

DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

WORKING PAPER

**THE ROLE OF POLICY ANALYSIS IN THE INSTITUTIONAL
FRAMEWORK OF ZIMBABWE'S AGRICULTURAL SECTOR**

BY

TOBIAS TAKAVARASHA AND GORDON SITHOLE

WORKING PAPER AEE/6/92

**DEPARTMENT OF AGRICULTURAL ECONOMICS & EXTENSION
FACULTY OF AGRICULTURE, UNIVERSITY OF ZIMBABWE
P.O. BOX MP 167, MOUNT PLEASANT, HARARE
ZIMBABWE**

THE ROLE OF POLICY ANALYSIS IN THE INSTITUTIONAL FRAMEWORK OF ZIMBABWE'S AGRICULTURAL SECTOR

by

T. Takavarasha and G. Sithole*

Working Paper AEE 6/92

**Department of Agricultural Economics and Extension
University of Zimbabwe
P O Box MP167
Mount Pleasant
Harare
ZIMBABWE**

December, 1992

T. Takavarasha and G. Sithole are Deputy Secretary and Chief Agricultural Economist respectively in the Economics and markets Branch of the Ministry of Lands, Agriculture and Water Development. The authors are indebted to Larry Rubey, Dr. E. A. Altwood and Dr B. Walker for their comments.

The views expressed in this paper are those of the authors and do not necessarily express those of the Department, University or any other institution.

Working Papers are published with minimal formal review by the Department of Agricultural Economics and Extension.

TABLE OF CONTENTS

	Page
1. INTRODUCTION	1
2. THE ROLE OF POLICY ANALYSIS	2
3. THE FARM MANAGEMENT DATABASE FOR COMMUNAL AREAS	4
4. AGRICULTURAL DATABASE	9
4.1 Applications of Database	10
a) Periodic Publications	10
b) Policy Analysis/Research Papers	10
c) Monitoring and Evaluation	10
5. MARKET INFORMATION AND PRICE MONITORING	11
6. POLICY SYNCHRONIZATION AND HARMONIZATION	13
7. CONCLUSION	15
8. BIBLIOGRAPHY	16

1. INTRODUCTION

Agricultural institutions responsible for policy analysis and policy advice play an equally important role in agricultural development as other supportive institutions. The role of agricultural institutions servicing commercial agriculture in Zimbabwe between 1890 and 1980 is well documented by Rukuni (1990). The post-independence strategy of extending and restructuring supportive institutions (research, extension, credit and marketing institutions), and the resultant success in smallholder production has been highlighted by Rohrback (1987) and Blackie (1986). It is clearly demonstrated in the 1980-85 period that public sector investment for institutional support towards agricultural production and marketing services is capable of stimulating production and marketing incentives for smallholders. At the same time, the weakening and/or withdrawal of key public services and support institutions due to budgetary constraints in the 1985-90 period has been partly responsible for declining productivity (World Bank, 1992). In particular, this has in recent years, resulted in a steady erosion of the effectiveness of most of the agricultural services provided by the agricultural Ministry.

Morris and Alderman (in Eicher and Rukuni, 1991) recently concluded that institutions matter most in distinguishing between country groups experiencing more successful and less successful economic development. Because most countries in Africa (including Zimbabwe) are currently at an early stage of scientific, institutional and human capital development than their counterparts in Latin America and Asia, agricultural development strategies in Africa should focus on human and institutional capacity building in the 1990s. The long term objective of this paper is to contribute to the recovery and stabilization of the food and agricultural sector by strengthening the institutional capacity for policy analysis in the Ministry.

So far much attention has been given to the more conventional public and private agricultural supportive institutions such as research and extension, training centres, farming organizations (Bratton 1984), marketing boards and input delivery systems (Blackie 1986) but there has been little discussion of the technical institutions responsible for agricultural policy analysis and advice. A properly co-ordinated institutional base for policy analysis and data management can contribute significantly to the effectiveness of supportive institutions in the process of developing the agricultural sector. In many Sub-Saharan African countries, policy reforms were introduced with little regard to institutional capacity required to cope with formulation, implementation, monitoring and evaluation of the reforms introduced. The capacity for policy analysis should not be allowed to lag behind the pressure for reform.

The next section of this paper examines the role of policy analysis in the context of the Economics and Markets Branch (E & M) of the Ministry of Lands, Agriculture and Water Development (MLAWD). This is followed by a review of the efforts that have been made to improve the availability of data for agricultural policy analysis through the Farm Management Survey (Section 3), and the agricultural database system (Section 4).

The broader applications of the agricultural database in policy analysis, monitoring and evaluation and periodic publications for use by researchers and other institutions is discussed. Section 5 looks at market information and price monitoring. The final section concludes with the implications of improved synchronization of policy institutions on the harmonization of major policy decisions.

2. The Role of Policy Analysis

The goal of researchers and policy analysts in agricultural economics is to describe and analyse economic and related social problems and to prescribe remedies based on available data, information and theory. Bonnen (1988) defines data as symbolic representations of concepts, quantities and actions and as the direct product of measurement or counting. Information is more than just data. It combines data from different collection processes (see later sections) and subject matters within some analytical interpretation. Interpretation may range from little more than formatting of data for presentation, to encoding in an index or scale, to modelling complex economic phenomena. Therefore information is data that are processed, organised, interpreted and communicated to the relevant users. Its usefulness is in aiding decision making or subject matter evaluation.

The "top down" approach in policy planning, design and implementation has frequently not resulted in the desired development of smallholder agriculture in developing countries (FAO, 1990). This approach often results in policy measures being implemented without adequate knowledge of the situation at the grass roots level.

