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DEVELOPING AN ANALYTICAL CAPACITY
FOR PLANNING AGRICULTURAL SECTOR DEVELOPMENT

George E. Rossmiller

Introduction

A wide range in stages of agricultural sector development exists among countries. A wide range of ideologies and institutions creates the environment within which agricultural sector development occurs. In all countries a complex set of vertical and horizontal linkages are necessary prerequisites for agricultural sector development. It thus may appear presumptuous to pose general principles toward developing an analytical capacity for planning agricultural sector development. Nevertheless, while the situation is different across time and space, enough similarity exists that some generalizations and principles can be postulated.

The premise of this paper is that developing an analytical capacity, broadly conceived, is institution building. Examined are problems associated with developing an analytical capacity at the national government level to provide input to the public decision making process affecting agricultural sector development. Certain functions must be performed within the public sector to influence the rate, course, and incidence of development. Planning is done, policies promulgated, programs developed, and projects conceived,

The author is Associate Professor of Agricultural Economics and Director, Agricultural Sector Analysis and Simulation Projects, Michigan State University. The author has benefited from critical review of this paper by colleagues James T. Bonnen, Martin Harratty and Glenn L. Johnson.

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designed and implemented. These functions and activities require that decisions be made, even if by default. But a major reason for the existence of a public sector in any society is to make decisions, hopefully with outcomes more in the public interest than would occur if these decisions were made by default. Some decisions are independent and easy due to limited scope or limited choice of alternatives. Most are complex and interrelated. All can be depicted as a process.

Decision making theoreticians and practitioners depict the steps in the decision making process in varied but similar ways. One such view is shown in Figure 1 as a sequential and iterative set of six steps including: 1) problem or issue definition, 2) data and information collection and observation, 3) analysis to determine the consequences of alternative courses of action, 4) the decision upon a course of action including policy formation or program development, 5) action, including the implementation of the decision, and 6) evaluation of the results and feedback of those results into the continuous decision process. As part of the process the decision maker must receive a continuous flow of both normative and non-normative data and information. Multiple problems must be confronted in agricultural sector development with many decision makers involved at different planning and program levels. Thus the analytical capacity providing information to the decision process must be able to deal with a wide variety of problems confronting decision makers at various levels within the dynamic context of time. To assure continuity in the functioning of this capacity over time, it must be institutionalized as an integral part of the decision making structure.

