Monitoring and Evaluation: Measuring Impact of USAID/Kenya's Agricultural Development Strategy and Program

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I. Background/Purpose

A. Need for Impact Information

The Agricultural Office will begin reporting on the impact of its portfolio under criteria established in the Guidance on the Assessment of Program Impact (API).[1] An API will be prepared annually by the mission and submitted to AID/W for review. The API will track impact in a measurable way, based on indicators, at each level of the mission's program log frame: country program goal, strategic objectives, target, and benchmarks.

AID/W will not be involved in tracking project level issues--missions will no longer be requested to submit PIRs for review by AID/W. Rather AID/W attention will be focussed on program impact through reviewing annual APIs, synthesizing these for reporting program performance under the DFA, and making cross-country comparisons.

The replacement of functional accounts with the DFA means that agriculture and natural resources budgets will no longer be "protected" as they were under the section 103 account. Under the API, missions will be asked to review their programs in relation to program progress and impact, and to make changes in their portfolios based on the results of the review. It is therefore essential that the agricultural office agree on a clear set of indicators for each level of its program, identify data sources and organize internally to collect, synthesize, and report on program impact.

The purpose of this paper is to identify indicators, sources of data, and remaining issues to be resolved for each level of USAID/Kenya's agricultural program. Much thought has already been given to monitoring and evaluation issues by the agriculture office staff and others in the mission. It is hoped that this report will further the discussion, clarify and resolve some of the issues, and assist the office to be prepared for the MSI team who will be arriving in August to complete an M&E plan for the entire mission. Recognizing that there is substantial fatigue level on the part of staff concerning these issues and that consensus on every issue is unlikely, it is recommended that the outstanding issues be resolved with staff participation prior to the arrival of the MSI team in August.

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[1] Guidance cable on API was being completed by AID/W in June.

B. Brief Overview of Agricultural Strategy

The strategic objective for agriculture-- increasing agricultural productivity and farm incomes-- will contribute to the mission sub-goal of increased production, employment, income, and foreign exchange earnings (see Figure 1).

The agricultural objective will be achieved through two targets:

* increased agricultural market efficiency, and

* accelerated development and transfer of improved technologies.

Increased agricultural market efficiency will be achieved by:

* rehabilitating market roads,

* improving marketing policies and analytical capacity, and

* by strengthening the capacity and management of agribusiness firms.

Accelerating the development and transfer of technology will be achieved by:

* supporting technology dissemination,

* developing new technologies for selected crops, and

* improving research management.

II. Principles for Data Collection and Analysis

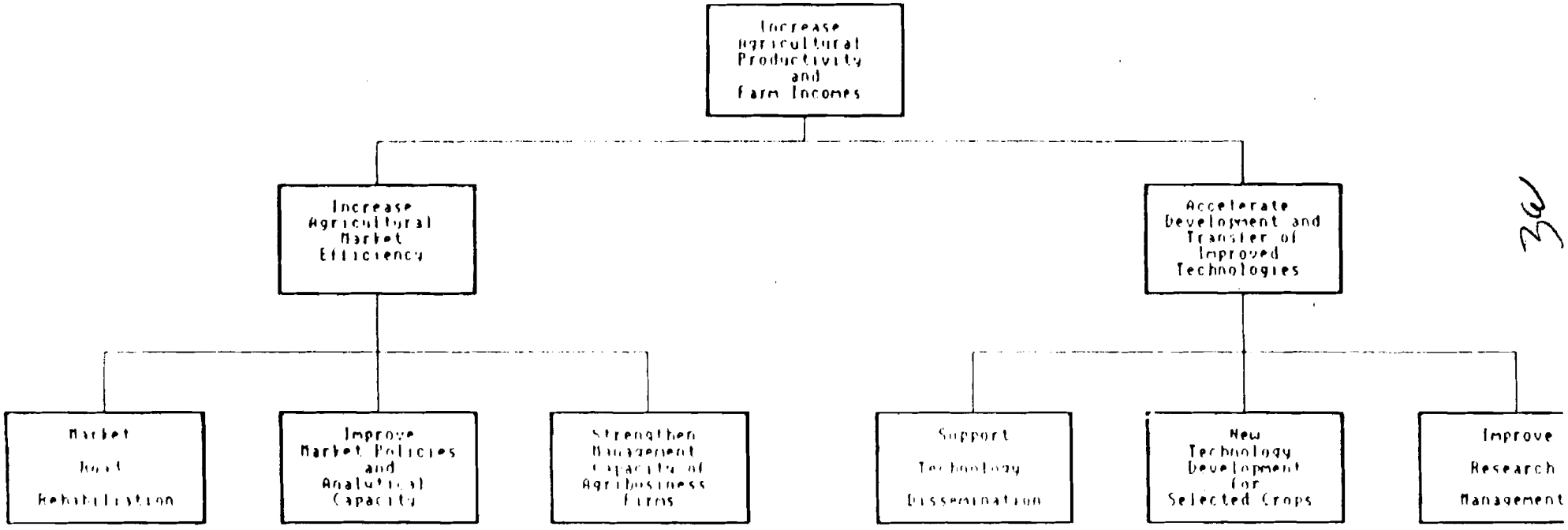
Several of the underlying themes for data collection and analysis discussed in the MSI, October 1989 report: "Improving the Collection and Use of Program Performance Data" are summarized below with an emphasis on how they apply to the agricultural program.

A. Be Cost Effective

By collecting only data and information that will be used by the mission and by using existing sources of information the cost of data collection and analysis can be minimized. Existing sources of information include data from surveys and studies conducted by the GOK and data which is or could be collected from mission-funded agricultural project/program M&E systems.

Figure 1

Agricultural Strategy



Use of GOK Data:

The GOK, Central Bureau of Statistics (CBS) collects a variety of data, data which could be used to measure agricultural program impact and to understand more about the sector. Three surveys particularly stand out:

- the Agricultural Production Survey conducted in 1986-87,

- the Household Budget Survey conducted in 1982-83, and

- annual crop estimate surveys conducted by CBS and MOA

The first two surveys listed are discussed in more detail below and in attachment 1.

Use of project/program M&E systems:

The two main programs in the agricultural portfolio--the Kenya Market Development Program (KMDP) and the National Agricultural Research Project (NARP)-- are excellent sources of information and of funds to strengthen GOK capacity in collecting and analyzing impact information. Opportunities to collect data from these projects/programs on key indicators as M&E systems for them are designed and implemented are discussed below. As new programs and projects are designed (Natural Resources and KARI/Egerton) new opportunities for data collection and analysis will arise.