The role of policy analysis is, and should be, to identify all major constraints that hamper development at the farm-household level and to specify and test possible solutions, both technical (ie from existing research results) and institutional. Policy analysis should recognise that the systems operated by smallholder farmers are not only complex but are also affected by many factors both internal to the farm household (eg resources, management) and external (eg input supplies, credit, markets). Only through close consultation with the farmer and examination of his total situation, can real and comprehensive policy measures be designed and implemented in the short and long term to improve farm productivity, raise farm and family incomes, increase the welfare of farm families and develop farm household systems and rural communities on a sustainable basis.

This approach in policy analysis ensures a better insight into the farm household system as a whole and an understanding of the connections and interactions between individual household components. Policy analysis should concentrate at the household level because in developing countries, the farm household is the decision-making unit which ultimately controls the transformation of inputs into basic agricultural outputs (FAO, 1990). Decisions have to be made by the household about what to produce, how to produce, how much to produce, when to produce and where to produce. Decisions also have to be made about the acquisition of inputs and use of family or hired labour. Thus, policy analysis tries to identify where conflicting objectives exist or may arise and the resultant trade-offs. The role of policy analysis is to assist in the design of appropriate policies so as to avoid undesirable economic consequences.

The value of information from research or data analysis is often derived from its value in decision making both in theory and in practical problems. In the descriptive process, the policy analyst arranges selected data to tell a story and illuminate a policy problem. The next stage of explaining the policy problem comes out of the interaction of data with theory. Theory relates facts and concepts and it is the duty of the analysts to identify the relevant theory and statistical method of analysis. For example the data may show a correlation between fertilizer usage and farm income; the theory helps to determine which is cause and

effect. Prescription is the last stage where alternatives for action are recommended. In general, the task of the analyst is to show the implications of each alternative without necessarily expressing a personal opinion about what is best. Policy analysis institutions are designed to combine together all three processes of description, explanation and prescription, and the three elements of policy problems, data and theory, before providing advice to senior managers in government. Here, the Economics and Markets Branch is used to illustrate the role of policy analysis institutions.

The Economics and Markets Branch

The MLAWD is the arm of Government responsible for a broad spectrum of agricultural related policy issues. These include pricing, marketing, trade and development of agricultural products, inputs and foreign currency for the agricultural industry (machinery, seed, fertilizer, chemicals, stockfeeds, spare parts, labour, packaging, etc), the operation of a wide range of locally and donor funded agricultural projects, land policy, the provision of technical services (research, extension, livestock and training) and the administration of agricultural parastatals. The full structure of the Ministry is shown in Appendix 1.

The Economics and Markets Branch dates back to the 1940s when it was set up to provide farm management services, drought-relief assistance and related work largely for the commercial farming sector and, through the Agricultural Marketing Authority, to deal with the pricing and marketing of controlled agricultural commodities. The structure and functions of the Branch have not changed significantly except that after independence the thrust of the activities shifted to reflect the Government's new agricultural policy strategy towards growth with equity (Zimbabwe, 1991). At present the basic functions of E & M include dealing with proposals on the prices of controlled and regulated agricultural products, input procurement for the agricultural sector, estimation of agricultural export earnings, economic appraisal of new agricultural projects, work related to the agricultural aspects of the economic reform programme, provision of basic farm management information, liaison with agricultural marketing boards and trade issues.

The Branch is headed by a Deputy Secretary who reports directly to the Permanent Secretary, and has a total establishment of 30 staff including 17 professional agricultural economists, 4 computer operators and 9 research assistants. It has two basic divisions, the marketing section headed by an Under Secretary with three supporting grades, and the Agricultural Economics section headed by a Chief Agricultural Economist, supported by principal and senior agricultural economist grades. Many observers have pointed to the high rate of staff turnover and the over-emphasis of routine as opposed to more policy analysis work, as a major weakness of the Branch. However, significant efforts have been made in the last six years to improve the policy analysis work of the Branch, and these include:-

- a) the requirement that the basic entry grade be a degree in agricultural economics, as opposed a general economics or agriculture degree;
- b) the provision of post-graduate (including PhD) training opportunities for all staff who complete the first two years in the Branch.
- c) improved access to computer facilities and computer training for data and policy analysis for all staff;
- d) the use of appropriate short-term and long-term technical assistance programmes to

- provide in-service staff training and technical back-up.
- e) facilitating the participation of senior economists in consultancies, feasibility studies and research activities, where appropriate; and,
- f) enhanced exposure and interaction with economic units in other agricultural institutions in particular, the University of Zimbabwe, farming organisations, Reserve Bank, marketing boards as well as bilateral and international organisations (in particular USAID, ODA, CIDA, FAO, World Bank, IFPRI, etc).

The work of the Branch has become increasingly oriented towards policy design, analysis and monitoring in the light of the rapidly changing economic environment brought about by the Economic Structural Adjustment Programme (ESAP). In order to effectively implement the ESAP, Government is required to identify, design and implement short/medium term specific policy measures which are necessary to achieve set goals.¹ The gathering, processing and management of data was developed over the past 5 years as a major adjunct to policy analysis. The Branch has been tasked with research and analysis which is targetted towards specific implementation issues to provide timely information to policy-makers for the effective implementation of reforms already announced and also for future policy reforms which are required to meet ESAP objectives. The Branch has therefore embarked on an analysis-driven process of policy reform. However, while some important analyses have so far been carried out, further work is required to better inform policy-makers of the implications of changes in such areas as stock-holding policy, further pricing and marketing reform and the pace and sequencing of the reforms (MLAWD Policy Statement, July 1992). The data components and information systems so far developed by the Branch are described in the next three sections.

