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SUPPORT SYSTEMS FOR AGRICULTURAL EXTENSION:
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SUPPORT SYSTEMS FOR AGRICULTURAL EXTENSION: A CONCEPTUAL FRAMEWORK

By

Jean M. Geran

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ABSTRACT

SUPPORT SYSTEMS FOR AGRICULTURAL EXTENSION: A CONCEPTUAL FRAMEWORK

By

Jean M. Geran

The performance of agricultural research and extension is of central concern in the process of agricultural development, yet the resource base for extension programs in many countries is declining. Scholars and practitioners of agricultural extension need to think carefully about the funding and institutional structures of their programs in order to use scarce resources wisely. This study addresses that need by developing a conceptual framework for the analysis of support systems for agricultural extension.

A support system is defined as the resource mobilization and allocation process of a rural development program and the institutional arrangements governing that process. Its three components are: sources, generating mechanisms, and disbursing mechanisms. A conceptual framework for the analysis of support systems is presented which can be applied to the evaluation of existing programs or to future research. Models of support tied to institutional pluralism, financial sustainability, privatization, decentralization, accountability and local resource mobilization in specific extension programs are presented along with hypotheses.

DEDICATION

This small contribution is dedicated to the Creator and holder of all knowledge and wisdom. May we always remember that knowledge is not ours to own but only to share.

ACKNOWLEDGMENTS

We achieve nothing alone. I would like to thank those special people who supported me and helped me complete this study and this degree.

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LIST OF ABBREVIATIONS

AACREA	Argentine Association of Agricultural Experimentation Group
ATE	Entrepreneur Technical Assistance
ATEC	Agrotechnical Extension Center
ADAS	Agricultural Development Advisory Service
CFDT	Compagnie Francais pour le Developpement de Fibres Textiles
CTT	Technology Transfer Consultant Firm
DRI	Fund for Integrated Rural Development
FA	Farmer Association
FAO	Food and Agriculture Organization of the United Nations
GP	Group Promoter
GTZ	German Agency for Technical Cooperation
GVAM	Gwembe Valley Agricultural Mission
ICA	Colombian Institute for Agrarian Reform
ICAR	Indian Council of Agricultural Research
IDB	Inter-American Development Bank
INDAP	Instituto de Desarollo Agropecuario
INTA	National Institute for Agricultural Technology
IPM	Integrated Pest Management
IVA	Colombian National Sales Tax
KTDA	Kenyan Tea Development Authority
MOA	Ministry of Agriculture
NGO	Non-Governmental Organization
PPP	People's Participation Program
PTTI	Integral Technology Transfer Program
RDIP	Rural Development Investment Program
SAU	Small Agricultural Unit
SEDF	Socioeconomic Development Fund
Six S	Se Servir de la Saison Seche en Savanne at en Sahel
TAU	Technical Assistance Unit
TNC	Transnational Corporation
T&V	Training and Visit
UN	United Nations
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
VAT	Value Added Tax

1. CHAPTER ONE - INTRODUCTION

1.1 Introduction to the Research

The performance of agricultural research and extension is of central, strategic concern in the process of agricultural development (Antholt, 1994). Though agricultural extension has the potential for significantly contributing to increased agricultural productivity and human resource development through technology transfer and non-formal education, the resource base for extension programs tends to be declining. If agricultural extension is important to agricultural development then managing scarce resources wisely within programs becomes increasingly important to the effective use of extension in promoting positive community change and rural development. "In a period when the demand for and the demands from extension are growing and national budgets, particularly in Sub-Saharan Africa, are severely stressed by debt, economic stagnation, and adverse terms of trade, greater efficiency in extension design and operations is a necessity" (World Bank, 1990a: 5).

An analysis of the systems used to support agricultural extension which identifies ways in which resources are generated and used may offer lessons for the most effective use of those resources. This is an area of interest for scholars and practitioners of

agricultural extension and community development, because it addresses the challenges of successfully managing programs designed to meet the needs of rural communities.

For the purpose of this study the term **agricultural extension** is defined broadly to include any non-formal education system whose clientele are rural people, and whose content is primarily agricultural (including livestock production and marketing, as well as fisheries, forestry, and rural development) (Axinn, 1988). A **support system** is defined as the resource mobilization and allocation process of a rural development program and the institutional arrangements governing that process. Both monetary and non-monetary resources needed to cover the full cost of extension programs are included in the definition.

Different types of resources vary in importance for extension programs depending on the needs and capacity of the clientele. Identifying sources of financial and other resources for extension and the mechanisms used to generate and disburse these resources in actual programs will provide insight for managers seeking to improve the funding and institutional structures of their programs. A **source** of support will be defined as any individual, group, organization, or institution providing either monetary or non-monetary resources to support the activities of an agricultural extension program. A **mechanism** will be defined as any method used to either generate or disburse resources which support agricultural extension. Identification and categorization of such sources and mechanisms used to support agricultural extension has not been found in the literature. Therefore, this study seeks to describe the support systems for agricultural extension programs around the world in order to identify the sources and mechanisms used and how they interact.

After these are identified and categorized, hypotheses about how they affect the institutional structures and quality of extension programs will be generated for further investigation.

1.2 Background

There has been extensive writing about the quality of agricultural extension over the years (Axinn, 1988; Brunner and Yang, 1949; Rivera and Gustafson, 1991; World Bank, 1990a). Recently, topics of discussion in broader development literature are influencing the discussions on extension. Issues such as institutional pluralism, decentralization, privatization, financial sustainability, accountability, cost sharing and participation have created growing interest in understanding how the flows of monetary and non-monetary resources affect other aspects of extension programs. Other issues of key importance to extension such as relevance, responsiveness, and cost effectiveness are also affected by the type of system used to support programs. The fact that issues of such importance for the quality of extension programs are related to the methods used to support each program provides justification for a formal scholarly examination of support systems.

Antholt (1994) ties the issues of relevance, responsiveness, accountability and financial sustainability to farmers' increased sense of ownership of any extension system through partial or complete responsibility for its support. In his categorization of various approaches for extension programs Axinn (1988) uses resource flow as one component of

differentiation between approaches. "Different over-all approaches to agricultural extension suggest different choices among these [support system] alternatives" (ibid.: 47).

The accountability of extension programs to farmers can be improved by incorporating even small resource contributions from farmers thus ensuring farmer control over at least part of the budget (Antholt, 1994; Axinn, 1988; World Bank, 1994; and Zijp, 1992). The issue of accountability is often tied directly to the relevance of an extension program. Accountability which contains an element of local control over the program increases the relevance of program content to the needs and interests of the clientele (Axinn, 1988). It can be argued that relevant advice by definition means that it has an attractive benefit cost ratio and therefore, payment for information is justified (World Bank, 1994).

Clientele participation is an issue identified by scholars as affecting the quality of agricultural extension as well as other types of rural development programs. Participation can also be tied to the methods used to support extension programs. "Without participation and the feedback it engenders, extension systems are likely to waste time, money and their credibility by bringing farmers information for which they have little or no use" (World Bank, 1990a). One form of clientele participation can be through farmer contributions to support the extension program financially or with other available resources. Participation through resource contributions is only one of many forms of participation, but it may be a good indicator that other forms of participation are functioning well in the program." In non-formal education, it has often been demonstrated

that commitment of the learners to participation will be enhanced if they pay some part of the cost" (Axinn, 1988: 96).

A management issue which has caused much frustration for outside donors of agricultural extension programs is that of financial sustainability. The deteriorating fiscal situation of many developing countries in the 1980s exacerbated the already serious problem of financial sustainability of World Bank supported systems (World Bank, 1994). The promotion of Training & Visitation (T&V) extension in many countries has caused the buildup of national extension staff to levels financially and institutionally unsustainable without continued external assistance (Copestake, 1990; Macklin, 1992; van Blarcom et. al, 1993; World Bank, 1993a; World Bank, 1993b). Some scholars seeking ways to improve financial sustainability of programs are trying to decrease the cost of public sector services for fiscally strapped central governments (Antholt, 1994). Some feel that fiscal and administrative decentralization can reduce the strain on central government budgets. However, this remains debatable. A conceptual framework for the analysis of support systems in general can provide a base for future investigations into issues like decentralization.

Some support systems incorporate cost sharing. Ameur (1994), Antholt (1994), Axinn (1988), and Umali and Schwartz (1994) all conclude that agricultural extension incorporating contributions from farmers (cost sharing) whereby farmers are in part or completely responsible for support should be more cost-effective, relevant, responsive, participatory and financially sustainable.

The documentation of cost sharing arrangements in this study which have already been worked out on a case by case basis provide a reference for others managing similar programs. Managers of agricultural extension programs in developing countries are asking for examples of motivating mechanisms like cost sharing to address the key issues described above and offer practical tools for institutionalizing participation and measuring cost effectiveness (Olin, 1994; Pain, 1994). Evidence from past research and the literature on agricultural extension suggests that the challenges facing agricultural extension programs are related to the support systems which direct the flow of both fiscal and other resources within programs.

1.3 Research Problem

The declining resource base for agricultural extension programs and the linkages between resources supporting extension and key management issues affecting the quality of programs make the study of support systems within programs relevant to both scholars and practitioners of agricultural extension. The literature is full of scholarly discussions about how various types of support systems may affect programs and what this could mean for program managers. Yet, no studies have been found which explore and specifically document how both monetary and non-monetary resources are managed within various types of agricultural extension programs globally. Such documentation contributes to the knowledge base on extension in two ways. First, it provides a grounded conceptual framework and vocabulary based on what is happening in the field. Second,

hypotheses about how types of support systems used affect the quality of extension programs are presented. Ultimately, learning from what is happening now provides insights into improving the funding and institutional structure of programs and understanding the dynamic nature of the relationships which these structures govern. This study will take a first step in the investigation of this research topic by analyzing qualitative case study data collected during 1994 on support systems for agricultural extension worldwide. Analysis of this data will be the basis for identifying sources and mechanisms used to generate and disburse resources within extension programs and thus building a conceptual framework for the study of support systems.

1.4 Research Questions

The following research questions will guide the study of support systems.

1. **Who provides the resources for extension programs?**
2. **What mechanisms are used to generate these resources?**
3. **What mechanisms are used to disburse these resources?**
4. **Why were these mechanisms chosen?**
5. **Which aspects of the program are affected by the mechanisms chosen?**
6. **Are there strengths or weaknesses associated with certain mechanisms?**

Answers to these questions will identify various support systems being practiced in agricultural extension programs of different types.

1.5 Benefits of the Research

Through the identification and documentation of support systems for agricultural extension, a conceptual framework for analysis of institutional and funding structures will emerge. Another product of the study will be hypotheses to guide future investigations into resource management strategies and their effect on the quality of extension programs. The development of a framework for analyzing resource management strategies will be particularly useful for scholars and practitioners of agricultural extension by providing a base of reference and the vocabulary needed for collaborative and productive investigations into support systems and their effect on different types of programs. The framework may thus provide a tool for program managers considering their own resource management strategies and the ways in which those strategies affect other aspects of the extension program. A mapping technique is also presented as a tool to visually understanding the structure of support systems. Lessons learned about various support systems will be applicable beyond agricultural extension programs because funding and institutional issues are relevant to any community development program. Thus, this study contributes to the knowledge base on agricultural extension and community development by addressing the processes of program management.

1.6 Organization of the Study

This study will be organized into five chapters. This chapter has provided background to the research topic and defined the research problem. Chapter 2 will be a problem focused literature review to look more deeply into the scholarly discussions about agricultural extension and the issues surrounding its support. The third chapter will present the research design and methods to be used in analyzing the available qualitative data. Chapter 4 will outline the results of that analysis by identifying and documenting the support system components of the programs represented in the data set. The fifth chapter will present a conceptual framework developed based on the identified support systems which will facilitate further investigations into this topic. The mapping technique which illustrates institutional linkages emerging in the support system components will be presented. Possible research hypotheses emerging from this study will also be presented for consideration in Chapter 5 along with the implications and usefulness of the research products.

2. CHAPTER TWO - LITERATURE REVIEW

2.1 Introduction to the Literature

The review of the literature relevant to the study of support systems for agricultural extension which is contained in this chapter provides justification and background for this study. It does this by outlining the many important institutional and administrative challenges which are affected by the structure of support systems for rural development programs in general and agricultural extension programs in particular. The review draws on **2.2 Agricultural Extension, 2.3 Intergovernmental Fiscal Relations, 2.4 Institutional-Organizational Development,** and **2.5 Rural Development** literature to find the linkages between these bodies of literature where the study of support systems for agricultural extension lies.

It is around some important management issues that the linkages between the various bodies of literature emerge. Therefore, this literature review will be organized around these issues. The issues particularly tied to support systems found mostly in the agricultural extension literature are; *2.2.1 returns to investment*, *2.2.2 privatization*, and the *2.2.3 public funding of extension*. *2.3.1 decentralization* and *2.3.2 financial sustainability* are issues tied to the study of support systems and the intergovernmental fiscal relations literature.

Institutional-organizational literature provides the conceptual base from which the variables used in this study are drawn. It also provides insights into the relevance of institutional linkages and pluralism for improving the management of support systems for extension programs. Finally, issues found in all these bodies of literature are relevant to both rural development programs in general and agricultural extension programs in particular. The issues of accountability, cost sharing, local resource mobilization and participation are actively discussed in all four bodies of literature and are directly related to the study of support systems. Thus, they provide justification and background for the understanding of this research topic as applied specifically to agricultural extension.

2.2 Agricultural Extension

2.2.1 Returns to Investment in Extension

Numerous studies have been done documenting very positive returns to investment in agricultural extension (Hayami and Ruttan, 1985; World Bank, 1994; World Bank, 1990a). Since the social returns to such investment are apparent it seems that such investment should be supported. However, the declining resource base for such activities implies that any available resources must be managed increasingly well to provide needed social benefits from extension programs especially for poorer farmer groups. "Fiscal constraints and political realities will often reduce the priority given to a service such as extension, regardless of its economic worth; a system which is perceived as lean and efficient by finance managers, and

which is appreciated as necessary and effective by public beneficiaries, has the best chance of attracting the necessary funding to keep it efficient and responsive to a recognized demand" (World Bank, 1994: 51).

2.2.2 Privatization of Extension

Many scholarly discussions of support systems for agricultural extension which focus on government funds and constraints on those funds often lead to discussions over the privatization of agricultural extension programs. Similar discussions are occurring in other sectors as well such as health, education and rural infrastructure. The premise is that the private sector can provide more efficient and cost-effective services and so should be encouraged to do so. The counter opinion points out that too much private sector focus may further marginalize resource poor farmers, especially women, where the profits from programs as well as the increases in agricultural production on large commercial farms is privatized and the loses nationalized through debt. Rural women have often lost in the shift to mono-crop and export oriented agricultural production as they remain responsible for raising food to feed their families on smaller amounts of marginal land. "Privatization and cost-recovery trends bode ill for women farmers. Privatization is generally associated with and emphasizes crops with a high cash value, and the latter is directed toward the household member who controls the finances" (Rivera and Corning, 1993: 2).

One major conclusion is reached in most scholarly discussions of private and public sector roles in the provision of extension services. Ameur (1994), Antholt (1994), Bennett (1994), Bloome (1992), Umali and Schwartz (1994), and Zijp (1992) all agree that private sector extension programs can complement but not substitute for public sector services. Most of them also point to areas for public/private collaboration which are underutilized. Making use of the private sector and commercial funding mechanisms can be an important tool for improving the overall coverage and effectiveness of public sector services. The Chile system provides evidence that public responsibility for extension can be combined with relatively efficient and cost-effective privately contracted provision of services. The public sector maintains its role of policy setting and quality control while the executing agencies maintain local responsiveness and efficiency (Berdegue, 1994). This study of support systems outlines ways in which such collaboration between public and private sector programs can be managed by identifying appropriate mechanisms currently being used in functioning extension programs.

Schwartz and Zijp (1992) and Umali and Schwartz (1993) present fruitful discussions on the potential and limitations of the private provision of agricultural extension. Private sector provision of services often meets the cost-effectiveness, responsiveness, relevance and accountability aspects of efficient agricultural extension for farmers. However, limitations include neglecting the needs of small marginal farmers, broader national interests and environmental concerns. These are public goods whose costs are less likely to be covered by the private sector. Bennett (1994) determines that market failure justifies continued public sector support of agricultural extension programs.

The public good aspects of extension like poverty alleviation and environmental protection will usually not be addressed by the market, and therefore, government maintains the responsibility for these components. Value decisions are involved in the provision of public services and governments and communities must decide which values they hold and be willing to commit public resources to address important problems.

Complete privatization of extension services may be appropriate in areas where farmers can afford it. Then the concern, however, is that the privatized services will receive all the resources and quality personnel. When the interests of medium to large farmers are removed completely from a public sector extension program there is even less political power to attract needed resources to public programs. Growth of a commercial agricultural extension service may weaken existing government services by recruiting the best personnel (Rivera, 1993).

2.2.3 Public Funding of Extension

There is an important distinction for agricultural extension to be made between private and public "goods". This distinction has implications for what the private sector may be willing to pay and what remains the responsibility of the state. Some scholars feel that a clear articulation of the rationale for public funding of extension programs may help public sector programs maintain needed levels of funding. Such a rationale is clearly presented by Bennett (1994). He argues that the justification for public funding of an extension program may come from the program a) contributing needed public benefits cost-effectively, b) comparing

favorably with and complementing other public and private programs in contributing public benefits, and c) redressing "market failure", i.e. contributing needed public benefits through means not provided by commercially funded extension. He also argues that publicly funded extension may be needed for the following reasons: to meet environmental and health needs, to meet the needs of clientele with low or moderate incomes, to address emergencies and needs due to extreme variability, to validate market information, to transfer management practices, and to provide education.

Each public extension program may need to emphasize one or more of the needs mentioned above depending on specific social, political, and economic contexts in order to compete for public funds. For national governments, the responsibility of equitable service provision in meeting the needs of poor farmers and environmental concerns and the unwillingness of the private sector to address these issues may provide the most significant rationale for continued public support for extension programs. Again, proper attention to context is essential in determining the most pressing needs to be met by national agricultural extension programs. "The level of government intervention or support for a given industry depends ultimately upon the prevailing political support for government involvement and the ability of sectional interest groups to garner support for their political interests. The economic importance of agriculture in a society will influence both the political support for extension and the potential social benefits that might come from government intervention." (Cary, 1993: 345).

"Provision of extension services by the private sector can have the advantages of being highly professional, attaining good results and reducing the public sector service's cost. The clientele, however, must have the financial resources (i.e. be in commercial production with significant cash income) to pay for such services" (World Bank, 1994: 29). This is not the case in the poor small holder subsector of many developing countries, so that public services for the private good of small holder families is likely to be needed and justified in the foreseeable future on economic and poverty alleviation grounds. Further investigation into the topic of support systems can provide more empirical evidence to contribute to the constructive continuation of this debate, because it outlines the support mechanisms used in both public and private sector programs.

Reducing the financial burden on governments is a concern of many scholars and practitioners of agricultural extension. Some are exploring cost recovery mechanisms to shift some of the financial burden to the farmers who benefit from extension programs. In places where farmers can afford to pay for technical advice they are being "encouraged" (often with little choice) to do so (Hercus, 1994; Cary, 1993). In other places, government services are implementing cost recovery mechanisms like user charges to gradually recover some of the cost of service provision from farmers.

This study reveals where and how these mechanisms are functioning. In India, Macklin (1992: 24) makes the distinction between farmers who can and cannot pay for extension. "Prospects for direct extension cost recovery from the majority of India's small subsistence or subsistence plus farmers, mainly farming food grains and oilseeds, are very limited. However,

there is a substantial body of larger, irrigated farmers growing wheat, rice, sugar and oilseeds who could afford to pay for extension."

2.3 Intergovernmental Fiscal Relations

Intergovernmental fiscal relations have a direct effect on support systems for public sector agricultural extension programs. For an in-depth discussion of intergovernmental fiscal relations in developing countries see Shah (1994). Shah outlines criteria for the design of intergovernmental fiscal arrangements as: autonomy, revenue capacity, equity, predictability, efficiency, simplicity, and incentives. The structure of fiscal transfers should be judged according to how well they meet these criteria in relation to local government capacity to perform assigned duties like public service delivery which may include extension. Shah describes the best transfers as those which promote autonomy, revenue capacity and proper incentives for lower level governments and are equitable, predictable, efficient and simple. Such transfer design should support the efficient management of public sector extension programs. Government transfers are an important generating mechanism for the support of public sector extension programs described in this study.

