (cattle and small ruminants) population in each region which is vaccinated, except in the case of rinderpest. Rinderpest presents a slightly different epidemiological picture from the other diseases indicated in this table since a single successful vaccination, except in the case of young animals with colostral antibodies against rinderpest, produces life-long immunity. In the case of all other diseases, animals need to be vaccinated every 6 months or every year depending on the seasonal incidence of the disease.

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TABLE 8: MORTALITIES (DECLARED) FROM MAJOR CONTAGIOUS DISEASES							
REGIONS/ MORTALITIES % OF EST. HERD	REG I	REG II	REG III	REG IV	REG V	REG VI	REG VII
Rinderpest (1984)	.09	.02	.01	.02	.001	0	0
Rinderpest (1990)	0	0	0	0	0	0	0
C.B.P.P. (1984)	0	0	0	0	0	0	0
C.B.P.P. (1990)	.003	.006	.004	.01	1 ANIM	.02	0
Anthrax (1984)	0	.0002	.0001	0	.0002	0	0
Anthrax (1990)	0	.0003	.0001	0	0	0	0
Blackleg (1984)	.001	.0008	.0004	.0001	4 ANIM	0	0
Blackleg (1990)	.0002	0	.0001	.0001	1 ANIM	0	0
Pasteurella - Bovine (1984)	.0001	.0001	.0001	.001	0	-	0
Pasteurella - Bovine (1990)	1 ANIM	.0003	.0002	.0003	0	0	1 ANIM
Pasteurella - Small Ruminant (1984)	0	.002	.0004	.007	0	0	0
Pasteurella - Small Ruminant (1990)	.0003	0	.0003	.002	0	.0001	.004
* Source, DNE annual reports, 1984, 1990							

Table 8 illustrates the recorded deaths from the diseases listed in Table 7 for 1984 and 1990. As recorded, neither in 1984 nor in 1990 did these diseases collectively result in significant livestock losses, though the persistence of contagious bovine pleuropneumonia (CBPP) does represent a potentially serious endemic problem.

According to statistics released by the National Livestock Service (Cellule de Suivi, 1989) the average mortality rate for adult cattle is estimated at 8.0%. Table 8 indicates that these diseases presently account for significantly less than a 1% losses on a national scale. Even if the number of deaths were significantly higher than indicated in Table 10 (possibly due to a failure to report or correctly diagnose the disease) they collectively would still represent only a small fraction (0.001%) of the average 8% mortality estimated for cattle.

Though it is true that the mere presence of certain diseases pose potentially significant health risks (CBPP), it is likely that other diseases are a much greater health risk and of greater economic importance than is presently appreciated. The 8% level for mortality estimated by the National Livestock Service is of the same order of magnitude for other Sahelian countries with the same general systems of production and endemic disease problems. Therefore, it would appear that future animal health efforts need to focus on identifying these new diseases (developing field diagnostic capacity) and on developing

cost-effective control programs (applied animal health research).

Substantial improvements in animal productivity will require the development of an animal health service which is client oriented and provides an array of advice and services, in addition to vaccinating or treating sick animals. One way to do promote this re-orientation this is through the development of a private animal health care system. Mali has passed legislation legalizing private veterinary practice. What remains is the development of a strategy which will allow the application of this legislation in a realistic and positive way, without placing producers at risk to increased disease outbreaks or in having to pay excessively high health service costs.

As Mali moves from a public dominated animal health services sector to one dependent on animal health services from both public and private sectors, DNE's traditional role, that of disease prevention, public health services, curative and extension services, will increasingly change to a role dominated by public health, regulation and extension services.

IV. The Concept of "Filières" - The APEX Development Approach

The technical development approach adopted by the APEX project for increasing animal productivity and marketing is based on the concept of "filières". For the purposes of this document, this has been translated as a commodity production and marketing system, such as for cattle, meat, small ruminants, milk, poultry, etc. The reason for adopting this approach was the conclusion that development efforts for Mali's livestock sector had segmented the production - marketing process into relatively non integrated stages. Strengthening the commercial aspects of the sector require that production systems be capable of responding to market needs and constraints, and that they be closely linked in terms of information.

Improving livestock productivity will be undertaken with the perspective of providing producers with improved production techniques and support services that will make their production systems more cost-effective and cost-responsive. An important aspect of these efforts will be the extension of improved feeding techniques based on locally available, or potentially available feed resources. Numerous techniques already exist, others are being developed. One important aspect of APEX's programs to is to better link research with producers, an essential link in any technology transfer development program.

A. Animal-Meat Production-Marketing System (Filière Bétail-Viande)

The following discussions briefly presents some of the improved technical packages and production inputs that offer promise for improving the efficiency of animal-meat production-marketing systems.

1. The optimum protein content of rations for cattle fattening using locally available feed ingredients is 9-10%. Rations consisting of native hay treated with molasses and urea can produce weights gains of 1 kg/day at a cost of about 259 FCFA/day. Rations containing cowpea forage as a replacement for one-half of the cotton seed supplement have been shown to provide the same weight gains at 60% of the cost.
2. Dolichos lablab has been shown to be a better adapted semi-arid forage crop than cowpeas. Its higher drought tolerance and lower leaf shattering characteristics provide a better "fit" in traditional millet cropping systems. In 500-750 mm rainfall zones D. lablab has produced forage yields of 2.5 to 4 tons DM per hectare, with an average protein content of 12.5%. Digestibility is of the order of 61%. Though it flavors milk somewhat, the inclusion of 2 kgs./day in the ration of local breeds of lactating cattle has been shown to increase milk production by more than 30%.

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In addition, *D. lablab*, and other annual legumes, and perennials such as *S. hamata*, have been shown to provide a nitrogen carry-over effect for cereal crops of from 60 to 100 kg N per hectare. Although such levels are less than that required to maximize cereal yields, such species do offer potential for reducing fallow time. Studies carried out in Banamba (CRZ-Banamba, 1990) showed that millet production increased by 54% (grain) and 46% (stover) following *D. lablab*. These results showed that the traditional cereal/fallow/cereal system was significantly less productive than the tested cereal/legume/cereal system.

3. Reducing the fallow period is one key area to improve the productivity of cropping systems and increase the animal feed resource base. Trials with *C. ternatea*, demonstrated its potential as a perennial legume to improve soil fertility in land being turned into fallow. Yields ranged from 2-4 tons per hectare, though establishment took two years, and harvesting conflicted somewhat with cereal harvest.
4. The key to the economic viability and increased profit margins of on-farm livestock fattening is to reduce feed costs and confine animals. For example, rations composed of forages which replaced 50% of a cotton seed supplement increased profit margins by 55 FCFA per kilo of weight gained over a 60 day feeding period. (CRZ-ILCA, 1990)
5. Prophylactic treatment against pasteurellosis and intestinal parasites in pen-fed sheep increased average daily weight gains over a 45 day period from 42 g/day to 81 g/day. (CRZ-ILCA, 1989)
6. Small ruminant fattening programs utilizing rations composed of varying percentages of millet stover, cowpea, peanut, and/or *D. lablab* forage, millet, rice bran, rice hulls, increased profit margins of 40 to 50%, depending on the costs and availability of feed ingredients. (CRZ-ILCA, 1989)

B. Milk Production-Marketing System (Filière lait)

Mali's milk production is estimated at 900,000 tons annually, though only about half this amount is available for human consumption. Due to logistical problems associated with traditional pastoral system (collectively the largest milk production system in Mali) far less than this amount is commercialized. Another factor limiting national production has been the lack of interest and effort to increase small ruminant milk production in agro-pastoral systems.

REGION	LIQUID MILK PRODUCED (TONS)
KAYES	84,500
KOULIKORO	92,500
SIKASSO	89,000
SEGOU	101,500
MOPTI	230,000
TIMBUCTOU	156,870
GAO	142,800
DISTRICT OF BAMAKO	2,700

TABLE 9: ESTIMATED REGIONAL MILK PRODUCTION, 1986	
REGION	LIQUID MILK PRODUCED (TONS)
TOTAL	899,870

The annual regional contribution to national production (MAEE, 1986) and is illustrated in Table 9. More than 65% of all the milk produced in Mali is produced in pastoral production systems, though increasing amounts are being produced in agro-pastoral systems.

Studies have shown (ILCA-CRZ) that in the agro-pastoral system approximately 40% of the milk produced is sold, while 60% is consumed in the household. In the Bamako area, semi-intensive milking operations sell approximately 70% of production and consume approximately 30%.

The major constraints limiting the development of an efficient dairy sub-sector are related to the fragile nature of liquid milk and the resultant need for an efficient network for collection, transport, and processing, distribution, and conservation. In the greater Bamako area, four major distribution systems have been identified (CRZ-ILCA):

- a. direct sale from producer to consumer: the most profitable for producers, since retail clients buy directly from the park where animals are milked or from the producer's home. Milk generally costs approximately 250 FCFA/liter.
- b. sale to consumers through an intermediary: in Bamako, the intermediary is generally a Peul woman, who purchases the milk from the milking park and then re-sells it the same morning or evening. Women buy milk for between 175-190 FCFA a liter and re-sell it for 250 FCFA. In villages milk is usually sold by men, since they generally have some means transport.
- c. sale to wholesalers - retailers - consumers: frequently wholesalers, who have access to a vehicle, will purchase large quantities of milk, which is then sold to women, who then sell it to producers. These wholesalers frequently purchase milk for approximately 125 FCFA/liter, selling it to women for 175-190 FCFA/liter.
- d. sale after processing: fresh milk that is not immediately sold is frequently processed by traditional means into soured milk (lait caillé) by the wives of producers or herders. Soured milk not consumed in the household is sold to women (for approximately 100 FCFA/liter) for resale to consumers.

Regardless of the type of marketing system used, the vast majority of milk and milk products are sold and consumed in the same general location as produced. In villages, approximately 77% is sold directly to local clients, 15% to women intermediaries who sell in the immediate locale, and 8% that is sold in other nearby markets. Particularly during the rainy season relatively high quantities of milk and milk products (soured milk, gheé, butter, and cheese-produced by traditional means) are consumed by local household because of the difficulties in associated in the collection and transportation of liquid milk for commercial processing.

Low productivity and lack of efficient commercialization infrastructures have encouraged the consumption of imported milk products. From 1960 to the mid-1980, the quantity of imported milk products increased from 1,000 tons to over 11,000 tons annually. Presently, approximately 30,000 tons of imported milk products are consumed annually, roughly 22% of total consumption.

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The most popular of the locally produced milk products is soured milk and fresh milk, consumed by 60% and 30% respectively of households in the Bamako area. Processed milk products from Mali Lait are consumed by approximately 30% of households, while over 60% consume imported powdered milk.

In the area around Bamako (40 mile radius) milk production is undertaken in three general types of systems: villages systems (low input, low output, with production costs ranging between 170 and 261 FCFA/liter); communal parks (higher production than the village system with production costs ranging between 170 and 325 FCFA/liter); and rural dairies- "concessions rurales" (high input, high output, concentrate feeds and cross-bred cattle, with production costs ranging between 179 and 438 FCFA/liter). In the rural dairies feed and transport costs account for 76% of production costs.

In rural dairies, the introduction of concentrate feeds (aliment huicoma), and forages, and the use of cross bred animals (local zebu cattle crossed with European breeds) has increased average production on some farms from 5-7 liters per day to 14-17 liters per day. In 1988, when Mali Lait experienced a shortfall in milk powder imports (roughly 65% of the processed milk procured by Mali Lait is reconstituted powdered milk) and prices to local producers increased by 40%, and provisions of locally produced milk to Mali Lait more than doubled.

The main constraints limiting milk production are:

- limited genetic potential in local breeds
- limited, high cost feeds, farm infrastructures, and limited technical support services
- need to strengthen producer awareness regarding animal husbandry, health, and hygiene.
- limited marketing organization and infrastructure
- presently limited purchasing power of Malian consumers;

C. Poultry Production-Marketing System (Filière aviculture)

Traditional, village level poultry production provides a source of income for a majority of rural households. It is a low input, low output system, oriented to meat production, and severely constrained by two avian diseases, Newcastle Disease and Avian leucosis.

Death losses of chicks from these two diseases are estimated at between 25 and 30 percent. Efforts to introduce exotic breeding stock have been attempted on and off for the past 10 years at many rural and urban locations throughout the country. These efforts have generally not been sustainable because of inadequate disease prevention programs.

Mali's national poultry resource is estimated at 20 million. Efforts by the livestock extension service to promote traditional poultry production has been guided by an extension program focusing on making producers aware of the benefits of vaccinations, developing simple poultry housing using locally available materials, and developing improved feed packages using locally available ingredients.

Within certain zones in the first and second region extension efforts have been very successful and vaccinations have increased more than 10 fold and production has more than doubled. Problems in effectively marketing animals still persist. Market prices for birds are considered high by Malian standards, 600-800 FCFA/kilo in Bamako, while in Kayes they sell for between 950 and 1250 FCFA.

D. Hides and Skins Production-Marketing System (Filière cuirs et peaux)

The hide and skin production-marketing system has undergone a significant decline during the past five years. Historically Mali has been a major exporter of untanned hides. Although Malian hides are

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considered of potentially good quality, particularly those coming from Zebu stock, the lack of efficient infrastructures, quality control procedures, and a national system of grading, have given Malian hides a poor name in the international hides and skin markets.

Significant improvement could be made to make this commodity system more economically viable. Basically hides and skins need to be considered by producers and livestock processors as a production product. Improving the quality of hides and skins will involve training for producers to prevent damage due to traditional branding practices; for butchers to improve the methods for removing hides during carcass preparation, and for traders in terms of quality control. The establishment of a national grading system might be helpful in ensuring standardized quality control procedures and in improving the highly variable quality presently limiting the further development of the hides and skins market.

E. Summary of Development Constraints and Opportunities

In spite of significant improvements in production from Mali's rural sector, there still exist some fundamental constraints; difficulty in adapting new cultural practices and varieties to the variable environmental and rainfall conditions; very resource poor clientele groups, including large numbers of women, who have not benefitted from changes in technology, crops, and productivity; very low overall literacy and education levels of producers; and the exodus of many of the most productive rural farmers, not because economic development is drawing them into more productive and rewarding sectors, but because agriculture has little to offer them.

Development Constraints

A complex interaction of policy, technical, and institutional factors constrain the agriculture-livestock sector's contribution to Mali's economic growth. It is apparent that focusing on a single constraint is unlikely to have a measurable positive impact on the sector's productivity.

Changes in the GRM's pricing policies have not led to expected increases in production because programs have not sufficiently addressed the production constraints and risks faced by producers. Similarly, new more productive crop varieties and animal feeding practices have been adopted by producers, but the widespread adoption has been constrained by institutional and policy factors.

In the livestock sector, the production of high quality vaccines and the development of animal production technologies have had limited impact on animal productivity because the institutional mechanisms to ensure better and more timely coverage and to integrate field staff into applied research activities have not been fully developed.

The full impact of policy changes on agricultural-livestock performance depends on continued legislation to build upon recent reforms aimed at increasing the participation of private firms and cooperatives in the delivery of agricultural inputs, veterinary services, and marketing activities. Providing access to adequate credit, ensuring that marketing costs are kept low and information on market conditions is readily available from reliable sources are important for improving the efficiency and competitiveness of Malian producers.

In the absence of these measures, the private sector will be constrained in providing timely, low cost, and reliable services to increase production and reduce the risks of the marketplace. Policy measures will be required in order to capitalize on technological changes which will increase agricultural-livestock performance: crops, livestock, and natural resources.

In the livestock sector, production for market, export, and draft power is likely to expand in the future as

a result of more effective animal health services and a better targeting research of on major animal production problems. Production will also be enhanced by the increasing use of forage and supplements in animal feeding. A growing proportion of livestock are likely to be produced in the southern areas, complementing rather than competing with crop production.

A failure to devise strategies and technologies to improve animal nutrition in areas of limited range availability and to increase the complementarity between animal and crop production in higher rainfall areas will lead to serious negative effects on herder and farmer income and on the natural resource base.

Specifically as regards livestock development there is a need to continue support of animal health technology development and dissemination to improve disease diagnostic capacity, applied animal health research, vaccine quality control, and more cost-effective delivery of animal health field services. Continued efforts should build on GRM privatization decisions in the livestock sector to assist in the progressive privatization of animal health delivery functions.

Animal production technologies need to be further developed and extended to improve animal nutrition and reinforce the integration of forages into crop and livestock production systems. An integral aspect of these efforts will be natural resource management efforts to reverse the degradation of the natural resource base through the promotion of village-level land management systems, the extension of improved land use practices, and undertaking monitoring and evaluation programs that will assess the impacts of natural resource management efforts and assist in identifying improved approaches for the future.

In spite of the numerous constraints, there are numerous positive factors which allow one to envisage an improvement in animal production in Mali. The livestock sector remains one of Mali's major sources of income generation, both for a large majority of rural producers and the GRM. Mali's people; producers, extension agents, technicians, and decision-makers constitute the base for positive change in the medium term, while Mali's biological resource base also offers the potential to significantly improve the productivity of the local livestock through relatively unsophisticated means based principally on improved nutrition and improve prophylactic disease control programs.