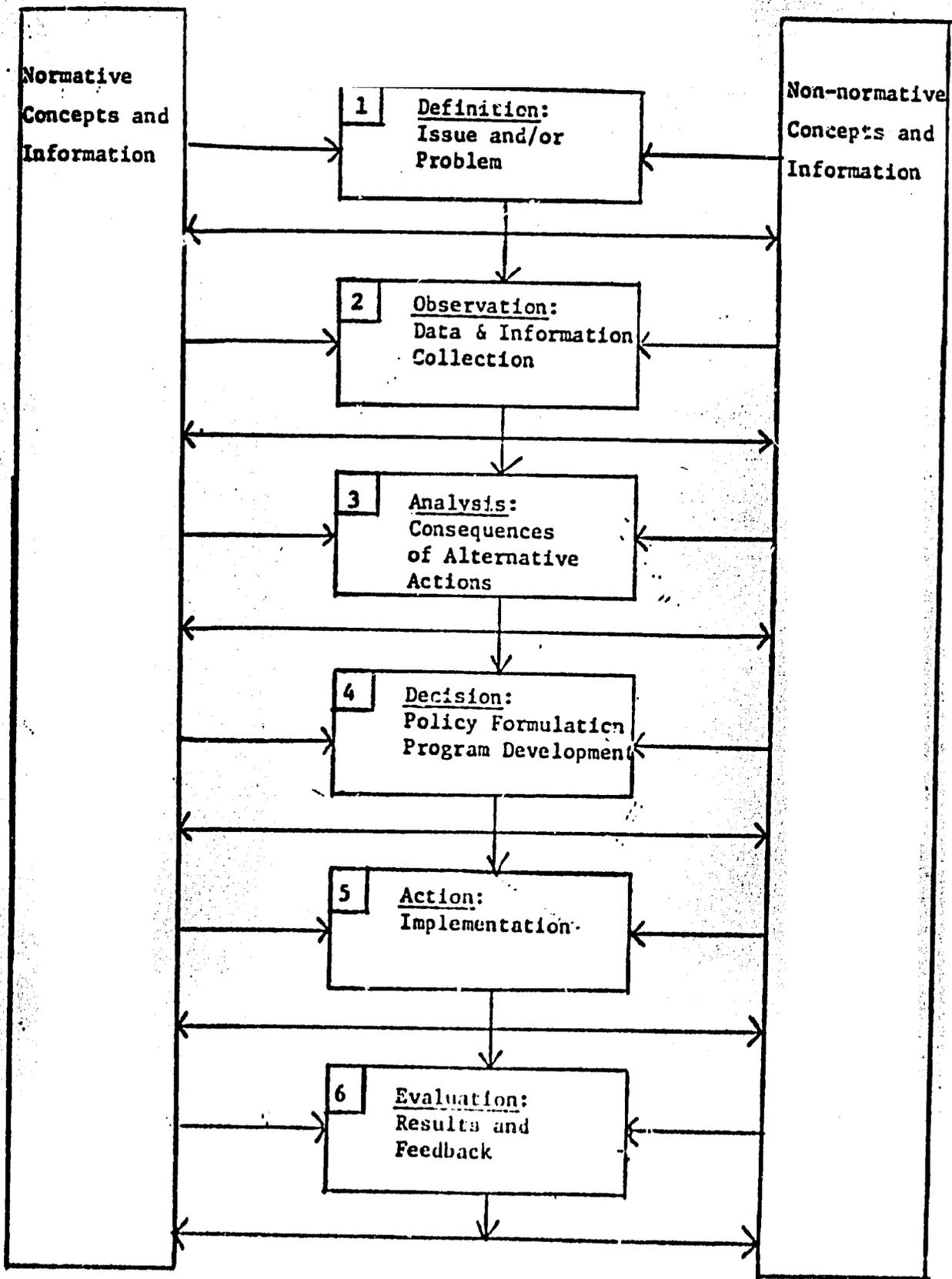


Figure 1. The decision-making process.

The development of an analytical capacity can thus be viewed as an institution building problem, the implementation of the desire to build such capacity as an agricultural sector development project. The factors necessary to such a project are examined in the remainder of this paper, drawing heavily upon the insights gained during the past four years with the Michigan State University Agricultural Sector Analysis and Simulation Project.

This project began in summer 1971¹ following the completion of an earlier project which terminated in 1970.² The objective of the earlier effort was to test the feasibility of using the systems approach and simulation techniques to develop computerized models of an agricultural sector as an analytical tool for planning and policy formation. After a computerized system simulation model of the Nigerian rural sector was developed, the general approach was concluded to be useful as a means of simulating the consequences of alternative policies for agricultural sector development.

The objective of the present project begun in 1971 was to further develop, test, and apply the approach in the decision making structure of a developing country. The field activity of the project in Korea is known as the Korean Agricultural Sector Study (KASS).

The activity in Korea consists of model development, training and organization of an analytical unit with indigenous personnel capable of

¹Michigan State University, Contract AID/csd-2975.

²Michigan State University, Contract AID/csd-1557.

further development and use of the models, and institutionalization of the analytical unit into the agricultural sector decision making structure at the national level. Thus, the focus is on a national level analytical capacity related to agricultural sector development in developing countries. The generalizations, however, apply at sub-national levels and in developed country contexts as well.

Analytical Capacity Development Defined

When viewed as an institution building program, development of an analytical capacity includes institutionalizing that capacity as an integral part of the decision structure. Thus, in the final analysis this capacity must depend upon indigenous personnel and institutional linkages without direct external support. In the institution building period, external support may be provided by foreign assistance agencies in developing countries, by national government agencies to local government units in developing or developed countries, or by any agency outside of the environment within which the analytical capacity is being established.

