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AGRICULTURAL POLICY RESEARCH AND ANALYSIS:
IMPLICATIONS FOR THE PAKISTAN ECONOMIC ANALYSIS NETWORK PROJECT

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Executive Summary:

Agricultural policy analysts use the results of policy directed research on the economics of the agricultural sector as data for analysis and interpretation as to the consequences of policy alternatives. Decision makers in turn use the results of policy analysis as one input in making a policy decision. Policy analysis is conducted primarily in advance of policy implementation, although some post-implementation evaluations are also useful for gaining a perspective on the effectiveness of existing policy.

The core program of policy directed research, to serve as a data and information base for policy analysis, involves the specification of economic relationships in the: (a) consumption, (b) production and (c) marketing sectors. Both micro and macro research on commodity demands, commodity supplies, and marketing processes are requisites of any core program of policy-directed economic research. Besides these three areas, policy makers often anticipate the need for a fourth category, (d) special long-term studies, to provide background information and analysis on an emerging issue, such as the use of credit by farmers or the extent of private investment in various agri-business components.

Many policy issues cannot be anticipated, however, because they deal with unexpected emerging problems. Analysis of these issues requires a trained staff to function as a (Staff Economist

Group) to (a) draw upon the results of completed studies and/or (b) the expertise of policy-directed researchers to conduct timely analysis so that the best possible information is brought to bear on a decision to be taken by a policy maker within a short time frame.

The core program of policy-directed research should complement the research agenda of existing institutions, as far as possible. In this view, the Staff Economists Group, operating under the guidance of the Director of Agricultural Policy should work closely with other groups providing policy analysis to the Ministry of Food, Agriculture and Cooperatives (MINFA). The Staff Economist Group must also recognize that not all policies affecting the agricultural sector are initiated by the Agriculture Ministry. Decisions taken by other ministries that will impact food and agricultural interests must also be anticipated and effectively analyzed as part of the Staff Economist function.

It would not be particularly productive to attempt to fully prioritize presently available lists of possible policy directed research. However, types of research that DAP may undertake or have undertaken can be prioritized at this point in time. Our suggested rank ordering is as follows: (1) to address short-term special problems as directed by the MINFA Secretary; (2) to develop a core program of research in consumption, production and marketing aspects

of the food and agriculture system; and (3) conduct a selected number of long-term special studies as limited budgetary resources may permit. The overriding criterion of this ranking is the effectiveness to which any policy-directed research and analysis can be applied by decision-makers in selecting among available policy options.

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AGRICULTURAL POLICY RESEARCH AND ANALYSIS: IMPLICATIONS
FOR THE PAKISTAN ECONOMIC ANALYSIS NETWORK PROJECT

The Economic Analysis Network (EAN) activity is designed to enhance the use of the results of economic research and analysis in the evaluation of agricultural policy alternatives. The EAN Project will assist the Directorate of Agricultural Policy (DAP) and its Staff Economist Group to assess the implications of policies effecting the agricultural sector. This effort will also provide direction for agricultural research required for analysis by this group so as to ensure improved policy formation and implementation. The EAN will serve as a catalyst to (1) focus the effort of the already considerable on-going Pakistan research program on the economics of agriculture to policy-relevant issues, (2) enhance the capabilities of individuals and institutions to conduct policy-oriented research, and (3) establish a framework by which the informational needs of policy makers are known to and used by agricultural economic researchers in providing research results.

This report will discuss the role of economic analysis in guiding agricultural policy directed research and will identify the kinds of informational needs required to formulate sound agricultural policies. We then suggest the ways and means by which policy information requirements should set priorities for the research program and how the results of research are related to policy decisions.

Role of Economic Analysis

It is important to distinguish between data and information in the research process (Reimenschneider and Bonnen 1979). Data are the empirical representations of reality. While raw data often represent a quantification, we must recognize that qualitative descriptions or facts can also be important data sets. Examples of data are yields of a particular crop, the amount and kind of seed, fertilizer or other inputs used on that crop and the procedures by which inputs are supplied and the products are marketed. These pieces of knowledge may be interesting to the student of agriculture, but they are of little use to decision makers in and of themselves. In particular, data must be analyzed and interpreted in order to be processed into information which is useful to policy makers.

Creation of information requires the researcher to have knowledge of the decisions faced by the decision maker. The form or structure by which the data are organized (analyzed, interpreted) make them useful. What types of data are collected should be defined to a large extent by their anticipated use (Skold and Lybecker 1985). For example, crop yields may be compared according to variety, cultural practice, farm size, tenancy status and a number of other parameters. Similarly, yield data may be considered in conjunction with input use and cost items and organized into an estimate of production costs and returns per unit of land. These are useful pieces of information for decision makers choosing among alternative crops and techniques of production for a specific crop.

Just as many data sets are processed into information, the results of economic research are merely another set of data for policy analysis. The results of research too may be of interest to students of agriculture, but in their original form they are of little direct use to policy formulation. The role of the policy analyst is to analyze, interpret and translate research results into a form useful to the policy maker. Just as the researcher must know of the decisions being faced before capable analysis and interpretation of data can provide relevant information, the policy analyst must know of the policy decisions to be considered before research results can be brought to bear as information about policy options, alternatives and consequences.

Agricultural decision makers, whether farmers or policy makers, operate in an uncertain environment, etc. (Timmer, Falcon, and Pearson 1983). Basic agricultural production processes are biological in nature and are affected by a number of uncontrollable and unpredictable factors. Unlike manufacturing processes which involve specific and often precise combinations of factors to produce a product, combinations of inputs and the relation between the amounts of inputs used and the level of production is not nearly as exact for agricultural production processes. Because basic agricultural production is variable, sectors which provide inputs to and receive the products from this sector must also be capable of operating in an uncertain environment.