3. Farm Management Database for Communal Areas

The Government of Zimbabwe has since 1980 targeted the communal and resettlement farming areas for accelerated development through the provision of infrastructure and inputs, in addition to price policy and land reform. Lack of comprehensive

^{1/} Following the introduction of the Economic Structural Adjustment Programme (ESAP), the overall functions and duties of the Branch broadened to cover areas of agricultural marketing and pricing de-regulation, trade liberalisation and the reform of Marketing Boards. The Branch found itself having to expand its farm survey work in order to effectively determine the impact of the ESAP on the agricultural sector; assess further options for price and market reforms; setting up a monitoring and evaluation mechanism for the Grain Reform Programme funded by USAID and the overall sectoral reform programme funded by the World Bank; identify the agricultural inputs to be placed on the Open General Import Licence (OGIL); and, administer new incentive schemes to encourage export production.

data on communal farms has been a major limiting factor in evolving effective strategies for the development of that sector. In order to improve this sector, the extent and characteristics of the very real constraints which are inhibiting the development of agricultural productivity on communal farms must be studied scientifically and strengthen the basis for policy formulation.

The history of the Farm Management Database goes back to 1985 when an Agricultural Data Analysis (ADA) project was initiated in the Branch. Implementation of Phase I began in March 1987 when USAID/ZASA funds were made available and continued until 1990 by which time the project had amply demonstrated that microcomputers could be effectively utilised by Branch and Agricultural Marketing Authority (AMA) staff. By the end of Phase I of the project, a number of areas had been identified where further work and assistance were required. Phase II began in September 1990 and involved the following activities : upgrading the level of microcomputers to take into account the increasing level of data collection and analysis; further training in microcomputers and applied agricultural economics for agricultural economists (MLAWD files 1990); development of the Agricultural Database; and, further improvement in the flow of data from the communal sector through a revamped farm management survey. The first activity has already been implemented; the second is on-going; the rest of the activities will be implemented during the remainder of the three-year project period.

The Economics and Markets Branch, through its FMRS, initiated an annual farm management survey in 1982/83. However, due to staff turn-over, lack of adequate resources etc, a backlog of unanalysed data accumulated. It was the introduction of microcomputers in 1987 under the USAID/ZASA-funded ADA project which facilitated the processing of the 1985/86 survey. There was no survey conducted in 1986/87 and the 1987/88 survey was disbanded due to the poor quality of data (MLAWD files, 1990). At this time, it was realised that if the FMRS was to play its central role as a major source of data and information on the communal sector, there was need to have the entire survey revamped and a major effort put towards the strengthening of collection, processing and analysis of farm management data.

Another survey was initiated in 1988/89 in selected communal areas. The first part was a baseline questionnaire carried out at the beginning of the season. Subsequently, enumerators used another questionnaire and visited farmers at least twice a month over the course of the season. During these periodic visits, the focus was on major operations being carried out by farmers and the data collected focussed on both physical inputs and cost data. Labour data was collected from a sub-sample rather than the entire sample in order to improve quality. As data was collected in the field, it was brought back to Head Office, checked and entered into a PC and did not have to wait until the end of the season to be analysed. This is the basis of the annual survey currently being carried out in the FMRS.

The aim of the annual survey is to determine and understand the conditions and extent of agricultural production in the communal areas, input usage, output levels, marketing activities and resource allocation decisions of small farmers. For a sample of the questionnaire used, see Appendix 1 pages 21-24. Another objective is to quantify input usage and production figures for a sample of communal farms in order to develop a detailed set of standard crop and farm budgets. The analysis of farm survey and crop budgets provides

useful information on resource allocation and regional comparative advantage, price determination and assessment of the impact of inflation on cost of production and viability of farming enterprises.²

There are nine trained field enumerators or research assistants based in each of the nine survey areas³ and supervised from Head Office. Regular training of the research assistants is provided by senior economists. Three new vehicles have been acquired and will be used by agricultural economists to improve the frequency of farm visits and supervision of enumerators. In addition, enumerators are also being provided with motor cycles under the second phase of the ADA project. These are important components in the re-orientation of the FMRS's survey effort. In previous years, without adequate transport resources, the enumerators were confined to limited enumeration areas. Improved transport will permit them to expand both area and intensity of coverage. Data entry is done by four trained computer operators based at head office. Valuable technical assistance on survey design and data analysis was provided by Dr Attwood (1989) and Dr Masters (1990) and financial assistance by USAID.

The survey is conducted in three stages. Each stage of the survey is designed to capture all relevant data on agricultural production, assets, farm structures and crop marketing. Three questionnaires are administered by the enumerators at specific points

^{2/} In Africa, three methods have historically been used to generate information at the farm level. These are : infrequent surveys, multiple-visit surveys and the case study approach. The infrequent visit survey approach is the one currently used by the Branch's FMRS. It involves enumerators visiting respondent farmers a number of times a year. Its main advantages over the multiple-visit and case study approach, are the lower cost of interviewing the farmer; better ability to sustain the interest of the respondent during infrequent interviews; and, shorter period of carrying out the survey, analysing the data and publishing the results. The other two methods, while providing more reliable data on input and output flows and better able to control measurement errors, involve visiting the farmer frequently over the entire cropping season. They both cost more per farm visit and come up against the problems of requiring 6-12 months to plan the survey, a year or so to carry it out due to the need to sustain the interest of the farmer during repeated interviews, and up to 3 years to analyse and publish the results.

^{3/} The nine survey areas are in Buhera, Chirau, Chirumanzu, Chiweshe, Kandeya, Mutoko, Nyajena, Zvishavane and Chivi. There are approximately 55 households in the sample for each survey area. Each area is further divided into two enumeration areas. The survey is regularly re-designed to achieve greater coverage of both high and low potential communal areas and ecological zones, and to minimise deterioration in data quality arising from frequent visitations to the same respondents.

during the agricultural season (October to September the following year).⁴ The data is then coded and collated into reports setting out the demographic statistics, physical assets and the full range of farming activities in both physical and financial terms. Two annual reports have so far been published: the 1988/89 and 1989/90 "Annual Report of Farm Management Data for Communal Farming Areas" (MLAWD 1990). The data contained in these reports is designed to provide essential information as an input to the development of appropriate policy measures, as a benchmark data to assess progress, and for any further statistical analysis.