In defining what an analytical capacity is, it is instructive to indicate what it is not. When the World Bank sends a short-term team into a country to conduct one of its periodic economic survey updates, when AID assembles a short-term sector survey mission to identify areas for capital assistance investment, when a consulting team is called in to do a benefit-cost feasibility study, or when a specialist is brought in to consult on a specific technical problem such as a livestock disease or a grain storage difficulty, no contribution is made toward developing an indigenous analytical

capacity. In each of these cases the parameters of the single problem are prescribed a priori, and the objective of the team or the specialist is to move in quickly, gather the secondary data and information necessary to the analysis required, draft the report, and leave. Normally, the only thing left behind is the report and a promise (or threat) to come back if or when needed. These activities are important in their own right and can be greatly assisted by using knowledge gained and software components developed and documented elsewhere. Money and time costs of such activities can be considerably reduced by doing so. Such development, for example, is a charge in pursuing the broad objectives of the Agricultural Sector Analysis and Simulation Projects. As indicated, however, contributions to development of an indigenous analytical capacity are not made in carrying out these activities. Thus, these types of activities are not of major concern here.

Of concern is development of an analytical unit composed of a core of professionals capable of amassing, assimilating, and analyzing data and information within a problematic logic framework in such a way as to provide decision makers with an understanding of the likely consequences of possible alternative courses of action. While the analysis will primarily provide information in terms of a wide range of performance criteria on the consequences of alternative courses of action, the information and data, and much of the analysis itself, must include knowledge from a variety of areas. These include the technical level and relationships within agriculture, the economic situation and structure, the social and cultural conditions, the state of human change, the institutional environment, and the political

process and its constraints. Thus the analytical unit must have the capability of drawing upon the knowledge and abilities of multiple disciplines, and the multidisciplinary emphasis required will change with the problem confronted

Necessary Conditions for Analytical Capacity Development

Before an activity seeking to develop or improve an indigenous analytical capacity can be considered, several prerequisite conditions must hold. First is the recognition by key decision makers that policy and planning objectives are not being fully realized. This may be the case for a variety of reasons including unrealistic objectives, plans and policies which conflict or compete with each other, programs and projects which are not fully implemented, or for other reasons directly attributable to faulty decision making.

A second and closely related precondition is that decision makers who are unhappy with the development performance must recognize that in part the present level of performance is due to the lack of information and analysis upon which decisions are based. A third prerequisite condition is that decision makers must have an intent and will to improve the decision process and the decision making structure with a more scientific and analytical approach. Finally, the appropriate decision makers must have the will and ability to commit the resources necessary to such a project. Decision makers may be reluctant to commit to such a project if a credibility gap has developed because analysts have been too narrow in their analyses or obtuse in their contacts with decision makers in the past.

These prerequisites were reasonably well met in Korea in 1971 and have been strengthened since. In 1967, the Agricultural Economics Research Institute (AERI) was established in the Office of Rural Development.¹ It had a farm management orientation geared to providing micro-economic input into the technical agricultural research program.

In 1970, AERI was removed from the Office of Rural Development, physically moved from Suwon to Seoul, and placed as a staff unit in The Ministry of Agriculture and Fisheries (MAF) under the Vice Minister. Its new charge was to provide MAF with economic and policy analysis input, mainly of a "brush fire" nature.

By summer 1971 when the KASS project was installed with AERI as the counterpart agency, AERI still had a strong farm management orientation and had not yet established itself as a capable, creditable policy analysis unit within the Ministry. Linkages with the decision makers were not well developed and lines of responsibility and authority were ambiguous. Analytical assignments were not well defined nor realistic when measured in terms of output demanded relative to time and resources provided. Coordination and cooperation between the data and information acquisition system, the decision makers, the policy and program implementors, and AERI were deficient.

However, the fact that AERI was moved to Seoul to function as a staff policy analysis unit within MAF indicated that a need for such analysis was perceived by decision makers and that the will was present to take action to fill this need. With time, experience, and the presence of the KASS project, many of the early operational difficulties have been vastly improved.