The uncertain character of agricultural processes also make the information required for taking policy decisions difficult to predict. While a long-term policy emphasis can be taken, such as in a 5-Year Plan, progress towards those targets must be continuously monitored and adjusted as in annual development programs (ADPs). It must be realized; however, that it will be impossible to anticipate all of the informational needs of policy makers in writing annual plans. Consequently, many day-to-day decisions must be made on the basis of information at hand. One of the more important functions of the DAP staff economist group will be to provide immediate or short term policy analysis with whatever information is available for the use of MINFA decision makers.

Policy relevant research programs require development of knowledge about the basic structure and functioning of the agricultural sector. Research results must be adaptable and flexible to meet a variety of anticipated and unanticipated needs. For example, if costs of production are to become a basis for establishing commodity price policies, structurally defined cost of production estimates are an anticipated need. Even if a sudden shift in price or availability of a critical input to the production process requires a speedy policy response, the same cost of production estimate used to establish price policy under the previous economic conditions can still provide useful information for evaluating the consequences of various new policy alternatives.

The policy analyst is often posed with "what if" kinds of questions. For example, "if the price of fertilizer is increased by 10 percent, how would the amount of use of such fertilizers be effected? and what would be the likely effects on farm income, cropping patterns and total production?" The policy analyst is more often asked to anticipate the consequences of a particular policy before it is implemented than to analyze the impacts of a policy after its implementation. While the latter exercise is a useful for gaining a perspective, the focus of the policy analyst tends to be always forward. Researchers can evaluate impacts and relate the lessons learned to the policy analysts and decision makers. Policy analysis tends to answer questions whereas economic research both answers and asks questions.

The policy analyst should avoid advocacy of any particular policy but should clearly specify and analyse the range of policy options available. The results of economic research, translated into a report by the policy analyst should be recognized as being only one input into the policy decision. The formulation of policy is the result of the political process. Therefore, policy analysts and researchers conducting policy related research should not be discouraged if the political decision making process seems at times to ignore their inputs of information.

It is important to remember that policy-directed economic research is guided by the information needs of the policy maker. Priorities are set by the decisions to be taken. While much of the broad-based informational needs of policy makers can be anticipated, many decisions must be taken on short notice in response to some unexpected change in events. Thus the policy directed research program must be specific to the anticipated needs but also be sufficiently flexible so as to be able to provide information for an analysis of policy options in responding to unanticipated changes in the environment. It is the role of the policy analyst to take the results of economic research, together with rigorous analysis and interpretation in order to provide information useful to the policy maker.

All policies which have impact on the agricultural sector are not initiated by MINFA. Policies of other Ministries often have profound effects on the agricultural sector (Nobe 1982). This kind of external impact is clearly recognized in the National Agricultural Research Plan (Pakistan Agricultural Research Council, 1985). In like manner the policy analysis conducted under the direction of MINFA must pay careful attention to the analyses of policies initiated by other agricultural agencies which have implications to agriculture, particularly in cases where the Ministry is asked to comment. Therefore, the agricultural policy analyst must also have results of research which considers the impacts of the policies of other Ministries on the agricultural

sector so that these policies can be evaluated together with those being proposed and/or implemented by MINFA.

Anticipated Economic Information Needs.

Because all requests for specific pieces of economic information cannot be anticipated and prioritized, it is necessary to have a program of long-term, broad-based research which provides information about the basic economic relationships within the agricultural sector and between agriculture and other sectors. Indeed, attainment of the government's goals or objectives in the agricultural sector requires the identification and understanding of these fundamental economic relationships. Agricultural policies generally have the objectives of addressing measures to increase the outputs of the agricultural sector by either expansion on the intensive or extensive margins, (e.g. adding more inputs per acre or adding more acres). However, the implementation of these policies must take into consideration the impacts of change on the distribution of income, both within the agricultural sector and between agriculture and other sectors. Consequently, the stability of food supplies, prices and incomes is important. Similarly, agricultural policies may also address concerns about the nutritional status of all spectrums of the population (Tolley, Thomas, & Wong 1982; Timmer, Falcon and Pearson 1983).

Given these concerns or objectives of agricultural policy, research to describe and quantify the basic economic relationships

important to the agricultural sector should be given priority. The policies in place on anticipated will tend to affect these basic relationships. They involve the linkages between policy variables (prices, income transfers, regulations) and their immediate and secondary impacts. Understanding the basic economic relationships requires knowledge or economic information about the relation between economic, financial and institutional variables and (1) the consumption of agricultural products, (2) the production of agricultural products, and (3) the effectiveness of the marketing system which links production to consumption and provides inputs to the production sector in response to technical and/or policy induced changes (Timmer 1984).

It is necessary for the policy analyst to gain basic understanding of the agricultural economic system through consumption-production-marketing research, because these are the same categories around which policy analyses will be directed. That is to say that impacts of policies will be assessed in terms of their consequences to consumers and producers, and on the marketing system. Further, the cost implications of policies to the government (Finance Ministry) will also be a subject to be addressed in policy analysis.

The three areas of basic economic research discussed above -- (a) consumption, (b) production, and (c) marketing -- form the core of any policy directed economic research program. Research results from each of these areas can be anticipated to be data and/or

information needed by the policy analyst. Further, at any given time, special research studies on matters of importance to agriculture can also be anticipated and thus become a part of the core research program. Generally, these special studies require conducting additional research that can be carried out in conjunction with the basic consumption-production-marketing research efforts. These anticipated pieces of information or types of analysis are called (d) special anticipated research studies in this paper's attempt to classify a basic policy-directed economic research program.