B. Focus on Analysis-- Not Data Collection

As can be seen throughout this report, there are numerous data collection efforts being conducted by the agricultural office and by the GOK. The GOK is already in the position of needing assistance to analyze the data it has already collected. The agriculture office will soon be in the same position given the number of data collection efforts taking place.

C. Clear Staff Responsibility

The MSI team should look at this issue for the entire mission in August. In order for the agriculture office to collect, analyze and report performance information effectively and efficiently roles and responsibilities will have to be established by the Office Director. The following are initial ideas:

Program/Project Managers: responsible for collecting data on the indicators for their programs, analyzing and interpreting

the data,and reporting it to the Office Director and to a PSC who will enter it into a computerized database.

Office Director: responsible for seeing that the right data is being collected to address the key questions in the sector, including assigning responsibility for designing and implementing special studies which may be required to address broader strategic issues not covered by routine project/program M&E systems. The Office Director also has responsibility for communicating the findings to the program office and higher-level mission management.

CHECK WITH POP OFFICE ON THEIR ORGANIZATION DATA COLLECTION AND ANALYSIS (I did not have time to do this as requested by the Acting Mission Director)

D. Few Variables: Simple Definitions

The MSI report notes that only two or three variables should be needed for measuring the performance of any one element and that one key indicator can suffice. Definitions should be kept as simple as possible. The agricultural program fails the test as far as the "simple" criteria is concerned. There is no simple way to define and measure increases in agricultural productivity and farm incomes. As currently drafted the M&E program indicators number four for the marketing target and four for the technology target. Suggestion: define indicators as precisely as possible and limit the number to three for each target. Information on other indicators at the purpose, output, and input levels of projects/programs will be collected as part of regular project monitoring and may be useful in assessing impact. These indicators do not, however, have to be part of the formal M&E system at the program level.

Following is a discussion of the indicators, data sources, and remaining issues for each level of the agricultural program.

III. Strategic Objective Level: Increased Agricultural Productivity and Farm Incomes

A. Who will be measured: increased agricultural productivity and farm incomes for whom?

In order to effectively monitor program impact a more precise definition of the target group for the agricultural strategy and interventions is essential. While the program may benefit groups

outside of the main target group, the main thrust of the program and therefore of the M&E efforts should be the smallholders in the

high potential areas[2]. But who are these smallholders?

Definition of the Smallholder: The definition of smallholder varies according to different GOK Departments, by donor, and by geographic region. For example, in former areas occupied by large scale European farms such as Uasin Gishu, Trans Nzoia, and Nakuru, small scale farms are those between 1 and 20 hectares (has) in size. However, in districts where there was traditional settlement and high population densities, like Kisii and Kakamega, the MOA considers anything above 8 has. to be a large farm indicating the small farm size in these areas (DAI, October, 1989).

Smallholder agriculture, according to the World Bank (IBRD, December 1989), are holdings characterized by less than 12.5 has. Holdings of this size represent the dominant mode of production in terms of output, employment, and production:

Employment--85% of agricultural employment

Population:--16 million persons

Output-- 75% of production: 55% of marketed output

Land Area--66% of cultivated land area

The Bank also notes that 80% of these farming households farm less than 2 has. In addition to subsistence crops, most of these farmers grow varying amounts of cash crops such as coffee ,tea, and pyrethrum, and sell surplus food crops in good years. Although not clearly stated in the Bank report, these farms are located in the densely populated, high potential areas. Smallholders in the semi-arid areas tend to have farm sizes greater than two has. and cannot be involved as much as the farmers in the higher potential areas in cash crop production due to climatic conditions.

So who are the smallholders in the high potential areas that are the target of the missions agricultural strategy?

Based on a review of the missions agricultural strategy statement, the Economic and Social Soundness Analysis of the KMDP Program, the National Agricultural Research Project, and the Herr report I suggest that the main, direct, target group for the agricultural program is not the majority of the smallholders,i.e, those with 2 has. or less, but the medium to large range of the smallholders in the high potential areas farming more than 2 to 20 has. Within this group it is really the larger of the smallholders--those with 8 to 20 has.-- which stand to gain the most from the program.

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[2]Kenya CPSP,pg.V-8,February 1990.

The higher potential areas include those highland areas of the country that have relatively higher levels of rainfall. These areas include parts of Central, Rift, and Western.

It is farm families farming from 2 to 20 has. in these areas that:

- have access to cash to purchase farm inputs such as fertilizer and hybrid seed being promoted under the agricultural program.

- have a marketable surplus large enough to take advantage of the changes in marketing policies being pursued under KMDP.

Nevertheless, if the program is successful even the majority of smallholders will benefit indirectly as consumers of maize and from increased employment opportunities on the larger farms. In the medium to long term the smallest farmers may rely more on the market for maize purchases and shift some of their land and labor resources to higher value crops. This can have a major impact on their net farm incomes. For example, if the smallholders in Kisii and in Kakamega shift only 0.1-0.2 ha into horticultural crops a measurable impact on aggregate farm income would result (DAI, 1989).

It will therefore be necessary not only to monitor the direct beneficiaries of the program, i.e, those farming 2+ to 20 has., but also those farming under 2 has. to monitor (a) the changes in maize purchasing behavior and crop mix anticipated under the program and (b) the worsening socioeconomic and food security situation of this large portion of the population which may eventually call for an adjustment in the agricultural strategy if the anticipated changes are not forthcoming.

Note: the task of monitoring the smallest of the smallholders involves more than just the Agricultural Office. A prime target of the private sector program should be to stimulate off-farm employment for this sector of the population. Off-farm (not necessarily non-agricultural) employment already accounts for a large portion of the cash incomes of the smallest farmers: 45 to 50 percent on average.

B. Larger Issues Requiring Monitoring:

The CPSP review raised major questions concerning the feasibility of the agricultural program. These are summarized as follows:

1. Will smallholders be able to respond to the strategy given the skewed distribution of assets and income: land distribution, minimum viable farm size etc.

2. With no action by the GOK on land tenure reform can agriculture focussed on smallholder agriculture generate employment and growth to extent anticipated?

3. Natural Resources: the question was raised as to the level and attention being paid to the sustainable nature of increases in agricultural productivity. It seemed that the agricultural strategy did not consider the existing or planned natural resource activities being implemented by the mission.