2.3.1 Decentralization

Fiscal decentralization may have potential for improving agricultural extension programs in some contexts. Obstacles to decentralization exist, however, in the political need for central control of many nations and the current structure of international lending programs. Large grants and loans, both disbursing mechanisms identified in this study, tend to have a centralizing effect on public service provision. Rondinelli (1987) and Uphoff (1986; 1995) discuss different types of decentralization which may directly affect support systems for agricultural extension. These types include: Deconcentration, Delegation, and Devolution. Further investigation into the effects of these various processes on the management of agricultural extension programs is called for. The effects of these processes on public sector programs are directly related to the type of present and historical governance used in each country.

The study of support systems for agricultural extension programs contributes to discussions of the pros and cons of decentralization by outlining the mechanisms used which may have a decentralizing tendency and those which foster greater central control. For instance, the adequacy of municipal services is affected by the revenue sources that local authorities are allowed to tap and by the capabilities and incentives of local managers. Both of these can be favorably influenced by the central government by conceding reasonable sources of taxation and user fees and providing assistance in the training of municipal staff (Esman,

1991). Knowledge of these mechanisms can provide concrete tools which may be useful to managers wishing to actively pursue decentralization of their programs.

2.3.2 Financial Sustainability

The two main types of costs for agricultural extension are recurrent and operational. Recurrent costs are those encompassing salaries, offices, transport and facilities. Operational costs are those covering actual program activities, materials and special transport. Personnel are the core of any extension program which relies mostly on face to face contact for extension. Increasing recurrent versus operational cost expenditures are challenging the financial sustainability of many extension programs especially in developing countries

"Fiscal realities in most developing countries dictate that priority must be given to containing recurrent costs, so that a service is not only economic in the true sense of representing the most cost-effective means of achieving a particular result, but which is within an expenditure level which is able to be fiscally and politically supported in the future" (World Bank, 1994: 40). Salaries and related costs become the basis of recurrent costs which grow with staff increases and length of staff service. Once staff of public sector programs have increased under outside donor assistance programs it is often difficult politically to cut recurrent costs back to a level which the government can sustain without assistance.

Operational costs are those covering actual program activities, materials, and transportation. Focused operational expenditures contributed to some of the most striking

technology transfer achievements in N.E. Brazil. Where a clearly beneficial technology existed like a new seed or a response to a crisis with disease or pests, focused operational campaigns made great strides in technology transfer (Tendler, 1993). Of course, these could not have been carried out if there had not been a functioning extension system.

Another problem faced by some developing countries that relates to both recurrent and operational costs is the disparity between budgeted funding and actual expenditure. For example, shortfalls and delays in budgetary releases challenge the viability of many extension activities in Kenya under the Agriculture and Livestock Ministry (van Blarcom et al., 1993). This both constrains operations and negatively affects morale and motivation of staff. Inflexibility in the budgeting process may also be problematic for program managers. In Yemen, central control of the extension program is exercised by not allowing any shifting of funds from one budget line item to another even if funds are no longer needed in the original line item (Souhlal, 1994).

2.4 Institutional-Organizational Development

2.4.1 Institutional Concepts and Variables

A good review of the institutional-organizational literature which flourished in the late 1960s and early 1970s under this name was done by Melvin Blase (1973). Much of this literature grew out of a framework initially conceptualized by Milton Esman (1967), who

identified the three components of institution building and analysis as institution **variables, linkages** and **transactions**. He defined five major institution variables as: *Leadership, Doctrine, Program, Resources,* and *Internal Structure*.

In a later work, Esman succinctly defined linkages as: "patterned relationships between the institution and other organizations and groups in the environment" (Thomas and Fender, 1969: 22). He explained further that these relationships comprise the exchange of resources, services, and support which may involve various degrees of cooperation or competition. The four types of linkages which he identified were: a) *enabling* "relationships with organizations that control the allocation of authority to operate or of resources", b) *functional*, "relationships with organizations that supply needed inputs or which take outputs", c) *normative*, "relationships with organizations that share an interest in social purposes", and d) *diffuse*, "relationships with individuals and groups not associated in formal organizations" (ibid.). He also defined transactions as "exchanges of goods and services or of power and influence." Transactions were seen as the substance of an entity's linkages with its environment.

2.4.2 The Resource Variable

This study of support systems for agricultural extension builds on this institution building framework by exploring specifically one of Esman's variables namely "*Resources*" as it functions in extension institutions. It also explores the *enabling* and *functional* linkages related to this variable. Esman's short definition of the resource variable is "the physical, financial,

personnel, informational, and other inputs which are required for the functioning of the institution" (ibid.: 22). Blaise (1964) sees the resource variable as having two components: *availability* and *sources*. This study defines a support system as: the arrangements governing the acquisition and use of both monetary and non-monetary resources needed to cover the full cost of extension programs. The monetary and non-monetary resources of this definition refer to the physical, financial and other inputs required for the functioning of an extension program.

This study does not attempt to specifically address personnel or information as resources contributing to a support system. The focus here is on economically oriented resources, including both monetary and non-monetary resources. However, the framework and support system mapping techniques developed in this study could be extended to the analysis of other types of resources like information, personnel, or even political support. This study breaks the resource variable down into three components: sources, generating mechanisms and disbursing mechanisms. These are related to Blaise's *sources* and *availability* distinction but also include some of Esman's **linkages** and **transactions**.

Elsewhere in the literature Norman Uphoff offers some clarification on the concepts of linkages and resources: "At some points in the literature on Institutional Building, it appears that the term *linkage* refers to the *source* of resources from the environment. This ambiguity is to be avoided by identifying resource exchanges or flows as linkages and by speaking separately of groups, organizations or sectors in the environment with which linkages can be

established" (CEDA, 1971: 22). Therefore, this study has attempted to avoid ambiguity by making *sources* of support the groups or organizations with whom linkages can be made and using *generating* and *disbursing mechanisms* to refer to the resource exchanges or flows. Thus, a *mechanism* as defined in this study encompasses both **linkages** between *sources* and the **transactions** which govern those linkages.

The study of institution building has evolved and changed names over the years to the study of development administration. Esman (1991) brings together current thinking on the management of development programs and reflects on the new generation of scholars. This groups includes Chambers, Pacey and Thrupp (1989), Korten (1987), Leonard (1977), and Uphoff (1986) among others. This group tends to be more skeptical than their predecessors of the utility of the centralized state and more sensitive to the potential of decentralized, participatory, bottom-up rather than top-down strategies and processes (Esman, 1991). Though these scholars may approach the study of rural institutions from a different angle they still use some of the language and concepts developed by their predecessors.

Discussions of resource mobilization and allocation are still active in the newer literature, since the management of resources is directly related to institutional structures and managerial procedures whether one is studying centralized or decentralized systems. Johnston and Clark (1982) in their discussion of institutional structures and managerial procedures of organization programs outline five "calculation and control tasks" that a development organization is called upon to perform. All of these are associated with the resource variable of institutions. The five tasks are: *making claims and choices, distribution of resources among*

claims, allocating resources, resource mobilization, and *resource productivity.* This study will contribute to the understanding of these tasks in relation to agricultural extension institutions by detailing the mobilization and allocation of resources within programs and providing a tool to eventually test resource productivity.

2.4.3 Types of Institutional Linkages

Market institutions, government institutions, and community institutions all need to be activated and strengthened, while supportive linkages among them need to be understood. "Capabilities to mobilize and use resources, to invest, to operate facilities, and to provide services need to be identified and fostered in each of the sectors that contribute to societal development" (Esman, 1991: 13). Local level groups can participate in horizontal linkages with other local organizations or vertical linkages with organizations that are controlled by government or the private sector. Through such horizontal and vertical linkages, needed information, resources and other forms of support are acquired and exchanged (ibid.). Both horizontal and vertical linkages can be enabling or functional and are represented in this study by the various generating and disbursing mechanisms identified in the case study data set.

2.4.4 Institutional Pluralism

Esman (1991) presents a formula for service provision of pragmatic pluralism in which the state establishes and enforces the rules, but at the level of operations it performs as one of many actors participating in the production and provision of economic and social goods and services including extension. He encourages broad support for what he terms "multiorganizational service networks" in order to achieve successful institutional pluralism.

The distinction between public and private goods of agricultural extension programs make them good candidates for a multiorganizational service network approach to encourage institutional pluralism. In response to the differing capacities presented by public and private provision of agricultural extension, Ameur (1994) and Antholt (1994) also refer to the notion of "institutional pluralism" in their discussions of technological change in agriculture. Such pluralism may help create innovative and collaborative systems in order to meet the diverse and complex needs of farmers through agricultural extension.

According to these authors, various actors providing extension, including NGOs, farmer associations, input suppliers, commercial firms and local communities, can and should have complementary roles in the generation and dissemination of agricultural information. "Governments should welcome private enterprises and NGOs to join in comprehensive efforts to raise productivity in agriculture, and as much organizational space should be ceded to these new actors as they can usefully occupy" (Uphoff, 1995: 17). Donors need to take into account

private and public sector services, traditional mass media and the applicability of modern information technologies, face-to-face communication systems, and fiscal capacity to maintain various levels of public extension services (World Bank, 1994). This same World Bank document also states that donor support must be consistent with the resource and technology base and capture any potential for cost sharing which encourages farmer ownership of the service and so improves accountability of the service to farmers.

Part of the motivation behind encouraging institutional pluralism for agricultural extension programs is to meet the needs of diverse groups of farmers. This same motivation implies that different models of extension should be used depending on the context. The World Bank (1994: vii) review of completed projects stated that "the findings do not support a contention that there is a single extension model which has sufficient superior features to justify its uniform adoption in an extension service in all small-holder farming circumstances." Conditions in each country should determine the scale and type of public sector extension services to be developed.

More emphasis should be placed on the design of projects to fit the particular circumstances of the borrower (fiscal, institutional and human resource) and of the farming systems in the rural communities to be serviced, and must asses the availability of appropriate, sustainable technology and the capacity for its continued generation (ibid.). Identifying the relationship between a social environment and the support mechanisms used in rural development programs could help us understand what works well in specific contexts. This

study takes the first step in understanding such relationships by describing which support mechanisms are used in which contexts.

2.5 RURAL DEVELOPMENT

2.5.1 Accountability

Current scholarly discussions of rural development programs are raising the issue of accountability of programs and program staff to rural clientele. Accountability is an important issue for agricultural extension, because it may determine the relevance and responsiveness of the program to farmers' needs. It is also related directly to the form of the support system of any program. When asking who the extension agent is accountable to, the easy answer is often whoever pays his/her salary (or at least whoever controls the amount of that salary and its disbursement). This ties accountability directly to support systems.

There are other factors influencing accountability like professional motivation, personally held values of the individual, organizational structures etc. Jiggins (1977) and Leonard (1977) both point out that financial incentives are not the only nor even necessarily the primary component in job satisfaction which may stem from various organizational characteristics. Accountability may also stem from social norms and cultural traditions. But few people would disagree that financial incentives play a

significant if not majority role in creating accountability. Even other forms of accountability fostered through social interactions are affected by the non-monetary resources used to support extension programs.

Support systems to a large degree determine the incentive structure, accountability and control of an extension program. "Accountability often boils down to the extent of control farmers have over the extension service. One of the easiest ways to measure control is the percentage of the budget for extension that is under direct control of farmers" (Zijp, 1992: 11). Rivera et al. (1988) include the degree of control which beneficiaries should have over the extension system as a factor in improving and developing extension.

Complete accountability through hire may be out of reach for poorer farmers with little or no cash flow or market orientation. Thus, the challenge becomes obtaining accountability in extension programs even when farmers are resource poor. One way to do this is to promote the concept of cost sharing through local contributions. Farmers may not be able to cover the total cost of hiring an extension agent, but reliance on small monetary or other forms of local contributions can at least improve the accountability of extension agents to farmers' needs.

2.5.2 Cost Sharing

The concept of cost sharing may be promoted by program managers to improve the accountability of agents to farmers and also to relieve fiscal constraints on government and program budgets. Contributing at least partially to the program gives the beneficiaries ownership and drawing rights on the services, takes some of the financial pressure off the central government and is the basis for a more demand-driven, responsive service (Antholt, 1994). Though these two objectives are both achieved through cost sharing it is helpful to separate them in discussion of the concept as they have differing implications for action.

The two objectives of cost sharing can be categorized as 1) cost sharing *as empowerment* and 2) cost sharing *as cost recovery*. Cost recovery is discussed above as a component of the privatization of agricultural extension programs section of this chapter. Such cost recovery is especially appropriate for medium to large scale farmers who have cash resources to contribute to an extension program. It may be slightly more difficult to arrange for cost sharing with small resource poor farmers. However, the cases reveal that it is not impossible when the extension program is meeting real needs of the clientele.

Cost sharing as empowerment encourages contributions from farmers, however small and not necessarily in cash, to the extension program in order to increase their control and feeling of ownership of the program. Many authors suggest that support systems for agricultural extension incorporating contributions from farmers, whereby farmers are in part or completely responsible for support, tends to make the extension system more demand-driven,

responsive, cost-effective, relevant and participatory. (Ameur, 1994; Antholt, 1994; Axinn, 1988). Poor resource circumstances should not prevent attempts to encourage farmer contribution in non-cash terms so that their demands on, and expectations from, the service are increased (World Bank, 1994).

The greatest risk to promoting cost sharing as empowerment is that potentially only those with resources in the community are empowered. The poorest who cannot contribute money and may be too busy to provide their own time may be excluded. Still, there is a tendency for program managers to explain the unwillingness of farmers to contribute to a program as a lack of resources rather than acknowledge that the program simply is not meeting their real needs.

Cost sharing may be a component of many types of support systems.

> There are numerous models to follow and any number of cost-sharing ratios for dividing the burden of support among beneficiaries and between government and communities/farmer groups. There is no one best option. Arrangements that fit the needs of situations, the characteristics of beneficiaries, and are politically acceptable need to be worked out on a case-by-case basis. However, a major and critically-important feature of the particular option eventually worked out is that the clients have both responsibility for and ownership of (and therefore "drawing rights" on) the service (Antholt, 1994: 18).

By identifying sources of support and generating and disbursing mechanisms of many cases around the world, this study documents where and how cost sharing is occurring in extension programs.

2.5.3 Local Resource Mobilization

Local resource mobilization, which can be an empowering process for communities, can also provide resources to be used for cost sharing arrangements which act as a form of participation and may improve the accountability of program staff to local clientele. This study contributes to an understanding of the process of local resource mobilization by identifying the mechanisms used by communities to mobilize resources.

This study of support systems remains focused on mechanisms used with resources to influence programs but does not address the social dynamics involved in resource mobilization. The social dynamics of resource mobilization are an area needing further research and discussion. Rural development and development administration literature both point to the fact that local resource mobilization can and does occur and should be encouraged wherever possible. "[Local] voluntary associations have demonstrated the ability to mobilize substantial resources in the form of labor, money, information, and specialized skills, including management. They can convert these resources into goods and services that benefit their individual members and their communities" (Esman, 1991: 103). This study explores where and how such successful local resource mobilization is occurring.

2.5.4 Participation

Many scholars and practitioners make valid arguments for incorporating more participation in the methodology and planning of agricultural extension programs. Still others

argue that it hinders efficient development planning. But Antholt (1994), Axinn (1988), Chambers, Pacey and Thrupp (1989), Farrington (1994b), Korten (1987), Odell (1994), and Uphoff (1986; 1995) offer evidence that increased participation by farmers does, in fact, improve the effectiveness of agricultural extension. Changes toward more participation by farmers in methodology and planning of extension programs will not be completely effective without parallel changes in the way the extension program is supported. Local resource mobilization and cost sharing are significant forms of participation which are related to support systems of agricultural extension programs. Voluntary cost sharing implies participation which can be empowering to end-users if it is authentic.

There are many forms of participation which are anything but empowering. A bullock pulling a farmer's plow is participating in the plowing, but the farmer is in control (Axinn, 1990). If cost sharing is voluntary and allows farmers to have a real influence on decision making then it can also be used to evaluate extension programs. If faced with losing the program farmers are willing to contribute something to keep it functioning, then it is likely they find the service useful and it is contributing positively to the agricultural development of the community.

Influence of farmers on the program through cost sharing may also increase the chance of incorporating valuable indigenous knowledge into the service. If farmers themselves contribute their own resources there is evidence that they will contribute valuable local knowledge to be able to use them more effectively (Foik, 1994). In fact, there are often assets (resources) in a community unseen from outsiders which can improve programs dramatically if

the community takes part in program management (Korten, 1987). "Researchers and extensionists lose out on many opportunities to make their enterprise more productive and sustainable if they ignore farmers' potential contributions" (Uphoff, 1995: 2). This study identifies the mechanisms used in support systems for agricultural extension programs to encourage farmer contributions to the system. The support system mapping technique developed can also illustrate the details of cost sharing arrangements to aid our understanding of them as a form of clientele participation.

Finally, Marc (1992) in his discussion of encouraging participation by thinking through its relationship to funding mechanisms provides useful criteria for participatory funding mechanisms. He describes five major characteristics which allow for participation from small farmers. The five characteristics are: Flexibility, Simplicity, Small Disbursements, Transparency, and Sustainability . These characteristics will be useful in evaluating the generating and disbursing mechanisms identified in the analysis of support systems for agricultural extension programs in this study.

3. CHAPTER THREE - RESEARCH METHODOLOGY

To begin investigation into the structure of support systems for agricultural extension, research into the information already existing on the subject had to be done. This preliminary research conducted by the author under contract with the World Bank was completed in August 1994. The outcome of that research was the qualitative data set which was used to conceptualize and present the models of support systems in this study. This chapter outlines how the data set was created and then explains how it is used in this study to create a conceptual framework for the analysis of support systems.

3.1 Phase 1 - Creation of the Data Set

3.1.1 Selection of Countries

Twenty five countries were chosen initially for investigation into their extension programs. The countries were chosen by research task managers at the World Bank in order to represent various regions of the world and various levels of national economic development. The industrialized countries represented were selected because each either had a unique method of supporting its public extension program or was attempting to

change the way its extension was supported. The developing countries selected were likewise seen as having unique extension organizations or were in the process of experimenting with different models of support. During the course of the investigation, this list of countries was to be shortened to sixteen based on the availability of in-depth details for specific countries. However, early on in the investigation process it was determined that in-depth data on how programs are actually supported financially and otherwise were scarce. Therefore, the investigation was adapted by incorporating relevant information available on any extension program, not just those of the original country set chosen. The final list of countries represented was similar to the original with just a few changes and the list was never shortened. In fact, the final list included 26 countries instead of 25.

3.1.2 Survey of the Literature

Investigations into the support systems for agricultural extension programs in these various countries began with a survey of the literature available on agricultural extension. The literature was scanned for details on the support systems of specific programs. In a few cases, significant information was given about a specific program in the literature and then the details of how it was supported were extracted. More often, however, information about the support of specific programs came as short cases or sentences within an article to illustrate an author's point. Therefore, some details on how the program was supported were found, but most of the contextual background for those

details was not included. Though the survey may not be exhaustive, it was undertaken over a seven month period and made use of substantial resource centers. The Michigan State University library and professors' personal resources, the World Bank Agricultural Sector library as well as the joint World Bank/IMF library services were surveyed. Internet resources also provided useful information from Europe and various international organizations.

3.1.3 Survey of Program Reports

In the case of some extension programs actual program reports and other documentation were acquired and scanned. Most of the program reports analyzed were on World Bank supported extension programs. The researcher had access to these reports while working at World Bank headquarters in Washington DC from May to August 1994. Only limited access to the program reports of other organizations was available. Efforts were made to acquire reports for different types of programs such as NGO or UN supported programs. In some of the World Bank documents, references were made to the support systems being used by other organizations which provided additional information on those programs. Private sector and NGO supported programs were less represented in the literature overall than the often larger public sector programs. Many public sector programs in developing countries have been supported by World Bank funding. The public sector programs of industrialized countries were relatively well represented in the

literature due to the current interest in privatization schemes for national extension programs and other agricultural services.

3.1.4 Personal Interviews

To supplement the information found in the literature and written reports some personal interviews of agricultural extension professionals were conducted. These interviews were also conducted while the researcher was working at World Bank headquarters from May to August 1994. The researcher began by interviewing World Bank staff who were involved in agricultural extension programs. Approximately 12 staff persons were interviewed. During the course of these interviews the staff persons were asked if they knew any details about how specific programs were supported financially and otherwise and what the implications of the support systems were. Some provided significant details on specific programs which were then included in the case study data set. Others simply had opinions about funding structures and their effect on programs but gave no real world evidence to support those opinions. Nearly all interviewed, however, agreed that this is an important topic which has generally been neglected in both the management and the scholarly study of extension programs.