¹Office of Rural Development (ORD) is the technical agricultural research and extension agency of the Ministry of Agriculture and Fisheries (MAF) located at Suwon.

further improvement is, however, both desirable and possible.

While the unique configuration of institutions and complex of responsibilities will dictate to some extent the latitude and scope of responsibilities, linkages, and functions delegated to an analytical unit, some basic principles generally apply. Figure 2 indicates a conceptualization of the functional linkages necessary to integrate an analytical unit into the decision structure. The analytical unit is shown in the middle with the units providing support and services indicated in the lower part of the chart and the functional units or agencies being served by the analytical unit shown in the upper part of the chart. The lines in the circles on the arrows depicting the linkages indicate the importance of interaction between the analytical unit and all other units with which it is linked. The heaviness of the arrows indicate the likely relative operational importance of the linkage. Finally, the analytical unit is shown to have two sub-units--one concerned with further development, adaptation and testing of the models, techniques, and methodologies used in the analyses, and the other concerned with operational use of the analytical tools in analyses of problems defined in interaction with the decision makers.

The relationship of the analytical unit to decision makers at a variety of levels in the national government is obvious in Figure 2. A major product of this interaction is a two-way information flow as problem definition, data collection, and analysis takes place. At the general economy planning and the agricultural planning coordination levels the analyses will focus on long term consequences of broad planning and policy