As the economic reform programme unfolds, there has been a need to make additions to the questionnaires to enable monitoring of the impact of the reforms on the welfare of communal farmers. This will also facilitate comparison of production and consumption characteristics of communal households with different resource endowments, income sources and cropping patterns. Empirical evidence on the short-term and long-term effects of the 1992 drought on household food access will be built up. These are ongoing improvements that will continually be made to the farm management survey. However, the institutionalisation of policy analysis involves more than simply putting into place data collection procedures and information systems that meet current policy needs. Databases and analytical work must be responsive to changing policy analysis needs and the focus of such efforts should evolve over time so as to anticipate future needs. Thus, although the current survey has generally focussed on quantifying input usage and production statistics in order to develop a detailed set of typical crop and farm budgets for communal farmers, the current reforms in the pricing and marketing of "controlled" agricultural commodities have revealed several new data needs. For example, it is apparent that there is need for appropriate data on the consumption and marketing behaviour of communal households if Government is to continue its role of ensuring the welfare of communal farmers in marginal rainfall areas. In addition, comprehensive data on income and expenditures could also be collected. Only when information is available on production and consumption decisions of a household, can welfare determinations be made or savings and investment behaviour be analysed.

A new monthly questionnaire that would elicit detailed information on grain purchases, prices and income sources, has been designed to be used by enumerators once it has been tested. It should go beyond the "one-shot", one year recall process currently in operation and should considerably assist in future analysis of the grain market reform process. This monthly survey will collect such data as follows :

- 1) Household expenditures - purchases of food and durables, including quantity and

⁴/ The aim of the first baseline questionnaire is to capture socio-economic characteristics, previous seasons cropping pattern, livestock composition and assets inventory; the mid-season questionnaire is for input stocks and purchases, land preparation, input usage and livestock changes; the end of season questionnaire is for grain harvests and retentions, crop marketing, overhead expenditures, off-season activities. Two supplemental questionnaires on household expenditure and transport costs were added in 1991; and food access and price monitoring in 1992.

- price information;
- 2) Source of food grains (GMB, retail shop, NGO's etc);
- 3) Gifts or barter of food and durable goods;
- 4) Existence (and potential for) grain purchases from informal traders (ie shopkeepers, millers or transporters);
- 5) Distance travelled and time spent queuing to obtain food;
- 6) Income sources (crop sales, off-farm activities, remittances etc).

The advantage of the monthly questionnaire is that it permits policy analysts to examine the food access situation of communal farmers in a wide range of farming systems. Such analysis helps to identify possible policy changes in the current grain marketing system that improve food access by vulnerable households. Determining the probable impact of future reforms and identifying potential ways of "fine-tuning" on-going policy changes, requires a data collection effort that is evolutionary in approach.

A number of data processing issues were described earlier. However, there are also design issues that arise over time with the type of comprehensive data collection such as envisaged under the Farm Management Database. One problem is getting a good "mix" of survey sites for policy questions that may not be adequately defined until one or two years later. The sites currently included in the survey work (see map), were selected at random and represent a cross-section of Natural Regions. This permits the comparison of communal farm production in the different agro-ecological areas. However, there are disadvantages to this type of site selection.

Despite the randomness in selection, the current survey sites are not geographically dispersed (see map) and are actually quite similar in many respects. For example, Nyajena, Zvishavane and Chivi, all lie within a 50 kilometer radius of Masvingo. Although these three survey sites represent two different Natural Regions (NRs), the variation in climatic conditions and cropping patterns is not very significant. Natural Regions, as delineated on national maps, are not strict climatic boundaries since agro-ecological differences cannot be delineated solely by a few solid lines on a map. Division into NRs is a simplification and, in many circumstances, there are no real differences in climatic conditions between a NR IV village and a nearby NR V village. Thus, there is an argument for a more purposive selection mechanism by identifying and selecting distinct "farming systems".

Purposive or stratified selection by "farming system" type would involve the identification of eight or nine different typical farming systems. Such a selection would introduce the ability to compare and contrast the production and consumption characteristics of communal households of widely differing resource endowments, income sources, and cropping patterns. In addition, the effects of a particular policy on certain "types" of communal farmers (eg livestock producers who are net buyers of food or cotton producers), could be observed. A list of possible farming systems that can be included in such a survey as follows :

1. Cotton farming system - eg Gokwe;
2. Tobacco farming system - eg a communal area north of Harare;
3. Livestock farming system in area largely unsuitable for crop farming - eg area south of Bulawayo;

4. High rainfall farming system near border with Mozambique;
5. Diversified maize-oilseed farming system with good transport links to major urban centre (eg Harare);
6. Maize-oilseed farming system in NR III with relatively poor transport links;
7. Low-rainfall farming system - eg south of Masvingo with substantial area devoted to pearl millet;
8. Mixed sorghum-maize farming system - eg north of Bulawayo like Siabuwa.