Still other topics which policy analysts are asked to address cannot be anticipated. They become identified on short notice, require immediate implementation and cannot await the results of long term research. These efforts should be targeted by (e) problem-solving research and analysis by the existing and/or planned staff resources of MINFA.

Research which can be anticipated (categories (a) thru (d)) can be called to the attention of those directing policy-oriented research by the Advisory and Steering Committees. However, special problems requiring the immediate attention of policy analysts and researchers (category 'e') cannot be anticipated. Therefore, it would be futile for an Advisory Committee to even attempt to establish an agenda for such research. The research agenda for these short term studies must be determined by the MINFA decision makers as their immediate need for economic information may dictate.

The EAN Project must reserve a portion of its research budget to meet these unanticipated staff problem-solving research and analysis requirements of the Ministry.

Consumption Information: It can be anticipated that agricultural policy analysts will need knowledge of the relationships between the prices of agricultural commodities and the quantities of those commodities consumed. Consumption should also be related to income in the aggregate; as personal income per capita increases, its effect on the quantity demanded of each commodity is necessary information for the policy analyst. In addition to the price - quantity relationships, other factors affecting the quantities consumed such as trends in tastes and preferences are also important pieces of information.

Research to identify and quantify the nature and shape of the demand function for a given commodity should also attempt to include the cross-price elasticities for other important consumption substitutes, supplements and complements. That is to say, if the price of wheat to consumers is increased by 15 percent, not only will the policy analyst be interested in its impact on the quantity of wheat consumed but also may be asked to determine whether consumers will substitute other starches (potatoes) for part of the wheat in their diets and whether the demand for wheat is directly linked to the demand for a complementary food; e.g., butter.

In addition to the aggregate relationships between prices and quantities demanded, demand analyses across important sub-groups (e.g. different income levels, rural versus urban, etc.) of the population can also be anticipated to be useful information. The same is true for price elasticities and cross-elasticities of demand within income groups. Further, the income elasticities revealed by examining consumption in relation to different levels of income among the population are also important research outputs for the policy analyst to use in responding to policy issues.

Production Information: As for consumption, the relation between prices and aggregate supplies of the various commodities must be estimated and continually updated. Supply responses result from both price and technological factors. Input prices as well as output (its own and any substitute commodity) prices are important. Thus, if the price of wheat is increased by 15 percent, knowledge of the basic economic relationships of supply will let the policy analyst consider (i) the effects on wheat supplies, (ii) the impact on the supply of products likely to be replaced (on the margin) by wheat, (iii) the implications to the demand for inputs used for wheat production; e.g., seed, fertilizer, threshing services, and (iv) how farm income is effected.

It can be expected that separate studies of the important purchased input subsectors will also be needed. Specification of the aggregate demand for fertilizers, chemicals, etc., by crop would also be in the data set needed by policy analysts. And some

attention to the elasticities of input supplies will be important because supply functions for agricultural commodities are influenced by the input supply functions.

Disaggregations of the production sector will also be required. Basic data for micro-level analyses of agricultural production or cost of production estimates by crop, size of farm, technology applied, water source, and tenancy status will be of interest. These cost of production estimates should be developed on a consistent basis between locations and among farming systems. Use of consistent methodology for making cost of production estimates permit evaluation of the macro implications of changes predicted at the micro-level. Thus, the consistency requirements include comparable assumptions in developing the cost of production estimates and in assigning aggregation weights associated with each important sub-aggregate.

Cost of production estimates, together with the structural characteristics for each sub-aggregate, will provide the data base needed for the policy analyst to consider the impacts of any proposed policy change on each type-of-farm subaggregate. For example, the policy analyst can use the results of such research to respond to proposed or anticipated changes in prices, input supplies, and/or technological practices. Given the appropriate sub-aggregates, the distributional aspects of policy variables can also be studied by the researcher as input for analysts in assessing the impacts of policy options.

Marketing Information: The marketing system links production and consumption. Agricultural policies may be directed toward improvements in the marketing system, or may imply changes in the marketing system because of targeted policy changes in either the production or consumption sectors. As with production and consumption research, basic policy-related marketing research will also include both micro and macro studies.

Micro marketing research will include research on the extent of direct household consumption of agricultural products, household purchasing patterns for commodities, and farm storage, transportation, and marketing practices. Marketing research must also provide information on movement of commodities through marketing channels. Cost of storage, handling, transportation, and processing at each stage should be considered in relation to value or price differentials so that the net profit margins can be rationalized with the marketing margins. The risks assumed by each agent in the marketing process should be evaluated as well because profit is in part a reward for risk taking.

As with the production and consumption research, basic marketing research results become data and information for policy analysis. The policy analyst will use the results of such studies to prepare position papers and impact reports that quantify for policy makers the benefits and consequences of alternative courses of action.

Special Anticipated Research Studies: Policy makers can often anticipate topics which are beyond the scope of the core consumption-production-marketing research programs but which may require considerable research attention as well. For example, The Ministry of Water and Power and the provincial governments are presently considering policies to increase cost sharing by farmers in the operation and maintenance of the irrigation delivery system. An analysis of the ability of farmers to pay, and the impact of such cost sharing arrangements on farm incomes, crop mixes, the supplies of agricultural products, and on the use of other inputs will require much of the same data as described for production economic studies. Yet, in a special study, the focus of research is on a specific problem (e.g., the alternative ways and means to effect increased cost sharing by farmers of providing irrigation water). It is important that the policy analysts identify and direct such research so that questions posed about the consequences to the agricultural sector of such policy initiatives by the Ministry of Water and Power and the implications for the direct implementation by the provinces can be evaluated. The policy analyst is then in a position to provide information to policy makers about these policy changes at both the federal and provincial levels that will be useful to both agriculture and irrigation agencies.