These initial interviews also provided the researcher with names of other professionals to be contacted. This was done either through more face-to-face interviews for those professionals working in the Washington, DC area or through phone, fax or e-mail correspondence. Another 13 people were contacted and replied in this manner

representing organizations such as the Inter-American Development Bank, U.S. Department of Agriculture, the FAO, GTZ, and NGOs like World Neighbors, Save the Children, and Oxfam. Academics at various universities were also contacted and interviewed at Michigan State University, Cornell University, University of Maryland and University of Illinois - Urbana. These professionals provided supplemental information on most types of agricultural extension programs already identified in the literature.

One type of extension program for which none of these professionals had much information or experience was commercial systems. Thus, nearly all of the information obtained on commercial extension programs came from secondary data in the literature, mostly agribusiness journals, and could not be cross checked with other sources of information.

3.1.5 Original Research Questions

The original groups of research questions chosen by the World Bank task managers to guide the creation of the data set were the following:

a. Where does financial support for extension come from? If from government, which level? For non-government extension entities, what sources of funding will need to be identified?

b. How are revenues actually collected, i.e. taxes, voluntary contributions etc.?

c. On which basis are fiscal resources allocated to extension? What mechanisms are used to allocate budgetary resources by region, farmer group, problem, population etc.? How are choices made in funding particular outreach programs - by subject, cereal crops or location?

d. Identify and describe in detail what mechanisms such as revenue sharing, grant-in-aid, or cost-sharing are used between national levels of government and local communities and/or farmer organizations. How do the systems work in detail?

e. What mechanisms are used to fully or partially recover cost of extension services?

f. If financial allocations are related to program performance are there both positive and negative incentives associated with the fiscal system?

g. Under what system or rules are decisions made to allocate resources within extension systems for personnel, operational expenses, training etc.?

h. What specific roles do farmers and/or farm group leaders, direct or indirect, have in the resource allocation process and in evaluating the utility and effectiveness of extension?

i. What has been the fiscal sustainability over time of extension systems? What measures of sustainability are used?

j. What changes in fiscal systems are being discussed? Why?

k. Describe the advantages, disadvantages, and accountability of each country system.

3.2 Phase 2 - Analysis of the Data Set

The second phase of this research is the analysis of the previously created data set. The results of this Phase 2 work are the products of this research and presented in chapters 4 and 5. The methods used to conduct the data analysis are described below.

3.2.1 Description

The final product of the research conducted for the World Bank was a consolidated set of qualitative case studies based on the above set of research questions. The data set synthesized all the information gathered on the support systems of specific programs from the surveys of the literature and program reports as well as the personal interviews. Data were included on at least one extension program in each selected country. In some countries the support systems of up to 9 different extension programs were documented. However, the amount of information available about the support systems varied significantly between programs. Some programs have only a one or two line description of some aspect of the support system. Other programs have multiple pages of description.

Twenty-six countries are represented in the final data set. Five countries from Latin America are represented; Argentina, Bolivia, Mexico, Chile and Colombia. Four countries from Africa are represented; Kenya, Burkina Faso, Zambia, and Nigeria. Seven countries from Asia are also represented; China, India, Japan, Taiwan, Indonesia, Korea and the Philippines. Five European countries are represented; The Netherlands, Germany, France, Poland and The United Kingdom. From the Middle East, Turkey and Egypt are represented. Finally, The United States, Australia and New Zealand are also included in the data set.

The extension programs are listed under the title of the main implementing organization wherever possible. However, at times references were made in the literature

to the support systems of various types of agricultural extension programs in aggregate for a certain country. For example, Mexico has a section on "Transnationals", Bolivia on "NGO Extension", and Kenya and others on "Public Extension". This type of categorizing was done in cases where types of programs were described but not given specific names. In the analysis for this study such aggregated categories are treated as single cases. In this way a total of 81 cases have been reviewed.

It should be noted that the information available on the support systems in the cases came from many different sources often recorded at different times. All extension programs are dynamic and so the information recorded in the data set most likely does not represent the current state of affairs for each program. For example, most of the information about the extension programs run by Taiwanese farmer associations came from sources writing in the early 1970's. Therefore, this component of the data set does not refer to the current Taiwanese extension program but instead to how it was structured at a certain point in time. The information about the privatization of the United Kingdom's public sector extension program came from very current sources in 1994.

The data set thus represents cases varying in region, type and across time. This offers rich comparisons, but must be kept in mind as the conclusions are drawn from the data. In-depth field research could take advantage of an historical analysis of support systems for extension programs which was beyond the scope of this study. For purposes of this study the present tense is used to describe the information which presently exists in the data set - not which is presently occurring in the world.

3.2.2 Research Questions

The analysis of the data set is guided by a set of six research questions. These questions are based on the original set of research questions used to create the data set which were somewhat broader in scope. The information found during the creation of the data set (Phase 1) provided answers to questions a,b and e. Progress toward answers or partial answers were also provided for c,d,g,h,i, and j. However, details about how the support systems work, their advantages and disadvantages (k), and the effects they have on incentives (f) were difficult to obtain using the methods of this study. Such detail will need to be investigated more thoroughly through field data collection techniques. However, this study provides the basis for such future field research.

The data set to be used made a bold start but did not answer all the original relevant questions. Therefore, this study (Phase 2) has simplified the research questions in order to make use of the information which was provided. Answering the remaining important questions related to this topic of support for agricultural extension will require a higher level of research effort than is available for this study. However, this study will encourage such future research by setting the stage through the identification of possible research hypotheses to be tested in the field. The research questions used in this study to produce a conceptual framework of analysis of support systems are the following:

1. **What types of extension programs exist?**
2. **Who provides resources to support extension programs?**
3. **What mechanisms are used to generate these resources?**
4. **What mechanisms are used to disburse these resources?**
5. **Which aspects of the program are affected by the mechanisms chosen?**
6. **What are some general structures of support systems for extension programs?**

Answers to these questions will organize the information on what kinds of support systems have been used in extension programs. Such organization will be the basis for the construction of an appropriate conceptual framework to guide future investigations into this topic.

3.2.3 Identifying Variables

The major data analysis carried out in this study is the identification of key variables in the support systems of extension programs. These variables include types of extension programs, sources of support for programs, mechanisms used to generate and disburse those resources, and aspects of extension programs affected by the structure of support systems. These variables are listed and categorized in the process of conceptualizing and presenting models of support used for extension programs. These models are based on the trends found in the existing data set. This conceptualization will be the main product of this thesis and will provide a framework for further analysis of support systems for agricultural extension with implications for other rural development programs as well.

3.2.4 Mapping the Variables

A technique of mapping support systems has been developed. This technique aids in a visual understanding of resource exchanges, flows and linkages of support systems and could be used with other types of resources and rural development programs.

3.2.5 Contribution of the Methodology

The data set brings together specific information about support systems and their structure which has not been consolidated in such a form previously. Simply having focused on these issues while analyzing specific programs provided a sound and grounded basis for constructing a conceptual framework for future analysis of this research topic. The next chapter presents the results of the data analysis.

4. CHAPTER FOUR - SOURCES AND MECHANISMS TO SUPPORT EXTENSION

4.1 Defining Support Systems

Each extension program has its own approach, method, organizational structure, rationale for existence, and support system. A support system is the funding and resource mobilization and allocation process of a rural development program and the institutional arrangements governing that process. Support systems refer to more than financial support. The definition encompasses the mobilization and allocation of all economically oriented resources including both monetary and non-monetary resources needed at all levels to meet the costs of each particular extension system. Other resources like information, personnel and political support are also used in the support of extension programs but are not specifically addressed in this analysis. However, some of the products of this study could also be applied to these other types of resources directly.

A support system has three basic components 1) **sources** of support, 2) resource **generating mechanisms** and 3) resource **disbursing mechanisms**. Describing these three components of each support system in relation to the type of extension program of specific cases offers insight into how support for extension works. It also provides a framework for determining how support systems affect the quality of extension systems. This chapter

describes the types of sources, generating mechanisms and disbursing mechanisms identified in the case data set with supplemental details from cases found in the literature but not necessarily included in the data set.

Many sources of support for agricultural extension have been identified. Sources of support are organizations or individuals which contribute to covering the costs of an extension program. Most extension programs have more than one source of support. Though the list of sources identified remains constant in this study, each source may function differently depending on the case. When discussing sources of support as they relate to an individual extension program they may be referred to as either primary or secondary sources. A **primary source** of support for extension is one which channels resources directly to the functioning extension program. A **secondary source** is one which channels its resources through another intermediary "source" before it actually reaches the functioning extension program. Thus, a secondary source often provides resources to a primary source. Depending on the case, there may be multiple primary and/or secondary support sources.

A cost-sharing dynamic is apparent in some of the cases between a primary and secondary source of support or between two primary sources covering different costs of the functioning program (see Figures 1-10, Chapter 5). For example, in some cases the national government performed as a secondary source which channeled money through a regional government or as a primary source if it supported the extension program directly.

4.2 Sources of Support

Sources of support for agricultural extension can be divided into nine major types. These are "ideal" types and not every source of support for agricultural extension fits neatly into one type. However, these categories represent the major actors involved in supporting agricultural extension worldwide.

A. **National Governments** - National governments in most of the case countries remain the largest source of support for agricultural extension. This category represents resources from any government ministry or department at the national (central) level including ministries of finance and agriculture whose funding processes are governed by nationally legislated fiscal relations.

B. **Regional/Local Governments** - Regional and local governments seem to have varying degrees of importance for supporting agricultural extension. The degree of their importance as a source of support seems to depend on the amount of decentralization defined in the intergovernmental fiscal relations of each country. In some countries it was the responsibility of regional (provincial) or local (municipal) governments to coordinate the delivery of agricultural extension services and so they became the primary source of support for the public sector extension program.

C. **Research and Educational Institutions** - Some research and educational institutions including international research centers, national universities, and local agricultural

centers have their own extension or outreach programs which they support themselves. When these institutions act as a primary source of support for a program they usually rely on a secondary source like the government or international donors for some of the support. The institution may act as a secondary source of support for another extension program by contributing staff or materials to the other program. The amount and mechanisms used for educational institution support for extension have implications for research-extension linkages.

D. Commodity Boards/Parastatals - This category includes government supported parastatals or independent commodity boards focused on the improvement and marketing of a specific product like coffee, tea, cotton, or dairy. These organizations have varying degrees of autonomy, and may provide technical advisory services to their members.

E. Commercial Agribusinesses - For-profit commercial, agribusiness, or service firms, including input suppliers and marketing firms, were identified as sources of support for farm advisory services to promote the effective use of their products, insure quality standards, and foster long-term customer relationships.

F. Local Associations - Many types of community groups which contribute to agricultural extension programs were identified in the data set. Carroll (1992) refers to these as membership support organizations (MSOs). Local organizations which contribute to agricultural extension programs include professional groups, unions, community development associations, neighborhood groups, and voluntary marketing cooperatives.

G. Farmers - Individual farmers provide their own support for agricultural extension programs either by paying directly for technical services or contributing cash, labor, housing, time or materials to extension programs which serve their needs.

H. **International Organizations** - Bilateral, multilateral and financial lending institutions were involved in supporting many of the agricultural extension programs in the data set. The development banks often function as a secondary source of support by lending to national governments for extension programs. Bilateral or multilateral donors function either as primary or secondary sources of support. The cases analyzed indicate that many developing countries rely heavily on outside funds to run their public sector extension programs.

I. **Non-Governmental Organizations** - Both international and local (intermediary) non-governmental organizations were involved in providing support for some of the agricultural extension programs represented by the case data set.

4.3 Generating Mechanisms

The different sources which support agricultural extension use many types of mechanisms to generate their resources. Some of these mechanisms are under the control of the organizations providing the support and others like taxes or levies may be outside the organizations' control until disbursement. For example, in most of the public sector programs the national ministry of agriculture relies on general revenue tax money for its agricultural extension budget but may have little control over the tax design or collection. The generating mechanisms identified in the cases are grouped as **4.3.1 Public Revenue Generation, 4.3.2 Commercial Revenue Generation,** and **4.3.3 Local Resource Mobilization**.

4.3.1 Public Revenue Generation

Funds for public sector agricultural support services including extension often come from general revenue taxes. The amount and level of public revenue available for extension is closely tied to the intergovernmental fiscal relations of each country and relates to the assignment of revenue and expenditure. The revenue base for various levels of government should determine the level at which extension service responsibility is assigned emphasizing the lowest level possible for accountability reasons. Of course, all tax revenue and expenditure issues are intricately tied to the political and cultural environment in each country. The existence of public revenue as a generating mechanism is generally illustrated by the cases.. The public revenue generating mechanisms identified in the cases are: *4.3.1.1 taxes, 4.3.1.2 revenue sharing arrangements*, and *4.3.1.3 return on public assets*.

4.3.1.1 Taxes

National, regional and local taxes both general and special purpose provide revenue which may be transferred or expended on agricultural extension programs. The use of general public revenue taxes to support extension is specifically mentioned in the Zambia, Poland, India and U.S. public sector cases. However, it

is likely that general revenue taxes are a generating mechanism for most of the public sector programs in the data set.

Regarding special purpose taxes, some governments legislate that a certain percentage of a specific tax will go to rural development and extension programs. In Colombia, for example, 50% of the total revenues the central government collected in 1992 from the National Sales Tax was transferred to municipalities. A large portion of these funds were to be used for rural development investment which could include extension depending on the needs of each municipality (World Bank, 1990d). A percentage of crop taxes collected based on annual production goes to support public sector extension in China (World Bank, 1993d), the Netherlands, and France (Ameur, 1994). A tax based on size of land holding is a generating mechanism for Chamber of Agriculture based extension in the Netherlands and France (ibid.). In the U.S., several states have a property type tax which is collected specifically to support the Cooperative Extension Service (Woods, 1994).

4.3.1.2 Revenue Sharing Arrangements

Revenue sharing mechanisms are used by central governments to encourage higher tax collecting efforts at lower levels. This mechanism is directly tied to government transfers which are discussed above. Formula transfers may be linked to revenue origin where sub-national governments which generate more tax revenue will

have more revenue returned through transfers. In China, a new system began in 1994 where 50 percent of central revenues from VAT, resource taxes, and securities exchange taxes are returned by origin (Shah, 1994). The previous system in China was called the Provincial Overall Contracting System. Negotiations with the central government determined a fixed amount of revenue to be transferred up from the provinces annually (Shah, 1994). In Nigeria, states are heavily dependent on the revenue sharing arrangements with the federal government with 80 percent or more of their budgetary resources generated this way (World Bank, 1993c). Such a high dependence on federal money implies the states have not been able to mobilize their own resources or increase their tax base. Revenue sharing is a generating mechanism for support of agricultural extension to the extent that it encourages local tax effort and resource mobilization for the operation of public sector extension programs.

4.3.1.3 Return on Public Assets

In some of the cases such as Poland, publicly held assets like land, buildings, and equipment. produce revenue which is added to discretionary funds of local, regional and national governments. These discretionary funds may then be allocated to the provision of agricultural extension services at various levels. Public assets may also be contributed in kind by local governments to an extension program as in Colombia and the U.S. In the U.S. it is always the county's responsibility to provide office space to the Cooperative Extension Service.

4.3.2 Commercial Revenue

Commercial revenue in various forms is another type of generating mechanism used to support agricultural extension programs. Four commercially oriented generating mechanisms for extension were found in the data set. They are *4.3.2.1 user charges, 4.3.2.2 commercial enterprise revenue, 4.3.2.3 commodity levies,* and *4.3.2.4 interest earnings on credit.* Commercially oriented does not necessarily mean these are only used by the private sector. In fact, public sector programs are increasingly relying on these types of generating mechanisms for support.

4.3.2.1 User charges or Fees for Service

User charges are the main generating mechanism for private for-profit advisory firms, but they are also used to support many other types of extension programs. User charges are often one of many generating mechanisms used by farmer associations and national extension programs.

In Argentina, the SANCOR Dairy Cooperative, the Argentine Association of Agricultural Experimentation Groups (AACREA) and other rural cooperatives all make use of charges for some services provided by the agents they hire as a group (Umali and Schwartz, 1994; World Bank, 1989). Centres d'Etudes Techniques

Agricole in France on which the Argentine AACREA groups are based also make use of user charges. In Chile, a group of farmers involved in a USAID project hired their own extension agent (Rogers, 1987). The Kenya Planters Cooperative Union also hires its own extension agents and charges individual farmers for advisory services. Producer groups in China hire local farmers with recognized expertise on a fee for service basis (Delman, 1988). Grape growers in India hire their own agronomists as do women's groups seeking advice on sericulture (Antholt, 1994). The Chambers of Agriculture in France use fees for service as one of a variety of mechanisms to generate support for their extension programs.

In some countries such as the U.K., The Netherlands, Mexico, New Zealand and Australia, public sector extension programs are instigating user charges for certain services formerly provided free of charge. The change to fees for service has been motivated by government financial constraints in the U.K., New Zealand, and The Netherlands. In 1982, the government of Australia directed that a fee of $20 per hour be charged for advisory services provided to producers if they received a substantial benefit from the service (Walker, 1993). In Mexico, the introduction of user charges is tied to farmer income levels with medium and larger farmers required to cover a higher percentage of the overall cost of extension programs than lower income farmers (Wilson, 1991). The public sector program in Zambia is still mostly supported by government revenue however, they do charge for some services such as training and engineering services in irrigation and agricultural mechanization (Spurling, 1994).

Veterinary services are often supported by user charges whether they are provided by a farmer association or a national extension service. The Anand Milk Union Limited, a cooperative, in India charges directly for its veterinary services. District level farmer associations in Taiwan also charge for the veterinary services provided to their members (Stavis, 1974). In Turkey, farmers pay for services like vaccinations and soil testing in both private and public sector extension programs.

4.3.2.2 Commercial Enterprise Revenue

Private businesses in many countries provide technical services to client farmers paid for out of company revenues or as a percentage of the price paid to farmers for their production. Some of these businesses in Kenya, Turkey, and Mexico fund technical services as part of their commercial contract farming agreements (de Janvry et al., 1987). In Burkina Faso, the Compagnie Francais pour le Developpement de Fibres Textiles (CFDT) functions like a French Government consulting firm and funds extension activities having to do with the production of cotton (World Bank, 1990a). In The Netherlands and the U.S., technical advice often accompanies the sale of inputs. Farmers are sometimes willing to pay a higher price for products which come with technical advice. In the U.S. commercial firms make contributions to the Cooperative Extension Service and often like to support special programs which apply to their commercial interests (Woods, 1994).

Other sources of support for agricultural extension programs generate some of their funds through commercial activities. In China, Taiwan, and historically in the U.S. farmers associations are involved in all sorts of commercial activities like input supply, marketing, processing and storage services, the profits of which fund their extension services. They also receive commission on services rendered for the government such as land tax collection, crop quota collections and storage and handling fees (Stavis, 1974). In India, the Anand Milk Union generates funds for extension through the local sale of milk. In Poland, the public sector extension program receives a large proportion of its funds from the production on state run farms and a smaller amount from the sale of publications and charges for accommodations at training centers (World Bank, 1990e). Some forestry extension programs such as in Kenya raise funds through royalties on forest cutting, the sale of seedlings and other nursery services (World Bank, 1990b).

4.3.2.3 Commodity Levies

Some of the more efficient agricultural extension programs represented in the cases generate their funds through commodity levies. Levies can provide a relatively stable and at least predictable source of funding for both research and extension activities based around a commodity. The Colombian Coffee Federation receives its funding this way as do the Kenya Tea Development Authority (KTDA), Kenya Planters Cooperative Union (coffee) and the National Institute for Agricultural

Technology (INTA) in Argentina (wool) . The Coffee Federation actually collects the tax (levy) itself and the revenue never enters the national treasury (McMahon, 1992).

These organizations have their own extension programs known for their efficiency, effectiveness and quality of organization. The Coffee Federation and the KTDA both include small producers in their extension efforts. The KTDA even targets them because of their comparative advantage over large farms for quality tea production. Small to large private producer groups in India and The Netherlands also use commodity cesses or crop marketing charges to fund extension programs as does the Australian meat industry. The use of this mechanism, however, is usually limited to commodities which are highly profitable and/or exported.