4. Agricultural Database

The Economics and Markets Branch has designed an agricultural database (see Appendix 2 pages 25-37) to provide central storage of statistical data for recall and use by a range of users. As explained in section 2 above, the Branch has continuous data requirements for a wide range of economic variables in particular:

- prices for agricultural inputs and products,
- area planted for major crops, yield levels and livestock numbers
- input usage
- parastatal performance
- agricultural trade data

Prior to the database, these data requirements were obtained by repeatedly consulting public reports and internal documents from a wide variety of sources (e.g. CSO, Agritex, CFU, Marketing Boards and input companies). The process of assembling and retrieving datasets from different disjointed sets had a number of flaws, gaps and inconsistencies which had to be rectified. In addition, the timing and composition of the datasets proved insufficient for regular price policy analysis and assessment of implications of various changes on major policy objectives. For the type of policy analysis and quick reaction now demanded in the Branch as a result of the economic reform programme and for price monitoring, it became necessary to be able to receive, process and store up-to-date information in a centralised database.⁵

The first phase in the establishment of the database involved the installation of modern desk-top computer units (386AT) which operate at 33MHz and have 180 Mb hard drives with a storage capacity equivalent to about 90 000 pages of text. With such storage capacity, it has been necessary to plan, construct and maintain logical data structures and a directory for multiple-user applications. FAO consultants assisted in the compilation and management of files into a unified data bank, and training of staff in the management of the database system. A summary of the data files contained in the database is shown in Appendix 2. The next section discusses the output and various applications expected from

^{5/} The database will continue to have input from market information systems in GMB, CMB, CSC and DMB as well as obtain technical data from other departments and farming organizations, which will feed into the database. A systematic method for gathering data from these sources and up-dating information is being developed.

the Economics and Markets agricultural database.

4.1 Applications of Database

a) Periodic Publications

An immediate output from the database is the publication of an annual report on "Agricultural Statistics of Zimbabwe", the first issue of which is expected towards the end of 1992. This publication will contain current and historical data on crop yields, plantings, output and sales to marketing boards, food imports and exports, input usage, foreign exchange allocations, price information and any other relevant data on the agricultural industry. The data will be presented in a format that provides quick reference by policy-makers, researchers, investors and other users.

The second type of output is a bi-annual "Agricultural Policy Review", which provides a crop by crop situation outlook. The first issue was published in July 1992 as the Minister's pre-season agricultural policy statement (MLAWD 1992). A second issue is expected in April 1993 as a post-season review focussing on producer and selling prices and harvest projections. To ensure that the information from the above publications is of beneficial use, regular contacts will be maintained with users to obtain feedback.

b) Policy Analysis/Research Papers

Most policy decisions involve impacts which result in trade-offs between key Government objectives of growth, equity, food self-sufficiency, employment and resource sustainability. It is important that decision makers are given sufficient information to quantify or at least rank the costs and benefits of different policy options. Information from the agricultural database and the farm management survey has been used to develop a Policy Analysis Matrix for all major commodities in all the regions under different farming systems. The aim is to determine the comparative advantage of different commodities and technologies and to analyse the impact of different policies on both distribution and efficiency.

The PAM which is used to determine domestic resource costs (DRC) gives a sound framework for analysing policies as it shows both the distributional and allocative impacts of Government (price) policy. The DRC offers a way of empirically measuring comparative advantage by generating quantitative indicators of the efficiency of using domestic resources to produce a given commodity, as measured against the possibilities of trade. Thus, this is a useful methodology for providing input into decisions regarding the appropriate allocation of resources and provision of incentives between crops and by type of farming technology (Masters, 1989).

Various research work has been carried out using this methodology and data from the agricultural database. For more details refer to Masters (1989, 1990 and 1991), Rukovo et al (1991), Roth (1990), Woldu (1990), Jansen and Muir (1990), Food Studies Group (1990), World Bank (1990), Takavarasha (Ibid) and Sithole (forthcoming).

c) Monitoring and Evaluation

A major weakness with agricultural institutions in many African countries stems from the inability to evaluate their own activities and learn from past experience. The basic

question to be answered is whether available resources in a particular activity are being used optimally in relation to the benefits they generate. It is possible to achieve significant improvements in the efficiency of resource allocation by using the management information system and techniques such as the PAM, cost/benefit analysis and modern management audit procedures to assess performance.

Given the complex problems of agricultural policy and its implementation, and the very real budgetary and other constraints, monitoring and evaluation is a critical aspect of agricultural policy administration. The main objective in monitoring and evaluation is to aid senior management in their day-to-day decisions on the use of resources available to agricultural institutions, and as a tool for presenting the case for additional resources. Resources in this context include physical and financial resources, foreign exchange allocations, personnel (both administrative and professional) and equipment.

Areas⁶ in the agricultural sector for which monitoring and evaluation is essential include pricing policy, land resettlement, foreign exchange allocations, agricultural projects, departmental and parastatal activities, and achievement of overall agricultural targets. How effective are the policy measures and what are the appropriate priorities in the utilisation of resources? Are performance targets consistent with the national objectives? These are some of the questions to be answered in monitoring and evaluation of agricultural institutions.

5. Market Information and Price Monitoring

The lack of an adequate system for gathering and analysing information results in delays by policy makers to respond to crisis situations like drought and impending food shortages. It is for this reason that the Early Warning Unit (EWU) had to be re-assessed in terms of the timing and consistency of its information. In recent years, the EWU has focussed on publishing a regular Bulletin covering the food demand and supply situation in Zimbabwe, with production estimates drawn from the Agritex/CSO Crop Forecasting Committee, and marketing data from the Grain Marketing Board. The Crop Forecasting Committee and the GMB also submit their information directly to the Head Office of the Ministry, well before the NEWU Bulletin arrives. The Bulletin has been criticized for its inability to carry out detailed analysis of the data published, and duplication of information. It is also suggested that the NEWU needs to pay more attention to the potential consequences of its reporting; for example, at the start of the 1991/92 drought, the EWU went on to release information on GMB stocks which had reached a critically low level, while in the wisdom of Government it was felt necessary to withhold such information from the public until import arrangements were made, in order to prevent panic buying (which did in fact occur and aggravated the grain shortages).