Staff Economic Research and Analysis of
Unanticipated Issues and Problems:

The consumption, production, marketing and special studies research suggested above becomes in the aggregate the basic

economic research component of an economic analysis network in that the results of such efforts can be anticipated to be beneficial to most policy analysis. Because not all policy analysis needs can be anticipated, however, the policy analyst can expect to require special problem-oriented research studies addressing specific issues within a much shorter time-frame than is usually available for the basic research component. However, the research conducted under the consumption, production and marketing research programs and from special anticipated special studies may serve as a starting point for most staff economics research.

For example, the MINFA Secretary has recently requested that a short-term special study be made of the poultry sector to serve as a foundation for examining future policy options. If the long term research programs discussed in the preceding section were presently operational, data for cost of production and supply analysis would already be available through the production studies. The consumption research would provide data for the demand analysis. And the marketing studies would provide information on the marketing stages and processes and their effectiveness. Had such information been in hand, the policy analysis group could have responded via preparation of an in-house staff report.

Since such data are only in part presently available, the DAP Director will instead have to provide direction to a group of researchers commissioned to conduct a special short-term research study of the poultry sector. Clearly, such short-term staff

research studies cannot be prioritized by advisory committees as they cannot be anticipated far enough in advance for inclusion in a basic research component. Conceptionally, the DAP does have the option of producing such information "in house" or by commissioning a special study by other researchers. In many cases, however, "farming out" a short term staff research study is the only viable option. The DAP and his staff must therefore be intimately familiar with the current state of the art in agricultural economic research and with the expertise of the various contributors to the discipline so that (1) the decision of whether to do the analysis "in-house" or to "farm out" the study can be made, and (2) who to commission for the study if the latter option is selected. If a team of researchers is commissioned to conduct a special study, (e.g. the above mentioned poultry study,) they would be expected to utilize the results of available research to the greatest extent possible and to gather additional data sufficient to meet the Ministry's request for a specific policy analysis within the required time frame.

The results of such a special study could be used as either (a) input for the policy analyst or (b) as a special policy staff paper that would stand on its own. If option (a) is selected, the results of the special problems study would be used by the policy staff to prepare a briefing paper on the consequences and implications of policy alternatives. If the (b) option is used the special study report would be released as a special policy staff paper that could stand on its own. (Such a paper would be very

similar to some pre-determined special studies envisioned under the basic research component in terms of format and content--the basic difference would lie in the duration of the study effort).

Categorizing and Prioritizing the EAN Research Agenda

The Special Economic Analysis Advisory Committee (SEAAC) for the Economic Analysis Network Project has endorsed a preliminary "Program of Research Studies for Policy Analysis in Agriculture" (See Appendix 1). This program includes a tentative list of proposed research studies to be carried out under the EAN Project. A second list provided includes additional studies which might be taken up by other specific interested research-suppliers and research-user institutions. By placing these lists of anticipated research information needs into the framework of basic economic research needed to provide policy relevant data (as outlined above), a partial prioritization of the long-term research program for the EAN Project can be suggested. This can be done because many of the proposed research studies identified by the advisory committee on their two lists do correctly anticipate the kinds of basic research results required for policy analysis.

The Core Economic Research Agenda: When the proposed studies are reclassified in this manner, advisory and steering committees are more likely to make useful value judgements of priority, the agenda adopted should result in reduced duplication of effort and a

more desirable balance in the level of effort in each category could be achieved. These proposed long-term studies were re-classified as follows (See Appendix 2 for a complete listing):

Consumption Research: The research studies listed are:

- "Projections of the long term demand for food commodities" up to year 2000", and
- "Price forecasting model for essential commodities"; and
- "A study of food supply management..."

These three studies are key components of the basic economic research program needed to analyze the economics of food consumption. The demand projections would be based on those factors effecting the demand schedules and shifts in demand schedules for important commodities. The demand analysis research would consider both the own-price elasticities as well as cross - elasticities of demand for each commodity. Projections to the year 2000 should properly consider food consumption patterns among various socio-economic groups of the population and projections of the proportions of the population falling into each group.

Production Research: Several of the proposed research studies for 1985-86 fall under the category of anticipated production economic research required for policy analysis:

- "Application of fertilizer to important major and minor crops by size of farm and mode of irrigation";

- "A study of yield responses to various levels of fertilizer application especially on wheat and rice";
- "Impact of mechanization on productivity and employment by farm size, tenure and economic assessment of various levels of mechanization";
- "Comparative study of crop yields and cost of production of progressive and traditional farmers";
- "Study of farm productivity by size and tenure and estimation of domestic resource costs for major crops";
- "Impact of price policy on cropping patterns and farming systems - estimation of short, medium and long term price elasticities of supply for major crops";
- "A comparative study of the movement in input and support prices and impact on productivity";
- "Net impact on transfer of resources between agriculture and non-agriculture sectors on the income of small farmers"; and
- A study of desirable NP ratios for different crops on the basis of farm size, tenural status, irrigated/ barani conditions and other relevant factors.