4.3.2.4 Interest Earnings on Credit

Extension programs in Chile, China, Nigeria, Kenya, Zambia and Taiwan, including both public and private technical services, are linked to credit provision. The interest earned on credit by farmers associations, or community groups generates funding for extension programs. In a World Bank (1994) review of completed extension programs it was found that extension supplied as an adjunct to a credit delivery program was usually associated with technology adoption by the clientele.

In the FAO supported People's Participation Program in Kenya, local group savings are tied to credit by requiring that 10% of any approved credit be deposited

into a group savings account. This link has helped to maintain an unusually high repayment rate. The FAO, PPP program in Zambia similarly has a credit component in which a guarantee fund is set up with a local banking institution to provide credit to farmer groups (McKone, 1990). The Tiv Farmer Associations in Nigeria provide both credit and extension services to their members (Uphoff, 1986). Interest earned on credit provision is also a major generating mechanism for support of farmer associations in Taiwan. In fact, the government often uses the amount of deposits made to a farmer association as an indicator of its success in the community. Interest rates on both loans and deposits are regulated by the Taiwanese government (Stavis, 1974). In Mexico, credit and insurance institutions are required to pay the public extension service administration directly for the technical support provided to their sub-borrowers as part of a subloan conditionality (Wilson, 1991). The PTTI program in Chile targeting medium to large scale farmers was designed to recover 15% of the cost of extension services from the farmer and these charges could be financed through INDAP credit (World Bank, 1990c).

4.3.3 Local Resource Mobilization

Local resource mobilization includes both formal mechanisms which are an acknowledged source of resources for agricultural extension programs and informal mechanisms which may not be acknowledged but still affect programs. Information on the informal mechanisms used by farmers to influence extension programs is scarce in the data set

but some of the more obvious and frequently occurring mechanisms are included in the descriptions below. The generating mechanisms identified in the case data set which can be considered local resource mobilization are *4.3.3.1 membership contributions*, *4.3.3.2 income generating activities*, *4.3.3.3 revolving funds*, *4.3.3.4 in-kind contributions*, *4.3.3.5 informal charges*, *4.3.3.6 volunteerism*, *4.3.3.7 sharecropping*, *4.3.3.8 bonuses*, and *4.3.3.9 agriculture shows*.

4.3.3.1 Membership Contributions

Many local and regional associations collect membership fees which go toward paying for agricultural extension activities. The importance of membership contributions vary by group. Membership fees are collected by farmer associations/producer groups in Argentina, Taiwan, China, U.S., Netherlands, France, Germany, Indonesia, India, and Nigeria but may also be collected by other special interest community groups, as in Zambia.

4.3.3.2 Income Generating Activities

Community groups engage in various income generating activities to increase group savings and pay for needed services. These funds are similar to revenue from commercial enterprises, but they tend to be done on a smaller scale and a more ad hoc

basis. The activity through which the income is generated is not always related to its expenditure. For instance, women's groups in Zambia may raise money from production on a communal garden and use the money to obtain new cashew production technology. Activities include production on communal land, craft production and sale, renting out communal assets etc. The Gwembe Valley Agricultural Mission (GVAM) assists community groups with cooperative stores and grinding mills in order to cover local costs of extension activities (Copestake, 1990). Forest Protection Committees in India generate income through community management and profit sharing of degraded government forest land. This income generating activity is supported by national legislation though the exact percentages of income shared with the communities is decided by individual states (Banerjee, 1994).

4.3.3.3 Revolving Funds

A revolving fund can be considered both a disbursing mechanism and a generating mechanism. It can be used by grassroots organizations concerned with program sustainability. As a generating mechanism, it belongs here under local resource mobilization, because it helps individuals with loans to increase their resource base. It could also have been listed under external assistance, because some international or local NGOs set up these funds with an initial grant. In some cases, this type of revolving fund becomes an informal local credit institution in which repayment is based on group pressure and loyalty as in the PPP programs in Kenya and Zambia.

Revolving funds are based on cash and also in-kind resources. Se Servir de la Saison Seche en Savanne at en Sahel (6-S) is an NGO working in Senegal, Mali and Burkina Faso which helps village groups set up revolving funds like cereal banks (Umali and Schwartz, 1994). In Indonesia, the Ciamus Program makes small initial contributions of capital, seeds, fertilizers, pesticides and equipment which farmers repay in revolving fashion to make resources available to other communities (Terrant and Poerbo, 1987). These funds can be used for various rural development activities including agricultural extension. They function especially well when strong community groups exist.

4.3.3.4 In-Kind Contributions

Often the only potential that resource poor or subsistence farmers have to contribute to an extension program is through in-kind contributions. These include materials (land, supplies, equipment, food, etc.), labor, housing, and transport. In the GTZ program in Kenya, farmers make in-kind contributions to help cover the national extension program's operating costs (Foik, 1994). These types of contributions may be used informally by individual farmers to obtain services or influence extension agents. For instance, when housing is provided to extension agents by community members as in Zambia, the family providing the housing may get more attention from the agent than other farmers. Local elite can use these types of contributions along with money to maintain control of an extension agent's time.

Other organizations providing support for extension may also use in-kind contributions. NGOs contribute transport for public sector extension agents in Zambia (Copestake, 1990). The Ciamus Program in Indonesia makes initial in-kind contributions of seed and fertilizer to establish revolving funds based on these types of resources (Terrant and Poerbo, 1987). The national government of Korea contributes materials to communities for program use as in the successful Sameul Undong movement (Chung and Dong, 1984).

Another interesting example of a transport contribution is an experiment beginning in Ecuador. The Inter-American Development Bank (IDB) and the government have made an agreement with a farmers association (FA) to give them all the extension service's vehicles. They feel that giving the control of transport to the FAs will increase the extension agents' accountability to the farmers (Echeverria, 1994). The government and IDB will fund salaries for three years and then leave it up to the FAs to decide if the agent is worth funding. In-kind contributions may also be included in commercial contract agreements between farmers and agribusinesses as in Mexico (Rama, 1985).

4.3.3.5 Informal Charges

Farmers pay for extension services on an informal basis in some of the cases analyzed. These informal charges are sometimes made by individual farmers to public

sector extension agents. Details of exactly what these charges were are not found in the data set but their existence was mentioned.

4.3.3.6 Volunteerism

Sometimes the only asset available to poor farmers especially women is their time. The more critical their situation, the more valuable their time becomes. Often the survival of their families may depend on its effective use. In many cases, such as in Indonesia, Kenya, France, the U.S. and India farmers volunteer their time to be extension agents themselves with farmer to farmer extension approaches or to assist another type of extension program. By contributing their time farmers are usually contributing a resource of value to them and this contribution should not be underestimated. In Indonesia, World Neighbors, working through an intermediary NGO, compensates farmers assisting in farmer to farmer extension activities according to the cost for them to hire labor for that time period (Wodicka, 1994). Thus, the farmer is still volunteering but is not "out of pocket".

4.3.3.7 Sharecropping

In Ecuador, extension agents sharecrop with farmers for profit (Van Crowder, 1991). Agents usually choose small semi-commercialized farmers to work with and

they provide the land and labor while the agent supplies agricultural inputs and technical advice. The agent can obtain the needed inputs on credit because he/she has a salary. Hired labor and plowing costs are shared. Some agents sharecrop with multiple farmers with multiple crops and use the plots as demonstrations. It is usually not difficult for agents to find farmers willing to sharecrop (Ameur, 1994).

4.3.3.8 Bonuses

Farmer-contributed bonuses are the basis (along with a government salary) of supporting extension agents in China. Farmers and extension agents form a contract which states yield targets to be reached along with the methods and times for providing technical advice. The extension agent typically receives 20% of the value of the crop above the agreed target (50% of which is remitted to the extension service). If the harvest falls below the agreed target because of poor technical recommendations or non-supply of timely inputs, the bonuses intended for the extension workers may be docked up to 80 percent of the shortfall. The system works well for farmers needing to obtain scarce inputs which the agent supply. However, subsistence farmers with little hope of commercial gain at harvest are mostly unwilling to enter into such agreements.

4.3.3.9 Competitions/Agricultural Shows

Competitions at fairs and agricultural shows can be effective in mobilizing local resources for extension activities as in Kenya, Zambia and the U.S.. Entry fees are charged. Information is shared in this way and people benefit both from the activities at the show and the interaction with other farmers involved. In the U.S., the 4H system for youth has a large competition component which mobilizes community resources as well as private sector support.

4.4 Disbursing Mechanisms

Various resource disbursing mechanisms were also identified either in the case data set or the literature review on agricultural extension. The disbursing mechanisms identified fall into two categories: **4.4.1 Government Transfers** which govern public sector disbursement, and **4.4.2 External Assistance** which are mechanisms most often used by outside donors. Following is a brief description of these disbursing mechanisms which, together in various combinations, make up a component of the support systems for agricultural extension programs.

4.4.1 Government Transfers

Most public sector agricultural extension programs receive the majority of their funding through government transfers which are defined by the budgetary and fiscal arrangements of national governments. Different types of government transfers serve different purposes and exercise varying amounts of control from the top. Four types of transfers have been identified in the cases and can be grouped as; *4.4.1.1 block transfers*, *4.4.1.2 earmarked transfers*, *4.4.1.3 matching schemes*, and *4.4.1.4 financial responsibility agreements*.

Scholars (Shah, 1994) claim that the design of transfers should support the level of government responsible for providing extension services which varies across countries. For example, in Indonesia, Egypt, Burkina Faso, Zambia, and Kenya the central government remains responsible for providing extension services nationally. Sub-national governments have the main responsibility in India, Nigeria, Korea and Taiwan and in Colombia and China local governments are the focal point for public sector extension service delivery. The U.S. has a system of cost sharing between national, state and local governments which also share the responsibility of providing extension services. When sub-national governments have the main responsibility for decision making the literature suggests that the transfer system should support financial autonomy at that level either through untied block transfers, revenue sharing, or policies which work to increase the tax base at that level.

Though details of the transfer systems used in the cases analyzed were not conclusive there were some indications of the challenges facing local governments. Problems arose in the

Philippines and Nigeria when functions and decision making were devolved to lower level governments without a corresponding decentralization of fiscal control. Indonesia, Mexico, Colombia, Zambia and the Philippines are in the midst of reforming their intergovernmental fiscal relations through decentralization initiatives and any such changes require time to implement. The results of these initiatives and their implications for agricultural extension should be explored further.

Following are descriptions of the four basic transfer mechanisms used by governments and identified in the cases. There are many variations and combinations of these basic types and a thorough discussion of them is beyond the scope of this paper. Brief descriptions of those represented in the data set can, however, contribute to a broad understanding of government transfers in the context of support systems for extension. Though only a few of the public sector cases analyzed mentioned the transfer system specifically, it can be assumed that most of them use an intergovernmental transfer system of some sort to control government resource disbursement.

4.4.1.1 Block Transfers

In nearly every country analyzed, sub-national governments receive block grants of money from the central government to provide public services like extension assigned to their level. The allocation of these block transfers varies by country as do their importance to the extension program depending on the availability of other resources. Some governments like China negotiate these transfers with each regional

government. Others like the U.S. use a formula to disburse at least part of the available funding to sub-national governments to carry out agricultural extension programs. The U.S. formula to allocate funds to states for extension uses a combination of 40% based on rural population, 40% on farm population, and 20% equal portions to each state.

For the U.S. system, "formula funding permits consistent, stable, dependable and reliable programming but still retains options for flexibility. Although categorical [earmarked] funding has been effective in meeting specific needs, the success of categorical programming has been greatly enhanced by the basic program capacity which has drawn its support from federal formula funding, matched and usually exceeded by state appropriations" (Cooperative Extension Service, 1982: 2).

There are many variations on formula transfers of general revenue which are not tied directly to extension. In Nigeria, 45 percent of central revenues are shared with states and municipalities through transfers. Population, primary school enrollment, and internal revenue effort based on minimum responsibilities are formula factors used to share national revenue with states. Transfers to municipalities are based 25 percent on equal shares to recognize minimum needs and 75 percent on population (World Bank; 1993c). These funds are generated through a revenue sharing arrangement which is a mechanism discussed earlier. In India, population and some measure of relative income are used to return a significant proportion of national revenue to the states. Population, land area, equal shares, and ethnic derivation are factors used in the Philippines (Shah, 1994). A portion of these transfers received at lower levels may be used as funding for

agricultural extension depending on the responsibilities of assigned expenditure and service provision at each level in an intergovernmental fiscal system.

4.4.1.2 Subsidies

A type of government transfer which works almost exactly like a block transfer is a subsidy. Subsidy is the word used in five of the cases to refer to government contributions to various levels of an extension program. Interestingly, in four out of the five cases using the term subsidy, control was also mentioned in tandem. In Taiwan, the provincial subsidies to the extension programs run by farmer associations were designed to maintain some control over the program by the government (Axinn and Thorat, 1972). Subsidies used by the Dutch government to support extension are seen as a reduction to former government support through block transfers. Similarly, French regional and local governments subsidize the Chambers of Agriculture providing extension services to farmers in France (Ameur, 1994). Subsidies from regional and local governments to Chambers of Agriculture based on the French system are also being suggested for a soon-to-be reorganized extension service in Poland (World Bank, 1990e). Finally, in the U.S. the Cooperative Extension Service continues to subsidize Farm Management Associations in some states in order to stay involved with them and have access to the valuable information they produce for farmers (Woods, 1994).

4.4.1.3 Earmarked Transfers

Earmarked transfers are funds tied to special programs or, in the case of extension, certain activities. These were found in U.S., Taiwan and Zambia cases. Economic theory provides some justification for earmarking which can protect high-priority programs from shifting majorities, inefficiency, and corruption. However, there is debate over how often these should be used, if at all. McCleary (1994) presents a discussion on the pros and cons of earmarking government revenue and expenditure and concludes by cautioning against the practice except under certain defined and restrictive conditions.

The public good and poverty alleviation aspects of agricultural extension programs make earmarking attractive to national governments in order to protect services from local elite domination and maintain quality standards. However, these objectives may come at the cost of efficiency and the positive use of earmarking will vary according to which level maintains the motivation politically to address poverty issues. Earmarking increases control from above and decreases local autonomy in decision making. In the U.S. system, local autonomy is great with decisions made at the county and state levels. The importance of federal funding has been decreasing in relation to funding from the states. In order to maintain some amount of control which would otherwise be diminishing federal earmarking of funds has increased (Woods, 1994).

4.4.1.4 Matching Schemes

Matching schemes are used to increase both revenue and expenditure for agricultural extension. The matching concept can be used on all sorts of transfers as well as outside grants and loans. In designing matching schemes for government the revenue base and political environment of local governments must be considered. In the U.S. and Colombia local governments have met and even surpassed national matching requirements for agricultural extension. In other places, which lack local resources, where the economy may not be significantly monetized, or where farmers do not have a significant political voice, local governments may not be able to generate needed funds to meet outside matching requirements for agricultural extension support.

4.4.1.5 Financial Responsibility Agreements

Government transfers may also be governed by agreements negotiated between levels of government which function as contracts for the provision of services. A good example are the co-financing matrices being used in Colombia between the national government and municipalities who have primary responsibility for providing agricultural extension services. These matrices can be complex and use a combination

of formulas for equalization between municipalities as well as matching schemes and negotiations. Once in place, however, the agreement functions as a contract.

These can also be used between government and private sector extension providers. In the case of Chile, INDAP (the government department responsible for extension) contracts with CTTs (Technology Transfer Consultant Firms) which can be for-profit firms, NGOs or farmer cooperatives. A public bidding process is used after which contract agreements are reached between INDAP, the CTT and farmers. To allow flexibility in its relationships with the CTTs, INDAP has developed two "modalities" for these agreements. One includes co-financing with the CTT which then allows it to have greater autonomy in decision-making and planning. In China, the national government contracts with provinces, municipalities and autonomous regions for the implementation of its extension programs. National funds are used mostly for technical training, production and distribution of technical materials, observations and recording in demonstration plots in order to replicate results elsewhere. In New Zealand, the federal government now contracts with the newly commercialized Advisory Services Division now called MAFTechnology to provide extension services. MAFTechnology now receives only 10% of its revenue from the Ministry of Agriculture and the rest from its own revenue generation.

4.4.2 External Assistance

Four disbursing mechanisms tend to be used by outside donors to support agricultural extension programs; *4.4.2.1 grants, 4.4.2.2 loans, 4.4.2.3 contracts*, and *4.4.2.4 development funds*. These mechanisms are also used by other local sources of support and the private sector for programs but have special relevance to outside donors. The fact that these disbursing mechanisms tend to be used by sources of external assistance makes financial sustainability a major concern with their use.

4.4.2.1 Grants

The grant mechanism seems to be most preferred by bilateral and international NGO donors to support agricultural extension. Money is given to government agencies, intermediary NGOs or community groups to support extension efforts in Chile, Colombia, Kenya, Burkina Faso, Zambia, India and Taiwan. Much of the budget for the Agriculture and Livestock Ministry of Kenya comes through grants from bilateral donors tied to specific projects. This makes the project selection process less rigorous than it might be otherwise (van Blarcom et al., 1993). The extension component of the Kenya Forestry Development Project run through the Department of

Forestry in Kenya is also supported 14% by a grant from the Swiss Development Corporation (World Bank, 1990b).

Even those donors most committed to promoting self-sufficiency and sustainability of extension efforts have met with limited success in overcoming the dependency implications of grants. The FAO is promoting their People's Participation Program as a solidly participatory approach to extension which focuses on grassroots group initiatives. Two PPP programs are represented in the case data set in Kenya and Zambia. Groups are formed with the assistance of group promoters which are paid by project (grant) funds. The intention is that the groups will become self-sufficient through savings and access to credit. Some groups have achieved relative self-sufficiency but dependence on group promoters remains an obstacle to sustainability.

Similar challenges tied to using grants are faced by NGOs working toward self-sufficiency at the grassroots. Grants are used by NGOs to support extension efforts in four of the cases analyzed. In Chile, almost all the funding for local NGOs comes from grants from European or North American agencies (Berdegue, 1990). Six S, an NGO in Burkina Faso, supports farmer organizations through grants tied to specific projects (Umali and Schwartz, 1994). Global 2000, an NGO operating in Zambia provides grants to the Zambian Agriculture Department for demonstration plots. Also in Zambia, the Gwembe Valley Agricultural Mission (GVAM) receives external funding as grants from Harvest Help, a British NGO (Copestake, 1990).

Competitive grants are also used by public sector organizations in charge of providing extension services. INDAP in Chile uses a competitive public bidding system

to elicit private provision of extension services. McMahon (1992) suggests the use of grants based on competitive bidding as a way to improve efficiency of public funding for agricultural research. Spain set up a National Fund for Scientific and Technical Research to complement the traditional vertical allocation of funds from ministries and other federal agencies. Most funding is still channeled through ministries to research organizations but the Fund channels additional funds on a competitive basis through priority programs of a national plan (ibid.). Similar mechanisms may be applied to funding both research and extension.

4.4.2.2 Loans

Loans are also used to support agricultural extension programs. The great majority of these are made by the large international lending institutions to national governments. The World Bank has been the largest donor to agricultural extension programs around the world with its promotion of the T&V system. Eight national public sector extension systems represented in the data set are supported by World Bank loans. Often the funds are borrowed by the central government and then passed on to other ministries or sub-national governments through grants.

Loans are also used by other sources of support for extension programs. In Chile, the Agricultural Development Institute (INDAP) receives loans from the National Government via the Central Bank to support the technology transfer and rural credit programs it runs (World Bank, 1990c) INDAP in turn loans money to farmer

cooperatives at times to enhance their extension services (Berdegue, 1990). The government of Taiwan has also made loans to farmer cooperatives to support extension activities (Axinn and Thorat, 1972).

4.4.2.3 Contracts

Contracts are used by sources of support to reach agreement over who is responsible for which resources in the provision of extension services. Contracts are basically the same as financial responsibility agreements discussed under government transfers. The difference here is that these contracts are not only used by national governments but by many types of sources of support for extension. Bilateral donors contract with governments as in Zambia or NGOs as in Kenya and India. The FAO's PPP Program is an example of a tripartite contract agreement between the government of the Netherlands, the FAO and a local NGO, Partnership for Productivity Foundation (FAO, 1986). International NGOs contract with intermediary local NGOs as in Indonesia, India, and Kenya.

Most cost sharing arrangements found in the cases are governed by contracts which determine financial and other resource disbursements. Contracts are also used between farmer or community groups and extension agents as in China and The United Kingdom. The U.S. Cooperative Extension Service sometimes contracts its services out to other federal agencies outside the U.S. Department of Agriculture such as the Environmental Protection Agency and the National Science Foundation.