In order to make data collection and publication more rapid and consistent with

⁶/ Some evaluation of pricing and land resettlement policy is already being undertaken annually by the Farm Management Research Section and the Planning Branch, respectively, though not comprehensively enough to provide a firm basis for the direction of future policy decisions.

policy matters, one possible option is to house the NEWU in the Economics and Markets Branch instead of Agritex.⁷ The E & M Branch participates in the Crop Forecasting Committee and is responsible for oversight of agricultural marketing parastatals, and reports directly to the Minister and Secretary through the Deputy Secretary for Economics and Markets. Housing the EWU in Economics and Markets gives its staff more direct access to both the sources and the principal consumers of supply and demand information, making its work more timely and relevant to the policy-making process. An alternative option is to form a Technical Committee on the NEW system chaired by the Ministry to help in strengthening formal linkages between institutions that generate the information.

With the economic reform programme and the coming of price de-regulation, trade and marketing liberalization and the need to align domestic prices to world prices, price monitoring provides a further opportunity to improve the information management system. The timely collection and dissemination of information on prices of agricultural products and inputs at various locations is absolutely necessary for detecting emerging shortages or surpluses, the size of marketing margins, transport costs and direction of flows, and other key indicators of market performance. There is also another potential user : emerging private traders. As private grain traders over the next few years, assume certain GMB functions, there will be need for active Government efforts to facilitate the development of private grain trading channels that are both low-cost and competitive. This is crucial in the Zimbabwe context because the contraction of the single-channel marketing system without new information systems being put in place for the "new entrants" (ie private traders), would result in remote communal areas being disadvantaged. Judging from the experience of countries in West Africa, lack of information on prices and marketing conditions is often the single biggest deterrent to increased participation by private traders, more so than transport and credit constraints. Transparency in market information and prices can aid enormously in the development of a marketing system that is competitive (ie many sellers in a particular locality) and low-cost (with participants engaged in specialised functions).

⁷/ The need to speed up the processing of data is clearly one of the dominant factors affecting data collection and processing for policy design. However, the processing of survey data generally poses major problems for researchers throughout Africa. There is a general tendency to collect far too much data, paying too little attention on how it will be analysed until after data collection has been completed. Consequently, some of the data is not even key-punched or analysed, yet data processing is a key part of the entire survey process. For a comprehensive review of key survey design, data collection and analysis issues which influence the quality of results, see Eicher and Baker (1982).

Quicker turn-around times thus necessitate a more standardised economic methodology for policy research and better coordinated data collection and processing (see Dalton, 1973 and Dillon and Hardaker, 1980). One such methodology is the FAO's pre-coded questionnaire and standardised computer programme which is now in its third version.

The E & M farm management survey enumerators are now tasked to gather information on buying and selling prices from different locations around the country.⁸

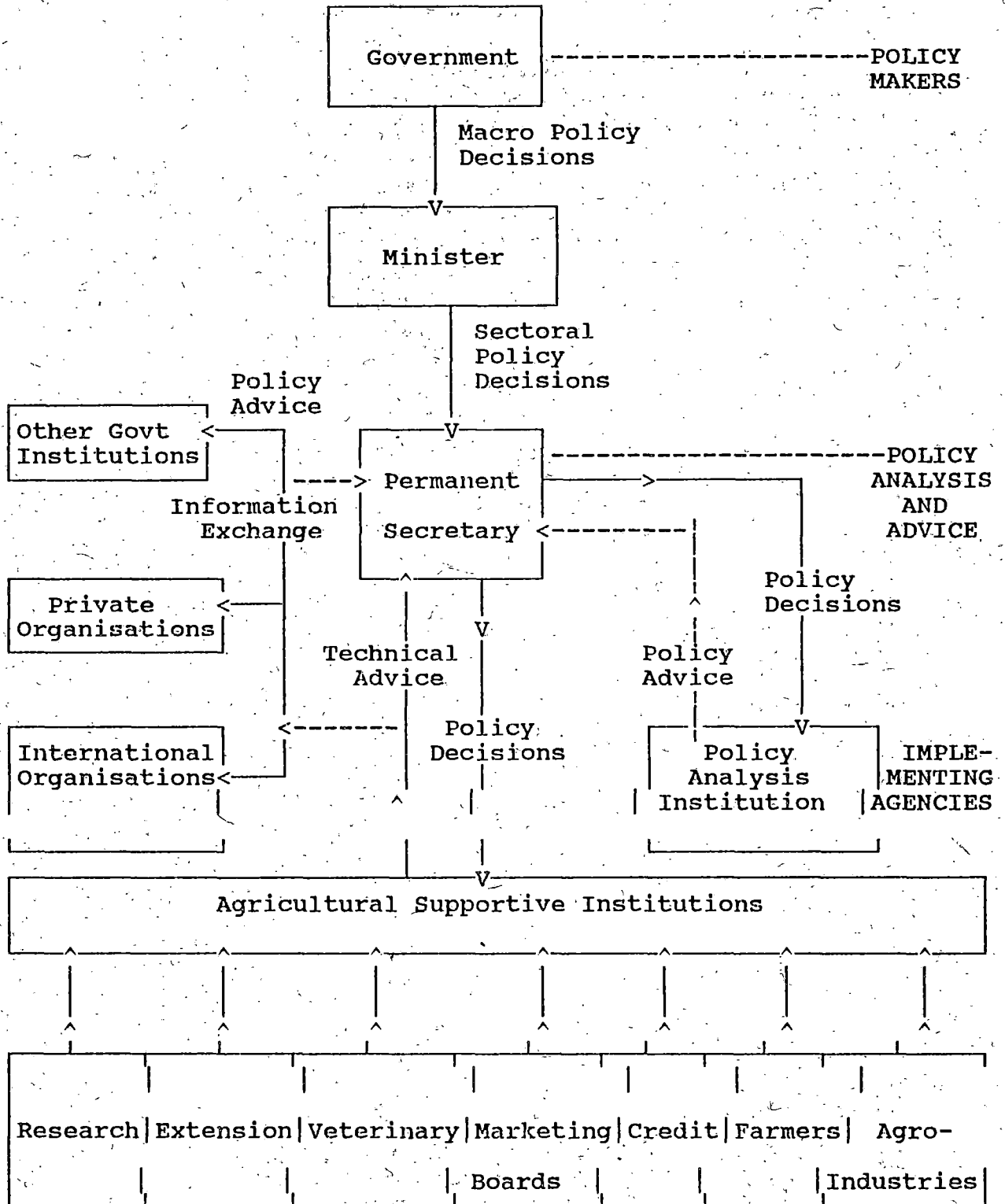
6. Policy Synchronization and Harmonization