Smallholder Issue: While not asked to address the smallholder sector explicitly, the mission will be asked to undertake an analysis of income and asset distribution in Kenya and its implications for the overall mission strategy. In addition, the Agricultural Office will have to monitor the response of the smallholder sector to its program as it is implemented, including understanding what portion of the sector is responding and the

effects of that response on overall agricultural productivity.

Concerning land tenure: a recent World Bank conference held in Nairobi concluded that in Kenya tenure security was not the binding constraint to increased investment and productivity. However, the question of land markets and weather they lead to concentration of land holdings was not fully answered . In addition, when improvements such as roads are made security of tenure may be threatened as a result of land speculation through land markets. The mission should monitor this as the roads component of KMDP is implemented. The mission is also considering a proposal to do research on the operation of land markets in Kenya which may answer some of the open questions.

Natural Resource Management: As a result of the CPSP review the mission agreed to more explicitly address natural resource management in all subsequent documents such as the API and PIRs. It is a bit premature to identify program level indicators for natural resource management since the mission project has not yet been designed. It may be possible to anticipate the kinds of indicators that would be appropriate for that project and, in conjunction with existing natural resource activities, identify indicators. Some of the indicators the mission may wish to consider are:[3]

- practices being adopted to increase: soil fertility, soil and moisture conservation,and vegetative cover.

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[3]Objective Tree Analysis of Natural Resource Management by M.McGahuey and T.Glowacki.

- technologies being developed for sustainable agriculture

- extension strategies/programs for NRM

To the extent the mission's program will be centered on biodiversity and park management, additional indicators for this area will be appropriate.

Data Sources/Reports Bearing on Larger Issues: There are two reports dealing with sector level issues which O/AGR should review:

(1) "Aspects of Agricultural Development and Consumer Demand In Kenya 1974-82" by Harvey Herr, and

(2) the Kenya Food and Nutrition Policy Paper by IBRD, January 31, 1990.

Following is a brief overview of the Herr report:

The Herr report contains an excellent statistical analysis of the Integrated Rural Survey of 1974-75 and the Rural Household Budget Survey of 1981-82. The objective of the study was to test four hypotheses:

1. Rural cash incomes are necessary for increased agricultural production.

2. Informal sector employment is stimulated through improved rural infrastructure.

3. There has been little change in rural production and marketing since the 1970s.

4. Female headed households, unmarried women, and elderly households will see little benefit from schemes to improve agricultural production.

Herr sought to test the assumption which forms the foundation of many of our agricultural development strategies, including Kenya's. That is: increased incomes and levels of living of rural populations will be attained by an increase in agricultural productivity which will generate employment through (a) forward and backward linkages in the rural economy and (b) stimulating the demand for goods and services. By analyzing budget shares for different expenditures by socioeconomic group, Herr attempted to identify the linkages between increased income from agricultural production and the increased labor required to produce the goods and services demanded from higher consumption expenditures. He also attempted to answer the question of how rural households become prosperous-- through increased agricultural production or through off-farm employment?

While Herr's statistical analysis seems excellent, I question some of his conclusions. For example,

1. The development of infrastructure in rural areas will probably activate consumption rather than agricultural production. The marginal surplus that rural smallholders have seems too small to justify great expense in this activity.

2. Informal sector employment in rural areas seem to be based on consumer demand, because improvements in agricultural production of the smallholder is not evident.

Theses conclusions seem to be based on current levels of technology and marketing constraints or on a miss-interpretation of the data.

Some of his conclusions support the mission's strategy of increasing the productivity of the larger of the smallholders while raising serious doubts about other donors' attempt to increase the productivity of the smallest holders: those with under 2has.

This type of analysis using GOK survey data is extremely useful for gaining a better understanding of the rural economy. It can also be used to establish baseline data and to address key questions or assumptions related to both the agriculture and private sector program.

Recommendations on Herr Report:

The following recommendations relate specifically to the Herr report. Additional recommendations concerning the use of GOK survey data are discussed in the attachment 1.

1. The agricultural office should assign or contract an agricultural economist to work with Mr.Herr to refine the findings, conclusions, and recommendations in the study concerning overall strategy issues and to identify data which the could be used as baseline measurements for the program.

2. The report should be reviewed by the private sector office for strategy implications and for data which could be used for baseline and indicator measurement.

The Kenya Food and Nutrition Policy Paper (IBRD,1990) raises serious issues concerning the socioeconomic and health status of the smallholder sector. The report states that the growth in the Kenyan economy during the 1980s has not been enough to keep pace with the rapid growth in population. The situation of the poor is demonstrated by the following facts:

- more than 1.25 million children under the age of five are stunted as a result of undernourishment,

- more than 20% of rural households,comprising more than 3 million people do not have enough income to obtain a minimum

sufficient diet, and

- declining domestic food availability per capita, and rising food exports reflect reduced purchasing power for lower income households.

The report states that: "these problems need to be addressed through faster agricultural growth for the smallest farmers, employment opportunities in rural areas,(including more investment in roads and other infrastructure), family planning, targeted subsidies and feeding programs, better healthcare for the poor, nutrition education, and programs to help women."

Again, the need to monitor and to understand more about the economic strategies and growth opportunities for this sector of the smallholders is evident from these reports. It will be extremely important for the mission to know if the smallest farmers are responding to the agricultural strategy as envisaged.

B. What Will Be Measured?: Definition of Increase Agricultural Productivity and Net Farm Income.

Indicators, benchmarks, definitions,and data sources for each level of the missions program are summarized in Table 1.

The mission will measure increased agricultural productivity by:

1. measuring returns to labor and to land in real monetary terms, and

2. measuring food grain output per hectare-- a physical measure of productivity.