4.4.2.4 Socioeconomic Development Funds

Increasingly, donors such as the World Bank and the Inter-American Development Bank are supporting governments in setting up special funds to support grassroots activities. These funds often known as Socioeconomic Development Funds (SEDFs) sometimes address agricultural extension. They are designed to allow communities to decide on which programs should be done. If the community decides it needs agricultural information then an agricultural extension program may be set up. SEDFs are in some ways apex institutions, serving as intermediaries between governments, donors, and communities (Marc, 1992). The "Development Funds" such as those found in Colombia and Mexico are designed to be a funding mechanism which facilitates access by grassroots organizations to government and donor funds.

This chapter has categorized and described the sources, generating mechanisms, and disbursing mechanisms found in the case data set which form support systems for agricultural extension. The next chapter will illustrate how these components fit together in 10 representative sample cases. These cases will be mapped showing the combinations of mechanisms used to support each program. They will also be categorized according to important management issues for the quality of extension programs which the support systems were designed to address. This categorization along with the mapping system shows potential relationships between the mechanisms used and the issues addressed in each cases. These relationships form

a conceptual framework for analyzing support systems and provide the basis for the hypotheses proposed for future research.

5. CHAPTER FIVE - SUPPORT SYSTEMS; MAPPING, ISSUES, MODELS AND HYPOTHESES

5.1 Mapping Support Systems

The components of support systems for agricultural extension were defined and described in Chapter 4. The analysis of support systems through the review of the case data set has led to the development of a method for visually representing the interaction of support system components. Three components of support systems have been identified in this study: sources of support, resource generating mechanisms, and resource disbursing mechanisms. The definitions of a support system and its components are listed again for reference along with the symbols used in the support mapping process to represent each component.

5.1.1 Definitions

Support System - The resource mobilization and allocation process of a rural development program and the institutional arrangements governing that process.

Source of Support - Any individual, group, organization, or institution providing either monetary or non-monetary resources to support the activities of an agricultural extension program.

Nine ideal types of sources were identified in the data set. It became apparent that these "sources" acted differently depending on the case. Therefore, a further distinction was made between a Primary Source of support and a Secondary Source.

Secondary Source - Any individual, group, organization, or institution which channels its resources through another intermediary organization before they actually reach the functioning extension program.

Primary Source - Any individual, group, organization, or institution which channels its resources directly to a functioning extension program.

Generating Mechanism - Any method used to generate resources which support an agricultural extension program.

Disbursing Mechanism - Any method used to disburse resources which support an agricultural extension program.

These symbols can be used to illustrate how the various Sources, Generating Mechanisms, and Disbursing Mechanisms identified and described in Chapter 4 interact in the support systems of specific cases. The general model is presented below.

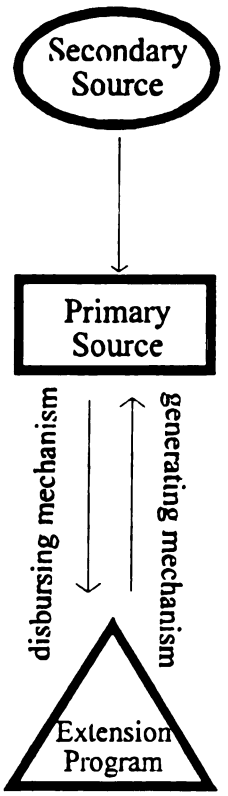

Figure 1 - General Model for Mapping Support Systems

5.1.2 Linkages

The arrows of this mapping system represent the generating and disbursing mechanism components of support systems as defined in this study. They also represent resource linkages and transactions between institutions (sources of support) as defined by Esman (see Chapter 2, p. 21). They may represent enabling linkages if they are between two organizations on one authority hierarchy; for example a national government and a regional government. They may represent functional linkages if they exist between two organizations which have access to different types of resources and therefore need each other. Normative linkages may also be represented if the arrows connect two organizations trying to achieve similar social purposes through resource sharing. Finally, diffuse linkages are also represented by this mapping system where two groups or individuals are sharing resources but are not formally associated.

Though all the linkages represented in this study are based on the sharing of resources they may imply the existence of other types of linkages and collaboration i.e. advocacy, training, management etc. between the same organizations participating in a cost sharing arrangement.

5.1.3 Variations

5.1.3.1 Proportions

The information on support systems contained in the data set was sufficient to identify the types of mechanisms used to support agricultural extension. However, the case specific information usually did not detail the amounts or proportions of resources coming from each source. Therefore, in this study all of the symbols representing sources of support, both primary and secondary are the same size. However, if this mapping technique was applied to more in depth investigations of specific programs then the symbols could vary in size according to the amounts generated and disbursed by each source of support. This could be very helpful in determining the degree of autonomy of some organizations as well as their reliance on outside sources of support. A visual representation of this could indicate the degree of financial sustainability to be expected from specific programs.

5.1.3.2 Other Types of Resources

The mapping system here is used for economically oriented resources including both monetary and non-monetary resources. This type of mapping technique could also be applied to other types of resources like information or political support. Sources of information could be identified and the flow of

information mapped through institutional linkages and varying sizes of source symbols.

5.2 STRATEGIES AND MECHANISMS

The wide variety of source and mechanism combinations found in the cases make it inappropriate to present generic models of support systems as they so rarely would reflect reality. However, the support systems of certain cases often were specifically designed to address some of the relevant issues in agricultural extension program management described earlier. The issues addressed by specific cases are:

5.2.1 Institutional Pluralism

5.2.2 Financial Sustainability

5.2.3 Privatization

5.2.4 Decentralization

5.2.5 Accountability

5.2.6 Local Resource Mobilization.

Therefore, the following section will use the mapping system described above to illustrate specific support systems which serve as models for the issues relevant to agricultural extension program management. These models are not intended to provide the "only" or even the "best" ways to approach these issues in program management.

They should, however, provide a conceptual framework for analyzing support systems and insight for managers seeking to address these issues in their own programs. Knowing what has been tried is helpful for managers trying to develop support systems which are useful in their specific contexts.

Along with the illustrations, discussions of the mechanisms used in each model will be presented. There is little evidence in the data set about the extent to which these models actually achieve their intended goals. The models simply show how some programs are combining the variables of their support systems as an attempt to address certain issues. The models also point to many hypotheses about the relationship between the mechanisms used and the issues listed which could be tested in future field research. Some of these hypotheses will be presented after the discussion of each issue.

5.2.1 Institutional Pluralism

Review of the literature on agricultural extension found that many scholars (Ameur, 1994; Amanor and Farrington, 1991; Antholt, 1994; Farrington, 1994a) agree that more institutional pluralism should be encouraged in the management of extension programs. Many encourage public sector policymakers to allow the proliferation of private sector extension programs through commercial firms, NGOs, or farmer associations (Ameur, 1994; Umali and Schwartz, 1994; Uphoff, 1995). The first stage in effective institutional pluralism is an understanding of the capacity of the various organizations running extension programs to collaborate.

A few cases in the data set are particularly illustrative of some kinds of institutional pluralism and collaboration. Each program uses different combinations of sources, generating mechanisms, and disbursing mechanisms. However, each case illustrates a specific cost sharing arrangement which implies collaboration. All of these cases represent resource linkages, either horizontal or vertical, and show which mechanisms are chosen for each type of collaboration. The different forms of collaboration represented in these sample cases are: **5.2.1.1 Public Sector/NGO, 5.2.1.2 Public Sector/Farmer Association, 5.2.1.3 Public Sector/Commercial Firm,** and **5.2.1.4 Collaboration through Training.**

5.2.1.1 Public Sector/NGO Collaboration

A good example of collaboration between the public and private sectors exists in Chile. The Instituto de Desarollo Agropecuario (INDAP) is an agency within the Ministry of Agriculture given the responsibility for the provision of extension services nationally (see Appendix A). INDAP uses a public bidding system to contract the provision of extension services out to private firms. This seems to be a successful means of decreasing costs to the government of providing extension services and provides a collaborative framework between the public and private sectors (Figure 2).

In 1993, the total cost of the PTT program was US$18,071,674 or approximately US$360/family. Of that amount, 81.37% went to the CTT (Technology Transfer Consultant Firm) as payment for services to farmers, 11.28% was used to pay

honoraria for private agronomist or field supervisory staff, 3.86% financed training for CTT personnel, 2.37% paid the salaries and social benefits for the 66 INDAP employees in national and regional offices, and 1.1% was for INDAP's fixed and variable administrative costs associated with PTT. Only US$ 628,894 was used to finance recurrent costs which equals US$12.6/family (Berdegue, 1994). According to Berdegue, the government subsidy per family in 1983 was 80% higher than in 1993 showing marked improvement in cost efficiency (ibid.).

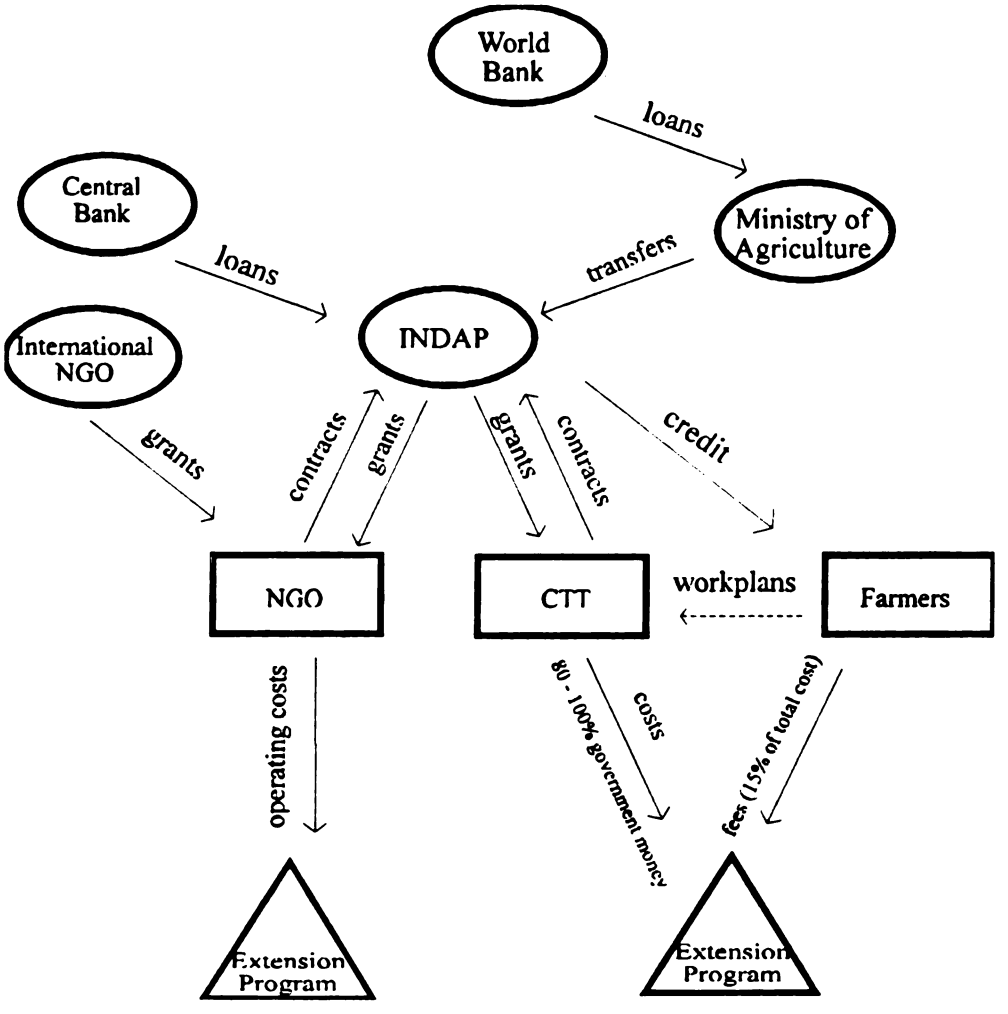

Figure 2 - Chilean Public/Private Contracting - See Appendix A for written case description.

Initial criticism of the approach pointed out that the systems of evaluation and control based on number of activities of a CTT coupled with the profit motive of some private firms forced an emphasis on quantity instead of quality. Also, there were great variations in technologies transferred even within the same province (Berdegue, 1990). At first, the public bidding was highly politicized but improvements have been made and now there are many more types of CTTs than before including NGOs and farmer groups.

Hypothesis 1 : Contracting public sector extension programs to private organizations can decrease administrative costs to the government without hurting the quality or coverage of extension programs.

5.2.1.2 Public Sector/Farmer Association

The extension programs run by Taiwanese farmer associations are a good example of programs having a high degree of collaboration between the government and farmer associations (FAs). The linkages presented in this case represent both functional and enabling linkages. The functional linkages are represented by the actual sharing of resources such as when the province gives money to the FAs to conduct certain activities. But many other generating mechanisms used by the FAs imply enabling linkages, because the government allows the FAs to collect taxes, run the credit service, store government grain, run

marketing activities etc. Many governments do not allow the private management of such activities (see Figure 3 and Appendix B). Though these are "enabling" by providing a diverse range of income generating activities for the local level FAs, the FAs are not completely autonomous. Government sets some profit margins, stipulates loan conditions, and regulates other commercial revenue generating activities.

The salary system of local FAs was very consciously designed to give all staff of the farmers associations a direct incentive to increase the profitability of the association. These incentives have not always been effective, because many staff members of poorer FAs feel that profitability of their FA is due to factors outside their control (Stavis, 1974). Provincial Farmer Association regulations govern staff size and salary structures of local FAs. The rating system base for salaries is on a point scale determined by a complex formula. Determination begins with the overall profits made by local FAs and makes adjustments according to ratio of profits to gross income, excessive use of capital assets, bad debts, excessive supervision expenses, inadequate extension services, low rates of animal insurance and other factors (ibid.).

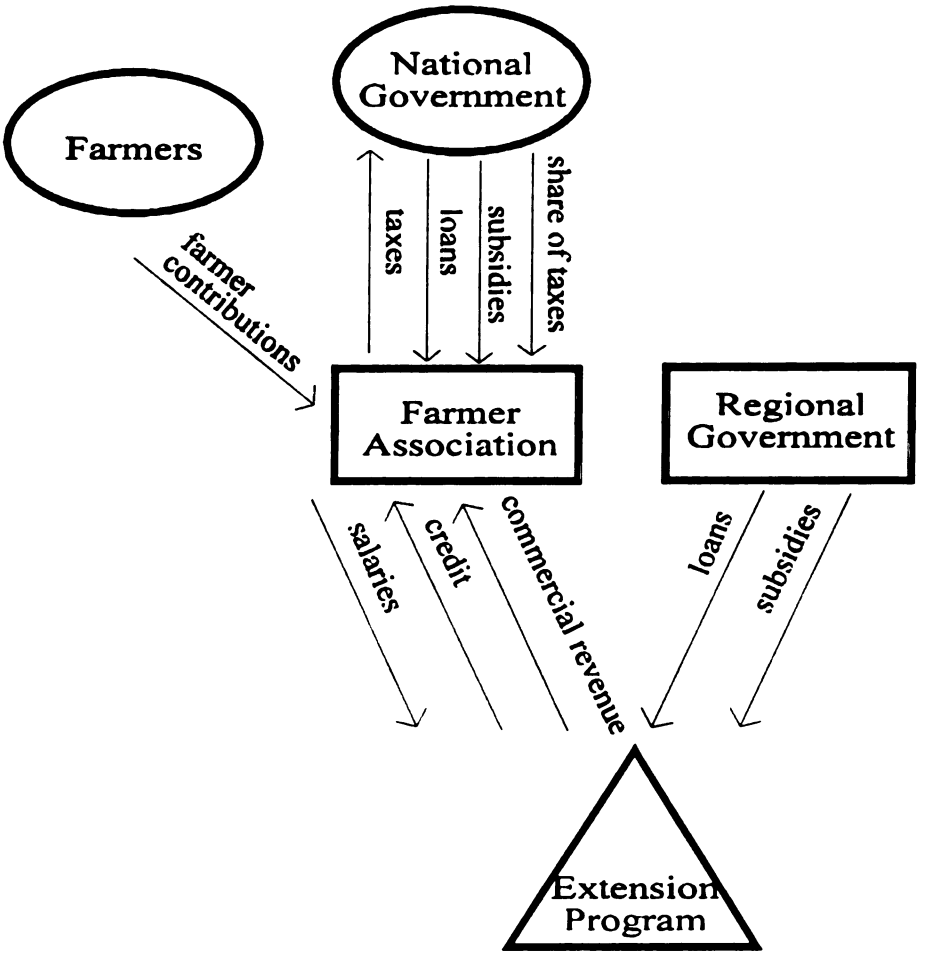

Figure 3 - Taiwanese Farmer Associations - See Appendix B for written case description.

Hypothesis 2: The greater the number of resources linkages (cost sharing mechanisms) the greater the success of interorganizational collaboration and institutional pluralism in the management of agricultural extension programs.

5.2.1.3 Links to Other Agricultural Services

Another area which represents institutional pluralism in the provision of extension services to various types of farmers is the successful linking of extension programs with the provision of other agricultural services such as credit provision, input supply and marketing. The Taiwanese example represented above (Figure 3) shows farmer associations performing all sorts of agricultural services like input supply and marketing which are directly tied to the provision of extension services. This is a case where farmer associations took on the role often played by commercial firms in other countries.

Though the other cases did not reveal a high degree of collaboration between government programs and programs conducted by commercial firms they did reveal areas where these private sector programs seem to flourish. Contract farming is conducted in many countries and often has an extension component. These contract farming agreements represent a support system for extension programs which came the closest to a model which can be generically applied in many countries. The support systems used by transnational corporations in Mexico will be illustrated here to represent contract farming agreements in general mentioned in many of the country cases. These commercial extension programs are most often tied to other agricultural services. Many of the extension programs provided through contract farming arrangements are designed to ensure quality of produce and correct timing in harvesting.

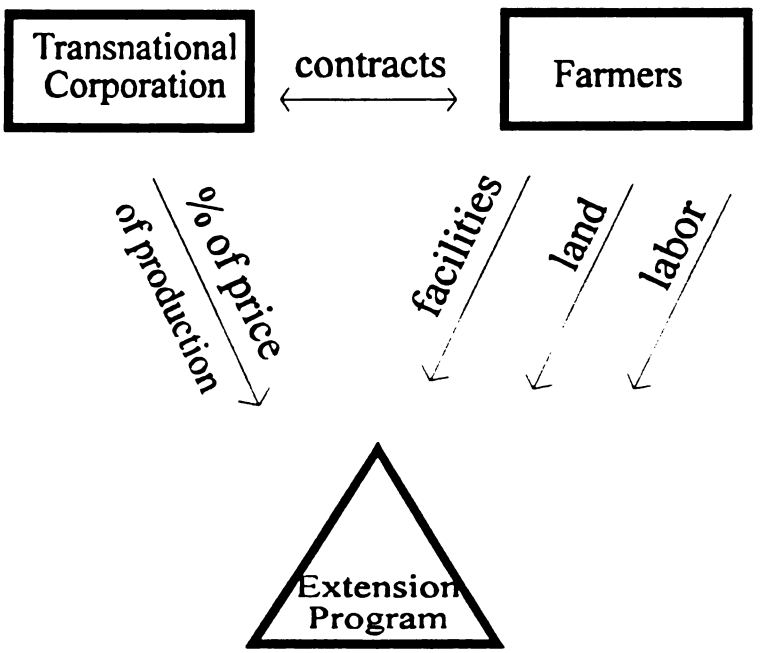

Figure 4 - Mexican Transnational Corporations - See Appendix C for written case description.

5.2.1.4 Collaboration through Training

Training is a cost area which seems to foster much potential for cost sharing among sources of support for agricultural extension programs. Examples of beneficial collaboration between extension programs abound in this area. In Zambia and Indonesia, government agents train or are trained by NGO staff. Examples in the cases show donors willing to fund a specific training program for government extension personnel. An Indonesian program shows that NGOs sometimes work with individual farmers to cover the cost of farmer to farmer type extension. In India, a forestry development project has a large donor, the government forest department, an NGO and farmer extensionists collaborating on training and disseminating community forestry techniques and information. Also in India, the Indian Council of Agricultural Research (ICAR) links with the larger national extension systems through demonstration and training programs (Prasad, 1989). In Taiwan, the District Agricultural Improvement Stations at the provincial level serve as a link between researchers and extension systems through training of farmer association personnel and other farmers (Lionberger and Chang, 1976).