A major constraint affecting the smooth operation of policy units is the lack of synchronization and harmonization of activities either within the same unit or with other institutions. For example, there is need for better synchronisation of producer and selling prices of controlled agricultural commodities to minimise the costs and maximise the benefits of policy measures. This is particularly critical in the case of maize whose producer price and ex-GMB selling price is the responsibility of MLAWD while maize meal is the responsibility of the Ministry of Industry and Commerce. Failure to synchronize the timing of major policy changes throughout the various stages of production and marketing (both in agriculture and industry) can result in excessive costs, delays, duplication of activities and unnecessary workload for policy analysts.

Policy harmonization within individual institutions can be greatly enhanced through regular internal meetings and planning sessions where senior management can discuss key policy changes and developments. With improved co-ordination at the sectoral level, it is possible that linkages with other institutions (including inter-departmental meetings) can become more productive and less time-consuming. Figure 2 below provides a schematic chart of information linkages between institutions within the agricultural sector.

^{8/} The locations have been selected to include one major urban area, a typically food-surplus rural area, a chronically food-deficit area and a borderline area; concentrating on farmgate prices for maize grain, maize meal and other crops, and auction and other sale prices for livestock.

Fig 2. INSTITUTIONAL LINKAGES IN THE AGRICULTURAL SECTOR



7. CONCLUSION

In conclusion, it can be noted that the failure of African countries to develop and sustain agricultural institutions that serve the specific needs of this crucial sector underlines the failure and decline of agricultural production in the region. A major cause of this failure is the complexity of the environment in which these institutions must operate, but more so the strength and effectiveness of the institutions themselves still leaves much to be desired. To the extent that policy analysis units are centrally strategically placed between policy-making authorities (Government) and policy implementing agencies (farmers, extension, research, marketing and credit institutions), it is difficult to envisage them functioning without adequate agricultural management information systems which facilitate policy analysis and monitoring and evaluation of the policy measures being implemented. The example of the Economics and Markets Branch in the Ministry of Lands, Agriculture and Water Development (MLAWD) has been used in this case to draw conclusions on the institutionalization and application of agricultural databases for effective policy analysis and administration, with a focus on agricultural pricing policy. In the absence of information systems, policy decisions will be made in a vacuum, and there would be no way of assessing the impact of the decisions on the major objectives of Government. Efficiency in resource allocation is greatly compromised.

Zimbabwe's agricultural development objectives centre around growth with equity and include food security, improved distribution of incomes and productive resources, employment creation, improved foreign exchange earnings, resource sustainability and efficiency. An agricultural information system should therefore be designed to feed into the decision making process and be able to answer questions such as what are the key issues on which decisions need to be made, what is the current status of the major economic and social variables and in which direction are they changing, which groups, crops or agro-climatic areas are most affected etc? The data collection system should aim to provide information on the extent to which these objectives are being met, and to what extent policy changes are needed. For instance, how is the current crop mix contributing to foreign exchange earnings, food self-sufficiency, and creation of additional employment and farm incomes by each sector, and what policy measures are needed to influence the crop mix? Data on macro-economic variables will be incorporated to assess macro-economic linkages between agriculture and the rest of the economy.

With the formation of the Southern African Development Community (1992) more effort will be needed to integrate and harmonize agricultural trade and development policies in the region. Therefore information systems should be geared towards obtaining relevant data from throughout the region, as well as disseminate its own information into the region.

Finally it has been observed in this paper that the development of properly synchronized policy units which facilitate harmonized policy decisions between institutions (both national and regional) involved with agriculture is fundamental to successful policy administration. A more integrated approach to sectoral policy implementation, in particular agricultural pricing policy, can contribute to greater price stability and reduce budgetary expenditures, which is a key objective in economic development.