Program Orientations for Future Livestock Sector Activities:

- 1. Analyze and make recommendations on ways the GRM can begin to assume recurrent costs in the delivery of animal health services and animal production research, as well as consider ways for the GRM to reinvest some of the revenues generated by the sector back into the sector.**
- 2. Develop the capacity of MAEE to assure the quality of veterinary pharmaceuticals available to consumers and undertake private sector initiatives for their distribution. Associated with this should be a re-examination of the public sector role in the provision of veterinary services and how to increase private sector participation.**
- 3. Improve the capacity of livestock research and extension services to address priority needs of producers; lack of market access to traditional producers, lack of adequate infrastructures, taxation policies that discourage livestock sales and exports.**
- 4. Support for analysis of land tenure issues concerning resource utilization and land use competition between herders and cultivators and the establishment of pilot zones where grazing lands and transit corridors for livestock can be defined. Promote village level development committees authority to manage and determine land use and access to traditional lands.**

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- 5. Promote the private animal health care sector as the driving force guiding future efforts to improve the effectiveness of animal health programs.**
- 6. Increasingly focus animal production activities on small ruminants and poultry and on developing locally available feed resources.**
- 7. Promote natural resource management efforts based on the development village-level management schemes and on providing producers with viable, economically feasible alternatives to improve the management of their natural resource base.**

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ANNEX F.4
SOCIAL SOUNDNESS ANALYSIS

ANNEX F. 4 - SOCIAL SOUNDNESS ANALYSIS

Drs. D. Miller and L. Butler and Mr. Y. Diarra

Introduction

APEX will be implemented in a great variety of socio-economic settings. Numerous ethnic groups with different but interwoven histories, cultures and social organizations imbricate the project region. APEX spans sparsely populated rural areas as well as the capital. Pastoral, agro-pastoral, mixed farming and modern production systems supply Mali's commercial production and marketing networks. A broad base of small producers dominate some commercial networks while large, well organized elites control portions of others. Despite these differences, they all share a cash and information poor environment, and they all exist in a socio-economic environment only recently opening up to greater private-public sector collaboration.

The APEX strategy to work in this environment provides the most convincing argument why the project will be socially sound. APEX will bridge the public/private sector gap through joint project and GRM commitment to the active participation of beneficiary groups in the identification, design and implementation of project activities. The Project will also address potential biases in participant identification through its decentralized structure, filière strategy, and team training. Spread effects will be achieved through the incorporation of associations in project planning and implementation, project private/public collaboration. Finally, project activity assessment criteria have been designed to assure social soundness, although the application of these criteria and the integrity with which they are applied will also effect eventual APEX social soundness.

Socio-Cultural Setting

The socio-cultural landscape of the APEX project zone presents a varied and interwoven patchwork of production and marketing systems. Geophysical and climatic factors, as well as proximity to urban centers and markets greatly influence population distribution in the project area, which reaches from the sparsely populated Sahel zones of the north west to the densely populated sudanese savanna of the country's riparian capital. The people of these regions share a variety of histories, socio-linguistic cultures, and systems of production. APEX will be working largely with Manding and Voltaic agro-pastoralists and mixed farmers who dominate the south eastern areas of the project zone, and Fulani and Moor pastoralists who, along with Soninke agro-pastoralists, dominate the north west and eastern sections of the APEX project zone.

Mali's various socio-economic systems were all implicated to some degree in West Africa's history of regional empires and international trade, however they also share a history of colonial conquest, parasitic state domination, international market instability, and precarious environmental volatility. They present themselves today as resource scarce, risk averse subsistence systems marginally integrated into commodity production for the national and international market. Malians have just recently liberated themselves from 23 years of dictatorship by an urban military elite -- they may remain at odds with and skeptical of the national government for a long time to come.

The commercial networks APEX will be working with range from local producer to producer exchanges to highly developed international cattle marketing channels. A broad base of small producers, frequently women working with meager resources, dominate some commercial networks such as poultry meat, milk and small ruminants. Large, well organized elites control portions of other networks, such as the formal urban milk market, hides for export, and, long distance cattle trade. Despite these differences, they all exist in a cash and information poor environment which has produced networks similarly rife with middlemen and constrained by relationships of indebtedness and clientship.

A. Population Distribution and Trends

The APEX project zone includes the sparsely populated semi-arid steppe lands of the Sahel to the north; the moderately populated Sudanese savanna agricultural zones to the south; the densely populated flood plains of the Niger and Senegal rivers and their tributaries; and densely populated and rapidly growing urban centers. The region's geophysical characteristics have strongly influenced population distribution between regions as well as within them. Higher average rainfall patterns, and proximity to rivers, regional capitals and Bamako all correlate to greater population densities. As a general rule, with some notable exceptions population density increases from the frontier of the arid northwest to Bamako on the Niger in the southeast.

Average population density for the three regions is 20.7 persons per square kilometer, largely concentrated in the urban areas. The 1976 and 1987 census statistics indicate an overall population growth rate of 24.8% for the nine year period, and an urban growth rate of 56.85%.

Kayes:

The Kayes region, farthest from Bamako, has the smallest and least densely concentrated population, with a regional average of 9 people per square kilometer. Within the region, the capital cercle of Kayes, situated on the Bakoye river, is the most populated, and the most urbanized. The population of the region as a whole is growing very quickly, increasing 22% between 1976 and 1987. With all except Kenieba cercle in the south growing at double digit rates over this period. Much of this growth has taken place in urban centers, which grew by 42%.

Contrary to the general rules outlined above, the northern boarder cercle of Yelimane is by far the most densely populated in the region, with an average of 16 habitants per square kilometer. The rate of urbanization in Yelimane also surpasses that of all other cercles, over 850% between 1976 and 1987. Although these surprising statistics may be in error, to the extent that they are true, they may be explained by the rapid development of public infrastructure in the region subsidized by substantial remittances sent by migrants in France. This expansion of public services in a period of drought has attracted population from the surrounding area.

Koulikoro

The second region, Koulikoro, in the southern quarter of which is located the District of Bamako, recorded the highest population of the three project regions in the 1987 census, with 1,197,968 inhabitants. Population density in the region averages higher than Kayes, with 12.5 per/km², and ranges from 5 per/km² in the cercle of Nara in the north, to 21 per/km² in the cercles of Kati and Koulikoro closer to the capital. The population of the urban areas of this region has increased twice as fast as in the two other regions farther away from the capital. The urban population in the Koulikoro region increased 100% between 1976 and 1987.

Segou

With a population of 1,339,631, and a smaller surface area than Koulikoro region, Segou is the most densely populated of the project regions. Its maintains a high average density of 21 per/km², over twice that of Kayes, due to the concentrations in the southern agricultural areas, and along the Niger river. The riparian cercle of Macina is approximately the same latitude as the cercle of Bafoulabe in Kayes, but has over three times the population density. Within the region the population is spread rather evenly, except for the cercle of Segou where a third of the region's population is located, and the sparsely populated cercle of Niono.

As in the other regions, Segou's population is increasing dramatically, jumping by 23% between 1976

and 1987. Much of this growth has been in urban centers, which have grown by 46%. Niono to the north grew at the fastest rate in the region, surpassed only by Segou in absolute terms. Much of this increase took place in Niono's urban centers, which grew by over 200%.

B. Introduction to the Populations

Contemporary society in the three project regions has been strongly influenced by a succession of empires reaching back before recorded time. The productive systems of the ethnic groups with whom the project will be developed have been molded by this history whose central characteristics include the great productivity of Niger's inner delta, an enduring but hesitant acceptance of Islam, and the north-south trade network which transverse and enriched the region. We also see today the effects of the 16th century reorientation of trade to the coast with the rise of slave trade; the later rise in importance of the palm and peanut trade; the conquest by a common colonial power, and the administration by a common government.

APEX will be working with pastoralists and agro-pastoralists of the northern Kayes, Koulikoro and Segou regions, and agro-pastoralists and mixed farmers of the southern portions of these regions and the Bamako outskirts. The major agro-pastoral and mixed farming ethnic groups involved are the Soninke and their distant cousin the Manding who represent about half of Mali's population and contain the subgroups Bambara, Malinke and Dioula; and the Voltaic ethnic groups who represent about 12% of Mali's population and contain the subgroups Minyanka (who we will use as a representative group in this discussion), Senufo, Mossi and Bobo. The major transhumant pastoral ethnic group involved is the Fulani who represent 17% of the country's population. Moor pastoralists also live in the project regions.

The Soninke

The Soninke who form a majority of the population of the northern section of Region I and II, trace their origins to the empire of Ghana, already an established state of great wealth when visited by Arab voyagers in the end of the 9th century. With the rise in the Maghrib of the Almoravid in the early 11th century Ghana eventually disintegrated. But by the seventeenth century, the Soninke had re-established a string of kingdoms in a rough band from the upper Senegal valley to Niara. During the colonial period the economic power of the region expanded and became a dynamic trade center for gold, ivory and slaves moving east. Slaves, who had always been a part of Soninke society, became integral to the productive system with the rise of trade with France. As a result of their labor, the Soninke increasingly exported cotton and peanuts. In the mid-nineteenth century, France conquered these kingdoms, turned the terms of trade against the Soninke merchants, and suppressed slave trade. The construction of the Dakar-Niger railroad drew trade and the production of peanuts south, and completed the isolation of the region.

Contemporary Soninke nevertheless continue the tradition of international travel and commerce. A strong labor exporting group, men have long invested commercial profit and migration remittances in cattle and cattle commerce, while women have invest in small remittances. The Soninke agro-pastoralists and cattle merchants will be a key APEX beneficiary group.

The Manding

Bambara, Malinke, and Khassonke agriculturalists who inhabit large portions of the project regions form sub-divisions in the Manding socio-linguistic group. Manding clans ruled the Mali empire which rose from the fertile alluvial lands of the upper Niger valley in the 13th century and controlled the Sudan for two centuries. The rulers of this West African empire converted to Islam, which provided them a means of unification, communication, and administration, the backbone of the empire's long reach.

The fifteenth century saw the decline of Mali, followed by the rise of the Songhai empire of Gao in the sixteenth. With Gao's eventual decline at the turn of the century, Manding peoples ruled many of the succession of smaller states that arose in West Africa from the 17th to the 19th centuries.

Although Mali's Manding populations don't historically raise cattle, in recent years the more successful farmers invest their cash-crop profits in cattle fattening and raising draft animals. They will be key participants in of APEX's sustainable forage and local resource management activities.

Women of these groups using a minimum of resources raise a large proportion of Mali's small ruminants and poultry. They will be key beneficiaries of APEX's animal productivity and commercialization activities.

The Fulani

The Fulani in the north of the second and fourth regions initially came from the middle valley of the Senegal river, the Futa Toro region, the site of the kingdom of Tukur, a contemporary of Ghana. Herders began spreading eastward from this region in the 14th century, settling on the lands of marginal agricultural productivity between established villages.

In the 16th century some of these Islamized populations rose in jihads against the sedentary kingdoms attempting to dominate and tax them. In a later jihad in 1818, Ahmadou ibn Hammadi established the theocracy of Macina in the Niger's inner delta. This productive and ethnically diverse region had been conquered by Mali, the Songhai and even Morocco. Ahmadou attempted to settle the nomadic Fulani by organizing them into communities and establishing an integrated management system for the delta's resources.

Transhumant herders such as the Fulani produce the vast proportion of the national cattle herd, and much of the small ruminant herd. They also manage much of livestock they don't own, and, along with Soninke, are specialists in marketing. Fulani women play a critical role in Mali's milk production for local markets. The Fulani will participate in APEX market identification, information and infrastructure improvement activities. Trekking route management and animal productivity will also be activities in which they will participate.

The Voltaic Subgroup: the Minyanka

The Minyanka, like other Voltaic subgroups who inhabit the southern portion of Region IV, remained on the outskirts of these great empires of West Africa. As far as is known, they maintained a village based organization until the 19th century when the expanding Manding empires to the north began raiding the region for conquest and slaves. Villages avoided conquest by grouping themselves in defence, yet were subject taxing for periods of the century. With colonization the threat from the north abided and, with the Minyanka reputation for independence established, the states dissolved.

Minyanka women raise small ruminants, and poultry. Men employ cattle as draft animals more and more frequently. APEX activities with these groups of the southern project zone will be similar to the APEX activities with Manding groups.

C. Productive Organization

The history of the APEX project zone has provided for a high level of integration; the ethnic groups of the project area share many similarities in their organization for production. Their differences often complement each other. For our purposes, they may be divided into two major categories: the various agro-pastoralist and mixed farmer groups, which include the Manding groups, the Soninke and the Voltaic groups, and the pastoralist groups, which include the Fulani, as well as much smaller populations

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of Moors.

APEX will work with all of these groups. Individuals of the pastoralist socio-economic systems, both producers and traders, will be strongly implicated in APEX commercialization of cattle and small ruminants. Agro-pastoralists and mixed farmers, while also involved in APEX's commercialization component, will be prime beneficiaries of APEX promotion of sustainable sources of animal feed. Women of this group will be central participants in animal health and commercialization activities in the poultry and small ruminant filieres. Local resource management activities will involve pastoralists, agro-pastoralists and mixed farmers, occasionally jointly.

Fulani

The majority of the pastoralists in the project's three regions belong to the Fulani ethnic group. Fulani in these regions raise livestock to greater and lesser degrees. Possibly up to a half of the people considering themselves Fulani in Mali practice sedentary, urban occupations. A very small number continue to practice a purely nomadic way of life, and the larger proportion have a fixed base, from which they perform seasonal transhumance. Such Fulani pastoralists inhabit all three of the project's regions, with major groups found in the north of Region II, and the Macina area of Region IV. We concentrate on the traditional organization of these groups here.

Fulani are patrilineal and patrilocally organized, with the nuclear family the primary unit of production and consumption. While a Fulani with a very few cattle may attach himself to a more wealthy agnate, individuals with larger numbers of cattle herd independently. As sons mature, marry, and develop their own herds, they hive off and look for new pastures. Extended families are recognized, and may have leaders (ar'do), however the authority of these men is limited; they act primarily as spokesmen, guides and arbitrators. This individualistic orientation with limited central authority enables the Fulani to remain mobile and search out water and pasture in a high-risk environment, irregularly watered in a short rainy season.

Fulani -- though to a lesser extent than Moors -- also distribute risk by including small ruminants in their portfolios. Their possession may provide a valuable first step in the reconstitution of a herd or a means to take advantage of temporary favorable natural resource conditions because initial investments are smaller than with cattle, and they reproduce faster. The weight of small ruminants is also less effected by the dry season; they can be marketed to greater profit at this time of the year. Small ruminants also continue provide milk in the dry season.

Fulani also diversify their portfolios by entrusting cattle to others to herd and herding the cattle of others. This cattle stewardship cross-cuts social and political independence by creating ties of economic interdependence. Despite these strategies, fate continues to play an enormous role in a particular herder's success. The Fulani consider children and cattle gifts of God (Reisman:143,1980).

The Fulani management goal is to maintain a herd of sufficient size to provide subsistence off the milk products. They raise their cattle for milk, not beef. Fulani do not perceive their cattle as a commodity. When they do sell their animals, they do so not as an investment or for the profit, but to meet needs above subsistence, larger expenses including taxes and emergencies. To Fulani, cattle are repositories of value. They provide subsistence, and confer prestige.

Because of the short rainy season, the Fulani of the Sahel can't live year-round on the milk of their animals. They have therefore either developed relationships with agricultural populations, or farm themselves. Before colonial period, the relationships with agricultural populations were established through conquest. Contemporary Fulani may still maintain patron-client relationships with "riimaay'be," putative descendants of slaves. Fulani may represent their riimaay'be in important matters before the

outside world as well as assure their daily subsistence. In principle they provide bride payments for riimaay'be. Clients contribute herding or agricultural labor to their patrons. In principle, the two groups are endogamous.

Particular lineages among the Fulani may have distinct status as maraboutic lineages. There is also a variety of endogamous and hereditary artisan castes.

Women in Fulani society may own their own animals, both cattle and small ruminants, and derive income from the sale of livestock. A woman leaves her cattle with her father until it is clear that she will live with and trusts her husband who will manage them. Transactions in these animals are performed in consultation.

Women also milk cows and prepare the milk products. They thus play an important role in animal health and monitor the animals through this close daily contact. Women largely decide how much milk to take, and how much to leave for calves. It is they who sell milk and milk products and use the money to buy the millet for the main meal. They also build and take down the houses, prepare all the daily meals, including getting of water and firewood. They wash dishes and clothes, and take care of children. Because of the year around demand on labor, seasonal out-migration tends to be low.

Transhumance and Resource Tenure

The Fulani productive system depends on seasonal transhumance. With the early rains they prepare fields in fixed base villages, planting them in fonio, millet and sorghum. Once the planting has been completed young males set off in transhumance following expected available water and pasture. Elder men, women and children rest behind with a few milk cows. Men on transhumance milk the cows, and their daily needs are provided through sale and barter of these dairy products.

The routes Fulani take in their yearly transhumance vary with seasonal conditions, and are influenced by relationships with potential hosts along the way. Herders develop and cultivate long enduring arrangements for pasturing cattle on land returning to fallow, and for guaranteeing cattle paths and the use of water supplies. Generally herds are led north during the rainy season, and out from the Niger delta, to keep them away from planted fields, and to provide them with the yearly "cure" of salt and minerals. After spending the rainy season in the Sahel they descend following the harvest of fields, or return to the Niger delta to consume the riparian pastures. Fulani of northern Region II will descend as far as Kolokani, Kita or Banamba. This is a tense time of the year, when cattle enter unharvested fields and conflict breaks out. But if all goes well, cattle consume crop residue and farmers benefit from the manure for their fields.