Basic data for each of these studies should involve a uniform and updated system for making commodity cost and return estimates. These cost and return estimates, together with the structural

parameters of the agricultural production sector (numbers of farms by size, tenancy group, degree of mechanization, mode of irrigation) form the basic production economic research anticipated for use in policy analysis. From data used to derive structurally defined cost and return estimates, fertilizer response studies, credit availability and productivity studies, mechanization studies, and supply response studies can be conducted.

It should be apparent that where direct relationships and joint data needs are involved, several of these proposed studies could be combined in a cost-effective manner.

Marketing Research: Falling under the basic economic research in marketing required for policy analysis are:

- "Examination of the post-harvest system of major crops for minimizing losses, reducing handling costs, and evolving an improved grading system";
- "Study of marketing margins of selected crops in the context of farming systems and ecological zones";
- and,
- "A study of trade, price and institutional policies for procurement, processing, marketing and export of perishable commodities".

These kind of studies encompass a bare minimum core research programs for marketing research in direct support of agricultural policy analysis. Anything less would result in a severe gap in the marketing information base.

Studies such as those listed above under the consumption, production and marketing research categories will almost always appear on a proposed list of policy directed research studies to be conducted by agricultural economists. This is obvious as economists are required to provide knowledge of the basic economic relationships of agriculture. However, such studies cannot be done once and be expected to be relevant for all time. For example, as consumer tastes and preferences, income, and price of food items change relative to the prices of other consumption items, the demand analysis will have to be periodically updated. As technology, production patterns and structural characteristics change, analyses of farm level impacts and supply responses will also require updating. Marketing research will have to be continuously updated as the mix of public and private sector involvement changes, as technologies in food handling and processing change, and as farmers adjust their marketing strategies.

Because these studies can be anticipated to be of continuing relevance to policy analysis, the EAN project should give priority to a system of research to provide this basic economic data set and to keep it updated.

Just as the requests for research analysis in these areas can be anticipated, the primary data needed to conduct the research can also be anticipated. Rather than conducting special surveys or gathering primary data necessary to complete every analysis, the EAN should seek to establish a data system which will result in the data

bank necessary for these analyses. The institutionalization of such a data generating system would be one of the more important contributions of the EAN project. With an institutionalized data generating system, researchers conducting the analysis and interpretation of the data can (a) avoid the need for primary data collection in many cases and (b) perform their research in a more timely manner. Further, policy analysts and researchers will not be faced with the insecurity of reaching incorrect conclusions because of good analysis of questionable data.

Special Anticipated Research: Several items appearing on the lists of proposed research studies and additional research studies do not fit under the headings of anticipated basic research needs in the consumption, production and marketing economics categories. Nevertheless, they have been identified to be of concern to policy makers and are posed as specific emerging policy issues. Among such studies on the current agenda are:

- "Price and Import Policy of Seed: Constraints in production and distribution of important seeds in the public and private sectors";
- "Effectiveness of pest control measures and policies with a view to adoption by small farmers";
- "Estimate of private investment in agriculture during the Sixth Five Year Plan by broad categories of capital assets";

- "Constraints to the development of cooperatives in the country in the light of examples of successful cooperatives in other countries, specially farming cooperatives and marketing cooperatives of perishable commodities";
- "Evaluation of different models of extension services in terms of effectiveness and cost, including the impact of communication media on agricultural production";
- "Capital formation in agriculture";
- "Impact of agricultural research on agricultural production:
 - by program
 - by institution
 - by specific areas of R&D"; and
- "Prospects for agro-industries in the Seventh Plan period".

Most of these listed studies may be "one shot" research efforts, particularly if wholistic or comprehensive efforts are anticipated. These studies will likely vary, however, in the duration of the research effort required. If it develops that such issues remain as continuing concerns regarding agricultural policy for a longer period, they should then be added to the appropriate category of topics under the long term or core program of policy directed research. For example, the extent of private investment in agriculture, particularly if concentrated in the agribusiness area,

may emerge as a continuing structural dimension issue. If so, this topic should become an additional aspect of continually updated studies in the marketing research category.

Another special research topic already indentified by several interested parties in the government and donor agencies is that of water pricing. While not on the list of topics initially endorsed by the Advisory Committee, it is known that the World Bank is requiring the GOP, through the Ministry of Water and Power and the Provinces, to develop and implement plans for additional cost sharing as a conditional precedent before its financing of such projects as Canal Rehabilitation, On-Farm Water Management and Command Water Management projects can proceed. These measures will have pronounced impacts on farmers and thus are areas of policy concern for the MINFA as well. For example, policy researchers and analysts will need to address the implications of various cost sharing schemes on the ability of farmers to pay, effects on farm income, the crop mix, and demands for other inputs. These impacts can furthermore be expected to vary between and within provinces.

Research and Analysis of Current Issues and Problems: While the specific topics in this important component of the EAN Project cannot be anticipated, it should be recognized that some of its resources must be reserved for responses to specific MINFA requests for current problem solving research and analysis. At the same time, it should seek to develop the capabilities of the office of the DAP and its Staff Economist Group to respond to such requests. The most

immediate example of a short-term study is the recent request from MINFA's Secretary for a staff report on the economics of the poultry industry. Once the Staff Economists Group becomes fully operational, such requests for analysis will ideally become a major recurring "bread and butter" function of DAP. In responding, they will (a) draw upon the results of completed research add/or (b) utilize the expertise of established specialists as identified by the EAN in order to prepare briefing papers and staff reports on specific policy issues within the specified time frame in which current problem issues must be addressed. Given the time-element, such studies cannot be prioritized by standing committees. Rather, this priority making is solely dependent upon the analysis input needs of the MINFA leadership.