Definitions of net farm income and returns to labor and land:

These measures are closely related and can be defined as follows:

Net Farm Income=

Gross Farm Income

(-)minus operating expenses:(hired labor, fertilizer, land rent,interest on current debt, marketing costs)

(-) minus: fixed expenditures: (property tax, depreciation on equipment, interest on intermediate or long-term debt)

Table 1

USAID/Kenya, Office of Agriculture
Portfolio Level Indicators

28-Jun-90

Strategic Objectives, Targets and Benchmarks (see CPSP)	What to measure/ Definition	1993 Targ.	How to measure /Data Source	Frequency	Comments
S.O.: Increase Agricultural i. Productivity					
a. value-added (4% per annum)	a. returns to labor and land in real shillings		1987 Ag. Prod. Survey; focused updates; PAM	1987; periodic	Can PAM be modified to give more statistically meaningful results? We will use it to explain trends even if adjustments cannot be made.
b. physical (4% per annum)	b. food grain yields per hectare for small farmers		KARI records; PAM; MOA/CBS yield survey	annual 1990, 1993, 1995 unknown	
ii. Farm Incomes	Net on-farm real incomes		1981-82 Income-Expend. Survey; focused updates	1981-82; periodic	
a. IMPROVE AGRICULTURAL MARKET EFFICIENCY					
a.1.: Reduce mkting costs for maize and beans by 15%	Farm/Transporter Budgets		PAM; KMDP/Roads,MOPW	1990, 1993, 1995 annual	Cannot be measured by 1993. Fifteen percent is the max. expected
a.2.: Increase smholder farm-gate prices for maize and beans by 10% in the medium-term.	Farm-gate Prices		survey - PAM survey - J.G.	1990, 1993, 1995 1990	
a.3.: Reduce variations in regional and seasonal maize prices	Market Prices		- KMDP MIS, MOA/Farm Mgt. and/or CBS	CBS - monthly or bi-weekly	AMIS team to design
a.4.: Increase number of fertilizer retail outlets by x	Fertilizer Outlets	?	Fertilizer Program surveys		Need some correlation b/w # of outlets and the # of distibutors. Talk with IFDC about optimal # Consider dropping.

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Table 1 (Cont.)

b. ACCELERATE DEVELOPMENT AND TRANSFER OF IMPROVED TECHNOLOGIES					
b.1.: Increase fertilizer use by sm. farmers by 25%	Fertilizer use	15%	- Survey (USAID) - Other: MOA/DPD, CBS - FAM	1990, 1993, ?? 1990, 1993, 1995	
b.2.: Increase the rate of developing tech. packages for specific agro-ecological conditions - 15 by end '95	New Technical Innovations	5	KARI M&E system; SR-CRSP	annual	
b.3.: Increase the number of innovations being tested by farmers on-farm: 10 by 1995	On-farm testing of new innovations	5	KARI M&E system KARI station annual reports; SR-CRSP	annual	
b. 4. Increase adoption of improved technologies.	a. input supply b. farmer adoption		a. Kenya Seed Co. & KGGCU b. KARI M&E (w/ CBS/MOA surveys); special studies	annual	CN and CM to meet follow-up with KSC and KGCCU
General Indicators:					
Area planted: maize, wheat, beans			- KREMU	annual	
Yield: maize, wheat, beans			- CBS	annual	
Value of hort. exports	define horticulture		?		
Total agric. exports					
Ag. Sector GDP					
Volume of agr. production					
Int'l prices					

The net farm income figure represents the return to (a) unpaid family labor, (2) operator's labor, and operator's management skills used in the business. Figure 2 illustrates the method used for calculating the returns to these factors of production. The basic principle is to place assumed charges on all but one of the resources and the residual amount is the return to that factor. For the purposes of calculating net returns to labor we will start with net farm income and work down the left hand side of the figure. Return to land can be measured by dividing net farm income by total hectares farmed (Managing the Farm Business, Harsh et.al 1981).

Targets: Justification for percentage increases-- the targets: 4% per annum for both increases in return to land and to labor as well as 4% increase in food grain yields per hectare are based on World Bank Agricultural Growth Prospect and Strategy Options Study and the agriculture's office judgement on the impact of its program. The Prospects study estimates for growth in agriculture value added range from 2.3% per annum to 5.6% per annum. An intermediate growth level of 4.0% per annum is projected. These growth projections are based on the degree to which the GOK makes the necessary policy changes in output and input marketing and the pace of technology development. The intermediate growth projection was chosen as a benchmark for the mission's agricultural program

C. Data Sources

1. GOK Surveys-CBS

a. CBS - Agricultural Production Survey 1986/87

DESCRIPTION:

The Agricultural Production Survey was conducted in 1986/87. Data collected include detailed input/output information in both quantities and value for both crops: grain, coffee, tea, horticulture, and livestock. The survey also collected data on crops stored, harvested, and purchased, as well as data on quantity and value of sales to NCPB agents and/or traders and consumers.

Methods/Sampling:

Data on the APS was collected from households within the sample cluster defined by the National Sample Survey and Evaluation Program II sample frame. The frame comprised 32 districts each of which was divided into 24 clusters. Due to budgetary and other logistical reasons only 24 districts were covered. Approximately 360 households were