In most of the project areas pasture tenure takes the form of loosely coordinated access where water tends to be the limiting constraint. Traditionally, wells are owned by the groups that dig or commission them and natural water points are open to all. In the north of Region IV in the Niger delta tenure is more formalized. There, during the Fulani theocracy of Macina in the early 19th century Chiek Ahmadou attempted to order the use of the highly complex and diverse Niger delta environment through the application of a code called the "Dina."

Chiek Ahmadou settled the Fulani in 37 territories (leydi), each with its own complement of fields, dry season pasture, and access to the river. He delineated pastures and trekking routes, and established a pattern for their use. Territorial chiefs (dioro), distinct from village chiefs, acted as resource administrators, granting grazing rights to visitors and guiding the transhumant herding unit. The dioro held yearly councils to adapt trekking patterns to changing climate and social conditions.

The Manding

The Manding system of production developed in an unstable and lightly populated environment in which labor was a more scarce factor of production than land, and access to labor the principle means of coping with environmental risk. The mobilization of labor thus forms the crux of the productive system, and social structure may be seen as a complex set of cross cutting institutions that provide labor where needed among society's interdependent groups.

Among the Manding, residential patrilineages of a depth of two or three generations form the primary production unit. Senior males manage the compound's productive activities, as well as assure their continuation through the performance of religious functions and negotiation of marital exchanges.

The men of a compound work a common field, in which they all have rights and which forms their patrimony. Individuals also have personal fields. Produce from the compound field enters a common granaries, while the harvest of individual fields supplements household consumption. The distribution of labor among these two types of fields varies greatly over time and distance; individuals may be allotted certain portions of the day to work their own fields or even one or two days a week. However, no matter what the arrangement, individual fields remain secondary to the compound fields.

This patriarchal system excludes women from political representation and primary use rights to village resources, making them economically and socially dependent on males. Adult women gain access to resources primarily through their husbands. They generally have no rights to own, manage or inherit lands, livestock, or their produce, although this varies greatly.

In addition to kinship ideology, Manding ethnic groups use the ideology of slavery to express and mediate control of productive and reproductive capacity. In Manding villages, members of families considered to be descendants of slaves, like strangers and immigrants, have restricted political voice and restricted access to labor and land. In principle, they don't marry with freemen.

Manding society also contains a number of endogamous artisan groups, blacksmiths, leather workers, bards.

Vertical patrilineal integration rises to the level of the village. The Manding base village authority on putative primacy of arrival. In theory, the senior male of the eldest village lineage holds the position of village chief, although in reality the colonial administration imposed many chiefs on villages.

Against these vertical institutions, age grades perform a number of functions, including providing smaller compounds access to agricultural labor. In addition to public works, age grades work member fields at critical periods. Other cross-cutting institutions are brotherhoods on the village level and initiation societies on the lineage and inter-village level. Often, village political authority is largely decentralized and negotiated among lineage elders, ward chiefs, age grade leaders, heads of initiation societies, and more recently, councilors imposed by the state.

Although the supra-village organization of the empires of the past may remain in name and memory, they have little institutional basis today.

Soninke and Minyanka

Social organization among the Soninke and the Voltaic groups strongly resemble the Manding model described above. Soninke differs as a result of a more intensive involvement in the West African empires while the Voltaic subgroup we are considering here, the Minyanka, differ in the other sense, from their non-involvement.

Social solidarity remains more evident among the Minyanka. Freeman/slave distinctions do not exist, nor

do the Manding artisan groups. Age groups probably perform a greater proportion of agricultural labor than among the Bambara.

The centralization of village authority is also more fragmented than in Manding villages. Primarily animists, Islam came much later to the Minyanka, and is still the religion of a minority. Man's sacred relationship to the land he farms remains important. Land can't be owned; spirits control its fertility and productivity. First settlers in a region formed a relationship with these spirits, and their descendants serve as land chiefs who administer land. They also set the schedule of agricultural activities and renew the fertility of the land through sacrifices. While in Manding villages ward chiefs administer land attributed to their lineages, in Minyanka society village land chiefs serve this function.

Among the Soninke, on the other hand, centralized political authority and Islam came early. Social hierarchy is more evident and freeman/captive ideology remains more important.

This early involvement in the larger world structures also drew Soninke into trade and migration and the market economy. A long tradition of migration has brought cash into the Soninke economy. Although migrants tend to be young, thus threatening to unhinge this patriarchal society, a variety of factors, including astronomical bridewealth, a lack of investment opportunities, and centralized land tenure have at least forestalled the fragmentation of the extended Soninke family.

In addition to circulating in the form of bridewealth, remittances are invested in cattle, real estate, public infrastructure, agricultural supplies, and consumable luxuries.

The labor Soninke villages loose to migration may be replaced by hired labor. In situations in which such labor is not available, women may be called to contribute more to the common field.

Livestock in Mali's Agro-pastoral and Mixed Systems

The Manding production system is based on agriculture. However, with increasing disposable income in the economy from cash cropping and migration people invest in livestock. While the farmers of the project regions increasingly own animals, raising livestock remains peripheral to the system described above.

Cattle

Except for the Soninke, the non-pastoral groups of the project's three regions do not have a rich history of raising cattle. In the southern portions of the project area, among the Minyanka, cattle is raised for traction. Manding ethnic groups also raise cattle for traction, milk, and increasingly for resale. Even the Soninke of the northern sections of Region I and II who have long invested in cattle usually contract with Fulani to tend their herds. (For a discussion of this relationship, see the Case Study: Beef, Northern Kayes -- Kayes/Bamako below).

In the southern zones, owners pasture cattle in fields after harvest, allowing them to feed on crop residue and fertilize the soil. In cases of recent increases in herd size, cattle over-graze in rings surrounding villages, because there is no established system for managing pasture. In the rainy season, Fulani are engaged to either guard village herds nearby, or take them on transhumance.

Women rarely have rights to cattle. Cows paid for bridewealth are kept by the bride's father. Her mother has rights to the cow's milk.

Raising cattle is a means of investing cash -- of banking earnings -- as well as of displaying wealth. Draft animals are rarely sold, even in times of need. Their sale, which provides earnings for individual owners,

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is seen by other villagers as labor taken away from substance farming and cooperative production. The dedication of time and labor to pastoral activities also threatens indigenous cooperative farming networks based on the control of labor.

Small Ruminants

All of these groups also raise small ruminants. Individuals with restricted access to cash, labor or land often invest in them because they may be raised with limited resources, can be purchased for a relatively small amount, and reproduce rapidly. They provide a means of food and cash security, of banking and investing capital, as well as a supply of milk for the family.

Women own the majority of small ruminants raised in agro-pastoralist and mixed farming systems, purchasing them with their savings from cash crop sales. Men may also invest in small ruminants. Children may own them having received them as gifts.

Women play the primary role in raising these animals. They pen or stake them in the rainy season to keep them out of the fields, and ask family members to bring forage when they return from in the evenings. A woman may also charge her children with assuring the feeding of sheep and goats. After the harvest, they are left to graze freely, their feed sometimes supplemented with millet bran, peanut greens, and kitchen salt. In the dry season, small ruminants are watered with water drawn from wells in the regions of Segou, Koulikoro and Bamako. In Kayes they are watered from ponds.

Agro-pastoralists rarely herd small ruminants together. However, if a village maintains a particularly large number, they may be pastured in a village herd, separately from cattle, entrusted to transhumant pastoral families who spend part of the dry season on village lands.

A woman may inherit her mother's small ruminants. (For further discussion of Mali's small ruminant filière, see the Commercial Organization section below.)

Poultry

Agro-pastoralist and mixed farmers, primarily women also raise poultry, again because of the possibility for their production with limited resources. This system is described in further detail below in the discussion of the poultry filière.

D. Transformation of the Traditional Systems

Economic and Institutional change in the Agro-Pastoralist and Mixed Farming Systems

These productive systems we have described evolve in a rapidly changing political and economic environment. The seeds of rural Mali's relationship to the state were planted in the colonial period and continue to influence development projects. The colonial administration, required to support itself through export and taxes employed draconian methods which disrupted existing socio-economic systems and promoted an alienation of the rural population which has yet to be overcome. Colonial administration replaced traditional leaders and divided traditional groups administratively. To turn a profit, the French introduced peanuts and cotton and employed forced labor construct the infrastructure for their transport. The state in West Africa has been shallow in reach, yet harsh in its methods.

APEX will, at least initially, work within or alongside a highly centralized administration which has only slowly evolved away from the principles of hierarchy and unity of command. In recent years, the GRM has established village, arrondissement, cercle and regional councils to give representatives of local communities and socioeconomic organizations a greater voice in determining the allocation of

development projects and priorities in their jurisdiction. However, although these Development Committees and Councils have been given some decision-making power, they have so far had little real autonomy.

The Manding agricultural community, of which we have presented an idealized version, has increasingly become integrated into the state structure and international market economy, resulting in gradual breakdown of lineage society and increased economic differentiation. With migration and cash cropping young men gain the resources necessary to pay bridewealth earlier, and establish their independent families sooner. Although they are independent of their elders, they also lack the resources in labor they otherwise would have had and the ability to respond to the vagaries of chance and climate. Compounding this shift, inter-aid societies more often act as labor teams rented by the heads of more wealthy families.

Village Associations (AVs) are the most dynamic of the local level organizations introduced by the state. They have been formed largely to facilitate agricultural production activities by the parastatals (ODRs), and serve as the basic unit for extension services, agricultural credit and input supply and marketing. Critical to the functioning of Mali's AVs has been the introduction and rapid spread of functional literacy programs that have resulted in the assumption of increased responsibilities by the AV. Numerous village associations in Region II conduct livestock-related activities. In the CMDT zone multi-functional associations supported in the PAAP project include the development of pastures and trekking routes among their activities. It is too early to assess the success of these associations.

Changes in Mali's Livestock Production Systems

Livestock productive systems in Mali have undergone enormous changes since the mid-70's. Some research indicates that the droughts of the early seventies decimated up to half of the national cattle herd. In the intervening years, the national herd has massively shifted south. Livestock distribution figures indicate that more than 30% of the cattle population (over 1,200,000 head) have moved out of the regions of Kayes, Mopti, and Gao, into the regions of Koulikoro, Sikasso, and Segou. The cattle population of Sikasso has more than doubled. It has increased by 25% in Koulikoro and Segou.

According to DNE agents interviewed, cattle have undergone the greater proportional shift to the south, while small ruminants have been better able to endure the harsh Sahel conditions, and their herds have been more quickly regenerated.

This loss and displacement of Mali's livestock have engendered substantial specialization in productive systems. Ownership has shifted from pastoralists to agriculturalists, government employees, merchants. Herders are farming more and agriculturalists, civil servants and merchants hold more livestock. As historic patterns break down, and individuals enter productive systems new to them in a context of resource scarcity, conflict has increased dramatically.

Along the Niger delta, the drought as well as the expansion of cultivation are leading to the breakdown of organization imposed through the Dina. Colonial and Malian administrations have slowly worked away at the legitimacy of the ordered use of natural resources established in the Macina state. The suppression of slavery altered the relationship between riimaay'be cultivators and Fulani herders. In 1961 Mali outlawed the taxing by dirq of strangers grazing their animals. As more land coming under cultivation, less and less is available for grazing and trekking paths. As the unstable soils have weakened, land that once was grazed (the bougoutieres) has been transformed into rice fields. At the same time, droughts have forced earlier and longer transhumance and the non-transhumant animal population that use the resources but are not recognized in the Dina has increased.

Longer duration in transhumance accounts for some of the increase in livestock in the south, but there

has also been a massive displacement of pastoralists from the north, chased down by the droughts. As in the Delta, in these zones pressure has increased on trekking routes as a result of the expansion of land under cultivation. Drought has also limited access to water. Herders who have moved south and live and graze their animals in new lands are strangers, have few established relationships with local agriculturalists and as a result have limited rights in resources. In Mali, even Fulani who attach themselves to a village and manage the village's animals for generations remain strangers and do not gain primary rights in pasture or fields. The "new strangers" who have arrived after the droughts and compete for increasingly limited resources become increasingly marginalized.

One response herders have taken is to hire out their skills to new owners of livestock. As noted above, herders in transhumance in this area have historically maintained only secondary rights in land, being granted access at the discretion of agriculturalists after harvest. In recent years, agriculturalists have increasingly invested in livestock, aggravating this already imbricated land use pattern. Farmers have increased their ownership of cattle for traction, milk, fattening and simple accumulation. Land holders now collect for their own livestock the crop residue once given freely to transhumants. In some cases they claim rights to this residue even before it is off the field.

Despite the high concentration of semi-nomads in the south of the country, few attempts have yet been made to work with pastoralists on the problems of their integration with agriculturalists. One exception is the ODIK project which has worked with pastoralists to lay out trekking routes north-south from Balle to Dioumara. Six pastoral sectors were constituted, managed by joint committees of pastoralists and agriculturalists. However, because of lack of participation by agro-pastoralists, these attempts have not been successful.

Increased income in the south has also translated into an increase in herds in the urban and peri-urban areas. A new class of livestock owner has also developed, peri-urban "neo-eleveurs." SPOT imagery identified 20,000 heads of cattle in the Bamako peri-urban area in 1989. They occupied 105,000 ha divided in five perimeters situated between 20 and 100 km from Bamako.

E. Commercial Organization

The pastoral, agro-pastoral, mixed farming and modern production systems feed Mali's commercial networks (filières) of varying range and complexity. A broad base of small producers, frequently women working with meager resources, dominate some commercial networks such as poultry meat, milk and small ruminants. Large, well organized elites control portions of other networks, such as the formal urban milk market, hides for export, and, long distance cattle trade. High urban demand and small scale rural production characterize the poultry filière, while seasonal, unstable demand and capital intensive production methods characterize the Bamako milk filière. Both pastoralists and agro-pastoralists, often those with limited resources, produce for Mali's local and international small ruminant markets, while the national hides market is limited, and the international market has collapsed. A great number of dairy oriented pastoralists produce cattle for ambitious and competitive traders seeking new international markets. Despite these differences, the filière all manifest themselves in a cash and information poor environment producing networks similarly rife with intermediaries and constrained by relationships of indebtedness and clientship.

Poultry

Women of Mali's sedentary ethnic groups produce the vast majority of Mali's poultry using small scale, resource-limited methods. With earnings from the sale of individual field crops, a woman will purchase a hen in a nearby market, which she will tag and let loose in the yard to fend for itself. Eggs will not be eaten, but raised to increase the owner's flock, or for sale. A woman will sell a few chickens at a time in the village or a nearby market, using the revenue to purchase primarily clothing for herself and her

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family.

Much of Mali's poultry is produced and consumed locally, however around larger urban centers a strong demand for local chicken reaches out into the surrounding regions. Buyers specializing in poultry marketing will tour the rural markets, collecting poultry and transporting them to urban markets, generally using commercial means.

Poultry producers within the orbit of this strong urban market are ready to adopt improved methods. Extension efforts for Mali's poultry producers have been limited, but it has born out a willingness to change to take advantage of the market. For example, a simple form of chicken coop introduced by Mali Livestock II to a limited number of women producers have been adopted by others.

A limited number of commercial producers, no more than fifteen, provide eggs for Mali's urban centers.

Case Study: Poultry, Region II -- Bamako

Much of the poultry sold on the Bamako market is produced by women living in a zone described by the villages of Fana, Dioila, Masigi (in Region II) and Konobougou (in Region IV).

Women of this mostly Bambara area cultivate their individual fields in a variety of crops such as okra, henna, corn and vegetables, which they market and invest the profits in poultry. With the money earned, a woman will buy a hen or two on market day in a nearby village. At home, she attaches a piece of cloth or tin to the chicken's ankle as an identifying marker, and sets it free in the yard. Often, such chickens are left to fend for themselves, finding food as they will, but more and more, women set aside millet bran from the day's meal for the chickens. Sometimes mud coops are built.

Eggs are not eaten. They are considered bad for the health of young boys, but more importantly, they are potential future chickens.

Once a woman has a number of chickens she will take them to the nearby market, where buyers come from Bamako. She enters the profit into her own budget, which may be used to buy clothes for herself and her children, or cotton to spin and have woven, and during the rainy season, buy ingredients for sauces.

Buyers, men who specialize in reselling poultry will bring the poultry, even hundreds at time, back to Bamako by bush taxi. Occasionally they organize and rent a bush taxi for the excursion.

Poultry prices may double between these villages and Bamako; at the moment there is a solid demand for these local yard-raised chickens. As a result, people are investing more in poultry raising in this region. Young men of the villages have begun to invest as their mothers have. The demand for vaccine in the area is high.

Beef

Cattle marketing in Mali is a complex and varied phenomenon. In grossly simplified form, it works like this:

Transhumant cattle owners will bring their animals to an initial market to sell, often through an intermediary. Agro-pastoralist cattle owners, on the other hand, will sell their animals to an itinerant buyer financed by a merchant. The buyer then brings the cattle to the merchant, who may at that point sell it to butchers on credit.