Linkage of the EAN Project to Other
Agency Research and Policy Efforts

Many of the intermediate and long-term research topics listed by the EAN Advisory Committee are already included in the ongoing programs of research of such agencies as the Pakistan Agricultural Research Council and/or commissioned by the Agricultural Prices Commission or the Central Planning Division and, in some cases, directly by a donor agency such as the World Bank. The EAN Project should avoid developing parallel or duplicate research programs. Rather, it should seek to join forces with these complementary sources of research support and management.

When the research programs underway by other agencies appear to be proceeding to provide the data necessary for policy analysis, the EAN project can add support when needed and otherwise monitor the progress and the results. If the research programs are still evolving, a joint effort by the EAN with other GOP research generating agencies would serve to provide the best possible data collection schemes and policy oriented research analysis of these data. The results of such joint research efforts would be a cost effective approach to providing the data needed by policy analysts to respond to continuing MINFA requests for information about policy options and the consequences of these actions. And, equally important, this joint effort approach would be a critical first step in institutionalizing an agricultural economic data generating and analysis system that would likely continue beyond the relatively short time-frame of the EAN project.

There may be several cases in which special topics identified for special long term research have already been conducted. For example, it came to the attention of the authors that the Punjab Economic Research Institute (PERI) is in the process of completing a major study on mechanization. Before launching another independent study on mechanization, the EAN should commission the PERI researchers to prepare a special briefing paper reflecting the current state-of-knowledge about the mechanization issue. Based upon this information, the EAN agenda can be directed toward the remaining gaps in knowledge, if any. Such a study should also be brought to the attention of the World Bank which is also in the process of commissioning a mechanisation study.

Similarly, just as the research program directed by the EAN activity must be reconciled with other producers of policy oriented research, the needs of the other research users must also be considered. For example, many policies which effect the agricultural sector are initiated by the Ministry of Water and Power, the Ministry of Trade and Industry, the Ministry of Finance and other GOP agencies (Nobe 1982). Further, many of the policies set at the national level rely on Provincial Governments for implementation and still others (e.g., water pricing) fall totally within the domain of Provincial Governments for initiation. It is important that the EAN effort attend to these linkages as well.

Concluding Comments

While a large program of research for the EAN project has been suggested, the authors are encouraged by (a) the large reservoir of talented economists potentially available in Pakistan to engage in agricultural economic policy-oriented research and (b) the considerable economic research output they have already produced. Even so, due to limits of time and budget, the EAN Project will likely have to set some internal priorities. Rather than recommending a specific priority ranking for the core research study components already suggested, given ^{our} ~~an~~ limited perspective gained during this short-term assignment, we instead will recommend some criteria for use by advisory and steering committees for establishing priorities within the long-term core research program.

These criteria are: (1) give immediate attention to major commodities which are the targets of government policies; (2) seek to augment the research programs of agencies already working to supply policy oriented research, making joint efforts where practicable; and, (3) give early attention to developing research and analytical abilities within provincial line agencies so that their capabilities to conduct their own staff analysis of province unique problems is established. Finally, we urge the MINFA to recognize the necessity for retaining the responsibility for setting the priorities for research and analysis directed to unanticipated problems and issues -- priorities for items in this category are determinable only by MINFA's need to take policy action within a short time frame.

In spite of our limited perspective, we nonetheless will provide a rank ordering of three types of policy-oriented research and analysis (even though we recognize that some effort in all three areas will be necessary and likely to be accomplished). In our view, first priority should be given to addressing short-term special problems as directed by the MINFA Secretary. It will be the ability of the DAP Director and his Staff Economist Group to effectively respond to these research and analysis requests that will establish and maintain their credibility. Second priority should be given to the suggested core research in the areas of consumption, production and marketing. Attention given to these research areas will form the research capital base which is necessary for effective response to the first priority studies over the longer term.

As a third priority, any residual budget can be directed to the special long-term research category items, as identified by the Advisory Committee and the EAN/Staff Economist Group. As a final caveat, we would simply note that, as in all professional endeavors, it is not the quantity of policy directed research and analysis that really matters; it is the quality of the product and its application to key agricultural policy decisions that is of primary importance.

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PROGRAMME OF RESEARCH STUDIES FOR POLICY
ANALYSIS IN AGRICULTURE

In recognition of the importance of improved economic analysis in policy formulation, the Ministry of Food and Agriculture has under-taken a major re-organization of its Planning Unit to strengthen its capacity to deal with policy issues. An important part of the re-organization will be a programme of research studies under-taken primarily through various research institutions in the public and private sector.

The first such programme has been formulated with a list of 17 studies to be under-taken during 1985 and 1986. The list together with a brief description of the scope and objectives of each study is presented in Annexures-I and II respectively. The programme of studies will be discussed and finalized in an inter-provincial meeting to be held on 16 and 17 February, 1985.

Selection of Research Institution

Once the list of studies has been finalized it will be circulated to various consultants and institutions according to the Planning Commission's roster of approved consultants specializing in agriculture and rural development. Each consultant will be asked to indicate its interest in any three studies on the list with a brief out-line of the methodology it intends to follow for undertaking a particular study. Based on this information, a minimum of 3 and maximum of 5 consultants or institutions will be pre-qualified for each study and they will be asked to submit their technical and financial bids in separate sealed covers.

A Technical Committee in the Ministry of Food and Agriculture will evaluate the technical bids and after grading them will award the study to a consultant in accordance with the recognised procedure on the basis of the best combination of technical and financial proposals submitted.