DECISION MAKERS

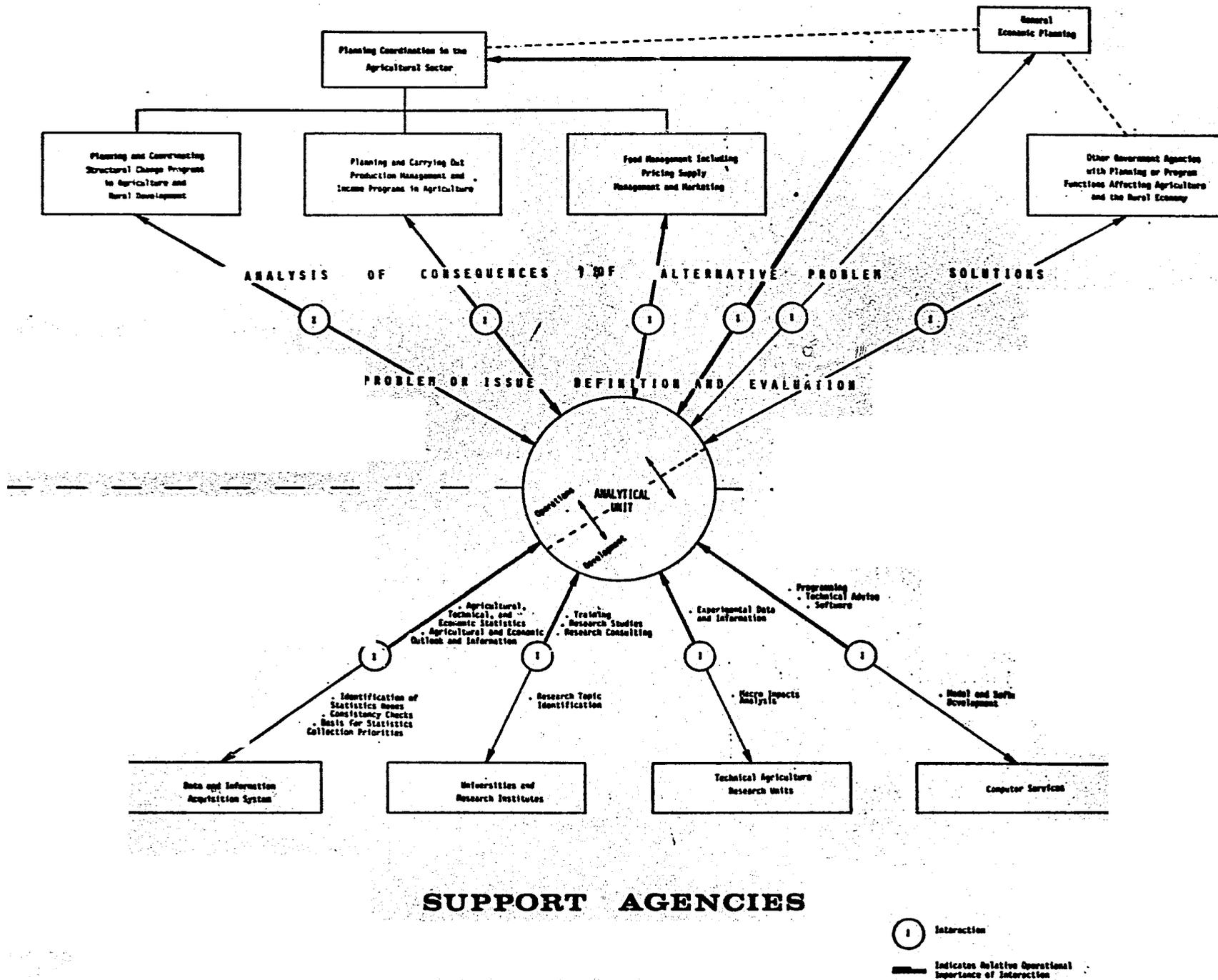


Figure 2. The Analytical Unit in the Decision Structure.

strategies. At the agriculture structure, production, and food management levels the analyses will focus on intermediate and short run consequences of policy implementation and program alternatives. Problems at each level must be defined in interaction with relevant decision makers and within the realm of authority of the particular decision maker.

A caveat is necessary with respect to Figure 2. The only part of the decision making system shown is that which impinges directly on the analytical unit. Input to the decision process by the analytical unit is only one of many inputs from a variety of sources. The inputs available from all sources are weighed and sorted, accepted or rejected by the appropriate decision maker for any given decision.

The strength of the input by the analytical unit depends upon the nature of the problem concerned, the relative value placed upon the input from the analytical unit by the decision maker, and the relative importance of information and implications not considered by the analytical unit, for the decision maker is always attempting to satisfy multiple objectives within an arena of multiple constraints - political, institutional and social as well as economic.

An extremely important supporting service linkage is with the data and information acquisition system. This system, whether contained in a single unit or dispersed among several agencies, provides an important function of quantitatively measuring the structure, performance, and behavior of the agricultural sector and relevant parts of the general economy. The statistics collected must be processed and disseminated in a form most

helpful to the users, in this case the analytical unit and the planning and policy decision makers. To be of most use in the decision process, the flow of data and information from the acquisition system must be relevant, accurate, timely, and consistent.

Close interaction between the analytical unit and the acquisition system can provide the basis for data improvement. The analytical unit, through the use of their models, can provide information on consistency and data sensitivity which can be helpful to the acquisition system in determining what statistics to collect, how they should be processed, and in establishing guidelines for priorities in data refinement for greater accuracy. The quality of the data and information generated by the acquisition system is vital to the quality of the output to the decision makers from the analytical unit.

The supporting linkages with universities, technical agricultural research units, and other research and analysis institutes are also vital. Through these linkages a continuous flow of information, research and analytical results and trained personnel from relevant disciplines can be accomplished. Computer service support is also critical. Computer installations will vary substantially from one country to another with respect to hardware capacity and configuration, software availability, administration and cost. Capacity, cost, timeliness of operation, and technical competence are important considerations for effective linkages between the analytical unit and the computer service unit.

Role of Foreign Assistance

Only when indigenous decision makers have the will to improve their analytical capacity can enlightened foreign assistance provide the catalyst which is so often needed to bring about change in the developing world. This catalytic action can take several forms and perform several functions. The forms include provision of both technical and financial resources, training, and administrative support, while the functions include a focus of interest, an organizational, technical, and methodological ability, and in some cases initial entrée to the decision process at levels not achievable by indigenous personnel. Foreign assistance cannot provide the will to succeed, the intimate knowledge of the indigenous situation, an understanding of existing institutions, the knowledge necessary to operate effectively in the local environment, or the indigenous internal linkages necessary for institutionalization and sustained usefulness. The foreign assistance will phase out over a period of time (in some cases too quickly, in others not quickly enough) and the indigenous capacity must be able to take over at that point with their own set of linkages and functional relationships intact; otherwise, possibly fatal institutional gaps will exist.