Butchery is a profession of limited status in Mali, entered by members of various ethnic groups through

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apprenticeship.

Cattle arriving in remote markets from either of these two sources may be brought to a more central market where it is resold, again often through intermediaries, and assembled into larger, sometimes multi-owner herds, for transport to a terminal or export.

Transporters of cattle by truck will face a series of legal and illegal taxes on route. While transporting by hoof may avoid some of these taxes, Mali's trekking routes are increasingly restricted by the expansion of cultivated land.

Cattle fattening plays an increasingly important role in the beef filière. Merchants, larger farmers, government employees, and larger butchers buy cattle produced in the traditional transhumant and agro-pastoralist systems and fatten them for resale using crop residue from their fields, improved crop residue, forage crops and industrial feed.

Case Study: Beef, Northern Kayes -- Kayes

The majority of the cattle consumed in the city of Kayes is produced in the northern part of the region of Kayes. Soninke agro-pastoralists in villages in this area produce the much of this cattle, as do Moor transhumants whose camps may be found further north, and on the lands surrounding the Soninke villages. This case study will focus on the Soninke producers.

Soninke herd village cattle together, engaging a Fulani or Moor to tend them. This herd is composed of the animals of the extended families of the village. Compound heads hold and manage the cattle of the extended family. Individuals of the compound may have limited rights in particular animals, but the herd is seen as property common to the family, to be used to resolve larger family needs. For example, if a woman with cattle marries into the family, the head of the compound pays the tax for the animals from the family treasury under his supervision, and takes responsibility for the new cattle. Male offspring of these animals join the family herd, while female offspring are considered to be the property of the woman. Decisions concerning all these animals are made jointly.

Compound heads will sell cattle to cover large expenses such as bridewealth and taxes. They select animals to be sold with the goal to increasing the dairy capacity of the herd. Steers, cows that no longer provide milk, and bulls from cows who were not good milk producers will be sold first.

In the post-harvest period when many Soninke marriages take place, men -- often young men -- pass from village to village buying cattle. Usually Fulani, these men know cattle and know the villages of the region. They have detached themselves from their families and work for a season to earn cash to subsidize the costs of building their own herd and family. Merchants in Kayes have forward financed them to use their skills and contacts to purchase animals at good prices.

The buyer will collect cattle from Soninke villages and attached Moor camps and conduct them to a holding village outlying Kayes, such as Segala. Once there, the buyer sends word to the merchant, indicating the number and quality of animals he has purchased.

The merchant then joins the buyer in the outlying village and examines the animals. He settles with the buyer, and categorizes the animals purchased, determining those that will be sold in Kayes, and those to be sent to Bamako for sale or export. To send the cattle to Bamako he will engage a drover licensed in cattle trekking from Kayes to Bamako. The drover will be paid a flat fee per head.

A single merchant may finance several buyers to bring in cattle for him. He resides in Kayes, where he keeps an eye on that market. Cattle merchants come from a variety of ethnic groups, but predominantly

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those who are familiar with cattle, such as Soninke, Moors, Fulani, or Jogorome. To make the most of their commercial license merchants also engaged in trading other commodities in addition to cattle, such as cloth or food staples.

When conditions are favorable, the merchant will send an assistant to the outlying village to bring in a cow which he will give to a butcher.

While a merchant may have several butchers attached to him and whom he keeps supplied in cattle, butchers generally work with one merchant. They receive animals from merchants on credit, and reimburse after sale of the meat. Butchers are chronically indebted to these merchants.

Butchers come from a variety of ethnic groups; theirs is a profession and not a casted skill, such as leather working or blacksmithing. The profession may be passed from father to son, but individuals also decide to become a butcher by apprenticing themselves to an experienced butcher.

Several apprentices will work for a single butcher. Under the direction of the butcher, they will slaughter the animal, skin it, and haul the carcass to the butcher's shop. The butcher decides what parts of the animal to leave whole, what to butcher and sell by the kilo (or in some regions by quantity), and what parts of the animal to grill for retail sale. He or an apprentice will sell this grilled meat. In addition to the skills apprentices learn, they may be given certain parts of the animal, the tripe or the head and hooves.

Case Study: Beef, Delta -- Fatoma and Sofara terminal markets for export

The beef filière in the fourth region has a different character from the Northern Kayes -- Kayes filière described above. Here, transhumant Fulani produce the cattle in the Niger delta of Regions IV and V. Cattle pastured during the rainy season in sahel areas surrounding the delta, the "Seno" and the "Mema," also feed this filière. Following the system of organization formalized in the 19th century state of Macina, cattle owners of the delta herd their animals out from the delta in the rainy season when the river floods, and return to graze them on the delta pastures after the rains.

Upon return from transhumance owners often sell many cattle at a time to pay family's taxes. The market is often saturated at this time. Owners will then continue selling off animals at a slower rate through the dry season. To sell his cattle, an owner will leave the herd outside of town, and enter the market with the animals he intends to sell. He will often bring with him a "host," a resident who knows the market and in whom he may trust. Hosts are cattle owners and herders themselves and may actually lodge the cattle owner and provide pasture for the portion of his herd he is not selling. A man chooses as a host an old friend of the family, a member of the extended family, or a member of the same Fulani subgroup. After discussing market conditions with the host, the owner will decide how much to ask for each animal. The host himself will negotiate the sales and take as profit the amount gained over the sum agreed upon by the owner.

The Fatoma and Sofara markets, 15km and 80km from Mopti respectively, are held tuesdays. When an animal is brought to market, its specifications are taken by a market manager. Sales are registered, and buyers given documents documenting the transaction. Buyers in these markets are exporters who specialize in this trade. Cattle are loaded in trucks in the markets of Sofara and Fatoma and sent to destinations in other countries in the region, to Burkina Faso and there sent to further destinations by train. Exporters may also sent purchased cattle to Ivory Coast by hoof.

In Sofara the transhumant herders have organized themselves in cooperative. Initially organized to gain access to industrial feed, they also gain credit from banks through the cooperative to purchase cattle for fattening. They also use credit to purchase cattle which they export themselves to Ivory Coast.

Hides

The hide filière begins with the butcher whose action transforms the hide into a commodity. Exporters, often working through a network of agents, once advanced credit to butchers, to be repaid in hides. An exporter's employees then treated the hides for export and sold them to his foreign clients. In recent years Mali's hides have developed a poor reputation and their international market has collapsed.

Internal demand for hides is limited and informal, with craftsmen buying directly from butchers.

Case Study: Hides, Northern Kayes -- Kayes/Bamako

The Northern Kayes -- Kayes hides tillère, when active, works like this:

Once a cattle merchant sells an animal to a butcher, he maintains no claims on the hide, which is considered part of the butcher's profit from the transaction. Butchers in Kayes receive credit from hide negotiators, usually based in Bamako. This credit gives butchers a certain independence in their relationship with the cattle merchants. As butchers slaughter animals, they put the hides aside. Hide negotiators have agents who pass regularly and collect the hides, subtracting from the butcher's debt as they are collected.

Negotiators specialize in hides and skins, they generally do not have other enterprises on the side, and often come from families already involved in livestock. Based in Bamako, they maintain contacts with companies in Europe to whom they sell their products.

Negotiators hire people to wash and clean the skins, then stretch them in sheds to dry in the shade. A negotiator's employees may be well educated, veterinarians able to classify the skins and treat them.

Hides in Kayes are purchased by agents for these negotiators. The agents who collect and treat the hides in Kayes, and either export them directly by train to Dakar, or send them to Bamako for export elsewhere.

In recent years, Malian hides and skins have developed a bad reputation in Europe and their market has fallen off drastically. Butchers no longer get advances from negotiators, sell their hides for greatly reduced prices, if at all, and remain dependant upon cattle merchants.

There is also a small national market for hides in Kayes. Individual leather workers purchase hides directly from butchers.

Small Ruminants

The vast majority of small ruminants consumed in Mali are sold in local, rural markets, and consumed for religious festivals and sacrifice. In the agro-pastoralist and mixed farming setting, husbands play a strong role in the decision to sell the small ruminants of their wives, and because it entails time out of the village, he may also be charged with the sale when a buyer can't be found in the village. However, unless a sheep or goat is sold to address an emergency at the level of the larger family, a woman keeps the revenue, which she may invest in life-cycle events, such as her daughter's dowry or dress clothes for herself and her children.

Small ruminants sold by Mali's pastoralists for the urban and export markets follow much the same type of filière as do Mali's cattle, characterized by a series of markets and intermediaries between the producer and the consumer. However, because small ruminants are less expensive, the bonds of

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indebtedness along this chain tend to be less frequent and less strong.

Case Study: Small Ruminants, Niono -- Segou/Bamako

The Bamako and Segou small ruminant markets are fed in large part by the animals raised by the transhumant populations of the cercle of Niono in Region IV. Fulani and Moor transhumants, many of whom come from the more sedentarized riimaay'be and bella sub-classes of these ethnic groups, select out small ruminants from their mixed herds for sale. The head of a family, often working through an intermediary, will take the animals to the weekly market in a nearby village where it will be bought by another pastoralist reconstituting his herd, or it may be bought by a trader for resale in the Sunday market in Niono. A producer may also directly bring his animals to Niono for sale.

In Niono, merchants again purchase animals from producers and traders through intermediaries. Sellers rely on intermediaries because they know the market and have established relationships with potential buyers. However, because their profit is dependant upon the sale price of the animal, they may spend a good portion of the day seeking the best price and selling the animal.

Merchants buying small ruminants in Niono turn them over to drovers for trekking to Segou and Bamako, where they are sold to other middlemen who in turn sell them to butchers, often on short term credit.

Some of these merchants are Bambara women who work with interpreters and in turn sell the animals directly to butchers in the cities on limited credit for a week or so. The small ruminants are transported in the bush-taxis and twenty two seat busses that cover these routes. From the market to the butchers in Bamako the buyers pay a series of taxes on their wares. The cooperative which built the market in Niono collects a fee; customs collects a fee on leaving Niono, and national police collect tax on the inter-city road.

After supplying the butchers with whom she has contacts, the merchant may move to another market held mid-week to purchase more animals to supply the butchers, collecting at that time on the credit loaned the butcher earlier in the week. Some of the buyers in Niono are larger butchers in Bamako and Segou who purchase the animals for distribution themselves.

Milk

Mali's milk filière is composed of a range of overlapping and coexisting systems including the extensive pastoral, semi-intensive agro-pastoral, and resource-intensive modern systems.

In the pastoral system, practiced primarily by transhumant Fulani and Moor ethnic groups, women maintain rights to milk produced by the cattle and small ruminants owned or managed by the men of their families. They head the milk to neighboring markets and villages where they sell it for cash or barter it for millet. Profit from the exchange goes to daily subsistence needs, primarily food and clothes for the nuclear family.

A significant number of sedentary male Malians also produce milk for the market. This group includes villagers who purchase cattle with migrant earnings, merchants who invest their profits in cattle, and government workers who invest portions of their salaries. These owners often engage herd managers paid in cash and kind -- who market the milk in nearby secondary urban centers. The revenue of this group of producers are more likely to be saved or invested in other enterprises. This producer is also more likely to perceive the cattle themselves as a commodity than the transhumant producer.

Modern productive systems also feed Mali's milk market. These producers, members of Mali's economic and political elite, run European-style farms on land grants outside of Bamako. Their employees truck the produce to Mali's milk processing factory, as well as to restaurants and hotels. Revenue is either re-

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invested, or applied to other enterprises.

All these producers work under the constraint of a market which fluctuates seasonally and in which consumers readily substitute imported products for a local one.

Case Study: Milk, Bamako Outskirts -- Bamako

Three distinctly different production systems feed the Bamako milk demand. Village level systems exist alongside limited capital peri-urban parks and the capital intensive modern production systems run on rural concessions. This case study will focus on the latter two types, which produce the majority of milk purchased in the District of Bamako.

Six or seven dairy associations run cow parks on the outskirts of Bamako. We will describe one of them, the association of Bakodjikoroni.

Some of the members of this association began raising dairy cows on the outskirts of Bamako over thirty years ago, before Mali's independence. The members, of whom there are about thirty five live in Bamako, and commute to the park daily.

Over half the members are women. In the mornings they gather and take a taxi out to the park from Bamako. At the park, they consult with the Fulani men who they engage to tend the cows. The herders are paid monthly salaries, and are also given Friday's milk.

The women also bring the cows' feed in the morning. Because of urban growth, very little pasture remains around the park. The women feed their cows millet chaff purchased from the various millet mills around the city. They also feed them plantain and potato skins purchased from street vendors who sell french fries and fried plantains. Extension service agents who work with the women are also able to sell them allotments of industrial feed.

In the evening, the women return to Bamako with the milk of the day and sell it door to door to clients they have established over the years. Some is also sold to milk vendors in the market. The market is seasonal, with much less milk sold in the cold and dry season. At present the women have difficulty selling their milk at any season, and have been obliged to lower their price per liter from 300 CFA to 200 CFA.

The park itself, cement pens for the cows, was built twelve years ago by the founders of the association. Women hold their cows held individually, at average 10 to 15 each, although some may own up to 60.

The association has recently been asked by the governor of Bamako to cede their land to residential construction.

Rural Concessions:

In addition to parks like Bakodjikoroni, large capital intensive farms on rural concessions also produce milk for Bamako. The owners of these concessions are well educated, maintain various sources of income, and live close to the sources of Mali's political power. They are high government officials, army officers, directors of parastatals -- members of Mali's elite.

The GRM has given these owners concessions of land that range from 2 to 5 hectares and are found in a 100 km circle around Bamako. A very few concessions are 10 to 15 hectares, and even fewer have been larger. The GRM grants the land on the condition that it be put into use within ten years, at which

point, if the conditions have been met the title becomes permanent.

The concession owners hire employees to run their farms using modern techniques. The cattle is kept in barns and pens. Stock has been improved by imported animals and crossbreeding. The animals are fed either industrial feed or improved mixes. The owners employ veterinarians in their off hours to tend to their animals' health.

The concession owners sell milk to Mali's milk produce factory Malilait with whom they hold contracts. They also furnish milk to hotels, restaurants, and the Bamako milk market.

Mali's peri-urban producers have been very well organized. Their cooperatives and associations have been able to control milk markets in Mali. Because of the political clout of their membership, the members of Bamako's cooperatives were able to pressure Malilait to purchase their milk at a higher price.

These conditions have at least temporarily changed since the Coup d'état. Malilait has refused to pay the higher prices on milk that had been imposed on them, claiming fiscal insolvency. The milk producer's cooperatives attempted to force the issue, striking Malilait. But this was unsuccessful and purchase price of milk has been reduced from 250 CFA to 200 CFA.

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ANNEX F.5
NATURAL RESOURCE ECONOMIC ANALYSIS

ECONOMIC AND FINANCIAL ANALYSIS OF NATURAL RESOURCE MANAGEMENT INTERVENTIONS:

THE ANALYTICAL PROCESS

Dr. Kjell Christophersen

1. ANALYTICAL PROCESS

1.1 Introduction

This section marks the beginning of the development of a process for analyzing the economic and financial feasibility of land use activities intended to increase the production of digestible biomass (fodder and agricultural residues). It will be refined and improved by Malian staff during project implementation, particularly through the project monitoring and evaluation component as hard data becomes available. The analytical process has its roots in similar work carried out for the USAID Africa Bureau Natural Resources Management Project in 1990 (Christophersen et al 1990). The analytical time horizon is 20 years including the anticipated six-year USAID/Mali disbursement period plus an additional 14-year period during which project activities are expected to continue with recurrent cost funding from the GRM.

At this stage, the analytical process can only be descriptive for lack of any hard data on which to base assumptions. It consists of the identification of relevant variables and their functional relationships associated with several different natural resources management (NRM) interventions. The detailed analyses will be carried out during the early stages of project implementation as data becomes available after having determined the specific NRM needs in each region. It is important to emphasize at this stage that the NRM interventions discussed here are but examples to illustrate the process. The specific interventions that will eventually be extended to local resource managers can only be determined following field reconnaissance missions.

One of the major constraints to the economic development of the livestock sector is alimentation de bétail--there is not enough fodder or agricultural residues (digestible biomass) for the animals to eat during the dry season. More must be produced. How the project should promote increased production of fodder and agricultural residues, however, must be well thought out and understood. It is a necessary condition that any fodder production schemes or NRM interventions recommended by the project must be financially attractive to participant farmers. The options are limited:

- Fodder production by itself (mono-cropping). This is not yet a viable scenario unless the land is in fallow. Fodder is still considered a low value crop compared to the grain crops (sorghum and millet). Although there are no well developed markets for fodder in any of the project regions, however, farmers are often selling niebe residues in local and scattered markets during the dry season at prices generally higher than millet or sorghum prices. These observations indicate that the project should strongly emphasize the development of fodder and fodder mix markets.
- Fodder production in association with grain crops. This may be a viable scenario if rainfall is adequate. Rainfall, however, is highly unpredictable in all of the project regions and many may perceive the scheme as too risky.

- Fodder production by itself on fallow land (jachère amélioré). This is a viable scenario and is meeting with widespread success in the project regions.
- Fodder production on fallow land in association with other appropriate NRM interventions such as the establishment of windbreaks, vegetative bands, contour dikes and Acacia albida trees. This scenario will not only increase total fodder production, but also the total supply of agricultural residues as crop yields too will increase in response to the NRM interventions.