covered in each district totaling 8,000 households in the 24

Figure 2

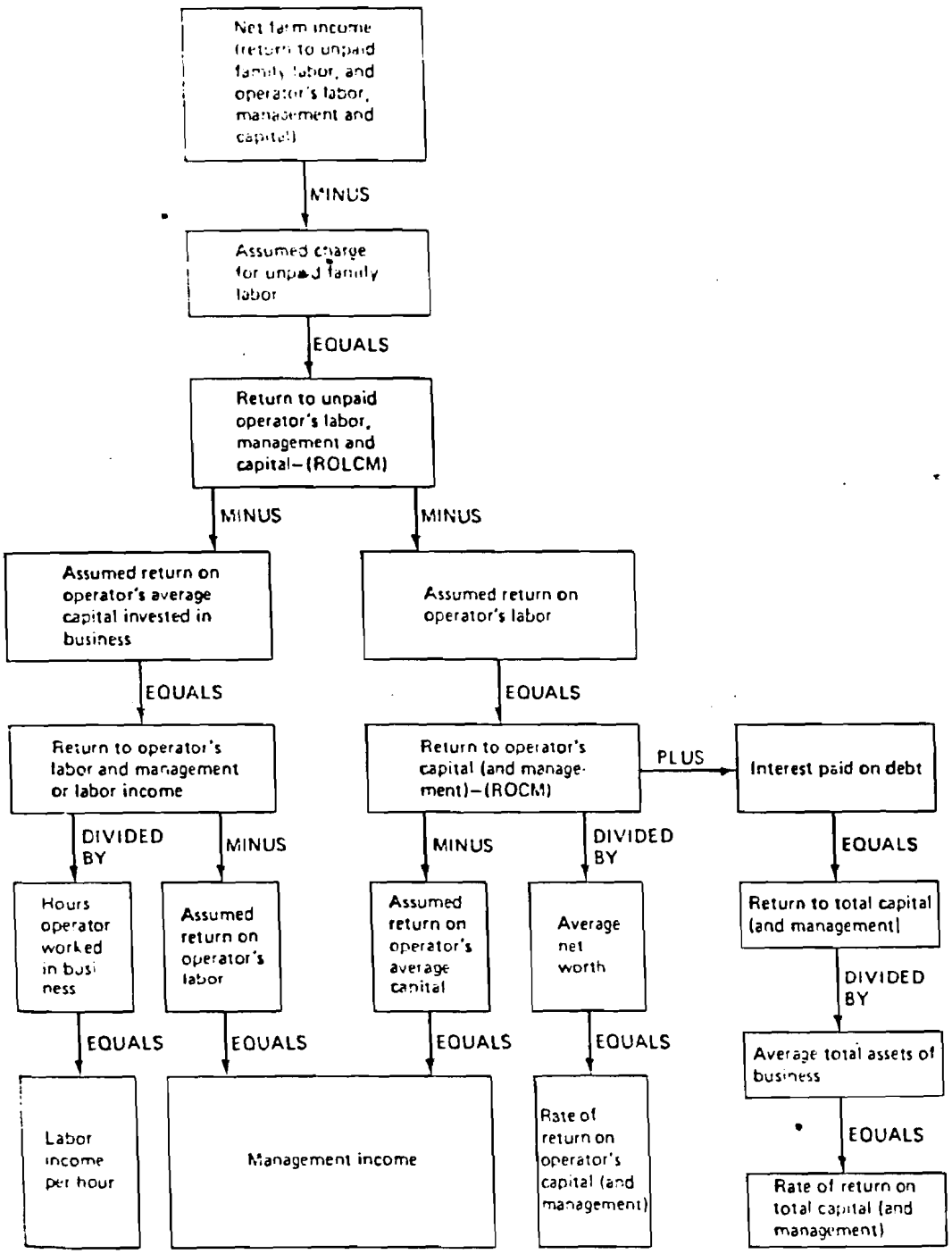

Figure 7-1. Flowchart for calculating profit and return analysis factors.

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districts.[4]

Status of Analysis:

The APS is now being analyzed by the Agricultural Department within CBS. The survey implementation and analysis was being assisted by an FAO advisor in the Ministry of Agriculture who has since left Kenya. Analysis was delayed because the license for the AERIAL software (FAO funded) which was being used on the mainframe expired. The data is now being processed on micros. A very preliminary review of the data was published in the 1989 Economic Survey, an annual publication by CBS.

Use of Survey for Measuring Program Objectives:

Agricultural Strategic Objective: Increase Agricultural Productivity and on-farm income.

If analyzed properly the 1987/88 data could be used to measure returns to land (and perhaps labor) as well as net on-farm income.

b. CBS- Rural Household Budget Survey 1981-82

Description:

This survey contains a gold mine of information on the small holder sector. The survey, conducted from 1981-82, collected information on household incomes, expenditures, consumption, and production for 6,001 rural households.

Sampling/Methods:

The survey used clusters from the 1979 population census enumeration areas and then selected households from the clusters. These samples were then stratified to ensure that each district was represented. Data was collected over a period of one year using the recall method.

Status of Analysis:

Data from this survey has not been analyzed and published by CBS except for a preliminary review of the data contained in the 1988 Economic Survey, an annual CBS publication. However the World Bank used some of the data in drafting its Food and Nutrition Policy Paper and a USAID consultant, Harvey Herr,

[4]Economic Survey, CBS, 1989

used the data to conduct a study entitled " Aspects of Agricultural Development and Consumer Demand in Rural Kenya 1974-1982.

Use of Survey for Measuring Program Objectives:

Analysis and periodic updating of the data contained in this survey will be useful in assisting the mission to measure progress towards:

* the sub-goal of "Increased Production, Employment, Income and Foreign Exchange Earnings,

* the agricultural strategic objective of increased agricultural productivity and on-farm income,

*possibly part of the strategic objective and the targets under the private sector program (depending on their final conceptualization), and

* the larger questions raised at the CPSP review in AID/W.

2. **The Policy Analysis Matrix (PAM)**

Information from PAM can be used to confirm the trends identified from the survey data. By itself, however, it will not be a useful tool for making statistically valid statements about the sector since the methods used do not (a) call for random sampling, and (b) interview individual farmers and record detailed input/output data. There is some interest in the mission to make the PAM more useful for measuring sector level changes. This would involve:

a. using random sampling techniques at least to select farmers within the commodity system chosen,

b. broaden the questions asked to include off-farm employment and use of improved technologies, and

c. conducting PAM in more sites.

Recommendations for the PAM: I was not able to talk with the primary people involved, i.e., Drs. Pearson and Monk. The proposed changes should be discussed within the mission and with the contractor. I do think that the PAM methodology is somewhat preliminary, at least within Kenya, and should not be overloaded or expected to answer all questions. There may be other good reason why the changes being suggested should not be implemented.

I see no reason, however, for not selecting the farmers to be

interviewed within the maize/bean commodity system a bit more randomly. If this is done, PAM will be a useful tool for measuring changes in agricultural productivity: net farm income and perhaps returns to land and labor.

IV. Target One: Improve Agricultural Market Efficiency

A. Indicators/Benchmarks and Data Sources

1. Reduce marketing costs for maize and beans by 15%.

This will be measured by actually interviewing farmers and transporters over the CPSP period to collect information on marketing costs.

Data Sources: PAM, KMDP Roads component through MOPW

2. Increase smallholder farmgate prices for maize and beans by 10% in the medium term.

This information is being collected for purpose level monitoring under KMDP. By itself, however, farm gate price information is not a measure of market efficiency. It will however be a significant indicator of people- level impact and in conjunction with the market price data, may be used to measure market efficiency. I suggest this be discussed with Holtsman before he departs. Note: it is not necessary to have people-level impact in every target and benchmark as long as they all add up to a strategic objective that does so.

Data Sources: PAM, farmgate price survey, CBS Agricultural Production Survey(see attachment for more on this survey)

3. Reduce variation in seasonal and regional maize prices.

This is an excellent measure of market efficiency.

Data Sources: KMDP MIS, PAM, CBS Agricultural Production Survey(see attachment for more on this survey)

4. Increase number of fertilizer retail outlets.

This may be a good indicator of input market efficiency if it can be correlated with the number of distributors. Use of this indicator should be discussed with the IFDC team when they arrive. If the information is being collected anyway as part of the fertilizer program and if it is determined to be a good indicator of market efficiency, I suggest leaving it in the program M&E system-- even though increased fertilizer use by smallholders will be a separate benchmark under target NO.2.