There is more than one case model which represents cost sharing collaboration through training. Instead training seems to be a component of many different support systems of many types of extension programs. The variety of cases of which it is a component indicates that training is a method of collaboration which is applicable to the support of extension programs in many ways. The concern over financial sustainability has caused some donors to focus the use of a grant mechanism on

training. When completed, the training itself may not continue, but it can still have lasting effects on human resource development and capacity building.

5.2.2 Financial Sustainability

Financial sustainability of extension programs is an important issue to many managers seeking to meet the long term needs of their farmer clientele. Two major challenges to the financial sustainability of programs uncovered in the literature and case data set are: **5.2.2.1 Recurrent Cost Crises** and **5.2.2.2 External Assistance Disbursing Mechanisms.** A summary discussion of the problems with increasing recurrent costs over operational costs found in the literature is presented in Chapter 2. The evidence from the cases supports the idea that there is indeed a crisis in many extension programs because of increasing and financially unsustainable recurrent costs. Some disbursing mechanisms like loans and grants do not deal with recurrent or operating cost issues but, as temporary external assistance, also challenge the financial sustainability of programs. Discussions of these challenges follow along with descriptions of how they are being addressed in some of the model cases.

5.2.2.1 Recurrent Cost Crises

The threat to the financial sustainability of many agricultural extension programs due to increasing recurrent over operating expenditure is discussed in Chapter 2, pp. 19-20. Both the Chile and Taiwan case illustrations presented above (Figures 2 and 3) also were designed to address the issue of financial sustainability of the programs. Both represent models which seem to have achieved a high level of administrative efficiency and have worked to avoid the build up of excessive recurrent versus operating costs in program budget requirements.

The ratio of recurrent to operational costs varies greatly across countries. However, the trend of increasing recurrent costs was identified in the Zambia, Burkina Faso, Kenya, Nigeria, Poland, India, and Indonesia public sector cases. The increase in staffing levels in the Zambian national extension service under the T & V system between 1964 and 1984 was accompanied by an increase in the ratio of staff to operating costs from 50:50 to 94:6 (Copestake, 1990). In Kenya, recurrent costs rose under the introduction of T&V. The problem was exacerbated by an unanticipated government policy of employing all agricultural school graduates which increased the salary load in the national extension service and reduced operational support allocations (World Bank, 1994). Poor funding of personnel-intensive services can reduce their effectiveness. Lack of operational funds can challenge the ability of public extension services to reach farmers and meet their needs.

Some programs are designing support systems to address the problem with recurrent costs. In Taiwan, the Provincial Farmer Associations regulate the salary structure of local farmer associations to avoid an inordinate amount of recurrent versus operating costs and thus improve the level of financial sustainability achieved by the FAs. In Chile, recurrent costs are kept low due to the low overhead needed to run the contracting system with CTTs. A GTZ funded program in Kenya is under way where extension agents discuss their proposed program activities with farmers and receive reactions before any other work is begun. Since the farmers have decided themselves what trials or demonstrations should be implemented they have been willing to finance the inputs, labor and other operational costs of the activities (Foik, 1994). These are examples of strategies to improve the financial sustainability of extension programs.

Hypothesis 3: The more equal the ratio of operating to recurrent costs the greater the financial sustainability of a program.

5.2.2.2 External Assistance

Due to their temporary nature, the major mechanisms used to provide external assistance to extension programs, grants and loans, challenge the financial sustainability of extension programs by creating dependency. Thus, they may contribute to the failure of programs and are often related to the recurrent cost crises discussed above.

Some grants are designed to support and encourage local resource mobilization in order to achieve financial sustainability for an extension program. This usually

means restricting their size and scope so as not to overwhelm the capacity of rural communities. Unfortunately, this also limits their short term impact and thus their attractiveness to donors wanting visible results fast.

The use of loans to fund agricultural extension programs may be the most challenging mechanism to manage well. The use of grants raises sustainability questions, but usually the worst case scenario is that program activities end. Loans, however, must be repaid. If there is a significant rise in agricultural productivity repayment may not be a problem nor an issue. The reverse, however, is problematic and the need to determine the contribution of extension to agricultural growth and who has actually benefited remains. Distributional questions also remain in many cases when it appears that a small proportion of the rural population gains from loan disbursements while everyone else including the poor are responsible for the debt.

Indigenous NGOs in the South and other advocates for the poor in the North have expressed concern that the poor must bear the burden of loan repayment on projects in which they did not participate in planning. However, distributional questions within nations are political and mostly beyond the control of lenders under the current institutional structure of international lending. The short term outlook of many governments makes borrowing attractive, because that government may not be around when the loans come due. Loans are beneficial in supporting agricultural extension programs to the extent that those responsible for repayment are the ones in control of the program and receiving benefit from it. This is difficult to insure given the size of most international loans and the fact that the lending is to governments.

Two disbursing mechanisms identified in the cases are designed to address the financial sustainability challenges of supporting extension programs externally. These are revolving funds and development funds. International or local NGOs may set up a revolving fund with an initial grant. This grant may help individuals or a community with loans to increase their resource base. It becomes sustainable if the loans are repaid and the funds made available for reuse by others (see Figure 10). Development Funds work like revolving funds but on a larger scale. Increasingly, donors such as the World Bank and the Inter-American Development Bank are supporting governments in setting up special development funds to support grassroots activities. These funds provide resources for grassroots initiatives which are designed to continue indefinitely through local loan repayment.

Hypothesis 4: Increasing the diversity of fund generating and disbursing mechanisms used in a support system increases the financial sustainability of the extension program.

Hypothesis 5: Increasing the number of cost sharing mechanisms used in an extension program increases its financial sustainability.

Hypothesis 6: Grants designed to encourage local resource mobilization will tend to improve the financial sustainability of an extension program.

5.2.3 Privatization

Two very similar models of support systems designed to privatize public sector extension programs were represented in the New Zealand and United Kingdom public sector cases. The Agricultural Development and Advisory Service (ADAS) of the United Kingdom

has instigated user charges to recover about 50% of its costs from farmers (see Figure 5 and Appendix D). In New Zealand, the change from free public sector extension programs has been even more drastic. The Ministry of Agriculture and Fisheries transformed itself in 1987 from the traditional structure of technically-based divisions into four commercial businesses. MAFTechnology represents the former Advisory Services Division which performed the extension function. Only 10% of MAFTechnology's budget is covered under contract with the Ministry of Agriculture. The other 90% of the budget must come from sales of services (see Figure 6 and Appendix E).

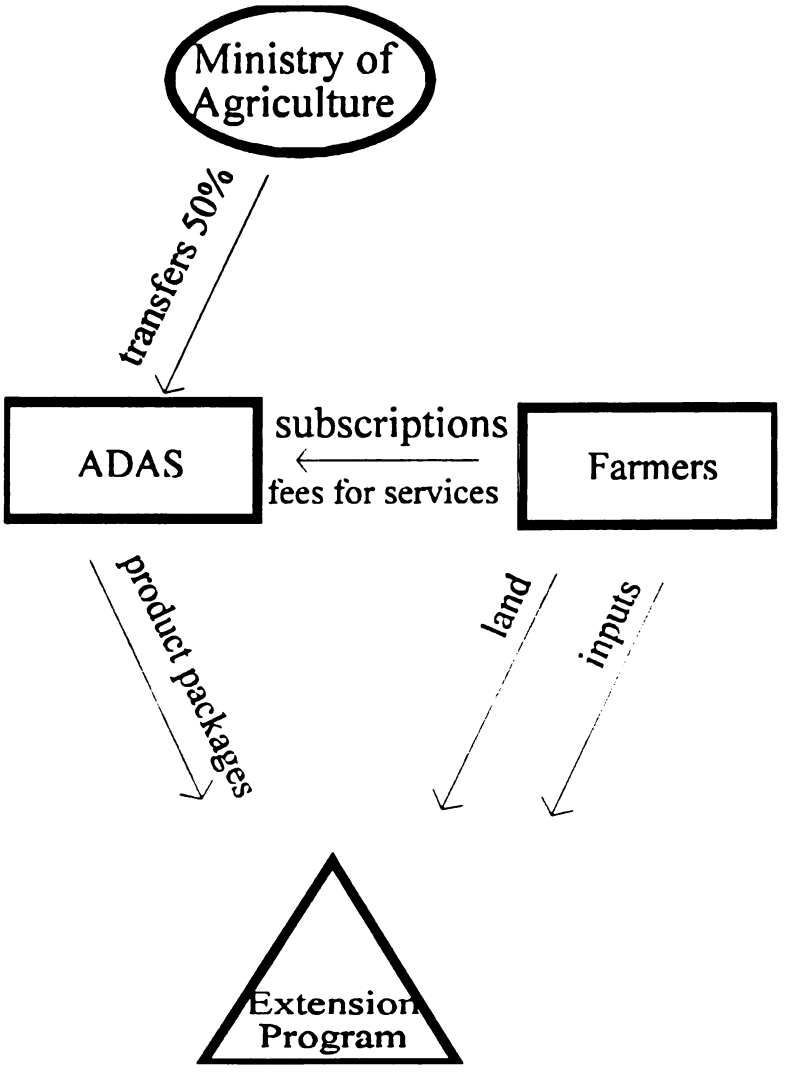

Figure 5 - British Privatization - ADAS. See Appendix D for written case description.

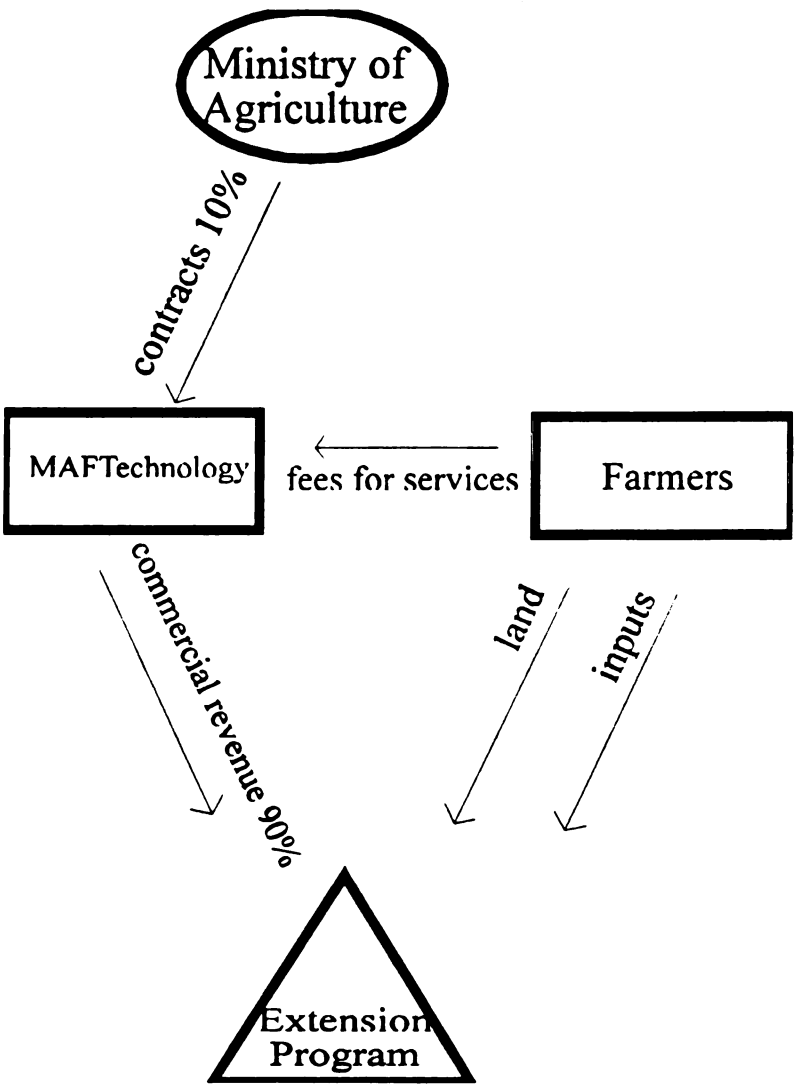

Figure 6 - New Zealand's Commercialization of Public Extension - See Appendix E for written case description.

There is great debate in these countries over which aspects of a public sector extension program should be paid for by farmers and which should remain the responsibility of government and free of charge. In developed countries, some traditional programs that may no longer be considered a public good and face possible elimination could be continued with user fees (Penrose and Rohrer, 1993). A primary drawback to introducing fees for service into a public sector program is the restrictions created on the free flow of information which is often an extension agent's best resource (Bloome, 1992).

This trend toward privatization has spread beyond the more industrialized countries. The Mexican public sector system is also instigating user charges to recover some of the costs of its extension programs. The introduction of user charges is tied to farmer income levels with medium and larger farmers required to cover a higher percentage of the overall cost of extension services than lower income farmers (Wilson, 1991). The use of farmer income levels to determine the amount of cost recovery is one strategy to overcome the equity implications of relying on commercial revenue for the support of agricultural extension.

Commercial revenue generation has potential to relieve government fiscal burden through public/private collaboration. However, focus on commercial mechanisms alone for the generation of resources for extension programs has the potential to further marginalize small subsistence farmers especially women who often have little to no commercial base or cash flow.

Hypothesis 7: The use of user charges (cash) as a generating mechanism is most effective in programs targeting medium to large scale commercial farmers.

Hypothesis 8: User charges are less effective as a generating mechanism for extension programs in which poverty alleviation remains a major goal.

5.2.4 Decentralization

During the last few years (late 1980s and early 1990s) the Government of Colombia has been trying to move to a more decentralized form of government. One aspect of these decentralization initiatives has been designing public services to be provided at the municipal level. Public sector extension programs have been incorporated into these initiatives and are now the responsibility of the municipalities. This section presents the Colombian model for decentralization of public sector extension programs and describes the mechanisms which are important in this model.

One of the most important generating mechanisms for public sector extension programs is taxes. Full discussion of tax design and collection options is beyond the scope of this study. It should, however, be acknowledged that the tax base, design, type, and level at which they are collected directly affect the amount of resources available for public sector agricultural extension programs. Suggestions to improve public sector programs that require increases in expenditure should not ignore the tax base or fiscal capacity of the affected levels of government. This is especially important when decentralization initiatives are changing the level of responsibility for the provision of public services.

Decentralization works best when democracy is in place (McMahon, 1994) which is why the level of responsibility for service provision chosen in Colombia was the municipalities instead of the departments (provinces). Municipal mayors are directly elected whereas department governors are centrally appointed (though this is currently changing). Mayors are accountable to their constituents and so are influenced by the farmers' need for extension

services. According to McMahon, it is difficult for local elite farmers to dominate the system because the working unit size for agents is usually about 450-500 farmers. To get that large of a group, small farmers must also be incorporated. Another source from the field says that the extension system has become highly politicized with only political supporters of the mayors receiving any extension services at all (Oakley, 1994). However, a visible benefit of decentralizing extension services has been getting over 2,000 professionals to relocate to rural areas. Extension agents must now go to the municipalities to receive contracts (McMahon, 1994).

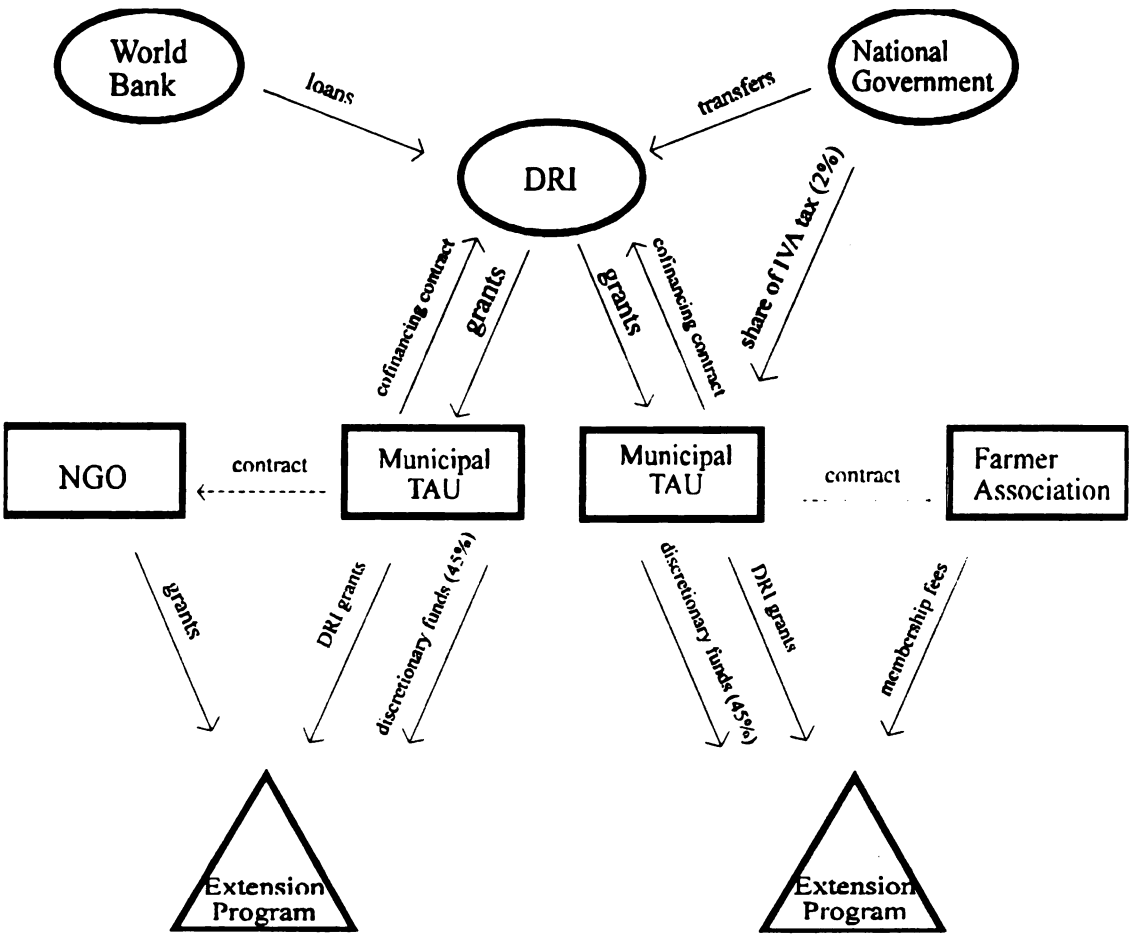

Figure 7 - Colombian Decentralization to Municipalities - See Appendix F for written case description.

There have been detailed manuals written by the Colombian Government with help from the World Bank. These manuals explain the formulas and negotiations used to determine the structure and amounts of the co-financing matrices used to support extension programs provided by municipalities. These arrangements seem to be successful in supporting decentralization as illustrated by the high degree of contributions from municipalities to extension programs over and above agreed targets (see Appendix F).

Hypothesis 9: There is a relationship between the success of the decentralization of public sector extension programs and the level at which taxes are planned and collected.

Hypothesis 10: The more local the level of tax planning and collection the more successful the decentralization of public extension programs.

5.2.5 Accountability

To insure direct accountability of agents to farmers, farmers can directly pay for or control an extension agent's remuneration. This, in fact, happens all over the world where individual farmers or producer groups hire a technical advisor to provide their information and technology needs. There are other ways of achieving accountability of extension personnel to their clientele besides direct hire. Many of the cases showed the clientele contributing to cover some of the costs of extension programs which may improve the accountability of the agents to their clientele. Of course, many factors work together in determining accountability. Local support of extension should also be accompanied by a system of involving farmers in extension staff evaluation, selection and transfer (Macklin, 1992; Schwartz and Kampen, 1992). A good

example of this is the system set up in China based on bonuses given from farmers to extension agents if their technical advice is helpful in increasing production (see Figure 8 and Appendix G).