Another reason for investing in fallow land is that, by the time the land is brought back into production, the NRM interventions will already have matured to the point where they may begin to show increases in crop yields vis-a-vis a no intervention option. Windbreaks, for example, will register no positive impact on crop production during the first few years because of the space occupied by trees instead of crops. Only when the trees mature to the point where they begin to break the wind and thus slow the erosion process will crop yields begin to increase.

The analytical process described here focuses on the latter two schemes--jachère amélioré--as being most logical. The last scenario--fodder production in association with other appropriate NRM interventions, is most interesting because it also addresses another important issue relevant to the livestock sector, that of encroachment pressures on the "pistes de bétail" in all target regions. Traditional pasture land is increasingly being reclaimed for agriculture because farm land is gradually losing its fertility and cannot continue to support an increasing population. The only way to relieve this encroachment pressure is to improve the productivity of existing farm land. This can be achieved by way of many appropriate NRM interventions such as those mentioned above (windbreaks, vegetative bands, contour dikes, Acacia albida, live fences, and many others). The APEX project should support and promote the extension of improved NRM techniques particularly in areas where the encroachment onto pasture land is severe, and where the quantity of agricultural residues is not sufficient for the livestock population.

1.2 Analytical Perspectives

The overall objective of the analytical component is to enable project staff to estimate the amounts of digestible biomass made available over time as a result of having implemented field activities designed to increase the production of both fodder, crops and crop residues.

All of the analytical results are expressed in net present value (NPV) terms. The internal rate of return (IRR) is not used since the nature of the cash flows is often such that the IRR obtained is meaningless¹.

¹ To give it meaning, the IRR must be compared to the returns from alternative investments -- the "opportunity cost of capital." If the IRR is higher than the opportunity cost of capital, the investment is feasible. If the opportunity cost of capital is already known, however, it can be used directly to compute the NPV--a monetary measure--which describes the net wealth increase over the investments and the opportunity cost of capital. A monetary measure is more meaningful. There must be at least one negative net cash flow entry (where costs exceed benefits) to offset the positive ones, otherwise the IRR cannot be calculated. The nature of the investments in some of the examples used, however, is such that benefits always exceed costs. In these cases there are no negative cash flows and the IRR cannot be computed.

The economic and financial analytical process addresses three different perspectives: 1) the local resource managers (farmers, herders, etc.), 2) the donor, and 3) the host country.

1.2.1 The Local Perspective

The project will, in effect, ask local resource managers to invest time and money to carry out appropriate NRM interventions (clear sites, plant fodder crops, establish windbreaks, etc.) for the purposes of: a) improving their stewardship over the land resources they now control, b) reducing the incentive to farm on land now in the livestock corridor, and c) increasing the production of fodder and digestible agricultural residues. A necessary condition for success at this level is that the proposed activities make financial sense from the perspective of the local resource managers. The process is illustrated in Table 1.5 for the windbreak alternative (2) showing the difference between the "no intervention" and "with intervention" scenarios. In this alternative, however, costs are incurred to establish the windbreaks as assumed in Table 1.3 causing both fodder and crop yields to increase, also as assumed in Table 1.3. Both fodder and crop yields are assumed to increase by an average of 10 percent per year as a result of the windbreaks during the first five years. Vis-a-vis the assumed 1250 kilos initial dolique yield, therefore, another 10 percent will be produced because of the windbreak intervention. Over time, this increased yield will also decline at the rate assumed in Table 1.2. The change in TR column also reflects the wood values received by the farmer beginning in year seven as assumed in Table 1.3. The TC column reflects all costs associated with the establishment of the windbreak interventions—the cost of the seedlings, all labor costs, plus the cost of the dolique seeds. The resulting NPV is positive indicating the intervention is financially feasible from the farmer's perspective, given the assumptions.

Table 1.5 Alternative 2: Windbreaks

Yrs	NO INTERVENTION			WITH INTERVENTION			NCF
	Crops	Yields	TR	Incr. Yield	Change in TR	Total Costs	
0	Dolique	0	0	1363	54500	18517	35983
1	Dolique	0	0	1226	49050	3275	45775
2	Dolique	0	0	1104	44145	2970	41175
3	Arachid	600	30000	54	2700	2970	-270
4	Sorgho	450	15750	41	1418	0	1418
5	Millet	405	12150	36	1094	0	1094
6	Millet	365	10935	131	3937	0	3937
7	Dolique	0	0	1531	64950	12500	52450
8	Dolique	0	0	1378	58825	12500	46325
9	Dolique	0	0	1240	53313	12500	40813
10	Arachid	600	30000	216	14500	0	14500
11	Sorgho	450	15750	243	12205	0	12205
12	Millet	405	12150	219	10261	0	10261
13	Millet	365	10935	197	9605	0	9605
14	Dolique	0	0	1700	54700	12500	42200
15	Dolique	0	0	1530	49600	12500	37100
16	Dolique	0	0	1605	51844	12500	39344
17	Arachid	600	30000	351	14230	0	14230
18	Sorgho	450	15750	263	11598	0	11598
19	Millet	405	12150	237	10808	0	10808
20	Millet	365	10935	213	10097	0	10097
NPV (F CFA)							102782

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Similar tables should be developed (and are in the analytical model developed for this section of the PP) for all of the NRM alternatives considered in all project regions.

1.6 Donor and Host Country Perspective Assumptions

The purpose of the donor perspective analysis is to "package" the technical NRM interventions with conditions that must be present in order for the interventions to succeed. For example, it is probable that the local farmers will need access to some form of rural credit to be able to carry out the activities. If the interventions cause crop and fodder yields to increase by as much as assumed, farmers may need additional equipment such as carts to haul produce to markets, donkeys to haul the carts, etc., which will require access to credit. The project may first have to fund a study on the credit availability and options as well as carry out financial accountability workshops for project participants.

Studies on how to resolve land and tree tenure problems in local areas will also have to be carried out, probably in conjunction with training programs to implement the recommendations of such studies. Similarly, the success of a fodder production program could hinge on the presence of a fodder bank system in the region which may require that the donor invests in some building infrastructure. Other prerequisites for successful implementation of field activities may include the establishment of grain banks, the provision of technical assistance to carry out relevant studies, the provision of appropriate training of key individuals or associations, etc. The best way of obtaining such information is to observe what is happening in other areas where similar activities have been or are currently being successfully implemented and document the conditions that were present that are also essential to the success of the effort.

Training courses, funded by donors and retraining funded by the host country. All of these activities will require that assumptions are developed on the number of people to be trained, for how long, where and how often. Each assumption has a cost and benefit implication. Who will teach the workshops, how will the participants get into the field, how much per diem must be paid to local participants, etc. The assumptions are summarized in Tables 1.6 - 1.11 below. All of the assumptions listed in the tables are hypothetical and only serve to illustrate the process.

1.6.1 General Assumptions

Several general assumptions pertaining to the feasibility from the donors perspective are given in Table 1.6. They include the costs of international air fares, per diems, in-country travel and local per diem assumptions as well as gasoline prices. Also included are estimates of contractor labor, overhead and fringe benefit rates. The most important assumption here is the discount rate. The rate is different (much lower) than the farmer perspective discount rate because of the fact that the donor and the host country have different perspectives on risk than does an individual farmer. The farmer has everything to lose and need to be well compensated for the risk he takes. The donor or host country, on the other hand, have diversified portfolios and can spread the risks. Hence, a much lower rate is justified.

Table 1.6 General Assumptions

Discount rate: 15%	
RT air fare	\$2,500
RT in-country travel	\$40
Per diem/expats, ST TA	\$190
Local per diem	\$10
Exchange rate, \$1 = FCFA	275
Gasoline/l	\$0.50
Contractor OH, LT/ST	70%
Contr. OH, travel/procurement	20%

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1.6.2 Long Term Training

Table 1.7 summarizes the (hypothetical) long term training needs associated with the natural resource component of the project. It is probable that some long term training will have to be funded to ensure that technical bottlenecks in the sector will not develop later for lack of qualified personnel. These training needs will become increasingly evident during project implementation as field activities are carried out and gaps in host country capacity in the kinds of disciplines required begin to emerge.

Table 1.7 Long Term Training

Expertise	Level	Years	Cost/yr	Int. Rts	Travel	TC	No.
Ag.econ.	MS	1.5	10000	1	3000	15000	1
1 Res.econ.	PhD	2.5	11000	2	6000	27500	
1 Nat.sci	MS	1.5	12000	1	3000	19000	
1 Soc.sci	PhD	2.5	12000	2	6000	30000	
1 Res.plan.	MS	1.5	13000	1	3000	19500	5
	10	58000	7	21000	110000		

1.6.3 Short Term Technical Assistance

Table 1.8 outlines the process for estimating the short term technical assistance required for the NRM component of the project, for illustrative purposes only. Factored in are the kinds of expertise required, the number of billable days the experts will spend on the tasks, their daily rates, the number of international trips they will be taking in the context of the task and travel and per diem costs. The TC column estimates the total cost of the activity.

Table 1.8 Short Term Technical Assistance

Rural Credit	Days	Sal/dy	Trips	Trv. Cst	TC
Economist	25	250	1	3600	19625
Fin. mgr	25	230	1	3600	18775
Sociol.	25	260	1	3600	20050
Tenure					
Econ.	30	250	1	5100	24330
Fin. mgr	30	230	1	5100	23310
Sociol.	20	260	1	5100	18260
Marketing					
Econ.	25	250	1	5100	21125
Fin. mgr	25	230	1	5100	20275
Sociol.	25	260	1	5100	21550
Mkt exp	50	150	0	0	23550

1.6.4 Short Term Training

Table 1.9 illustrates the short term training needs for the rural credit, tenure and marketing "conditions" provided by the donor. It is anticipated that USAID will fund any initial training workshops whereas retraining workshops will be funded by the GRM. Included in the table are variables specifying the length of

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the workshops, the number of students anticipated, their per diem and travel costs, the number of faculty required and their per diem and travel costs.

1.6.5 Vehicles and Infrastructure

Table 1.10 estimates the budgets for vehicles and buildings in the context of the activities to be supported by the project.

1.7 Donor and Host Country Perspective Analysis and Results

1.7.1 Donor

Table 1.11 summarizes the (hypothetical) anticipated investments made by the donor during the six-year disbursement period for the natural resource component. In Table 1.10, the donor (USAID) will make investments in training (long and short term), technical assistance and certain infrastructure, all in the context of the field activities to be undertaken. In other words, the scope and magnitude of the field activities determine the needs for additional technical assistance, training and infrastructure support needed to ensure financial security (credit), tenure, and access to markets, etc. The summary table indicates that the donor support ends after six years.

Table 1.9 Short Term Training

Training	Initial	Retrain
Rural Credit		
Days per workshop	10	5
No. trainees/workshop	30	15
No. times wkshop taught	2	3
No. faculty	2	
Days prep/teach ea	18	
Avg. sal/day	290	
Travel/p.diem	14400	
Misc. costs/wkshop	\$3,000	\$1,000
TC	\$44,562	\$8,175
Tenure		
Days per workshop	5	4
No. trainees/workshop	10	10
No. times wkshop taught	2	1
No. faculty	1	
Days prep/teach ea	10	
Avg. sal/day	290	
Travel/p.diem	\$7,200	
Misc. costs/wkshop	\$1,000	\$250
TC	\$18,590	\$1,250
Marketing		
Days per workshop	5	2
No. trainees/workshop	40	30
No. times wkshop taught	2	4
No. faculty	1	
Days prep/teach ea	10	
Avg. sal/day	290	
Travel/p.diem	\$7,200	
Misc. costs/wkshop	\$2,500	\$250
TC	\$28,490	\$9,400

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Table 1.10 Vehicles and Buildings

Veh.	No.	Cost/ea	Repl yr	Maint	L/yr	TC
Motos	15	1600	5	8%	400	\$57,720
4wd	1	18000	6	7%	2,000	\$41,860
Carts	20	600	5	7%	0	\$27,240
Buildings						
Cost per m2:		\$600	m2 needed:		100	\$60,000
Maintenance:		5%	of constr. costs			\$3,000

Table 1.11 Summary: Average Donor Investments Per Year

	Training	ST	TA	Vehicles	Bldngs
LT Training	110000				
Rural Credit	52737	58450		57720	0
Tenure	19840	47640		0	0
Marketing	37890	86500		69100	63000
Average/Yr	36745	32098		21137	10500
Final Yr	6	6		6	6

1.7.2 Host Country

Table 1.12 summarizes the (hypothetical) investments to be made by the host country during the 14-year period following the USAID disbursement period. The GRM perspective is largely a recurrent cost perspective—costs beginning in year seven as shown in the Table. The project will be funded for a total period of six years (the disbursement period) where the GRM will be expected to contribute land for the project headquarters, and some personnel². The host country recurrent cost burden begins in year seven. It is emphasized again that these figures are hypothetical and used only to illustrate the analytical process.

Table 1.12 Summary: Avg. Recurrent Costs Per Year for Host Country

	Retraining	Vehicles	Buildings
LT Training	0		
Rural Credit	8175	2120	0
Tenure	1250	0	0
Marketing	9400	3100	3000
Total	3138	5220	3000
Start Year	7	7	7

² The personnel constraint is key since the GRM is not authorized to hire any new people under the current economic adjustment program. The Government is, in fact, under pressure to reduce the government payroll. This, in turn, may make it difficult to properly extend NRM techniques using extension agents to farmers in the field. The most probable approach will be to collaborate with other projects in the project regions and to buy into their activities when the objectives overlap.

1.7.3 Summary of Donor and Host Country Investments

All of the donor and host country investments over time are summarized in Table 1.13 below. For the sake of simplicity, the average investments given in Table 1.11 are reproduced in Table 1.13 for the first six years of the project, for all of the investment categories listed in the table. The averages given in Table 1.12 are reproduced in Table 1.13 as recurrent costs to be paid by the host country beginning in year 7 of the project.

1.7.4 Host Country Benefits

One very important but often overlooked set of variables are several host country benefits attributable to the project. They are often most difficult to identify because they are usually not directly linked to any specific project. If a donor invests in a NRM project in a region and the economic well being of that region increases, the state treasury stands to benefit substantially. Examples include more fees, permits, taxes and transport licenses will be collected as the productivity of the area increases and attracts additional business. Furthermore, it is probable that the current default rate on individual flat "head" taxes will also decline as more people will be inclined to pay their taxes if their economic welfare increases. All of these possible government (general treasury) benefits should be identified and traced and counted as returns on the investments made. This should be another highly prioritized research topic to be carried out during the implementation of the project.

For purposes of the analytical process, Table 1.14 suggests some probable variables for consideration by the project team as a start. They include the impacts of increased grain and fodder production on fees and permits collected in the region over time and the impact of reducing the default rate on the individual head taxes. The numbers used are hypothetical.

1.8 Results: Overall Project

The assumptions given in Table 1.1 set the stage for the results presented in Tables 1.15 and 1.16. The targets will not be reached instantaneously but will be approached gradually over time according to the assumptions on extension effectiveness, etc., in Table 1.1. Of the total target audience of 2,874 households (from Table 1.1), only 43 farmers will actually absorb and apply the fodder production scheme extended during the initial year of the project according to the assumptions. The second year, more farmers will be added, including also the farmers who adopt the technologies without any support from the project sponsored extension agents. The entire target population will be reached by year 15 according to the assumptions used. Note that the number of farmers receiving and successfully adopting the practices, increases exponentially over time. This is due to the "over-the-fence" demonstration effect as discussed above. The more farmers trained the greater the spread effect. The NCF per hectare is copied from Table 1.4. The net cash flow for all farmers column is the NCF per hectare multiplied by the average number of hectares per farm as assumed in Table 1.1.

Table 1.16 presents the results for the windbreak intervention. In this case, the target population will be reached by year 18 given the assumptions in Table 1.1. Similar tables are produced for the other alternatives analyzed in the analytical model.

Tables 1.17 and 1.18 show the overall project feasibility summing all of the costs and benefits for the local resource manager, donor and host country. The investments made and benefits received by the individual resource managers multiplied by the number of hectares developed in accordance with the technologies extended are added to the investments made and benefits received by the donor and host country for each year. The total net cash flow, subjected to the NPV calculation, indicates the overall financial feasibility of the project as a whole.