B. Issues Remaining for Target 1

1. Use of PAM: I am not precisely clear on how the PAM can desegregate and measure changes in private and social profitability resulting from investments in roads and changes in marketing policies,e.g. movement controls. I assume this is done by interviewing farmers on what factors they think changed their costs and returns rather than a real quantitative measure. Again, I was not able to interview the key actors. A discussion with the contractors on this point during their next visit will be very useful for broadening mission understanding of this issue.

2. Management Intensity: the KMDP PAAD calls for an institutional home-- the Ministry of Agriculture and the Ministry of Public Works-- to integrate the collection and analysis of data to measure the impact of policy reform and infrastructure development under KMDP and to develop an approach for evaluating the long-term impact of sector policy reform. For a variety of reasons, at least in the short-run, O/AGR may have to backstop the collection and analysis of baseline data and possibly initial follow-up. This has significant management implications since supervising the design, implementation, and analysis of surveys is a time consuming task.

V. Target 2: Accelerate the Development and Transfer of Improved Technologies.

A. Indicators, Benchmarks, and Data Sources.

1. Increase Fertilizer Use by Farmers by 20%

Data Source: Fertilizer Survey, CBS Ag.Production Survey, MOA/DPD

2. Increase the Development of Technology Packages for specific agroecological conditions-15 by the end of 1995

The number of technologies developed on research stations will be tracked. The target

of 15 technologies developed by 1995 and 5 by 1993 was based,in part, on the recent project evaluation.

Data Sources: KARI M&E System,KARI Station annual reports

3. Increase the number of innovations being tested by farmers on farmer fields: 10 by 1995.

The number of innovations being tested by farmers on their fields will be tracked. The target of 10 technologies being tested by 1995 and 5 by 1993 was based,in part, on the recent project evaluation.

Data Sources: KARI M&E System, KARI Station Annual Reports

4. Increase the adoption of improved technologies.

The adoption by farmers of improved technologies will be tracked. This will be done by tracking input use by farmers and actual adoption rates by small farmers.

Data Sources: Kenya Seed Company, KARI M&E System, CBS/MOA Surveys, Special Studies.

B. Issues Remaining for Target 2

1. **KARI M&E System:** the M&E System for KARI is in its early stage of development. Detailed recommendations on developing this system can be found in the recent project evaluation. In the short term, little information will be forthcoming from the system. The project manager will have to closely monitor the implementation of the recommendations. In the meantime some of the information will have to be obtained from special studies and surveys. One recommendation that could be implemented by KARI relatively quickly is to hold discussions with CBS and MOA to see if they will include additional questions on their annual crop estimate surveys to collect information on farmer adoption of specific varieties or cultural practices developed by the research system.

2. **Technology Transfer and Farmer Adoption:** This part of target 2 borders on not being in the manageable interest of the mission since the only direct activity related to it is the training of extension workers at Egerton University. However if one considers donor coordination as a mission activity considerable scope exists for increased mission dialogue with the World Bank on extension policy and on the implementation of the Bank's extension program.

VI. General Recommendations

A. CBS Agricultural Surveys

1. We should continue to explore with CBS the possibility of

providing them assistance in analyzing the current data--for both the Agricultural Production Survey and the Rural

Household Budget Survey-- in exchange for access to it. This analysis could be used as a baseline and updates of the survey could be implemented in 1993 and 1995 to measure progress against the baseline.

2. Discussions with CBS should be pursued vigorously and action taken to assist CBS with analysis initiated as soon as possible.

3. These types of statistically valid surveys are expensive to implement and to analyze. For the agricultural production survey I believe the entire survey questionnaire would have to be implemented to get the information we require. A way to cut costs would be to reduce the sample size to the bare minimum while still maintaining statistical validity.

4. Donor Coordination: UNDP has an advisor, Mr. So Paing, and a project assisting CBS. This could be a good opportunity to begin collaborating with other donors to share some of the costs of assisting CBS to collect and analyze data (see attachment 2 for details on discussion held with Mr. Paing).

5. The following questions and issues concerning the Agricultural Production Survey need to be discussed with CBS:

1. What is the status of the analysis of the existing data?

2. What sampling method is used. Are the same "clusters" used as in other surveys. What was the sample size? Smallholder/Large holder mix.

3. How often does CBS intend to undertake the survey. At what costs?

4. Does the survey cover small and large holders?

5. How are data size of area and quantities harvested collected - measured with crop cuts or farmer interviews?

6. What would be the most cost effective way for USAID to assist in conducting an update? Would it have to cover the entire sample?

7. While some data was collected on labor inputs I am not sure that it was collected in sufficient detail to allow calculation of returns to labor. This would have to be

confirmed with CBS and by examining the data.

B. Management Intensity of Overall Monitoring Effort

After seeing what has been laid out for the O/AGR, I am overwhelmed by the complexity and number of activities they are being asked to track. This is emphatically not a marginal increase in staff time and management effort. I strongly suggest that the O/AGR staff and the MSI team who will arrive in August find ways to simplify the indicators and develop an office management plan for how the data will be collected, stored, and analyzed. I simply did not have the time or, in some cases, better alternatives to offer.

C. Recommendations for Simplifying the M&E Task

1. Strategic Objective Level

The Agricultural Office and the MSI team should consider dropping the returns to land and labor measure. These are very complicated measures to track for the agriculture sector as a whole. In addition, I doubt that the data on labor used in the farm enterprise from any source is reliable. If the mission can track changes in net farm income and grain yields per hectare to measure agricultural productivity they will have their hands full and will have accomplished their measurement objective.

2. Target Level

Increased Market Efficiency:

a. Consider dropping the farmgate price increase for maize and beans as a target level indicator. As stated previously, this is not, by itself, a measure of market efficiency. It will have to be tracked as a purpose level indicator under KMDP. If it can be used as an indicator for market efficiency and there is a good story to tell about people-level impact the data can be added to the API. By not including it upfront the mission will not be held accountable for reporting on it in the API.

b. Consider dropping the increase in number of fertilizer retail outlets. It is not clear that the mission will continue the fertilizer program beyond 1992. It is also not clear that this is a good measure of market efficiency. If it turns out to be the mission may wish to include it.