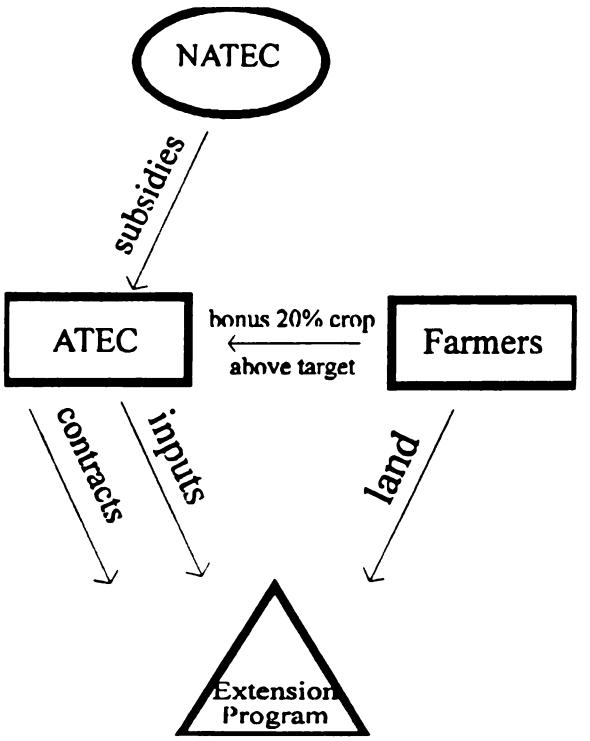

Figure 8 - Chinese Bonus System - See Appendix G for written case description.

The contract system appears to meet the requirements for proper motivation of extension staff and recovering part of the cost of extension. Of the 20% revenue above targets from the farmers, 50% goes to the agent and 50% to the Agrotechnical Extension Center (ATEC) to help with costs. One important aspect of the system which may be overlooked is that it is a means of rationing scarce production inputs to farmers who agree to a contract. Thus, the system will only continue to function where high quality inputs are important and in short supply. Another concern in tying cost recovery to the supply of inputs is a potential conflict of interest between the extension message and "public good" especially concerning the use of certain fertilizers and pesticides instead of IPM or other more sustainable practices.

This bonus-based approach works well in some high crop intensity areas where input supplies are sufficient. But in other areas, with greater crop diversity, fewer farmers are willing to make such agreements, because the extension service currently lacks sufficient adaptive research capacity to develop location specific technology and messages (World Bank, 1993d). Personnel tend to concentrate on contract farmers, ignoring non-contract farmers who are the vast majority (ibid.). Small subsistence based farmers who tend to be unwilling to contract with the extension service do not receive technical services (Zhong, 1994). These challenges to the design of the support system for Chinese public sector programs show that many factors contribute to the success or failure of extension programs. Still, bonuses are one way to work toward accountability of extension agents to their clientele. Other strategies which make use of local resource mobilization described below can allow even poorer farmers to contribute to an extension program as a group. This is usually a form of cost sharing which may improve the accountability of extension agents and, therefore, improve the relevance and responsiveness of

the program to farmers' needs. These relationships need to be investigated further in future research.

Hypothesis 11: The existence of contributions from farmers to an extension program improves the accountability of extension agents to their farmer clientele.

5.2.6 Local Resource Mobilization

Local Resource Mobilization is pursued by many sources of support concerned with self-help at the grassroots. It is a long process beyond the time frame of many project proposals and a difficult one often beyond the patience of program managers from NGOs, international organizations and governments. On the other hand, once the process is begun it may potentially continue even after external assistance ends. The process can be seen as an "end" in which the resources mobilized are less important than the growth in community responsibility and empowerment which may take place through the process. "When people collectively mobilize economic resources, this can produce some social and political resources for them" (Uphoff, 1986).

All social aspects of a community interact with its ability to mobilize resources and make local resource mobilization a complex and challenging process. Program managers need to understand how the social dynamics of local resource mobilization work in their program context. A farmer's ability to walk away (not participate) in a program is one form of control, but there are other forms such as withholding information or sabotaging program efforts etc.

which may seem negligible to large public sector programs but can define a program's success at the grassroots. Besides the issue of control, there is an efficiency issue to local resource mobilization. If all resources come from outside it matters little to local farmers if they are used efficiently. However, if locally generated resources belonging to farmers are used to support extension programs the farmers will be more involved having a stake in the success of the program.

The local resource generating mechanisms identified in Chapter 4 may have limited potential to relieve in a significant way the fiscal constraints being faced by public sector programs, but more importantly they have the potential for improving the accountability, relevance and responsiveness of programs by making them demand-driven. Uphoff (1986) suggests that an important principle for agencies is to avoid a standardization of mechanisms used and encourage a multiplicity of locally operable mechanisms. He would encourage that mechanisms be designed to fit the local environment and be sustainable over time.

Three local resource mobilization strategies emerging from the cases which are appropriate for large and small farmers alike are: **5.2.6.1 Group Membership, 5.2.6.2 Volunteerism and In-Kind Contribution Promotion** and **5.2.6.3 Group Rankings.** Discussions of these strategies and appropriate models are presented below.

5.2.6.1 Group Membership

Supporting extension through group membership seems to have potential for farmers gaining control of extension activities. Individual farmers may have few resources alone but in groups even the poorest have been able to mobilize savings to meet needs in their communities. This is apparent in the People's Participation Program in Zambia (see Figure 9 and Appendix H). Various mechanisms are used in this program to encourage local resource mobilization, the most important of which is income generating activities.

Hypothesis 12: The existence of local farmer groups improves the capacity for local resource mobilization in communities.

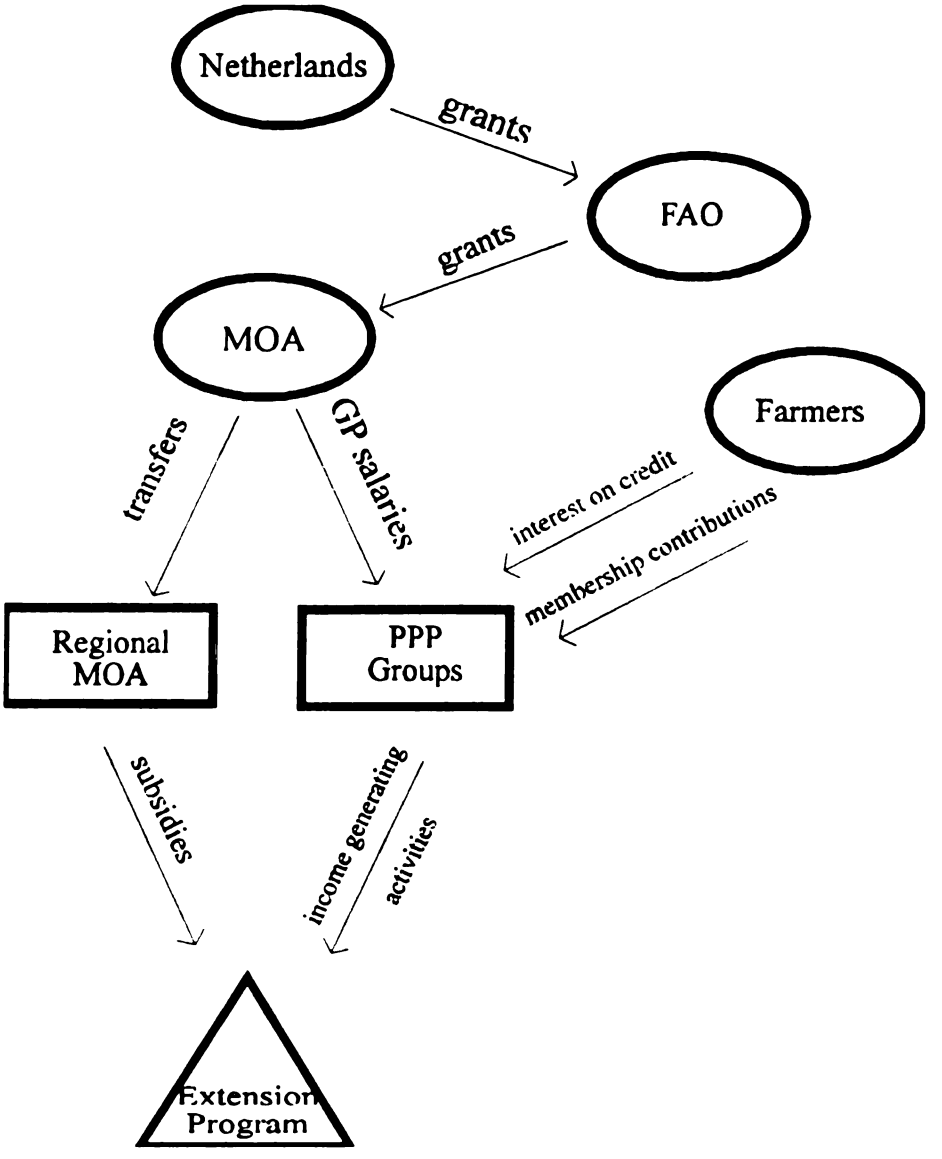

Figure 9 - Zambian PPP Program - See Appendix H for written case description.

5.2.6.2 Volunteerism and In-Kind Contributions Promotion

Two generating mechanisms for local resource mobilization which are often accessible even for resource poor farmers are volunteerism and in-kind contributions. In cases where farmers are not compensated for their participation in extension activities it should be recognized that they are contributing not only their time but the opportunity cost of not engaging in other activities. It may be necessary to lower that opportunity cost in order to promote volunteerism. Contributions without compensation may only be possible for farmers who are able to hire other labor and get away from household demands. The poorest farmers, especially women may again be left out unless special attention to their time constraints is given. Efforts like providing child care, transport, or convenient locations for program activities can foster participation by individuals who otherwise could not volunteer their time.

When reliance on in-kind contributions are fixed into an extension program then it can activate control of the farmers over the program through the power to withhold their contribution. If an extension agent's salary, transport, or access to training advancement, etc., relies on the contribution of farmers (however small) then accountability is working in the system.

A case in Indonesia shows how in-kind contributions can play an important role in both a community feeling of ownership and also financial sustainability of the program through the use of a revolving fund (see Figure 10 and Appendix I).

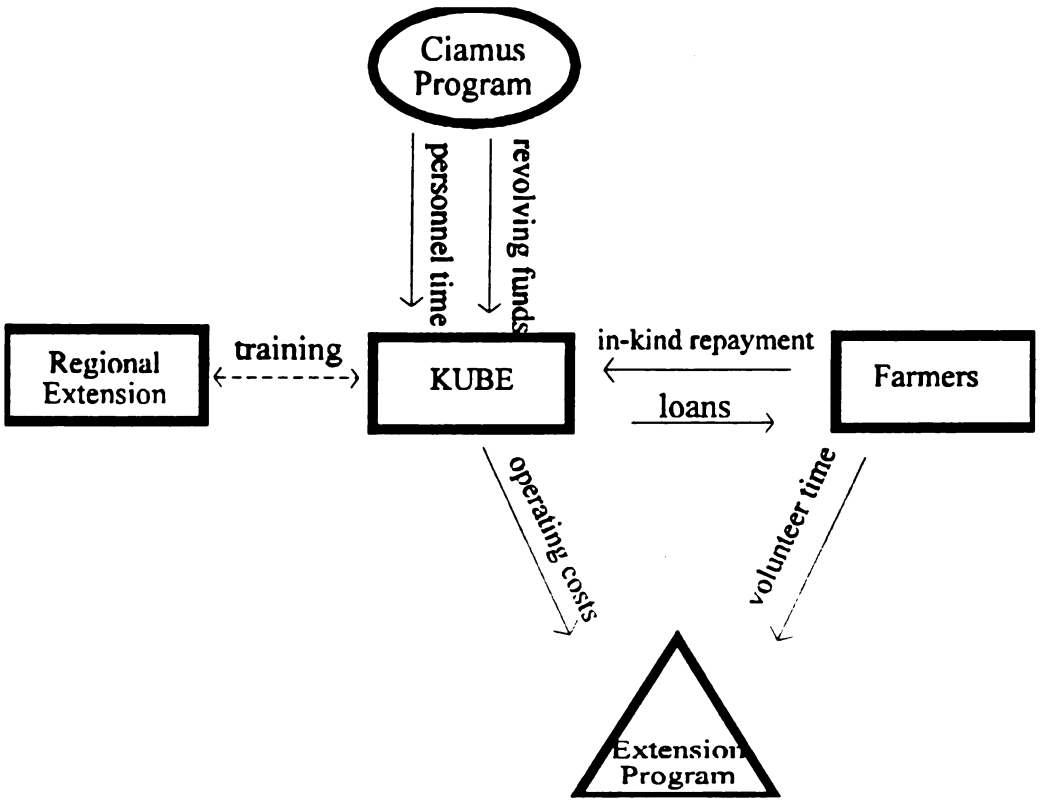

Figure 10 - Indonesian Ciamus Program - See Appendix I for written case description.

Hypothesis 13: Extension programs which incorporate cost sharing with farmers in the form of in-kind contributions and/or volunteering will tend to be more relevant and responsive to the farmers' needs.

Hypothesis 14: Reliance on local resource mobilization generating mechanisms in the support of extension programs makes the programs more relevant, responsive and demand-driven.

5.2.6.3 Group Rankings

Another strategy designed to encourage local resource mobilization is the use of group rankings. This strategy is illustrated by the Saemaul Undong Movement in Korea (see Figure 11 and Appendix J) and also is used in Indonesia. The idea is to give initial grants or in-kind contributions to communities and then base later assistance on whether the community progresses through cooperation. In Korea, the groups are ranked as c) still underdeveloped, b) self-help villages and a) self-reliant villages (Chung and Dong, 1984). This approach is used to address many community development needs including agricultural extension. In Indonesia, village farmer groups are classified as elementary groups, advance groups, and Madya groups. Eventually these groups can move on to the cooperative system which has a strong legal foundation and more formal constitution (Sukaryo, 1983).

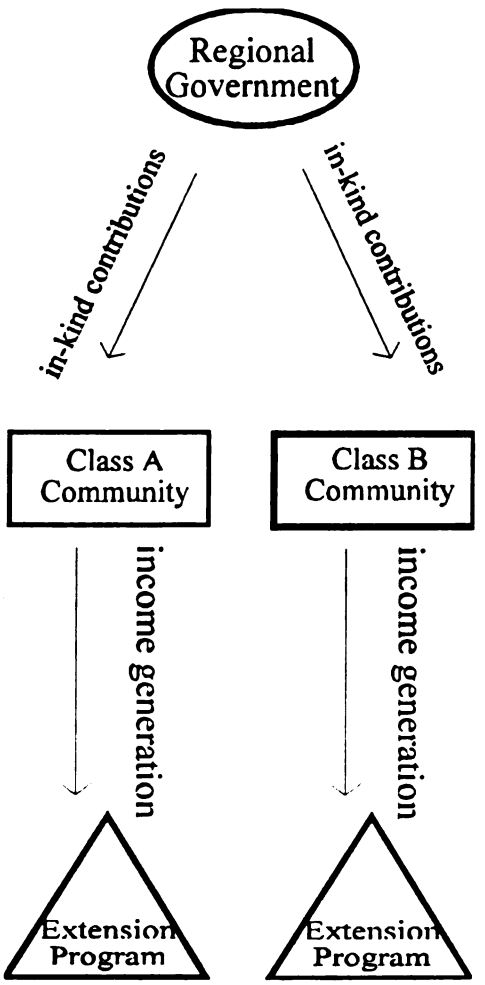

Figure 11 - Korean Saemaul Undong Movement - See Appendix J for written case description.

Hypothesis 15: The use of group rankings increases the amount of local resources mobilized for the support of extension programs.

5.3 *Limitations of this Study*

This study pulled together information on support systems based on the case data set which has not previously been consolidated in such a form. However, collecting information on this topic, which has not been systematically studied before, presented some limitations. The limitations of the created data set prevented it from answering all of the original research questions posed in Phase 1. Some limitations identified were; 5.3.1 Lack of Context, 5.3.2 Lack of Equal Representation of Types and 5.3.3 Variable Quantities of Information on Cases. These limitations are discussed below. However, the simplifying of the research questions used in the Phase 2 data analysis overcame most of these limitations and produced a guide for future research which, if conducted, could surmount the rest.

5.3.1 Lack of Context

The information on programs in the data set provided "facts" about who pays for extension and how. However, these facts most often stood alone with very little understanding of the context in which they function. That is why answers to only the basic empirical questions could be documented. Many of the normative judgments about what mechanisms are "good" or "better" are not contained in the data set. Some opinions from scholars were found in the general literature review. These opinions are most likely

based on empirical evidence encountered by the scholars but were usually not tied to empirical data in their presentations.

5.3.2 Lack of Equal Representation of Types

The researcher had access to more information on World Bank supported public sector extension programs than other types of programs. Therefore, the quality of the information on these public sector programs is higher, because it could be checked from more than one source. Much of the information on NGO and commercial programs came from one source and could not be verified by another.

5.3.3 Variable Quantity of Case Information

The amount of information available on specific programs varied. As mentioned some programs in the data set have more than one page devoted to them whereas others only one or two lines. Certain cases provide answers to some of the research questions while other cases address different questions. Therefore, an analysis of the data which cuts across all the cases for each research question was not possible. However, in the data set as a whole, answers to all of the simplified list of research questions were forthcoming and are presented in the categorization of support system components.

5.4 Implications

The conceptual framework developed in this study can be useful to scholars and practitioners of agricultural extension and community development in three ways; understanding existing programs, planning future programs and guiding future research. First, the understanding of support system components and the mapping of them can aid in the understanding of how resources flow within existing programs and how support systems affect other issues in program management. Second, such an understanding of some cases can help in the design or improvement of support systems for other programs seeking to address similar issues. Finally, the hypotheses proposed in this study based on relationships illustrated by the data analysis can guide more in-depth research on this topic.

5.4.1 Understanding Existing Cases

The conceptual framework and mapping system developed in this study could be applied to an in-depth case study or program evaluation. Such an exercise in understanding the support system of an existing program could provide insight into an aspect of program management which is dealt with daily by managers but often overlooked by academics. If this framework were applied to a single case where more contextual details were available much more progress could be made in understanding the relationship between support systems and other management issues than was possible in this study.

5.4.2 Planning Future Programs

The next step after using this framework to understand or evaluate an existing program would be the application to designing a new program or improving an old one. An improved understanding of support systems and their relationship to other management issues could guide managers in designing or improving the funding and institutional structures of their program. Any improvement strategies would be driven by program goals but understanding how support system design affects the achievement of those goals is an important component of the process.

5.4.3 Guiding Future Research

Finally , the conceptual framework as applied in this study produced a list of 15 hypotheses which could be tested in future research. These are just a few of the potential research hypotheses emerging from this study. The analysis of support system components and their relationship with other aspects of a program presents many areas which could be explored further. Such further exploration could uncover answers to the more normative questions about which mechanisms are better in specific contexts. Such normative questions are represented by the hypotheses which could be tested. Following is a restatement of the hypotheses emerging from this study:

1 : Contracting public sector extension programs to private organizations can decrease administrative costs to the government without hurting the quality or coverage of the extension programs.

2: The greater the number of resource linkages (cost sharing mechanisms) the greater the success of interorganizational collaboration and institutional pluralism in the management of extension programs.

3: The more equal the ratio of operating to recurrent costs the greater the financial sustainability of a program.

4: Increasing the diversity of fund generating and disbursing mechanisms used in a support system increases the financial sustainability of the extension program..

5: Increasing the number of cost sharing mechanisms used in an extension program increases its financial sustainability.

6: Grants designed to encourage local resource mobilization will tend to improve the financial sustainability of an extension program.

7: The use of user charges (cash) as a generating mechanism is most effective in programs targeting medium to large scale farmers.

8: User charges are less effective as a generating mechanism for extension programs in which poverty alleviation remains a major goal.

9: There is a relationship between the success of the decentralization of public sector extension programs and the level at which taxes are planned and collected.

10: The more local the level of tax planning and collection the more successful the decentralization of public extension programs.

11: The existence of contributions from farmers to an extension program improves the accountability of extension agents to their farmer clientele.

12: The existence of local farmer groups improves the capacity for local resource mobilization in communities.

13: Programs which incorporate cost sharing with farmers in the form of in-kind contributions and/or volunteering will tend to be more relevant and responsive to the farmers' needs.

14: Reliance on local resource mobilization generating mechanisms in the support of extension programs makes the programs more relevant, responsive and demand-driven.

15: The use of group rankings increases the amount of local resources mobilized for the support of extension programs.

Most of these hypotheses are based on the issues most illustrated by the data set cases. However, many of the hypotheses could be restated to measure the relationship between various support system designs and program effectiveness. For example, in hypotheses 3 - 6 the words financial sustainability could be replaced by the word effectiveness if that was the main concern of program managers. This study tried to remain focused on the issues addressed in the data set. However, if more in-depth details of cases were available studies could be designed to measure the effects of various mechanisms on overall achievement of program goals.