Table 1.13 Results: Donor and Host Country Investments

DONOR INVESTMENTS					HOST CO. INVESTMENTS					
Yr	Train.	ST TA	Veh.	Bldgs	Total	Train.	Veh.	Bldgs	Total	
32098	21137	10500	100480		0	0	0	0		0 36745
1	36745	32098	21137	10500	100480	0	0	0	0	
2	36745	32098	21137	10500	100480	0	0	0	0	
3	36745	32098	21137	10500	100480	0	0	0	0	
4	36745	32098	21137	10500	100480	0	0	0	0	
5	36745	32098	21137	10500	100480	0	0	0	0	6 36745
32098	21137	10500	100480		0	0	0	0		
7	0	0	0	0	0	3138	5220	3000	11358	
8	0	0	0	0	0	3138	5220	3000	11358	
9	0	0	0	0	0	3138	5220	3000	11358	
10	0	0	0	0	0	3138	5220	3000	11358	
11	0	0	0	0	0	3138	5220	3000	11358	
12	0	0	0	0	0	3138	5220	3000	11358	
13	0	0	0	0	0	3138	5220	3000	11358	
14	0	0	0	0	0	3138	5220	3000	11358	
15	0	0	0	0	0	3138	5220	3000	11358	
16	0	0	0	0	0	3138	5220	3000	11358	
17	0	0	0	0	0	3138	5220	3000	11358	
18	0	0	0	0	0	3138	5220	3000	11358	
19	0	0	0	0	0	3138	5220	3000	11358	
20	0	0	0	0	0	3138	5220	3000	11358	

Table 1.14 Host Country Benefits

HOST COUNTRY BENEFITS	FEES	PERMITS	MKT TAX	Total
Transactions/tonne	5,000	6,000	4,500	15500
Transport/tonne	2,000	2,500	2,000	6500
Household tax	7,000 FCFA	Current tax default rate		50.0%
		Default rate with project		20.0%
Commerce permit/yr			80,000 FCFA	
New traders entering market:		1 every	80 tonnes	

It is important to note here that the NPV results given in Tables 1.17 and 1.18 are financial, not economic results. To this point, no shadow prices on key variables have been developed to determine the economic attractiveness of different NRM schemes for society as a whole. A full fledged economic analysis of the project NRM activities will become necessary if the overall NPV of the project as a whole is negative. As shown in Table 1.19—the summary of the NPVs for all of the alternatives analyzed (converted to US dollars)—all of the overall project NPVs are positive. This means that the proposed activity meets the criterion of feasibility and that it is at least equal to or is more attractive than alternative investment opportunities. Had any of the overall project NPVs been negative, there would be reason to carry out the economic analysis. This would entail the specification of shadow prices where warranted, and more importantly, identify and quantify project benefits such as the positive environmental impacts likely to occur as soils are stabilized and productivity increased as a result of the interventions.

In Table 1.19, note also that the contour dike alternative shows a negative farmer perspective NPV. This means that the time and money investments from the farmer's perspective are too heavy vis-a-vis the returns he can expect. Nevertheless, the technical judgement remains that the land in question is in need of contour dikes and should be treated. The fact that the overall project NPV for the contour dike

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intervention is positive means that the government will receive funds which can be used to subsidize local farmers to the point where the contour dike intervention becomes financially interesting.

Table 1.15 Results: Fodder Production

Yr	No. of Farmers	NCF /Ha	Net Cash Flow All Farmers
0	43	37,500	12,572,656
1	88	32,500	22,228,456
2	136	28,000	29,691,199
3	190	0	0
4	253	0	0
5	327	0	0
6	416	0	0
7	528	37,500	153,965,491
8	669	32,500	169,109,185
9	851	28,000	185,336,928
10	1090	0	0
11	1409	0	0
12	1841	0	0
13	2438	0	0
14	3274	37,500	954,772,236
15	2874	32,500	726,420,139
16	2874	28,000	625,838,889
17	2874	0	0
18	2874	0	0
19	2874	0	0
20	2874	0	0

Table 1.16 Results: Windbreaks

Yr	No. of Farmers	NCF /Ha	Net Cash Flow All Farmers
0	11	35,983	3,022,600
1	22	45,775	7,767,159
2	33	41,175	10,655,224
3	45	(270)	(95,355)
4	58	1,418	644,844
5	73	1,094	619,365
6	89	3,937	2,717,905
7	107	52,450	43,548,314
8	127	46,325	45,863,458
9	151	40,813	47,940,742
10	179	14,500	20,159,956
11	211	12,205	20,075,718
12	250	10,261	19,989,878
13	297	9,605	22,213,890
14	354	42,200	116,261,892
15	424	37,100	122,282,172
16	510	39,344	155,934,895
17	616	14,230	68,208,310
18	750	11,598	67,659,128
19	720	10,808	60,523,400
20	720	10,097	56,543,060

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**Table 1.17 Project Feasibility:
Fodder Production**

Year	Costs	Benefits	NCF
0	102,439	41,537	(60,902)
1	104,477	76,729	(27,747)
2	106,677	107,791	1,114
3	100,480	10,134	(90,346)
4	100,480	13,452	(87,027)
5	100,480	17,385	(83,094)
6	100,480	22,162	(78,318)
7	35,352	508,662	473,310
8	41,767	583,741	541,974
9	50,041	672,846	622,805
10	11,358	58,003	46,646
11	11,358	74,972	63,615
12	11,358	97,992	86,635
13	11,358	129,731	118,373
14	160,153	3,154,317	2,994,164
15	141,983	2,507,499	2,365,516
16	141,983	2,272,042	2,130,059
17	11,358	152,930	141,573
18	11,358	152,930	141,573
19	11,358	152,930	141,573
20	11,358	152,930	141,573
NPV			1,308,953

**Table 1.18 Project Feasibility:
Windbreaks**

Year	Costs	Benefits	NCF
0	101,207	12,354	(88,853)
1	100,739	22,589	(78,150)
2	100,839	31,203	(69,636)
3	100,970	4,738	(96,232)
4	100,480	5,316	(95,163)
5	100,480	6,342	(94,138)
6	100,480	14,120	(86,359)
7	16,210	137,886	121,676
8	17,143	148,902	131,758
9	18,222	160,102	141,880
10	11,358	45,160	33,802
11	11,358	55,377	44,019
12	11,358	59,857	48,499
13	11,358	66,120	54,762
14	27,458	483,209	455,751
15	30,620	523,373	492,753
16	34,520	658,294	623,774
17	11,358	209,206	197,848
18	11,358	204,630	193,273
19	11,358	182,027	170,670
20	11,358	169,070	157,712
NPV			899

Table 1.19 Summary: Management Alternatives

Alt	INTERVENTIONS					NPV/HA FARMER	NPV TOTAL PROJECT
	FP	WB	VB	CD	AA		
1	x					\$301	
2		x				\$374	
3			x			\$590	
4				x		(\$222)	
5					x	\$343	

Note: FP = Fodder production only

WB = Windbreaks plus fodder production

VB = Vegetative bands plus fodder production

CD = Contour dikes plus fodder production

AA = Acacia albida plus fodder production

ANNEX F.6
FINANCIAL MANAGEMENT ANALYSIS

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Annex F.6 - Project Financial Management Plan

Mr. Lloyd Mitchell

The overall administrative structure for the APEX project is a strategy of decentralization to the Regional level (I, II, IV and The District of Bamako). The Project Coordinator will be responsible for coordinating all the project's programs and activities in accordance with the program approved by the Comite Conjoint De Gestion (CCG). The project's Central Management and Support Unit will administer the financial management and accounting system. The Administrative Coordinator, Financial Coordinator and Program Coordinator will work closely with the Chief Accountant and the Project Coordinator to ensure that the financial management system is operated to generate the support and fiscal and budgetary information required for effective project implementation and for input into the monitoring/evaluation systems.

The approach used will be to build on the current system in place at the MDST. The system, Lotus 123:

a. Provides accurate, complete and timely accounting information for the project. b. Has internal controls to prevent misuse and waste of funds. c. Provides a system of financial reporting that assist USAID in monitoring project implementation. The system, with modifications in the reports generated, will be installed in the accounting office of the APEX Regional Representative. This office will be used to provide direct funding, monitoring and evaluation of APEX programs and activities. The system and accounting stations will meet the following USAID requirements:

1. The system will be able to identify the receipt and expenditure of AID funds.
2. The system will ensure that approved budgets and budget categories do not become oversubscribed. In other words, there will be a system for identifying commitments and encumbrances and funds due or receivable, by budget category.
3. Accounting entries will refer to documentation that will support the entry and is filed in such a way that it can be easily located.
4. The system will generate accurate and current financial reporting information, including periodic bank reconciliations.
5. The system will include appropriate internal controls which assure usefulness of financial data, accuracy and integrity.
6. The system will enable an auditor to trace readily each transaction from accounting records to source documents to determine the validity of project expenditures.

The accounting system will have a detailed instructions for accounting and preparation of reports. In addition, each accounting center will be provided with a computer equipped with a modem for reporting and tracking project funds.

The accountants assigned responsibility for project funds will be paid by project funds and under the technical supervision of the Chief Accountant in the Central Management Unit.

Short-term technical assistance to train the accountants will be required prior to implementation of APEX. It is also likely that short-term technical assistance will be required to monitor the system to

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organize workshops in system operation and in general accounting and financial management principles for APEX and producer groups' financial and accounting personnel.

In addition to the operational funds for the project, an "Imprest" fund will be established by WSU for support cost. This account will be managed by the Project Coordinator and the Chief Accountant. The use of this account will be monitored by WSU in accordance with the requirements and standards of the AID contract and WSU reporting requirements.

The Regional Program Committees will need to stock inputs of supplies that are used routinely in carrying out their activities. The system will recognize the tradeoff between the problems and costs of carrying stocks and the inconvenience of frequent purchases. Procedures for receiving, inspecting, requisitioning and issuing supplies and equipment will be established. A perpetual inventory system will be used to control stocks and will be backed up by shelf cards. Controls will include periodic wall-to-wall physical counts and permanent, ongoing cycle counts.

There will be a need to track all of the project's fixed assets. As of 1 August 1992, a physical inventory will have been performed by MDST and all assets in the custody of the Livestock II project will be disposed of in accordance with the project agreement. All fixed assets received after this date will be classified according to their source: GRM, USAID, WSU or other etc.. A fixed assets tracking system will be set up whereby all assets of APEX will be tracked according to their location and the person responsible for their custody. Forms for the transfer of custody will be used, so that as personnel assignments change, new custodians will be assigned. The tracking mechanism will also note the condition of the asset.

A credit fund is not envisaged in the first phase of the project. If it is deemed necessary to play a role in livestock sector development, funds will be channeled exclusively through the established banking institutions in Mali. It would be authorized to cover a broad range of possible activities and the loans would be made on the basis of the technical and financial feasibility of the specific loan proposal and the creditworthiness of the loan recipients. There will be no ad hoc project credit funds set up outside the banking system or operated under criteria other than those of strict and conservative banking practices.

The Project Coordination Unit will designate the internal auditor and his or her staff. Audits will be performed on a rotational basis and will include surprise visits. Formal audit programs will be developed and workpapers documenting all audits will be kept on file for inspection. Audit reports will be published and circulated to APEX management and the USAID Controller. Aside from findings and recommendations, they will include the comments from the local managers whose operations are being audited.

In the interest of maintaining a high level of integrity with respect to the management of funds, there will be an external audit performed once every year.

Project Support for the DAF

The DAF unit will be involved in the decisions of the APEX project. All administrative and financial training programs will include DAF participation to build capacity in the area of financial management.

The project monitor in the DAF will assist in training, assessment of the impact of training and programs to support the decentralized program. Specific workshops will be held for inventory control procedures and procedures written for vehicle use and maintenance.

ANNEX F.7

PRELIMINARY ASSESSMENT OF BAMAKO MILK SECTOR

Mali Livestock Sector Project II

Observations and Recommendations

Martha Cashman and Kristin Rens
Land O'Lakes, Inc.

January 10-15, 1992
Bamako, Mali

SCOPE OF WORK:

Land O'Lakes' objective is to familiarize itself with the dairy production and processing sectors of Mali and to recommend appropriate actions and policies for the Government and interventions by the USAID Mali Livestock Sector Project II.

CONTACTS:

- Dick Cook, Washington State University Project Coordinator
- Doral Watts, USAID
- Cheik Drame, Livestock Project Associate, USAID
- Mali Livestock Sector Project II Design Team
- Dr. Ousmane Guindo, Tech. Advisor, Ministry of Livestock
- Boubou Doucoure, President, CAPS
- Mohamed N'Diaye, Financial Secretary, CAPS
- Amadou Bocoum, Secretary, CAPS
- Cooperative Members of CAPS and COLAIBA
- Ms. Dairranee Aicha Maiga, Director of Processing, Mali Lait

1. Government Policy Role

Observations:

It appears that the Government of Mali is interested in privatizing its current role in the dairy industry. The absence of a government policy which stimulates private sector development and competition has created a low-performing dairy production sector and led to a reliance on imported dairy products.

Recommendations:

It is recommended that a complete dairy sector study be conducted which would identify and analyze the current status of the Malian dairy sector. The results of this study would facilitate discussions between the government and private concerns regarding appropriate national policies to stimulate private dairy development. Further, the study would provide recommendations to the industry regarding actions which, if implemented, would respond to the policy mandate(s) and would begin to develop a quality/price responsive system from the farm to the consumer.

2. Milk Processing

Observations:

Before visiting the Mali Lait processing plant, we had been informed that the plant had been purchased used from Senegal, with the help of UNICEF, some twenty years ago. We were also told that the processing equipment and the overall condition of the plant was in very poor condition. The plant appears to be in fair operating condition and, to a reasonable degree, maintained. The maximum output, theoretically, is 30,000 liters/day, but it was explained to us by the processing director, Ms. Dairranee, that due to low milk production in the Bamako area, the plant is processing an average of 15,000 liters/day. They have two trucks that collect milk around Bamako and individuals bring milk directly to the plant. Ms. Diarranee stated that milk is quality tested on site and an average price of 180 CFA is paid per liter. Mali Lait processes and markets 15 different products, varying from reconstituted milk, fresh milk and cream, five flavors of yogurt, and butter. Mali Lait has three packaging lines which are capable of packaging 300, 600, and 1,200 liters/hour. Ms. Diarranee stated the availability of packaging materials is not a problem due to the fact that it is manufactured in Mali. The average shelf-life of the milk products is 72 hours. They will soon be introducing and marketing two new cheese products in February. Mali Lait sells their products to supermarkets in the Bamako area for a Liquid Milk Equivalent of 275 CFA. The supermarket sells these products to the consumer for a Liquid Milk Equivalent of 300 CFA.

It was observed that perhaps there are too many employees working at the plant. It also appears that consistent quality control is a problem. We were told by the Cooperative Union and the producers that they have not been paid for their milk by Mali Lait for over three months.

Recommendations:

Land O'Lakes recommends that a technical audit of the plant and its operations be conducted to determine the economic feasibility of continuing plant operations and make recommendations for privatization. Human resource requirements would be reviewed according to staffing and technical training requirements.

3. Milk Production

Observations:

Information concerning milk production has been collected through conversations with the project design team, meetings with various cooperatives, visits to research stations and the three levels of milk producers, and the reading of current studies conducted in the dairy sector. It is our observation that the Mali Livestock Sector Project II objectives for interventions in the dairy sector need to be clarified and agreed upon (see recommendation number one). If the objective is to increase the availability of milk products to the urban populations, there should be focused technical training and development offered to the

commercial parcs and rural comunals. At present, they are producing a higher quantity of milk per head through improved breeding and feeding practices. They also appear to have maintained a better overall herd health program. Although the parcs may be more intensive and therefore have higher production costs, their proximity to Bamako cannot be overlooked.

The potential for increased milk production at the village level to satisfy urban demand will be limited until there is increased investment in feeding practices, animal health, village-based collection and chilling points and transportation to the processing plants and urban centers.

If the objective of the project is to increase the per capita consumption of milk throughout Mali, there should be a strong focus on the integration of improved milk production and child nutrition at the village level. It was apparent that breeding, animal health, forage production/storage, and milk sanitation are major issues for the producers at the village and communal level. It would not be our recommendation to focus on these two levels of producers for meeting the needs of urban consumers due to their location, lack of organized collection, lack of refrigeration and transport, and very low milk production/cow (in one case, less than .5 liters/cow/day). There are also cultural constraints one must consider when attempting to improve the production situation at the village level. A major constraint is the prestige of large herd sizes as it relates to feed inputs per unit of production (milk and beef) and the need to cull low/none producers, and the overall societal and environmental impact of overgrazing.

Recommendations:

Land O'Lakes recommends intensive herd management and sanitary milk collection training for the farmers of the commercial parcs. In-country training workshops can be conducted by Land O'Lakes experts, in collaboration with the Center of Livestock Improvement, to improve milk production, especially in the areas of animal nutrition, forage production, genetics and on-farm milk quality/sanitation. In as much as the parcs are currently selling their genetically superior livestock to the communal parcs, they may also be developed and serve as an extension/training outreach center and perhaps, as future collection points for producers.

Substantially improved on-farm sanitation and milking practices will have the single greatest impact on the quality and shelf-life of milk and other processed dairy products. It will also lead to the establishment of quality price differentials at the farmgate as well as from the consumer.

Land O'Lakes' recommendation for improvements at the village level should be addressed by a village-based organization. The technical training program could be developed by the Center for Livestock Improvement, which would integrate improved milk production, forage management, family nutrition and environmental sustainability. This could be a very good program implementation opportunity for a local NGO such as Re-Ma-Dev or an organization like Peace Corps.

4. Cooperative Development

Observations:

We met with several cooperatives during our stay that have only recently been organized. They have organized cooperatively to improve their access to inputs, influence the price they receive for their products, and to represent producer interests.

Recommendations:

Due to their newness and lack of experience, it is recommended that either National Cooperative Business Association (formerly CLUSA) or University of Wisconsin-Madison Center for Cooperative Development work with these newly formed cooperatives in the area of cooperative law, structure, and board of director training.