In the Korean case, the basic administrative and structural linkages already existed with the Agricultural Economics Research Institute before the KASS project began. The KASS project was attached to AERI as the Korean counterpart institution and was able to take advantage of this existing set of linkages even though they were incomplete and in some cases weak.

On the incomplete list were linkages to computer services and to the research, training, and consulting services of universities and other research

and training institutes. A satisfactory linkage between AERI/KASS and computer services did not come easily. The first attempt was to use the computer services provided by the National Computer Center, an installation operated by the Government to provide services free to government agencies. This computer installation is administered as a data processing center with priority given to large data processing jobs such as survey tabulation or census data processing. The needs of model developers and researchers are not met. At times job turn-around time was once a week when a minimum of three times a day would have been more appropriate. Such delays led to the realization that this "free" service had a high opportunity cost in terms of the frustration felt by KASS team members in effective use of team time, and in inefficient model development and operation. It was finally arranged for the KASS Team to use the computer installation at the Korean Institute of Science and Technology on a pay basis with the MSU project, USAID/K and NAERI¹ sharing the cost of the service. The agreement specified that Korean resources be used for operational activities and MSU and USAID/K resources be provided for model development activities. As the MSU contract nears termination, model development is declining and operations are increasing. Thus the Korean Government is providing an increasing share of the computer service cost.

¹By this time the name of the Agricultural Economics Research Institute (AERI) had been changed to the National Agricultural Economics Research Institute (NALRI), thus reflecting its wider role and responsibility.

Existing linkages with Korean universities and research were strengthened through special training of professors to provide them with the knowledge of basic simulation techniques and the skills necessary to teach the systems approach. After prolonged negotiations by the NAERI director, a mechanism was established to allow government agencies (like NAERI) to contract with professionals in universities and elsewhere for their services at rates of pay nearer their opportunity cost than the civil service system had allowed. Thus a very good means of upgrading work quality at NAERI was devised.

A major constraint to institutionalizing an analytical capacity for agricultural development planning in the Korean agricultural ministry was identified by the KASS team early in the project. A KASS task force concerned with identifying organizational and functional constraints to effective planning and policy development in MAF found a low capacity among MAF administrators to absorb and utilize serious analytical input to the planning and policy process. This was because little horizontal or vertical coordination between MAF agencies took place as planning decisions were made, MAF was organized along non-functional lines making systematic planning difficult, decision makers usually had short (less than 1 year) tenure in their positions thus creating a lack of memory and experience, and finally, decision makers had little experience in using an analytical backstopping unit since NAERI was only integrated into MAF in 1970. Further, the analytical work done in MAF was found to be sporadic, piecemeal, and fragmented throughout the bureaus and divisions of the Ministry.

This situation led the KASS team to recommend that MAF initiate concerted action to increase the planning and policy development capacity of its personnel in four specific areas. These areas were: agricultural policy analysis, agricultural outlook, program and project evaluation, and agricultural statistics and data collection, processing and utilization. Subsequently, a joint project was developed between USAID/K, the Korean Ministry of Agriculture and Fisheries, and Michigan State University to provide technical assistance in these areas under the Korean Agricultural Planning Project (KAPP). While KASS was designed to be developed into an analytical backstopping unit with the capability of using large and complex computerized models for analysis of Korean agricultural development problems, KAPP was designed, in part, to help MAF decision makers identify and interpret their problems in such a way that the KASS unit could help them analyze and derive solutions to those problems. Therefore, KAPP provides interim linkage support between KASS and the decision makers so crucial to the effectiveness of the analytical unit. To insure close cooperation and coordination between KASS and KAPP a single field project coordinator administers the operations of both units.