* Official planning document of the Ministry of Food, Agriculture and Cooperatives, Government of Pakistan, February 1985

Methodology:

The methodology of each study will be designed to focus on the objectives of each study but there are some preliminary requirements which are common to all studies.

First, a considerable amount of research work has already been under-taken on many of the topics linked in the research programme. The consultant will be expected to review the relevant literature, in Pakistan and abroad and to the extent necessary, analyze the results of previous studies as a starting point for the proposed study.

Secondly, in addition to any fresh data that may have to be collected through field surveys and questionnaires, the consultant will take into account and analyze the large volume of secondary data that is readily available in various Census and other reports.

Thirdly, many of the studies listed would require sophisticated analytical techniques to obtain the desired results. In addition to the expertise and facilities that might be available with the consultant it-self, attempts will be made to secure the services of short term consultants from abroad to supplement the expertise of the local consultant.

Finally, it is proposed to constitute a Steering Committee for each major study. This Steering Committee which would include officials of the Ministries concerned and some outside experts, will provide continuing guidance to the research institutions in conducting the study and preparing the results.

Advisory Committee:

An Advisory Committee under the Chairmanship of the Minister for Food and Agriculture is being constituted with representatives of the Provincial Governments and

selected research institutions to determine overall priorities of the research programme and to supervise its implementation. The Advisory Committee will also recommend measures to strengthen the research capability of various public and private institutions in the four provinces.

GOVERNMENT OF PAKISTAN
 Ministry of Food, Agriculture &
 Cooperatives
 (Planning Unit)

TENTATIVE LIST OF PROPOSED RESEARCH
 STUDIES FOR 1985-1986

Increasing Agricultural Productivity:

1. Price and Import Policy of Seed: Constraints in production and distribution of important seeds in the public and private sectors.
2. Effectiveness of pest control measures and policies with a view to adoption by small farmers
3. Application of fertilizer to important major and minor crops, by size of farm and mode of irrigation.
4. A study of yield responses to various levels of fertilizer application specially on wheat and rice.
5. Impact of mechanization on productivity and employment by farm size and tenure, economic assessment of various levels of mechanization.
6. Constraints in the flow of credit ^{with particular reference} to small farmers.
7. Comparative study of crop yields and cost of production of "progressive" and "traditional" farmers.
8. Impact of price policy on cropping pattern and farming system - estimation of short, medium and long term price elasticities of supply for major crops.
9. Study of farm productivity by size and tenure and estimation of domestic resource costs for major crops.
10. Estimate of private investment in agriculture during the Sixth Five Year Plan by broad categories of capital assets.

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Food Security:

11. A study of food supply management with particular reference to partial provisioning system of wheat in the context of food security and minimum food requirements of the poor.

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12. Examination of post-harvest system of major crops for minimising losses, reducing handling costs and evolving an improved grading system.
13. Projections of long term demand for food commodities upto year 2000.
14. Study of marketing margins of selected crops in the context of farming systems and ecological zones.

Institutions for Agriculture and Rural Development:

15. Constraints to development of Cooperatives in the country in the light of examples of successful cooperatives in other countries specially farming cooperatives and marketing cooperatives of perishable commodities.
16. Evaluation of different models of extension services in terms of effectiveness and cost, including the impact of communication media on agricultural production.
17. A study of trade, price and institutional policies ~~needed~~ for procurement, processing, marketing and export of ~~perishable commodities.~~ perishable commodities.

LIST OF ADDITIONAL RESEARCH STUDIES THAT
MIGHT BE TAKEN UP BY OTHER ORGANIZATIONS

		<u>Organization Concerned</u>
1.	A comparative study of the movement in input and support prices and impact on productivity	Agricultural Prices Commission
2.	Capital formation in agriculture	Planning Commission
3.	Impact of agricultural research on agricultural production - By programme - By institution - By specific areas of R&D	Pakistan Agricultural Research Council
4.	Price forecasting model for essential commodities	Agricultural Prices Commission
5.	Prospects for agro-industries in the Seventh Plan period	Agricultural Development Bank of Pakistan
6.	Net impact of transfer of resources between agriculture and non-agriculture sectors on the income of small farmers	Pakistan Agricultural Research Council
7.	A study of desirable NP ratios for different crops on the basis of farm size, tenurial status, irrigated/barani conditions and other relevant factors	Planning Commission/ Pakistan Agricultural Research Council

ANNEXURE-I(A)ADVISORY COMMITTEE ON POLICY ANALYSIS
IN AGRICULTURETERMS OF REFERENCE

1. To develop Agricultural Research Programme and supervise its implementation.
2. To fix priorities of the research studies on the basis of the proposals received from various Provincial/Federal agencies and Universities etc.
3. To review the ^{final} results of the Research Studies.
4. To recommend measures to strengthen the research capability of various public & private institutions.