The purpose of this study was to provide a framework which could be useful to both scholars and practitioners of agricultural extension as they grapple with the issues surrounding the support systems of their programs. The researcher hopes to continue her own research in the area of support systems for extension incorporating local resource mobilization and cost sharing through local level farmer groups. She hopes that others will continue work in other areas within this topic in order to improve extension programs and make the most of the resources available for an important component of rural development.

APPENDICES

APPENDIX A - Chilean Public/Private Contracting

In 1962, the Agricultural Development Institute (INDAP), (Instituto de Desarollo Agropecuario) was created as an agency within the Ministry of Agriculture with a mandate to raise the living standards of small-scale farmers. The institute's budget in 1988 represented about 59% of the ministry of agriculture's total budget (World Bank, 1990c). Both the rural credit and technology transfer programs are run by INDAP. The technology transfer program is carried out by private sector advisory firms and financed by long-term loans from the Central Bank. Privatization of the extension service by INDAP was begun in 1968 with the Entrepreneur Technical Assistance Coupons programme (ATE). Under this program farmers received coupons from the government with which they could hire a private extension firm to provide technical assistance services. The government would directly reimburse the extension firms for the coupons. This program had many problems with a lack of supervision, evaluation and control of the quality and quantity of the services actually provided to farmers. It also was based on the false assumption that a market of technical assistance existed in rural areas. In fact, there were few agents available and so farmers were not able to choose their source or content of information.

In 1984, the Integral Technology Transfer Program (PTTI) replaced ATE. This system is supervised more closely by INDAP whose responsibilities are: a) to define overall policies b) to assign the budget and other resources to different regions and areas, c) to conduct the bidding process, d) to define the general methodology of PTT e) to supervise and evaluate all Technology Transfer Consultant Firms (CTT), f) and to provide training to CTT personnel (Berdegue, 1994). There is also a formal evaluation and grading system for CTTs.

INDAP assigns a number of "coupons" or farmers to each CTT. The farmers are grouped into modules of 66 and the CTT receives US$13,000 per module for all operational costs, equipment (provided by extension agents who receive a fixed payment per kilometer), salaries and a profit margin (app. US$1,500 per module) (Berdeque, 1990). Extension agents are paid depending on the number of activities done within dates established by a workplan. These annual workplans are monitored by the participating farmers according to Medium-Term Local Agricultural Development Plans spanning three to five years. Partial and final payments to CTTs are directly linked to the fulfillment of these plans which are mutually agreed upon by local groups and the CTT.

Initial criticism of the approach pointed out that the systems of evaluation and control based on number of activities coupled with the profit motive of private firms forced an emphasis on quantity instead of quality. Also, there were great variations in technologies transferred even within the same province (ibid.). At first, the public bidding was highly politicized but improvements have been made and now there are many more types of CTTs (Technology Transfer Consultant Firms) than before including NGOs and farmer groups. To improve flexibility INDAP has set up various "modalities" for their relationships with CTTs.

Besides the regular modality described above there is also a cofinanced modality which allows nearly absolute methodological liberty for the CTT in planning integrated agricultural development projects. The government funds up to 80% of the total project cost and the CTT must provide the rest (Berdegue, 1994).

PTTI is aimed at better endowed small producers. Another Programa de Transferencia Tecnologica Basico (PTTB) is aimed at small marginal producers with inadequate resources to achieve self-sufficiency from on-farm activities. PTT (Both PTTI and PTTB) are organized in three stages. First, six years of intensive support of group and individual activities with 100% of the cost to the CTT covered by the government. Then the second stage has three more years of less structured reinforcement of previous activities with the families paying 25% of the total cost of the service. The third stage will be based on a low base subsidy with support on demand service whose cost will be mostly or completely covered by farmers (ibid.). The government subsidy to PTT is given to those families which lack the resources to pay for technical assistance but with gradually declining support.

Beneficiaries of PTTI were supposed to cover 15 percent of the cost of the service which can be financed through INDAP credit. In reality, between 1987-90 no more than 20% of the benefiting farmers actually paid this amount (World Bank, 1990c). INDAP still subsidizes the total cost of PTTB. Under a proposed World Bank Technical Services Project, the goal is to expand services in the PTTB and increase the financial contribution of appropriate end-users from 15 to at least 50 percent under PTTI (Wilson, 1991). According to a survey by Berdegue (1994) over 40% of the participating small farmers affirmed that they were willing to pay part of the cost of the service. Half said they would pay up to $12/year and the rest would be willing to pay up to $35/year. 50,000 small farm families out of a total of 230,000 participated in PTT in 1993 (Berdegue, 1994).

In 1993, the total cost of the PTT program was US$18,071,674 or approximately US$360/family. Of that amount, 81.37% goes to CTT as payment for services to farmers, 11.28% is used to pay honoraria for private agronomist or field supervisory staff, 3.86% finances training for CTT personnel, 2.37% pays the salaries and social benefits for the 66 INDAP employees in national and regional offices, and 1.1% is for INDAP's fixed and variable administrative costs associated with PTT. Only US$ 628,894 is used to finance recurrent costs which equals US$12.6/family (Berdegue, 1994). According to Berdegue, the government subsidy per family in 1983 was 80% higher than in 1993 showing marked improvement in cost efficiency.

APPENDIX B - Taiwanese Farmer Associations

The main source of extension services to farmers in Taiwan is through farmer associations (FAs) with a high degree of collaboration with the government. Membership in local FAs is voluntary. All members in a village are organized into small agricultural units (SAU's) and into township associations. The small agricultural unit, one in each village, acts as a bridge between the township association and its members in the villages. About 90% of Taiwanese farmers were members of SAU's and FA's in 1972 (Axinn and Thorat, 1972). A general manager is employed by the townships associations to manage township business and coordinate both government and FA programs.

Taiwan law states that 70 percent of the profits of the township farmers associations must go to further extension service. Extension agents are hired by the township farmer associations. From 1953-67 membership in farmer associations increased by 50 percent; the income from self-conducted economic services rose eightfold; expenditure of extension services also multiplied eight times; deposits grew by twenty-seven times, and the loans distributed increased twenty-five times (ibid.).

Axinn and Thorat (1972) state the sources of funds for FA's as: sale of capital stock shares, initial membership fees, annual membership dues, net profit from business activities, commissions from handling business entrusted by the government or private agencies, voluntary contributions, subsidies and loans from the government and private agencies, and appropriations from agricultural finance agencies. Other authors provided more detail.

An important generating mechanism for the FAs is receiving a share of taxes. The FA's are in charge of collecting land taxes for the government which are paid "in-kind" (rice). The FA's receive a handling fee for collecting these taxes (Uphoff, 1986). If a farmer has no rice to pay with, he can purchase rice from the FA at a 3% mark up and the FA keeps the profit.

Other generating mechanisms are tied to commercial revenue generation such as fertilizer sales, crop purchasing and other marketing activities. FAs have almost a monopoly on fertilizer sales and are allowed a certain mark-up by the government. However, the price paid by farmers is fixed and subsidized by the central government (Stavis, 1974). FAs purchase certain crops for the government at a price set by the government and receive a handling fee. In shares of taxes, fertilizer sales, and crop purchasing, the rate of profit is always set by the government. With other marketing activities FAs can usually determined their own profit margins. Some profits come from packaging and shipping fees. Other income can come from animal feed grain factories established and the profit made on the animal food. FAs also store rice for the government and receive payment for that service. FAs also may elect to sell various other items like chemicals or even electronics (ibid.). Since these farmer's associations have purchase, sale and banking functions, marketing receives appropriate attention in extension activities (Narayanan, 1991). Other sources of income for some FAs have been

renting out tractors, producing on a small demonstration farm, and charging for veterinarian services (Stavis, 1974).

Credit and banking services are other good income earners for FAs. Farmers can deposit savings or take out loans from their local FA. Interest rates on both deposits and loans as well as maximum ratio of loans to deposits are regulated by the central government and provincial farmer associations. The government often uses the amount of deposits made to a FA as an indicator of its success in the community (ibid.).

APPENDIX C - Mexican Transnational Corporations

Various transnationals are involved in extension in Mexico often using contract agreements. The farmer provides "land, facilities and capital goods, pays for the electricity, water and manpower used and helps to supervise and organize the work" (Rama, 1985). Contract farming for improved seeds, chickens, eggs, pigs, milk, fruit and vegetables involved large amounts of financing, technical assistance and supervision from the firms. Contract growers turn over frequently and the TNC's must find and train new producers. TNCs implicitly charge new growers for this service (and all other services) by offering them lower prices for their produce. For example in the summer of 1986 growers who needed a full range of services were being paid as low as 6.5 cents per pound for broccoli while the large integrated growers were selling raw product to the TNCs at up to 13 cents per pound. Once the grower learns to produce the crop, visits from field men are actually police actions to guarantee that he uses the proper chemicals" (de Janvry et al., 1987).

APPENDIX D - British Privatization - ADAS

In both England and Wales, rural development is the responsibility of the Agricultural Development and Advisory Service (ADAS) created in 1972 under the Ministry of Agriculture. Until 1987, advice from ADAS was free. As budgetary support became increasingly difficult, public extension services gradually shifted from cost-free to fee-paying consultancies for those services of direct benefit to the recipient. The government still covers the cost of public good services like soil conservation and other environmental information. Publications and other materials are sold at cost. Other services are often delivered as a package of actions or visits known as "product services" under contract with the farmers. These product services have two types of subscription schemes. Under the basic subscription scheme, a farmer would receive regular newsletters containing information appropriate to his particular farming system plus the right to telephone contact with the adviser of his choice. The premium subscription scheme, also includes four advisory visits by an adviser to the clients premises (Dancey, 1993). ADAS hopes to cover 50 percent of its operating cost by 1994 (Ameur, 1994) (Dancey, 1993).

According to LeGouis (1991), the change to charging for some services has been successful in reducing about 25% of the publicly funded ADAS budget over a three year period. Before 1986 ADAS was empowered only to provide free advice and information to commercial farm and horticultural businesses, i.e. excluding food manufacturers and retailers, the supply trade etc. But the 1986 Agriculture Act expanded the potential client base for ADAS to any business or organization using agricultural and associated technology. The Act also provided the legal basis for charging for advice (Dancey, 1993). It was decided that supporting functions like personnel and financial management should be brought in house. Initially at least the Agency was set up on a 'Net Running Costs' (NRC) basis which gave greater financial flexibility than previously when separate revenue and costs targets were set. The intention was that NRC would be a stepping stone to a Trading Fund status which would provide even greater freedoms, including the ability to borrow, retain earnings and invest (ibid.).

APPENDIX E - New Zealand's Commercialization of Public Extension

In 1986, New Zealand decided to commercialize its agricultural advisory service. The Ministry of Agriculture and Fisheries transformed itself in 1987 from the traditional structure of technically-based divisions into four commercial businesses. MAFTechnology represents the former Advisory Services Division which performed the extension function. For the 1991 fiscal year only 10 % of the total costs were covered by contract with the Ministry of Agriculture, the remaining 90 % had to come from sale of services. This is almost the reverse of the situation in 1985. The change to commercialization was a result of a national government decision to drastically cut federal spending on agriculture and other services. The Advisory Services Division so decided to double the rate of revenue generation. Each responsibility center was given a new funding target which could be met by either reducing expenditure or by increasing revenue or a combination. Some remaining obstacles to organizational autonomy are; the maintenance of the government pay-fixing system, and prevention of the business becoming a shareholder in a commercial organization (Hercus, 1991).

APPENDIX F - Colombian Decentralization to Municipalities

Under a government decentralization reform program, municipalities were directed to set up their own Technical Assistance Units (TAU's) by 1992 to provide extension services that are to be paid for entirely at the local level. ICA (the Columbian Agricultural Institute) which used to provide technical assistance free of charge to 53 of the 323 municipalities is phasing out its extension services to concentrate on research. The remaining technical services are currently provided by Departmental Secretariats of Agriculture (about 20 %), INCORA (The Columbian Institute for Agrarian Reform) and the Coffee Committee (10 % each); and by the Agriculture, Industrial and Mining Credit Bank (Caja Agraria)(5%). Under a more recent decentralization reform (decree #1946), the National Agricultural Technology Transfer System (SINTAP) was established to outline the respective roles of ICA, Caja Agraria, INCORA and the TAU's on the provision of technical assistance. The decree designates INCORA, Caja Agraria, the Coffee Bank, the Livestock Bank and various producer federations to provide extension directly to small farmers or to help the municipalities establish their own TAU's. Small farmers must be engaged in a peasant economy based on family labor, low income, small size farms and inadequate technology to qualify for free extension services. The cost of this extension is estimated at US$60 per farmer per year (Wilson, 1991) with approximately 280,000 farmers receiving extension services (World Bank, 1990d).

In 1990, the World Bank began funding the Rural Development Investment Program (RDIP) with the Fund for Integrated Rural Development (DRI) as the executing agency. The program was designed to facilitate municipal management and financing of rural development projects in conjunction with the decentralization reforms taking place in the country. With respect to extension, the decentralization reforms required that municipalities provide services by 1992 either through the establishment of the own TAUs or by hiring other specialized organizations (ibid.). Under the project a target was set for municipalities to eventually cover 30% of the cost of extension. After five years the average percentage contributed by municipalities is 45%. This is due to limits on co-financed funds from the center. Any additional extension needs must be covered by municipal discretionary funds. Once the money is transferred the municipality decides how much money will be allocated to extension which depends on how many municipal funds are available to use for extension and the matching requirements (McMahon, 1994). This is unlike other municipal public services where the central level maintains control over expenditures and doesn't actually send money to the municipalities. The municipalities actually receive the money and control its disbursement as it passes directly through the Department level.

To facilitate cost sharing arrangements, DRI has developed a cofinancing matrix as well as a standardized cofinancing contract. The matrix lists the percentages of DRI's contribution, in the form of grants, towards the cost of each project. DRI's share with the municipalities under the RDIP depends on the type of project and the priority needs of the municipalities. Formulas are used to determine rates for each municipality but there is also a lot

of variation and individual negotiation between the national government and each municipality. The cost sharing arrangements provide that the municipalities would use 2% of the IVA allocation (value added tax revenue transfer from central) to cofinance DRI projects in extension, roads, water supply and sanitation. As the municipalities become stronger financially and improve their creditworthiness levels of funding from DRI decrease according to a graduation policy in effect under the RDIP (World Bank, 1990d).

Decree 77 is a further development of Law 12 approved in 1986 which provides for transferring to the municipalities about 50% (from 35% in 1985) of the total revenues the central government collected in 1992 from the National Sales Tax (IVA). The percentage of total IVA transfers varies between municipalities according to population. A large portion of these resources were to be used as counterpart funds for financing projects in the RDIP. The counterpart funds from the central government were to be disbursed monthly, and the IVA funds to the municipalities were to be released in six annual installments, beginning in February each year for approved projects. These arrangements were expected to solve the problems of slow approval and delays in provision of counterpart funds (ibid.).

APPENDIX G - Chinese Bonus System

In 1979, a system of contract extension was introduced. This is in parallel to the reformed production system which is also governed by contracts. Land is still publicly owned but contract production governs the relationship between collectives and self-managed individual households. Payment is tied to production and collectives may retain funds as public accumulation (Qirui, 1988). Agrotechnical Extension Centers (ATECs) operate all the way from the national (NATEC) to the township (TATES) level with the county center (CATEC) being the focal point of the entire extension system.

Extension technicians draw up contracts to provide technical services and inputs to a farmer or a group of farmers. The contracts state the yield targets to be reached along with the methods and times for providing technical advice. Both sides must carry out contract stipulations. The ATECs are supported by the farmers with typically a bonus of 20 percent of the value of the crop above the agreed target. If the harvest falls below the agreed target because of poor technical recommendations or non-supply of timely inputs, the bonuses intended for the extension workers may be docked up to 80 percent of the shortfall (World Bank, 1993d).

APPENDIX H - Zambian PPP Program

After the 1979 World Conference on Agrarian Reform and Rural Development (WCARRD) in Rome, the FAO became involved in various People's Participation Programs (PPP) which took as an objective the expansion of the Small Farmer Development Program methodology. One PPP project was started in Zambia through the Women's Extension Service of the Ministry of Agriculture and Water Development in the remote Western province (Rouse, 1994).

PPP projects provide only a loose participatory framework for promoting group-based initiatives. Group objectives are determined by the groups themselves, with facilitation from specially trained Group Promoters (GPs). Over nine years, the project has built a network of over 200 small farmer groups and 9 inter-group associations that serve as a vehicle for delivery of agricultural extension information to 2130 farmers (73 percent of them women) (Rouse, 1994). PP group structures not only help farmers and their household members solve their own problems more effectively but also to mobilize their own savings for investment purposes and better utilize existing government and NGO service delivery systems. There is also a credit component to the program in which a guarantee fund is set up with a local banking institution to provide credit to groups. This part of the program has caused the most difficulty and so greater emphasis is being placed on savings (McKone, 1990).

The majority of groups are self-sustaining because of membership contributions. The groups have mobilized more than K 188,690 in savings (averaging K 1,945 per savings group) despite high domestic inflation rates. Much of the savings mobilized have been invested in the adoption of new technologies, such as ox-plowing, mango drying, cashew production and fruit production. Other group savings come from various types of income generating activities which vary by group. (i.e. vegetable gardening, products planted communally, renting the use of oxen etc.)

Grants are used by both the Netherlands and the FAO to fund the program through the government of Zambia. FAO representatives along with the government implementing agency sign a project agreement which determines resource contribution responsibilities. GPs are paid by project funds. They may be hired locally or seconded from the Ministry of Agriculture. There is a personnel retention problem when the project ends. Some GPs may return to work for the ministry but for most there is no financial resource to continue their employment. GPs are paid on the length of service basis, but FAO has been encouraged to change that to quality of effort (Clark, 1994).

APPENDIX I - Indonesian Ciamus Program

In 1980, the Center for Environmental Studies at the Institute of Technology in Bandung (CES-ITB) undertook a participatory action research program (Ciamus Program) in the uplands of the Citanduy River Basin in Ciamus District of West Java. The approach of this program was for people to mobilize their own resources to address problems with government assuming the role of enabler and service provider. In one site Cigaru hamlet program staff began to work with the community to define problems and seek solutions. Group formation emerged according to neighborhood blocks (domicile groups) and functional groups like dry-land farmers, and irrigation-users groups. Larger needs which required coordination of the various smaller groups led to the formation of the kelompok usaha bersama ekonomi or KUBE, a hamlet-level cooperative organization. The KUBE differs from the government sponsored KUD (Village Unit Cooperative) where membership is frequently limited to farmers with relatively large landholdings.

Through this evolving group formation the whole hamlet had become structurally transformed becoming a kind of development module available for replication by other hamlets. Cigaru farmers had visited experiment sites nearby to learn about terracing techniques. The institutional support of the groups provided the management needed to apply this technology to Cigaru fields. Surrounding communities became interested in Cigaru's progress since it had been one of the least developed communities in the area. Cigaru farmers were asked to teach farmers from other communities about their experience with local institutional development and new technologies. In three years, the model spread to 24 hamlets of 14 villages in the district. Some 3,000 hectares had been terraced without direct subsidies.

The KUBE became a link to government services like extension. It provided training for community members in new agricultural technologies and also trained government extension workers in the organizational techniques of the Cigaru model. The entire program was based on a community's need to improve the management of its land and water resource base, creating grassroots organizational structures compatible with the traditions and skills of its people and slowing building up its capacity to address more complex problems. Apart from small initial amounts of capital, seeds, fertilizers, pesticides and equipment which farmers repaid directly to the program or by revolving contributions to other communities, the only subsidy of the Ciamus Program was in the time of the program staff (Terrant and Poerbo, 1987).

APPENDIX J - Korean Saemaul Undong Movement

The Saemaul Undong (New Community Movement) has been implemented nationwide since the early 1970's. The movement is a comprehensive socio-economic development program based on the concepts of diligence, self-help, and cooperation through voluntary participation. The thrust of the movement is to reduce the income gap between the urban and rural sectors. The initial steps of the movement were to spark motivation for small community projects to meet broad based community specific needs with government assistance. After an initial gift (usually of cement) villages were classified into three categories according to effort and progress made through cooperation; class c (still underdeveloped), class b (self-help villages), and class a (self-reliant villages).

Government support was proportional to the degree of community activity which fostered a sense of competition and motivated progress. The movement effected every aspect of village life and had an impact on the agricultural extension system. The movement has fostered a higher standard of education, advanced farm technology, and a progressive attitude for community improvement. The farm household average income increased from $740 in 1972 to $3,847 in 1980 producing greater resource capacity for community projects and contributing to extension activities (Chung and Dong, 1984).

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