It is extremely important that the institutional and operational linkages necessary for institutionalization of the indigenous analytical capacity be developed and installed such that they are minimally affected as the foreign assistance effort is withdrawn. Figure 3 indicates the MSU project linkages with AID and the Korean agencies as well as the established indigenous linkages. It is obvious from the diagram that the AID and MSU activities are supportive

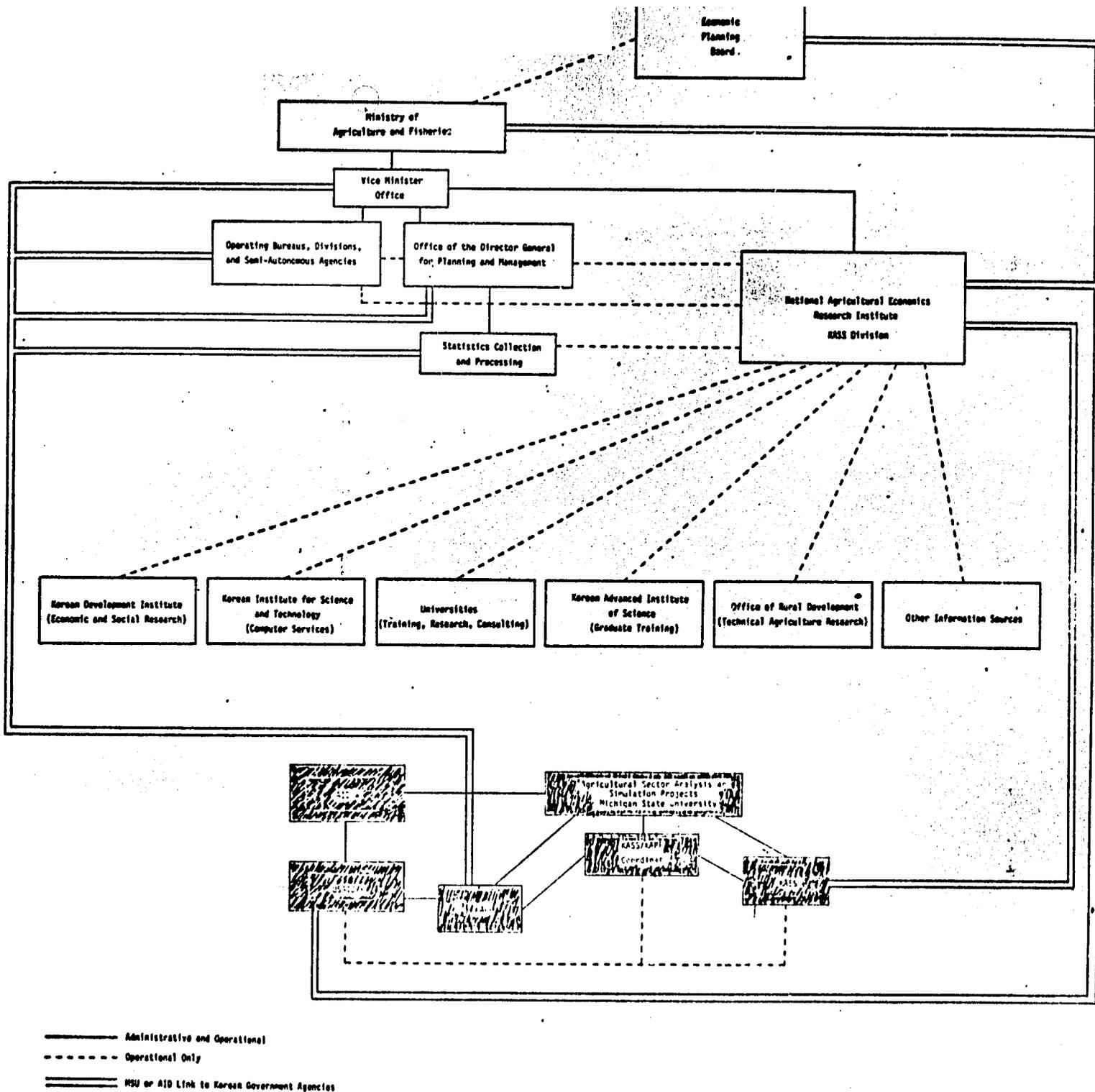


Figure 3. Michigan State University Projects' Linkages with AID and Korean Government Agencies.

and integrated with, but not substituting for, the indigenous institutional structure. The MSU and AID blocks and linkages (gray, shaded areas of Figure 3) can be withdrawn at any time, leaving the indigenous institutional structure and linkages intact and functioning. This project structure was no accident but rather designed from the beginning to insure that the survival of the analytical capacity being built in Korea does not depend upon MSU or AID remaining within the structure.