Accelerate the Development and Transfer of Improved Technologies

a. Fold fertilizer use data into the measure of increased adoption of improved technologies rather than as a separate indicator. Doing so is consistent with measuring adoption by tracking the use of inputs as proxy. The mission will not be required to report on this data if it is not listed as a separate indicator and if measurement of adoption can be accomplished adequately through the other alternative data sources listed.

Table 2 presents the revised monitoring and evaluation matrix based on the above suggestions. It will still be a major task to collect, analyze, and report on each of the indicators but....it does fit on one page. Good Luck!

Table 2

USAID/Kenya, Office of Agriculture
Portfolio Level Indicators

28-Jun-90

Strategic Objectives, Targets and Benchmarks (see CPSP)	What to measure/ Definition	1993 Targ.	How to measure /Data Source	Frequency	Comments
S.O.: Increase Agricultural					
i. Productivity (physical) (4% per annum)	food grain yields per hectare for small farmers		KARI records; PAM; MOA/CBS yield survey	annual 1990, 1993, 1995 unknown	Can PAM be modified to give more statistically meaningful results? We will use it to explain trends even if adjustments cannot be made.
ii. Farm Incomes	Net on-farm real incomes		1981-82 Income-Expend. Survey; focused updates	1981-82; periodic	
a. IMPROVE AGRICULTURAL MARKET EFFICIENCY					
a.1.: Reduce mkting costs for maize and beans by 15%	Farm/Transporter Budgets		PAM; KMDP/Roads.MOPW	1990, 1993, 1995 annual	Cannot be measured by 1993. Fifteen percent is the max. expected
a.2.: Reduce variations in regional and seasonal maize prices	Market Prices		- KMDP MIS, MOA/Farm Mgt. and/or CBS	CBS - monthly or bi-weekly	AMIS team to design
b. ACCELERATE DEVELOPMENT AND TRANSFER OF IMPROVED TECHNOLOGIES					
b.1.: Increase the rate of developing tech. packages for specific agro-ecological conditions - 15 by end '95	New Technical Innovations	5	KARI M&E system; SR-CRSP	annual	
b.2.: Increase the number of innovations being tested by farmers on-farm: 10 by 1995	On-farm testing of new innovations	5	KARI M&E system KARI station annual reports; SR-CRSP	annual	
b.3. Increase adoption of improved technologies.	a. input supply - seed - fertilizer (CDC) - chemicals	15%	a. Kenya Seed Co. & NCCCU: Fert. Program surveys	annual	CN and CM to meet follow-up with KSC and NCCCU
	b. farmer adoption		b. KARI M&E (w/ CBS/MOA surveys); special studies		

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Attachment 1

Central Bureau of Statistics Surveys

I. CBS - Agricultural Production Survey 1986/87

DESCRIPTION:

The Agricultural Production Survey (APS) was conducted in 1986/87. Data collected include detailed input/output information in both quantities and value for both crops: grain, coffee, tea, horticulture, and livestock. The survey also collected data on crops stored, harvested, and purchased, as well as data on quantity and value of sales to NCPB agents and/or traders and consumers.

Methods/Sampling

Data on the APS was collected from households within the sample cluster defined by the National Sample Survey and Evaluation Program II sample frame. The frame comprised 32 districts each of which was divided into 24 clusters. Due to budgetary and other logistical reasons only 24 districts were covered. Approximately 360 households were covered in each district totaling 8,000 households in the 24 districts.[1]

Status of Analysis

The APS is now being analyzed by the Agricultural Department within CBS. The survey implementation and analysis was being assisted by an FAO advisor in the Ministry of Agriculture who has since left Kenya. Analysis was delayed because the license for the AERIAL software (FAO funded) which was being used on the mainframe expired. The data is now being processed on micros. A very preliminary review of the data was published in the 1989 Economic Survey, an annual publication by CBS.

Use of Survey for Measuring Program Objectives:

Agricultural Strategic Objective: Increase Agricultural Productivity and on-farm income.

If analyzed properly the 1987/88 data could be used to measure returns to land (and perhaps labor) as well as net on-farm income.

Target Level:

Target 1: Increase Agricultural Market Efficiency Target.

The data collected on crop marketing could be used to measure the following benchmarks:

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[1]Economic Survey, CBS, 1989

a.2. increase smallholder farm gate prices for maize and beans.

The survey currently collects quantity sold and total value - One can obviously compute price but it may be useful to add it to the survey as a check.

a.3. reduce variation in regional and seasonal maize prices

Information collected on quantities and total value of crops purchased could be used in conjunction with the market information system being collected under KMDP to measure this benchmark.

Target 2: Accelerate development and transfers of Improved Technology.

The survey questionnaire asked whether seed used is local or improved. It may be possible to ask more specific questions about the variety used. This would generate information on farmer adoption of improved technology to supplement information in benchmarks a.2. and a.3. development and release of technology.

II. CBS- Rural Household Budget Survey 1981-82

Description

This survey contains a gold mine of information on the small holder sector. The survey, conducted from 1981-82, collected information on household incomes, expenditures, consumption, and production for 60001 rural households.

Sampling/Methods

The survey used clusters from the 1979 population census enumeration areas and then selected households from the clusters. These samples were then stratified to ensure that each district was represented. Data was collected over a period of one year using the recall method.

Status of Analysis

Data from this survey has not been analyzed and published by CBS except for a very preliminary review published in the 1988 Economic Survey, an annual CBS publication. However the World Bank used some of the data in drafting its Food and Nutrition Policy Paper and a USAID consultant, Harvey Herr, used the data to conduct a study entitled " Aspects of Agricultural Development and Consumer Demand in Rural Kenya 1974-1982.

Use of Survey for Measuring Program Objectives:

Analysis and periodic updating of the data contained in this survey will be useful in assisting the mission to measure progress towards:

* the sub-goal of "Increased Production, Employment, Income and Foreign Exchange Earnings,

* the agricultural strategic objective of increased agricultural productivity and on-farm income,

*possibly part of the strategic objective and the targets under the private sector program (depending on their final conceptualization), and

* the larger questions raised at the CPSP review in AID/W.

III. Recommendations:

1. We should continue to explore with CBS the possibility of providing them assistance in analyzing the current data in exchange for access to it. This analysis could be used as a baseline and updates of the survey could be implemented in 1993 and 1995 to measure progress against the baseline.

2. Discussions with CBS should be pursued vigorously and action taken to assist CBS with analysis initiated as soon as possible.