ANNEXURE-I(B)ADVISORY COMMITTEE COMPOSITION

- | | | |
|-----|--|------------------|
| 1. | Minister for Food and Agriculture | Chairman |
| 2. | Minister of State for Food & Agriculture | Vice Chairman |
| 3. | Secretary(F&A)/Addl. Secretary(F&A) | Member |
| 4. | Chairman, P.A.R.C. | " |
| 5. | Chairman, A.P.Com. | " |
| 6. | Vice Chancellor, Agr. University, Faisalabad | " |
| 7. | Vice Chancellor, Agriculture University,
Tandjam | " |
| 8. | Vice Chancellor, Agriculture University,
Peshawar. | " |
| 9. | Additional Secretary, Planning & Dev. Division | " |
| 10. | Minister/Secretary, Agriculture Department,
Punjab | " |
| 11. | Minister/Secretary, Agriculture Department
Sind | " |
| 12. | Minister/Secretary, Agriculture Deptt. NWFP., | " |
| 13. | Minister/Secretary, Agriculture Deptt.
Baluchistan | " |
| 14. | Chairman, Planning & Development Board,
Punjab or his representative. | " |
| 15. | Additional Chief Secretary, Planning and
Development Department, Sind. | " |
| 16. | Additional Chief Secretary, Planning and
Development Department, NWFP. | " |
| 17. | Additional Chief Secretary, Planning and
Development Department, Baluchistan. | " |
| 18. | Director, Punjab Economic Research Institute,
Lahore. | " |
| 19. | Director, Applied Economic Research Centre,
Karachi. | " |
| 20. | Director, Centre for Applied Economic Studies,
Peshawar. | " |
| 21. | Director, P.I.D.E., Islamabad. | " |
| 22. | Financial Adviser(F&A) | " |
| 23. | Economic Consultant, Ministry of Food and
Agriculture. | Member/Secretary |

TECHNICAL SUB-COMMITTEETERMS OF REFERENCE

1. Register and maintain a list of Research Institutes/Consultants for this programme.
2. Circulate objectives and scope of studies proposed to be contracted out among Research Institutes/Consultant and pre-qualify 3-5 institutions for the award of a study.
3. To evaluate technical proposals of research studies submitted by the Consultants.
4. To approve the methodology, procedure and design of each study for which the institution concerned will make a presentation.
5. To award studies to consultants according to the prescribed procedure.

ANNEXURE-II(B)TECHNICAL SUB-COMMITTEE COMPOSITION

- | | |
|---|------------------|
| 1. Secretary/Additional Secretary(F&A) | Chairman |
| 2. Chief Economic Research Section
Planning and Development Division | Member |
| 3. Chief, Agriculture Section, Planning
Development Division | " |
| 4. Financial Adviser(F&A) | " |
| ✓ 5. Chief Economist, Planning & Development
Department, Punjab | " |
| ✓ 6. Chief Economist, Planning & Development
Department, Sind. | " |
| ✓ 7. Chief Economist, Planning and Development
Department, WFP | " |
| ✓ 8. Chief Economist, Planning & Development
Department, Baluchistan | " |
| 9. Economic Consultant | Member/Secretary |
| 10. Expert in the relevant field | Co-opted Member |

ANNEXURE-IIISTEERING GROUP(S)FUNCTIONS

- in
- i) To assist/the formulation of the TOR of a study if required.
 - ii) To supervise and monitor the study/conducted to see if it was being conducted according to agreed plan. being
 - iii) To examine the draft report.

COMPOSITION

The composition of the steering group will vary from study to study depending upon nature of the study and will normally consist of the following:-

- | | |
|---|------------------|
| i) Subject Specialist/Expert | Convener |
| ii) Economist | Member |
| iii) Statistician | Member |
| iv) A representative of the Planning Unit | Member/Secretary |

CLASSIFICATION OF THE SEAAC APPROVED LIST OF
STUDY TITLES BY CONSUMPTION, PRODUCTION, MARKETING
AND SPECIAL STUDY CATEGORIES IN A LONG-TERM
CORE POLICY-DIRECTED RESEARCH PROGRAM

Consumption Research

- Projections of long-term demand for food commodities upto year 2000.
- Price forecasting model for essential commodities.
- A study of food supply management with particular reference to partial provisioning system of wheat in the context of food security and minimum food requirements of the poor.

Production Research

- Application of fertilizer to important major and minor crops, by size of farm and mode of irrigation.
- A study of yield responses to various levels of fertilizer application specially on wheat and rice.
- Impact of mechanization on productivity and employment by farm size and tenure, economic assessment of various levels of mechanization.
- Constraints in the flow of credit with particular reference to small farmers.
- Comparative study of crop yields and cost of production of "progressive" and "traditional" farmers.

- Impact of price policy on cropping pattern and farming system - estimation of short, medium and long term price elasticities of supply for major crops.
- Study of farm productivity by size and tenure and estimation of domestic resource costs for major crops.
- Estimate of private investment in agriculture during the Sixth Five Year Plan by broad categories of capital assets.
- A comparative study of the movement in input and support prices and impact on productivity.
- Net impact of transfer of resources between agriculture and non-agriculture sectors on the income of small farmers.
- A study of desirable NP ratios for different crops on the basis of farm size, tenurial status, irrigated/barani conditions and other relevant factors.

Marketing Research

- Examination of the post-harvest system of major crops for minimizing losses, reducing handling costs and evolving an improved grading system.
- Study of marketing margins of selected crops in the context of farming systems and ecological zones.
- A study of trade, price and institutional policies for procurement, processing, marketing and export of perishable commodities.

Special Anticipated Research

- Price and Import Policy of Seed: Constraints in production and distribution of important seeds in the public and private sectors.
- Effectiveness of pest control measures and policies with a view to adoption by small farmers
- Constraints to development of Cooperatives in the country in the light of examples of successful cooperatives in other countries specially farming cooperatives and marketing cooperatives of perishable commodities.
- Evaluation of different models of extension services in terms of effectiveness and cost, including the impact of communication media on agricultural production.
- Capital formation in agriculture
- Impact of agricultural research on agricultural production
 - By program
 - By institution
 - By specific areas of R&D
- Price forecasting model for essential commodities
- Prospects for agro-industries in the Seventh Plan period