Toward an Institutionalized Analytical Capacity

It is unfortunate that the main perspective of the Korean project tends to center on the KASS models. The objectives of the MSU-AID Contract focus on model development, testing and application. The attention of interested people, both inside and outside Korea, tends to focus on the models. Project staff tend to put dominant emphasis on the models in their discussions. Admittedly, the models are an important component of the project. However when viewed from an institution building perspective, the truly critical aspect is the development of the analytical unit with a cadre of trained personnel capable of using, adapting and further developing the model as a tool in analyzing a wide variety of planning and policy problems. The most complex and challenging dimension of this process is the institutionalization of the analytical unit into the decision making structure, with appropriate linkages to decision makers and to support and service agencies.

Project staff are often asked, "When will the job in Korea be finished?", "When will the model be completed?", "When will you finish the final report and wind up the operation?" The answer to all these questions is, "If we

are successful, never." Once the KASS analytical unit is institutionalized into the decision structure it must continue to be relevant and useful to decision makers to remain an effective part of that institutional structure. It must continually adapt, update and develop its analytical tools and models as the agricultural system they represent changes. It must continue to adjust its abilities to accommodate to the changing nature of the problems confronting the decision makers. Thus, the job is never completed and a "final report" is not an objective.

The main question remaining in Korea is whether the foreign assistance projects have been designed to provide enough resources and time for the indigenous structure to become well established. The time required to establish a training schedule and to institutionalize the activity was grossly underestimated during early project planning. This deficiency has been partially corrected by lengthening the term of MSU involvement. By the time the MSU projects are phased out, a small but important core of Korean personnel (professionals directly associated with the projects) will have returned from training in agricultural economics and systems science. It will be their task to take over the operation of the analytical unit and to insure its smooth and effective functioning. However well trained, these professionals will still be relatively inexperienced and will most likely need some additional outside support through short-term consultation.

The overall process of institutionalizing an analytical capacity in which organizational, technical and human change are required (often in large amounts) is a risky venture at best for both the host government and the

foreign assistance agency. The process must begin within the context of a given political ideology, human resource base, technological level, and configuration of institutions and their linkages with each other. It must be recognized that the foreign development assistance agency cannot provide resources and exert its influence forever. While it is involved, however, one principle is imperative. No matter what the ultimate design and mode of project operation, it must be a joint undertaking with the relevant institutions and decision making personnel of the host country. The foreign assistance agency may be able in its effect on the process to help shape the structures necessary for the continuation of an analytical capacity, but the determination of long-term survival is out of its hands. Unless the project and its process are legitimized by indigenous decision makers and accepted into the country's culture, tradition and institutional structure, the involvement by the foreign assistance agency will pass with no visible remaining sign that it ever existed. The ultimate test, in fact the only test, of success in developing an analytical capacity is whether the output of that capacity is sought and used over time by decision makers who, because of its input, make better and more effective decisions.

With the sound analytical base which has been established and with continued attention and nurturing by MAF, the KASS unit has a high probability of becoming an integral part of the decision structure for Korean agricultural sector development. However, Korea, along with only a few other developing countries, is unique. The ingredients of established institutions, of human capacity, of the ability to handle technical change, and of the will for more

adequate decision making were all present when the foreign assistance was provided as a catalyst for developing and institutionalizing the analytical capacity. Only countries with these attributes in strong measure can hope to achieve the integration of an analytical capacity on a large scale. The less developed of the developing countries have a long and arduous task ahead in developing these basic attributes. Only when this is accomplished can they successfully attempt the next steps toward establishing a broad analytical capacity within the decision making structure for better and more effective planning and policy formulation for agricultural sector development.