ANNEX F.8
BUILDING PUBLIC/PRIVATE SECTOR AND RURAL CAPACITY

BUILDING PUBLIC/ PRIVATE SECTOR AND RURAL CAPACITY

Implementation Plan and Issues for APEX Start-Up

Dr. Lorna Butler

I. Project Overview

The design of the Mali APEX project occurs at an opportune time in the context of Mali's changing political, institutional and economic environment. There could not be a more appropriate time to introduce a decentralized approach to enhancing livestock productivity and commercialization, while contributing to natural resource sustainability. APEX will serve as one model for the Malian Government to identify and test ways in which a centralized national program can be strengthened and broadened to enhance regional and local capacity to achieve improved technical productivity, increased commercialization, and improved natural resource management.

In the context of APEX, decentralization will be executed through

- o **administrative deconcentration** - transferring more project administrative functions and powers to regional and local representatives of the public and private sector, i.e. budget, program decision making
- o **local participation** - increased involvement of local citizens in resource allocation and in shaping program activities; the precise nature of this participation will not be determined until the end of the planning phase, and even then, participatory mechanisms should remain flexible and continually responsive to collaborators' needs
- o **enhancement of management and technical capacity** - improving local (arrondissement level) and regional level skills for carrying out APEX and other user-oriented activities and programs

APEX can make a significant contribution to development of a decentralization strategy that integrates the needs and capabilities of key regional and local representatives in both the public and private sector. APEX will capitalize on the transitional government's promotion of the democratic power-sharing process through its commitment to the following:

- Broad-based participation in APEX planning and implementation by beneficiaries, particularly women involved with livestock enterprises; livestock producers in general; government, especially regional extension personnel in all divisions of MAEE; private business; non-governmental organizations and on-going regional projects
- Stronger interdisciplinary partnerships between regional extension personnel, non-governmental organizations and village level groups for joint APEX program planning and strategizing
- Improved village level (arrondissement) capacity to resolve production and marketing problems, and to respond to new production and marketing opportunities in ways they perceive to be important and practical
- Improved extension skills, in program management and technical support, for working jointly

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with local associations and for responding to producer/trader-defined livestock production and marketing problems

- **Shared local-regional responsibility for APEX program management, implementation and evaluation**
- **Regionally appropriate programs which are sensitive to social and cultural differences, unique human resource capabilities, and management needs of different natural resource systems**

By applying a step-by-step experiential learning process, APEX proposes to build a broad-based regional capacity to share in program design and operation. This will be done by identifying a small core team for each region, all of whom will be Malians. Initially the regional core team will consist of the following:

- o **APEX Regional Coordinator**
- o **APEX Regional Accountant**
- o **APEX - NGO Partner Coordinator**

APEX will recruit several NGO partners (initially no more than two per region) to facilitate the regional APEX planning and implementation process. The core team will act as trainers and facilitators to gradually expand the range of project collaborators at regional and local levels. Early in the planning phase, the core team will be expanded through the identification and formation of planning committees at the regional level and at the village level. Each of these will be a broadly representative group of APEX collaborators.

In general, regional committees will be composed of the following types of representatives:

- o **Regional Directors of MAEE Extension Services**
- o **Regional Development Committee Representatives**
- o **Private sector representatives (cooperatives, associations, banks, etc)**
- o **Cercle representatives**
- o **Village-level representatives**

The village-level representatives will include a diverse mix of village people who represent livestock farmers interest groups. Village-level associations might include:

- o **Producers associations (cattle, milk, small ruminant, poultry)**
- o **Traders' unions**
- o **Insurance groups (tontines)**
- o **Village associations (associations villageoises)**
- o **Women's associations**
- o **Cooperatives**
- o **Syndicats**
- o **Savings or credit groups (caisses d'epargne)**
- o **Foundations (les entreprises sociales), and so on.**

The core team will take part in training workshops to prepare them to identify and work with regional committees. Regional committees will actively participate in determining regional program needs and priorities, shaping communication mechanisms, and identifying effective intervention strategies. Wherever possible, intervention strategies will directly involve collaborators in implementation. Collaborators will

also work jointly with APEX in monitoring and evaluating APEX.

In addition, APEX expects to work closely with Extension personnel at cercle and arrondissement levels, for example to communicate with village people, and for technical expertise. Partner NGOs will provide primary support for identifying and working with village-level producers and producer groups, however extension technicians will be needed, particularly women agents to work with women's associations and groups. If women extension personnel are not available, APEX will investigate alternative ways of engaging (or training) technically trained women at village levels.

Ultimately, the goal of APEX is to establish an effective regional mechanism for communicating with, and involving, a broad-based group of public and private sector livestock fillere representatives in the APEX program. This group of collaborators, integrated over time, will be the regional APEX team.

II. Initiating the Capacity Building Process

During an initial eight month planning phase (Phase 1), the APEX project design will be refined and developed through a participatory training - planning process concentrated in the three regions, and in the District of Bamako. Within each region NGO partners will work closely with APEX coordinators to facilitate a regional planning process. By the end of this period each region will present APEX Joint Management Committee (JMC) with a Year 1 plan of work proposal. The plan of work will include specific regional program objectives, a plan for achieving these, and a budget. The plan will identify target populations, regional collaborators, a multi-level advisory committee system, communication mechanisms, technical program activities and a monitoring and feedback process. The step - by - step process for achieving this objective is outlined in the APEX Plan of Work.

Before the project begins, a manual of APEX management procedures and responsibilities will be developed (The Mitchell Group) and available for use in project staff training and implementation. As soon as the contract agreement is approved and signed, personnel scopes of work will be reviewed and modified if necessary.

A core team recruitment process will be outlined by APEX in order to attract the best possible Malian candidates for the positions. APEX will take steps like the following:

- Step 1. Review and modify (as needed) scopes of work for each position. Draft position description
- Step 2. Identify APEX personnel advisory - selection committee, e.g. representatives from PAC, APEX Project Coordinator, USAID/WID, women's association representative, Regional Director of Extension, NGO representative, etc.
- Step 3. Advertise positions widely in Mali newspapers and in professional association newsletters and publications; and post throughout MAEE, other ministries, educational institutions, private sector, etc. To recruit women the positions will also be advertised through women's professional association networks.
- Step 4. Selection committee will arrange a systematic review process for screening and interviewing applicants, checking credentials, references, etc.
- Step 5. Make selection. Candidate and employment contract will be approved by the Ministry of Labor to ensure conformance with Mali laws and standards.

1. Participation of NGOs

APEX will establish partnerships with several NGOs to strengthen the organizational capacity of the regional extension system, and to improve the collective abilities of public and private sector representatives to plan and carry out focused activities which they feel will enhance their opportunities in livestock production and marketing. APEX, with the help of several NGOs per region, will work with farmers interest groups to better understand production and/or marketing situations and problems, to explore alternative solutions, and to assist these groups in solving their own problems.

NGOs will be contracted for the planning phase, to work closely with the regional APEX team on the following:

- o Participate as a member of the regional APEX team**
- o Serve as a trainer-facilitator to identify and organize a village level APEX Planning Committee (APC) (a forum, "think tank" or "groupe de reflexion") which represents local people and groups (see below). The NGO regional trainer will act as a technical specialist in organizational development for the region, comparable to other technical specialists in agriculture, livestock, natural resource management, etc. (see section that follows on Establishment of Regional Operations in which the regional technical team is elaborated).**
- o Assist APEX with the planning and implementation of organizational development training activities for the APEX team and for regional and local level planning and advisory groups**
- o Assist APEX to identify and develop organizational development skills among regional extension personnel at all levels**
- o Assist the APEX Regional Coordinator to identify and develop an effective regional advisory system that provides a two-way communication mechanism between the village level APC and higher level APCs, for example this may mean broadening and strengthening existing comites des developpement (arrondissement, cercle, regional), or identifying a new or different mechanism . The advisory system will represent primary beneficiary groups, private sector interests, key NGOs, women's organizations, donor projects, etc. who have overlapping concerns with livestock production, marketing and natural resource management.**
- o Assist the APEX Regional Coordinator, and other APEX team members, in development of the Year 1 regional plan of work by working with the APCs to learn about the existing situation, identify needs, establish priorities, including the identification of a continuing NGO support mechanism, and plan problem solving strategies compatible with the aims of APEX**

When the planning phase is complete, the role of the NGO partners will be reviewed to see how it might be improved, modified or strengthened. At this stage consideration will be given for developing another contract to continue the program that has been started.

Non-governmental organizations are becoming an increasingly important mechanism for Malian social and economic development. The customary role of the mutual assistance group in African culture is well known, for example "tontine" savings groups, agriculture cooperatives, village associations, age groups, secret societies, traders' associations, and other comparable "associative" groups.

In 1990 Mali officially recognized Malian NGOs. At that time there were 72 domestic NGOs registered with their headquarters in Mali. Since that time there has been a great increase in this number with estimates of between 200 - 300 in existence. Generally each is organized by a small group of people having a common goal. While some started in response to emergency relief needs, many have gone far

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beyond these early objectives, and are involved with such things as self reliance projects, transfer of technology, small enterprise development, training and/or education, political and organizational development, market development, and long term social and economic development. NGOs tend to "specialize" in different development sectors (health, horticulture, small enterprise development women's economic enterprises), and to emphasize some skills over others, e.g. research, coordination, training, organizational development

While there is still wide variation in the capability and effectiveness of Malian NGOs, some are performing well. The government of Mali and the donor community recognize the value of this movement for turning more and more government services over to the private sector. For donors they also represent a viable mechanism for strengthening private sector partnerships in long term development, and for building indigenous organizational capacity to carry on with donor-initiated activities.

APEX proposes to form partnerships with several NGOs to ensure broad-based collective participation in APEX program planning and implementation by both private and public sectors. Through this mechanism APEX will improve extension's ability to work with village associations using more participatory approaches. This will begin with the identification of village level planning committees to work with APEX in laying out an action strategy.

2. NGO Recruitment and Selection

One of the first things APEX will do is identify one or two credible NGOs to work in each targeted region. This will be initiated through international NGOs resident in Mali. NGO partners will possess recognized program organizational development experience and capability, a good record of financial and program management, knowledge of APEX target regions and their executive committee will be perceived as politically neutral.

An NGO selection process should be outlined by APEX before the planning phase begins in order to allow selected NGO partners to take part in APEX team orientation and training. This APEX - NGO partnership should start small, with not more than two NGOs per region in the beginning. Their partnership and the groups that they work with on behalf of APEX should essentially be a "pilot effort," expanding gradually as more experience is gained.

At the end of the planning phase, after target populations are defined and program priorities are established, an APEX regional advisory committee structure will be in place. One or more partner NGOs will be collaborating with APEX in each of the APEX target regions. An organizational capacity building foundation will be in place.

When the planning phase is completed APEX and its collaborators will do an initial assessment of the role of NGOs in the regional programs and make needed improvements in this support mechanism. If the NGOs that are in place are not effective, different NGOs will be recruited, or the existing NGO mechanisms will be modified.

Preliminary NGO Selection Process:

Step 1. Draft statement describing roles and responsibilities of regional NGO partners in relation to APEX mission (Statement of Need)

Step.2. Identify NGO partner advisory - selection committee, e.g. APEX Project Coordinator, CCA/ONG, women's association representative, USAID/WID, USAID/PVO, international NGO representatives, MAEE Livestock Extension Service representative

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Step 2. Identify regional NGO partner selection criteria

Example criteria:

- Sound financial management record (documented)
- Individual/group experience in one of the APEX regions, or in the peri-urban areas (to focus on the District of Bamako, and possibly other peri-urban areas in other regions)
- Experience with field projects that have involved the training of trainers and other group-oriented participatory approaches
- Politically neutral reputation (executive committee, leadership, staff, etc.)

Step 3. Develop brief application - questionnaire to accompany the Statement of Need. APEX - NGO Partner Application might request such information from potential NGO partners as:

- Names and credentials of executive committee
- Project experience: where, type, principle objectives, duration of activities, other organizational collaborators
- References (International NGOs, projects, donors)
- Field methods used
- Successes, accomplishments
- Problems experienced
- Experience of individuals/group with livestock or natural resource activities

Step 4. Distribute Statement of Need and APEX - NGO Partner Application through the CCA/ONG network and through women's association networks that reach into rural areas

Step 5. Arrange selection plan with Advisory - Selection Committee to interview applicants. Check references, documentation, etc.

Step 6. Make selection. Approval.

Step 7. Arrange for selected NGOs to take part in APEX Orientation

Step 8. Conduct regional proposal development workshop (5 days approx) for NGO partners (including collaborating international NGOs if appropriate)

Initially, APEX will recruit 1-2 qualified NGOs to work in Region 1, Region 2, and Region 4. In the District of Bamako and possibly other peri-urban centers, APEX will investigate the possibility of identifying an appropriate mechanism for coordination of all peri-urban activities throughout all regions. This could include the identification of an NGO which has specialized expertise and knowledge of working with more commercially oriented businesses and market groups, e.g. processing, value-added opportunities, promotion, vet and public health issues in the highly populated areas (e.g. World Education, DONKO).

III. Training for Start Up Phase

After the APEX core team is in place several training and orientation workshops will be conducted. The purpose of these will be to prepare individuals with different but complimentary responsibilities to facilitate APEX program objectives. During the planning phase it will be particularly important for the APEX team to facilitate a regional program management and planning process which involves the core team, Regional Directors of Extension, and other regional public and private sector representatives in shaping APEX activities and programs. APEX will require strong technical support in the design phase for organizational development and group processes for the training of trainers. Further assessment of technical support needs in this area will be made at the end of Phase 1.

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Proposed workshops for the design phase are listed below. Many areas of organizational development, group leadership processes and community development training will be on-going through out the project, much of the learning occuring through experiential activities.

Training Modules:

1. General Orientation for APEX Team and Collaborators

Purpose: Orientation for entire APEX team, partner NGOs, key collaborators, etc. about APEX mission, central focuses, decentralization strategy, management, partners and collaborators, operational plan, communications and coordination, etc.

2. APEX Administrative Personnel Training

Purpose: Administrative systems and financial procedures for APEX project administration and accounting personnel in APEX project administration, APEX accounting system, financial and personnel management, APEX software accounting system (Lotus 123), and APEX vehicle/equipment management software package

The TMG Financial Management Trainer will be available for trouble shooting, performing unforeseen modifications to the accounting system and conducting additional staff training for 2 person months during implementation of the APEX project. He will travel to regional locations to assist with any difficulties encountered in the use of the systems.

APEX will monitor all logistical support with the same computerized system. All APEX personnel will be oriented on APEX policies and procedures. Accountants will be responsible to actual implementation.

3. APEX Regional Coordinators' Training

Purpose: Training for regional APEX core team, including partner NGOs and principle regional collaborators, in coordination and trainer-facilitator roles in building broad-based participation in APEX regional programs and activities. Training will address formation and development of the APEX Planning Committees (R-APCs and V-APCs), participatory planning methods regional situational analysis including identification of regional livestock fillers.

4. Regional NGO Partners' Training: Regional Proposal Development

Purpose: Proposal development skills for selected NGO partners to facilitate development of their regional plans for village organizational development. The outcome will include a plan for working with the regional APEX team in the identification, formation and development of the V-APCs, including needed resources for technical coordination of organizational development training and facilitation, village "organizers" (animateurs/animatrices), etc.

5. APEX Planning Committee Training (Village Level)

Purpose: Improving private and public sector skills for effective joint participation in APEX activities. In the planning phase this will include experience in collaborating with a diverse participant group (R-APCs and V-APCs) in helping shaping the APEX regional plan of work, e.g. filere description, problem and need identification, defining target groups, methods of communication and collaboration, strategy development, etc.

6. APEX Project Advisory Committee (National Level)

Purpose: Training for top level MAEE managers of technical service divisions and private sector collaborators in policy analysis and administrative management. APEX will provide policy level opportunities to improve public - private sector integration with regard to livestock commercialization.

IV. Technical Assistance in Organizational Development

APEX should provide technical assistance during the planning phase to

- Assist APEX in identifying regional NGO partners to participate in the planning phase
- Assist APEX and NGOs with regional team training
- Support regional APC organizational development, situational assessment, group planning processes

APEX will also explore the possibility of contracting with an in-country international NGO (e.g. World Education) for assistance with Phase 1 organizational development training activities.

Title XII institutional assistance is available to further support organizational development needs, however priority will be placed on using available resources in Mali where possible.

V. APEX Training Plan for Strengthening Regional Capacity

During the planning phase Title XII technical assistance will be drawn on to assess long term and short term training needs to strengthen regional capacity. Primary concern will be directed to skills needed in management, organizational development, policy analysis, and market analysis and development. To a lesser extent, APEX will review needs associated with livestock production and natural resource management. Mali has a high level of agricultural technical capacity in country.

APEX will give most of its attention to ways in which these existing capabilities can be strengthened through short term study tours and seminars, such as team visits to other areas in Mali and in the region to interact with other filere participants; visits to understand competitors' products and marketing strategies, and to talk to other agencies involved in the marketing process. This will also include opportunities for decision makers and policy makers to learn more about organizational and policy strategies to promote commercialization and decentralization.