3. These types of statistically valid surveys are expensive to implement and to analyze. For the agricultural production survey I believe the entire survey questionnaire would have to be implemented to get the information we require. A way to cut costs would be to reduce the sample size to the bare minimum while still maintaining statistical validity.

4. Donor Coordination: UNDP has an advisor, Mr. So Paing, and perhaps a project to assist CBS with surveys. This could could be a good opportunity to begin collaborating with other donors to share some of the costs of assisting CBS to collect and analyze data.

5. The following questions and issues concerning the Agricultural Production Survey need to be discussed with CBS:

1. What is the status of the analysis of the existing data?

2. What sampling method is used. Are the same "clusters" used as in other surveys. What was the sample size? Smallholder/Large holder.

3. How often does CBS intend to undertake the survey. At what costs?

4. Does the survey cover small and large holders?

5. How are data size of area and quantities harvested collected - measured with crop acts or farmer interviews?

6. What would be the most cost effective way for USAID to assist in conducting an update? Would it have to cover the entire sample?

7. While some data was collected on labor inputs I am not sure that it was collected in sufficient detail to allow calculation of returns to labor. This would have to be confirmed with CBS and by examining the data.

Attachment 2

Date: June 20, 1990

TO: See Distribution

FROM: Tom Hobgood and Charles North

SUBJECT: Highlights of Meeting with Soe Paing, UNDP Advisor to CBS.

The Central Bureau of Statistics collects and analyzes data on a wide variety of subjects, data which could be invaluable to the mission in measuring progress towards meeting its development objectives. The question is at what cost and how will the mission get access to the data.

We met with Mr Paing for two reasons:

1. to learn more about the UNDP Project which is providing assistance to CBS and identify additional CBS functions which might require further strengthening, and

2. to discuss the Agricultural Production Survey and the Rural Household Budget Survey conducted by CBS and how they might be used to assist us with monitoring the agricultural program strategic objectives, targets, and benchmarks.

1. UNDP Project

This project entitled, Implementation of the Statistical Information Processing Plan, was designed by Harvey Herr and was suppose to begin in 1986. Implementation actually began in August 1988. Total project costs are $639,000 over a three year period. The objective of the project is to provide assistance to CBS in automating its data processing activities. The project provides hardware (mostly micro computers), training, and technical assistance. The project will end in October 1991: a follow-on project is being designed by Mr. Paing. The follow-on project will run for two years and will extend computer processing to the districts.

2. CBS's data collection activities

Mr. Paing explained that the UNDP project is assisting CBS in all its data collection activities which consists of three groups:

A. The National Sample Survey Program which consists of periodic surveys on specific topics. These surveys consist of two types:

(1) a sample frame based on the population census is used to conduct surveys on special topics. The most recent surveys of this type were one on literacy and nutrition and the Agricultural Production Survey.

conducts regular annual surveys and censuses of business establishments and industrial production. An annual survey of the distribution of services is also conducted under this component. Industrial surveys are supported by the French Government.

B. **Administrative Data** consisting of statistics on customs, education, trade, income tax, motor vehicles, etc. Paing said that this is the last priority for automation.

C. **Aggregate Data** on balance of payments, national accounts etc.

Quick institutional history of CBS: The Government Computer Services Center was originally a part of CBS. Later it was separated from CBS, but they remained under the same ministry, the Ministry of Finance and Planning (MOFP). When MOFP split into two ministries, CBS lost control of the processing of its data and had to wait for computer time behind higher priority applications like the GOK payroll. With the arrival of Paing, CBS has been moving its data and processing to microcomputers in CBS. CBS has 30-35 microcomputers and expects to get more after the Census is finished.

3. Agricultural Production Survey and other CBS/Agriculture surveys

The Agricultural Production Survey (APS), conducted in 1986-87, is now being analyzed by the Agricultural Department within CBS. The survey implementation and analysis was being assisted by an FAO advisor in the Ministry of Agriculture who has since left Kenya. Analysis was delayed because the license for the AERIAL software (FAO funded) which was being used on the mainframe expired. The data is now being processed on micros. Mr. Paing was unable to answer the detailed technical questions concerning the APS and suggested we talk with Mr. Kerimi, Acting Head of the Agriculture Department or Mr. Akach, Head of the Surveys department. Donor support for the APS comes from UNDP or FAO.

Mr. Paing indicated that in addition to the APS, the Agriculture Department undertakes crop forecasting (quarterly) and market price surveys. These surveys were supported under the EEC-funded Food Monitoring Project which has ended. Data collection, entry and processing continue, but Mr. Paing suggested that CBS/Agriculture may need assistance with analysis of the data and publishing reports.

Mr. Paing said that the Rural Household Income/Budget Survey was done on the mainframe using ARIEL. CBS is in the process of moving that data to micros.

When asked by Mr. Hobgood about the duplication of agricultural data collection and analysis efforts between CBS and the Ministry of Agriculture e.g., market price and crop estimate data, Mr.Paing

acknowledged that this was a problem and that a workshop involving all concerned Ministries was going to be held in October to sort out who was going to collect various data. He gave us a copy of the workshop agenda and said donors would be invited.

4. Additional Assistance Required by CBS

When asked how a donor such as USAID could assist CBS in the implementation of its survey work, Mr. Paing suggested the following:

1. provide operational costs support for surveys, including preparation and reproduction of questionnaires, and support for enumerators. While no computer hardware is required, he did think that CBS could use an optical scanner. (FYI: I have heard this comment before from Steve Peterson, HIID -- CN)

2. assist in the analysis and publication of survey results,

3. support training activities such as the short-term courses at ISPC-U.S. Bureau of the Census and at the Kenya Institute of Administration (KIA). USAID has funded these courses through our support to the National Census (PH) and our support to KIA through RMRD. The statistical software provided and trained in at ISPC is used for all CBS's statistical processing, including the Economic Survey.

4. continue to support the maintenance of the over 300 computers in the Ministry of Planning, currently supported through RMRD, the Census Project and the UNDP-CBS Project. Paing emphasized that what was needed was continued funding of a computer engineer and maintenance staff not the funding of spare parts and consumables.

Recommendation/Follow-Up Actions

1. Discussions with CBS should continue. Hobgood and North will meet with Mr. Akach and/or Mr. Kerimi to resolve technical questions on the Agricultural Production Survey.

2. Mission management team needs to decide if and how it wishes to provide assistance to CBS.

3. The mission should considers sending a representative to the CBS workshop in October.

Distribution:
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AMIS Team

Drafted:AID/W:TDH:Memo;AGR:CN