BIBLIOGRAPHY

1. Blackie, M.J. (1986) : "Restructuring Marketing Systems for Smallholders : Cases in Zimbabwe".
2. Bonnen, J.T. (1991): "On the Role of Data and Measurement in Agricultural Economics Research" The Journal of Agricultural Economics Research, Essay Supplement, United States Department of Agriculture, Economic Research Service.
3. Bratton, M. (1984) "Draft Power, Draft Exchange and Farmer Organizations". Working paper 9. Harare: Department of Land Management, University of Zimbabwe.
4. Collinson, M.P. (1972) : "Farm Management in Peasant Agriculture : A Handbook for Rural Development Planning in Africa", New York, Praeger.
5. Collinson, M.P. (1982) : "Farming Systems Research in Eastern Africa : The Experience of CIMMYT and Some National Agricultural Research Services, 1976-1981", MSU International Development Paper No.3, East Lansing, Michigan State University.
6. Csaba Csaki, Theodor Dams, Diethelm Metzger and Johan van Zyl (1990) : "Agricultural Restructuring in Southern Africa", Papers presented at an International Symposium held at Swakopmund, Namibia, 24-27 July, 1990.
7. Dalton, G.E. (1973) : "Adaptation of Farm Management Theory to the Problems of the Small-Scale Farmer in West Africa", in Ofori, 1973, pp 114-129.
8. Dillon, J.L. and Hardaker, J.B. (1980) : "Farm Management Research for Small Farmer Development", in FAO Agricultural Services Bulletin No.41.
9. Eicher, Carl K, (1991): "Agricultural Research Priority - Selling Southern Africa: Nutrition and Household Food Security Issues", in M Rukuni and J.B. Wycoff eds., 'Market Reforms, Research Policies and SADCC Food Security, Proceedings of the South Annual Conference of Food Security Research in Southern Africa, Nov 12-14 1990, UZ/MSU Food Security Research in Southern Africa Project, Department of Agricultural Economics and Extension, University of Zimbabwe, Harare.
10. Eicher, Carl K, and Baker, Doyle C. (1982) : "Research on Agricultural Development in Sub-Saharan Africa : A Critical Survey", in MSU International Development Papers, Paper No.1, Department of Agricultural Economics, Michigan State University.
11. Eicher, Carl K, and Rukuni, M : "The Food Security Equation in Southern Africa", in M. Rukuni and C.K. Eicher eds., Food Security for Southern Africa, Food Security Project, Department of Agricultural Economics and Extension, University of Zimbabwe, Harare.

12. FAO (1990) : "Farming Systems Development : Guidelines for the Conduct of a Training Course in Farming Systems Development", Rome.
13. Food Studies Group (1990) : "Agricultural Marketing and Pricing in Zimbabwe", background Paper to World Bank Agricultural Sector Memorandum, June 1990.
14. Friedrich, K.H. (1977) : "Farm Management Data Collection and Analysis : An Electronic Data Processing Storage and Retrieval System", FAO, Rome.
15. Government of Zimbabwe (1991) : "Government Policy Document on the Economic Structural Adjustment Programme", Harare.
16. Government of Zimbabwe (1991) : "Growth with Equity", An Economic Policy Statement, Harare.
17. Jansen D, and Muir-Leresche Kay (1991) : "Trade, Exchange Rate Policy and Agriculture", Paper presented at Conference on 'Zimbabwe's Agricultural Revolution : Implications for Southern Africa, Victoria Falls Hotel, Zimbabwe, 7-11 July 1991.
18. Litjens, Paul J.M. (1991): "Agriculture Services Project: Institutions Strengthening Component", Vol I MLAWD Headquarters Final Report, Agriculture and Rural Development Department, Netherlands Economic Institute, Rotterdam.
19. Masters, W.A. (1991) : "Comparative Advantage and Government Policy in Zimbabwean Agriculture", Dissertation submitted to the Food Policy Research Institute and the Committee on Graduate Studies of Stanford University in partial fulfillment of the requirements for the degree of Doctor of Philosophy.
20. Masters, W.A. (1990) : "Trade Policy and Agriculture : Measuring the Real Exchange Rate in Zimbabwe", a submission to the Quarterly Journal of International Agriculture, October 1990.
21. Masters, W. A. (1990) : "The Value of Foreign Exchange in Zimbabwe : Concepts and Estimates", University of Zimbabwe, Department of Agricultural Economics and Extension, Working Paper AEE 2/90.
22. Ministry of Lands, Agriculture and Water Development (1990): "Proposed Phase II of Agricultural Data Analysis Project", unpublished memo.
23. Ministry of Lands, Agriculture and Water Development (1990): "The First Annual Report of Farm Management Data for Communal Area Farm Units : 1988/89 Farming Season", Report compiled by the FMRS, E & M Branch, Harare.

24. Ministry of Lands, Agriculture and Water Development (1990): "Proposal for a Training and Development Agreement between MLAWD and the Rockefeller Foundation : Strengthening Research and Analysis Capability in the E & M Branch", unpublished memo.
25. O'Driscoll A, and Takavarasha T (1988) : "Crop Price Policy Analysis", Working Paper No.AEE 5/85, Dept of Agricultural Economics and Extension, University of Zimbabwe, Harare.
26. Rohrbach, D (1989): "The Growth of Smallholder Maize Production in Zimbabwe (1979-1985): Implications for Food Security", in Rukuni and R Bernsten eds. Southern Africa: Food Security Policy Options: 307-328, UZ/MSU/Food Security Project, Department of Agricultural Economics and Extension, University of Zimbabwe, Harare.
27. Rukovo A, Takavarasha T, Thiel R, and Wiebelt M. (1991) : "The Profile of Agricultural Protection in Zimbabwe", Working Paper No.457, The Kiel Institute of World Economics, Kiel Working Papers.
28. Sithole, G (forthcoming) : "Measurement and Evaluation of the Impact of Price and Market Liberalisation: Re-Orienting the Farm Management Research Section Survey".
29. Sithole G, and Attwood, E.A. (1990) : "Farm Management Characteristics of Communal Farms in Zimbabwe : Implications for Household Food Security", in 'Proceedings of the Sixth Annual Conference of Food Security Research in Southern Africa'.
30. Takavarasha, T. (1991) : "An Analysis of Zimbabwe's Agricultural Price Policy since Independence", Paper presented at the Conference on 'Zimbabwe's Agricultural Revolution : Implications for Southern Africa', Victoria Falls Hotel, Zimbabwe, 7-11 July 1991.
31. World Bank (1992) : "Zimbabwe : Agricultural Services Project", unpublished memo, Pre-Appraisal Mission, March 1992.
32. World Bank (1991) : "The African Capacity Building Initiative : Towards Improved Policy Analysis and Development Management", Washington, D.C.