During the planning phase, and during the following phases, APEX will assess women extension personnel's availability, capacity and training needs at all levels of extension (professional, technical, animatrices) with specific recommendation re: numbers of trained women required at all organizational levels to provide support to women producers, traders and others associated with small ruminant, milk and poultry filere activities, and women who perform roles with cattle filieres (i.e. Fulani areas). APEX will identify gender specific issues that should be considered in training, recruitment and placement of women extension personnel at the regional level and in the District of Bamako. Discussions with Mallan

women's associations (e.g. CADEF, COFEM, ACFEM, ICWES) , and with NGOs focussing on women's livestock-related economic enterprises will be included. Mechanisms will be explored for giving women better access to needed information and resources for improving their livestock business management opportunities. The training plan will be coordinated with the USAID/GRM Country Training Strategy.

VII. APEX - Regional Communications

Throughout APEX, and in years beyond, there will be need for a continual effort among and between all actors and levels of the social and institutional structure to constantly work at maintaining open communication. The participatory approach that APEX is advocating will not come easily, nor without conflict and problems. It will be important to continually explore ways to encourage all levels of the public and private sector to contribute to the process, and to take responsibility for strategy implementation. The greatest challenge will be in identifying mechanisms whereby village associations and groups can be heard, and can participate in their own problem solving interventions in their own ways. The process will be slow, and will require a major commitment to trust building. Right now the needed trust level is not in place, for example between the private and public sector, but there is an atmosphere of hope and optimism that it can be worked out collaboratively. Everyone involved must see something in these proposed changes for him or herself.

APEX should explore the value of annual regional or national **APEX FORUMS** which brings together a broad representation of regional filieres for discussion of issues, problems and strategies. Such a forum would be planned and carried out jointly by APEX, partner NGOs, APCs and extension. In Phase 1 village and regional level forums could highlight proposed APEX plans of work. One of the greatest challenges faced by APEX is how to develop an effective means of communication with and among village people. The regional APEX team will consider ways of establishing village level forums for hearing from local people, and for encouraging their continuous participation in APEX activities.

Printed materials concerning the APEX program will be developed, reviewed and distributed to collaborators, the public and others. APEX will develop a newsletter to communicate APEX activities and accomplishments, provide collaborator and team member visibility, recognize individual contributions, reinforce training (technical, management, organizational subjects), clarify team member responsibilities, announce workshops and seminars, relevant policy changes, study findings, etc. It will also provide a forum for collaborators' comments, observations and feedback.

APEX will look into how a modified local language newsletter might be developed and used in conjunction with village level literacy education. It might originate with local APCs (APEX Planning Committees) and serve as a village voice on livestock filiere issues, problems, activities, etc. Literacy training may be a potential mechanism to facilitate village level participation.

VII. The Regional Situation

1. Establishment of Advisory Planning Committees

One of the principle training mechanisms that APEX will employ is the use of action planning groups. By involving a diverse mix of constituents, APEX will capitalize on the "teachable moment" by beginning where people are and with their concerns. With the assistance of Malian NGOs, APEX will seek out existing groups and associations and assist them to collectively examine the livestock filieres in which they participate, and to take part in activities which they feel will help to resolve problems underlying increased livestock commercialization.

The process will begin with the identification of several regional advisory planning committees. The most

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important of these is the village or arrondissement level APC. The NGO partner will assume the major role in establishing "forums" or "think tanks" ("les groupes des reflexir") which are intended to represent a wide range of livestock fillere interests at the grassroots level. There may be several levels of these APCs, e.g. arrondissement, cercle, region, however, as a general rule, the fewer levels the better. The evolution of the APCs might be as follows:

2. Village Level APEX Planning Committees

The regional team will investigate existing local and intermediary level structures in which diverse fillere interests are represented, discussed, coordinated or referred to higher level decision makers. This will be a broadly representative group or groups, not one composed of government officials, such as the the comite de developpement. Every effort will be made to use existing structures if an appropriate one is available. If such a structure does not exist, APEX will organize one for the design phase that includes a diverse mix of livestock fillere group and association representatives. Associations that might be represented in the APC: producers associations, traders' unions, insurance groups (tontines), village associations (associations villageoises), women's associations, cooperatives, syndicats, savings or credit groups (caisses d'epargne), foundations (les entreprises sociales), and so on.

Committees will include both men and women in proportion to gender numbers represented in the areas' production and market systems. Where it is culturally difficult for women to take part in such a committee, local women's associations will be asked to organize an acceptable communication mechanism with the group so that their interests are addressed. For example this may be done through "animatrices" or women extension agents working as a liaison with a women's subgroup. When the design phase is completed, the planning committee structure will be modified to reflect the proposed plan of work.

Collaborating NGOs will be encouraged to identify and employ technical staff and animateurs/animateuses to work with APCs. Where extension personnel are available and it is practical, they will be involved in the organizational process.

3. Regional Level APEX Planning Committee (R-APC)

A comparable regional level planning committee will be developed by APEX to serve as a forum for planning and coordinating APEX programs and activities in the region. It will include representatives from village level APCs, the Sub-Commission for Rural Economy, the regional MAEE Extension Service, cercle representatives, and gradually will expand to include private sector participants. It will also include links to agriculture research, donor projects and parastatals. An attempt will be made to achieve an appropriate balance among constituencies represented, e.g. one-third private sector, one-third government, one-third village level. At least one-third of the entire group should be women in areas where women are involved in livestock filleres.

ANNEX 1: PLANNING PHASE - TRAINING COMPONENT

Details on Planning Phase Training Components

1. General Orientation for APEX Team and Collaborators

Participants: The entire APEX team and key collaborators (heads of ministry divisions, donor projects situated in APEX regions, USAID, Chamber of Commerce, Chamber of Agriculture, CCA/ONG and key international and national NGO partners (includes Mallian NGOs recruited through APEX selection process), representatives from women's associations which have

potential for reaching into rural and peri-urban areas, i.e. ACFEM, ICWES, COFEM, CADEF, and the recently organized Forum for Women and Development, etc.)

Content:

- o **APEX project goals, objectives, primary themes and rationale**
- o **The APEX regionalization philosophy, mechanisms for putting this in place, constraints, opportunities, expectations**
- o **Joint Management Committee (JMC)
Composition, functions, linkages**
- o **APEX Project Advisory Committee (PAC)
Composition, functions, linkages**
- o **APEX Technical Coordination Committee (TCC)
Composition, function, linkages**
- o **Communications and coordination (internal, external)**
- o **Collaborators and partners (MAEE service divisions, NGOs (international, national), private sector, etc.**
- o **Operating strategy**
- o **Preliminary of plan of work for carrying out Phase 1 (the "plan to plan")**
- o **Regional overview (regional field tour involving APEX management and coordinating team, representatives from collaborating institutions, NGO partners, MAEE heads of divisions, USAID, etc.; to include situational "briefs" from key regional resource people**

2. APEX Administrative Personnel Training

Participants: APEX project administration and accounting personnel

Duration: Multi-phased training program in APEX project administration and the APEX accounting system. Estimated time for Phases 1-4: 3-4 weeks

PHASE 1: Review Administrative Financial and Personnel Manual (produced by The Mitchell Group) with all members of the APEX Team. This Procedures Manual will cover all regulations concerning administrative, management and personnel policies for the APEX project team.

PHASE 2: Review of APEX Accounting Manual of Procedures. The Accounting Manual will cover the following:

- o **Management and Follow-up of Funding**
- o **A Budgetary Management System that includes planning and implementation**
 - o **Documentation required by GOM and USAID for financial management of resources (financial and material)**
 - o **Cash Management**
 - o **Financial Reports and Documentation**
 - o **Analytical Accounting**
 - o **Management of Petty Cash**

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- o **Management of Credit Funds**
- o **Payroll Management**
- o **Inventory and Stock Management**
- o **Procurement**
- o **Travel Regulations**
- o **Vehicle Use and Gasoline Control**
- o **Organizational Chart for Flow of Funds and Documentation**
- o **Internal Control Procedures**

PHASE 3: In addition to the above, all accounting and financial management personnel will be trained on the software accounting system to be used by the APEX Project (Lotus 123).

The TMG Financial Management Trainer will be available as needed for trouble shooting, performing unforeseen modifications to the accounting system and conducting additional staff training for 2 person months during implementation of the APEX project. He will be available to travel to field or regional locations to assist with any difficulties encountered in the use of the system and to offer additional training as needed.

PHASE 4: Vehicle and Equipment Management Software Package (implemented at all APEX levels for all APEX vehicles). PEX will monitor all APEX logistical support with the same computerized system. All APEX personnel will need to know and understand policies and procedures. Accountants will handle actual implementation.

3. APEX Regional Coordinators' Training

PHASE 1: Introduction to the Trainer's Role

Participants: Regional Coordinators (3), Project Coordinator, Administrative Coordinator, Financial Coordinator, Technical Coordinator, NGO partners, Regional Development Committee Reps, private sector reps (Cooperatives, Associations), Cercle representatives

Location: Regional level (all 3 regional coordinators will participate at each regional location)

Content:

- o **Coordination and management of personnel, facilities, equipment, vehicles**
- o **Coordinators' responsibilities, method of operating, communications**
- o **Team composition and team building, including the gradual integration of additional regional members from various extension levels, regional and local development committees, village associations, NGOs, etc.**

- o **Collaborators: beneficiary groups, collaborating institutions and organizations (other projects, private sector reps, etc.)**
- o **Operating strategy: "the plan to plan" and how APEX will involve a broad constituent group in an experiential learning process to:**
 - Understand and assess the regional production, marketing and natural resource situation, including the perspectives of the village people . Establish priorities target fileres and beneficiaries, problems, needs) Set objectives and identify alternative interventions Reaching agreement on strategies, feasible interventions (where to begin)**
 - Develop a first year plan of work .**
 - Monitor progress and provide feedback for needed improvements in the APEX approach and in next level of interventions**
- o **Establishment of regional APEX office (personnel recruitment, facilities, equipment, management procedures, expectations)**

PHASE 2: APEX Planning Committees

Participants (Regional Level) : Regional Coordinators (3), Project Coordinator, Administrative Coordinator, Financial Coordinator, Technical Coordinator, Regional Extension Directors, Regional NGO Coordinators

Participants (Village Level): Producer associations, traders' unions, insurance groups (tontines), village associations, women's associations, cooperatives, syndicates, savings or credit groups (caisses d'épargne), foundations (les entreprises sociales), etc.

Content:

- o **Functions of the APCs**
- o **Composition of the APCs (criteria for nomination, balance, constituents to be represented, size, terms, rotation of members, integration of new members)**
- o **Numbers and locations of APCs (each region to review the need for a number of village level APCs, and linkages between these, and with regional APEX planning committee)**
- o **Process of selection and organization (identifying local groups and/or associations, local leadership, regional - arrondissement level communications)**
- o **Members' roles and responsibilities (position description, rewards and incentives, contracts for services)**
- o **Coordinators' and partner NGO's roles and responsibilities**
- o **Training and support for APCs**
- o **Linkages between APC members and constituents**

o **Methods of working with groups**

Additional training for regional coordinators will cover roles and responsibilities of the "coordinator-trainer," participatory methods of working with advisory and participant groups (train-the-trainer approaches, reaching consensus, negotiation, problem solving methods, identifying and using local experience and knowledge, etc.), identifying new regional collaborators and integrating them, linkages with regional committees and groups (IER, regional donor projects, parastatals, Regional/Cercle/Arrondissement Development Committees, etc.).

Training will also assist coordinators to understand their own regional situation (social and cultural background of population, livestock production systems, existing filleres, animal feeds, fillere participants including gender analysis of filleres, markets, constraints, opportunities, etc.) so they will be able to assist the APCs in the planning process. Coordinators, NGO partners, members of APCs, and other regional people will collaborate in the proposed filliere studies.

PHASE III: Additional Training for APEX Personnel

APEX will continue to provide training workshops for smaller groups of APEX personnel to assist them with their responsibilities, e.g. accountants, secretaries, regional coordinators. The entire team will take part in regular workshops to maintain communications, discuss progress, learn new skills, share accomplishments, problems, ideas, etc. APEX will look primarily to collaborating international NGOs for training of regional NGO personnel. Where appropriate, regional extension personnel will be included.

4. Regional NGO Partners

Following NGO selection, and the APEX Team Orientation a week long workshop will be held for NGO Partners to assist them in the development of their regional proposal. This will be done in collaboration with international NGO sponsors and the organizational development technical assistance support that APEX has secured for Phase 1.

5.. APEX Planning Committee Training

APEX is committed to developing an active advisory committee system at all project levels, but particular emphasis will be given to enhancing the skills of village people for taking part in APEX activities. In the planning phase this will include participation in shaping the APEX regional plan of work. After the V-APCs have targeted regional beneficiary populations, filliere problems and opportunities, possible strategies, etc., V-APCs recommendations will be presented to the R-APC, and integrated into the regional APEX plan of work.

Participants in the R-APCs and V-APCs will take part in experiential "hands on" training provided by the regional APEX team. Examples of possible areas of training include:

- o **Functions of the APCs (related to APEX goals)**
- o **APC composition and communications mechanisms and philosophy (initial APC members review balance of interests represented and determine if additional members are needed, and if so, how to recruit; communications with constituent groups (i.e. special needs of women, social groups, etc.), R-APC, PAC, APEX team, etc.).**
- o **APC organization (determine how APC prefers to organize; leadership roles, expectations, participatory group methods, information gathering, reaching agreement, etc.)**

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- o Roles and responsibilities : APEX, APC members, others
- o Understanding/assessing the situation (needs assessment) - the primary fileres, key participants, markets, associated issues like feeds, animal health, etc., problems, opportunities; APC determines how they might be involved in gathering/providing and assessing local information

6. APEX Project Advisory Committee

APEX will offer management, policy analysis and organizational training to PAC members throughout the duration of the project. During the planning phase the PAC will participate in a 1-2 day workshop following APEX regional coordinators' training, and following the NGO partners' proposal development workshop. The purpose of the workshop will be to review regional plans for Phase 1, including the general APEX operational strategy. A similar workshop will be held for PAC at the end of Phase 1 to review regional plans of work.

ANNEX 2:

APEX PLAN OF WORK: YEAR 1 (PLANNING PHASE:May 1992-December, 1992)

	Activities Timing (approx) May-June
<u>I. Project Organization</u>	
1.Approved Agreement (Contract Signed)	
2.Personnel Scopes of Work	
3.Project Structure, Function and Communications	
4.Facilities	
5.Equipment	
6.Personnel Recruitment	
. Process (Manual and Procedures)	
. NGO Partner Identification and Selection	
. Salaries and Benefits	
. Agreements	
<u>II.Training for Start Up (Planning Phase)</u>	June-July
1.General Orientation (Team, MAEE, Collaborators)	
. Project Goals, Objectives, Regionalization	
. Management Structure, Operations	
. Communications, Coordination	
. Decentralization	
. The "Plan to Plan"	
. Regional Overview Tour	
2.APEX Administrative Personnel Training	
. Administrative Financial & Personnel Procedures	

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<ul style="list-style-type: none"> . Accounting Procedures . Computer Training (Accounting System) . Vehicle & Equipment Management 	
3. APEX Regional Coordinators' Training <ul style="list-style-type: none"> . Trainer Role . Operating Strategy . APEX Planning Committees (APCs) Regional - Village 	July-August
4. Regional NGO Partners' Training: Regional Proposal Development	
5. Long Term/Short Term Training Plan <ul style="list-style-type: none"> . Internal . External 	July-August
III. <u>Establish Regional Operations</u>	July-August
1. Facilities & Equipment	
2. Identification of APEX Planning Committees (APCs) Regional (R-APC) & Village (V-APC)	
3. APCc Orientation & Training <ul style="list-style-type: none"> . APEX Orientation . Composition, Identification & Integration of new members . Organization, Roles, Responsibilities . Assessing Regional Situation 	
4. APEX Project Advisory Committee (PAC) <ul style="list-style-type: none"> . Roles and Responsibilities . Composition, Functions . APEX Phase 1 Strategy 	August - September
5. Extension Technical & Organizational Capacity Analysis and Strengthening	June - December
6. Establish Methods of Regional Communication	October- November
APEX - APCs	
IV. <u>Studies</u>	
1. Privatization of Vet Services	June
2. Vaccine Cost of Production (CVL)	March - February 1993
3. Filiere Studies Scopes of Work (criteria for	July-October

- defining filere, feasibility)
 - . Small Ruminant - Region 1, Region 2 (women's)
 - . Poultry - Region 2

- 4. Women's Enterprise Case Studies July-October
 - (one per region investigating filere)
 - . Milk Production/Marketing in urban fringe
 - . Rural Poultry Production/Marketing
 - . Rural Sheep Fattening/Marketing

- 5. Cost of Production Studies (Plan) September-October
 - (based on filere study findings)

- 6. Ghanaian Lsk. Market Analysis June-July

V. Regional Program Planning October-November
(completion)

- 1.Strategic Planning Workshop(s)
 - (approx. 2 per region in phases)
 - . Examine Regional Situation/Cases
 - . Determine Beneficiaries/Target Groups
 - . Program Priorities

VI. APEX Regional Work Plan November-December

- 1.Target Populations/Groups
- 2.Regional Objectives
- 3.Regional & Central Program Activities
- 4. Partners, Collaborators
 - (NGOs, MAEE, projects, priv. sector, other)
- 5.Budget Proposal (resources, operations, training, etc.)
- 6.1993 Implementation Plan
- 7.Evaluation and Monitoring Plan