87160

Guidelines for Agricultural and Natural Resource Policy Analysis

AGRICULTURAL POLICY ANALYSIS PROJECT, PHASE II

Sponsored by the
United States Agency for International Development
Bureau for Research and Development
Office of Agriculture
A.I.D. Contract No. DAN-4084-Z-00-8034-00

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF BOXES

PREFACE

Agricultural policy reform has become an increasingly critical element in A.I.D.'s economic development efforts. To be successful, however, policy dialogue and reforms must be based on careful economic analysis and extensive host country collaboration. To support such analysis, A.I.D. field officers must know what the key issues are and the methods that can be used to analyze them.

The Bureau for Research and Development's Agricultural Policy Analysis Project, Phase II (APAP II) has been a key vehicle through which A.I.D. has fostered such agricultural policy analysis, for assisting USAID Mission-host country negotiations, and for enhancing host country analytical capabilities. One of the lessons of APAP II is that many policies that are not specific to the agricultural sector have important impacts on agricultural performance. Besides highlighting issues like these, APAP II has developed practical methods that can be used in agricultural policy analysis in developing countries.

The results of A.I.D.'s agricultural policy analysis experience are extremely important to USAID Missions and the larger development community. This report is intended to provide practical, operational guidance for development officers in the field. It is hoped that the lessons learned from APAP II will play a useful role in guiding future agricultural policy reform efforts to stimulate broadly-based economic growth throughout the developing world.

FOREWORD

The *Guidelines for Agricultural and Natural Resource Policy Analysis: Issues, Methods and Approaches* have been prepared by the Agricultural Policy Analysis Project, Phase II, sponsored by the Office of Agriculture, Bureau for Research and Development of the Agency for International Development (A.I.D.). The purpose of the *Guidelines* is to present in a clear and concise manner key issues for policy reform, ways in which policy reform can be supported through appropriate analytical methods and training, and to illustrate key issues and methods through selected case studies. The *Guidelines* present this information in the context of policy reform's role in A.I.D. development progamming. They also provide an overview of current A.I.D. approaches to thinking about, building capacity to carry out, and designing programs to promote agricultural policy reform.

The *Guidelines* draw upon the experience of A.I.D., APAP II in particular, in agricultural policy analysis, and in formulating and implementing reform programs. Through interactions with policymakers, country analysts, and USAID Missions in Latin America and the Caribbean, Africa, the Near East, and Asia, APAP II has concentrated its resources on the following broad themes:

- Agribusiness policy and international trade;
- The effect of structural adjustment programs on agricultural sector performance;
- Sustainable agriculture and natural resource management;
- The political economy of agricultural policy reform; and
- Developing domestic capacity to do applied policy analysis.

The *Guidelines* are intended to assist agricultural development officers and other A.I.D. personnel in incorporating policy concerns into programming for the agricultural sector. The *Guidelines* are concise and do not attempt to treat any one topic exhaustively. They may be read in their entirety or consulted selectively for specific guidance on policy issues, methods, and approaches.

This manual was the product of many individuals' collaborative efforts. Gary Ender, APAP senior agricultural economist, was the overall coordinating author. Ender, William Levine (APAP II Project Director), and John Holtzman (APAP II Research Coordinator) reviewed draft sections of the document and provided comments to the individual authors. Charles Hanrahan, senior agricultural economist at the Congressional Research Service and a member of the APAP II Technical Advisory Group, did the final technical editing. We also acknowledge the overall guidance of APAP II Project Officer David Schroder, R&D/AGR/APP chief James Beebe, as well as previous APAP II Project Officer Chris Brown. This publication

would not have been possible without the tireless efforts of Rosemary Hyson and the additional assistance of David Junius.

We hope that these guidelines will prove to be of value to all those involved in the analysis, formulation, programming, and implementation of agricultural policy in developing countries. The authors would be gratified if their work helped to improve the quality of policy dialogue between A.I.D. and host country governments. We welcome comments, criticism, questions, and suggestions from our readers.

John S. Holtzman
Research Coordinator
APAP II
Abt Associates Inc.
Bethesda, MD

1. INTRODUCTION

1.1 Objective of the Guidelines Manual

In recent years, the international donor community has given greater attention to policy analysis, policy dialogue, and policy reform. The Agency for International Development (A.I.D.) has established policy analysis, policy dialogue, and policy reform as key aspects of its development assistance programs. No sector demonstrates a clearer need for such a focus than agriculture. Whether tangling with macroeconomic adjustment, multilateral trade liberalization in the General Agreement on Tariffs and Trade (GATT), water pricing subsidies, food security, growing soil infertility, dietary concerns, pesticide use, or monetary unions, development practitioners always need to understand, analyze, and improve agricultural policies.

This guidelines manual is intended to assist A.I.D. personnel and those who work closely with the Agency to incorporate policy concerns into agricultural development assistance. It builds upon and extends the findings of its predecessor: *Agricultural Policy Analysis: A Manual for A.I.D. Agricultural and Rural Development Officers*. The mandate for revising the original manual is based upon the recognition that significant changes in international agriculture in general, and agricultural policy in particular, have occurred since 1986, when the first edition appeared. Multilateral negotiations to bring global agricultural trade more fully into GATT, the proliferation of regional trade groupings, most notably the North American Free Trade Agreement (NAFTA), and the Enterprise for the Americas Initiative have, for example, heightened the Agency's interest in trade and agribusiness. The relationship between sustainable agricultural development and natural resource management was only beginning to be conceived during the mid-eighties. Private sector development, with an emphasis on agribusiness, has become a prominent theme in A.I.D. development assistance programming. Finally, the recognition has grown that the political dynamics of a country strongly influence the content and pace of policy reform.

These changes have broadened and driven the research agenda for the second phase of the Agricultural Policy Analysis Project (APAP II), whose research includes areas such as structural adjustment, international trade, agribusiness, sustainable agricultural production, natural resource management, and the political economy of agricultural policy reform. APAP II also invested in new methodologies and training efforts to address the Project's capacity building objectives. These changes required further elaboration of the original manual to insure That development practitioners were provided with more comprehensive and current guidance.

This manual will assist Program Officers, Private Enterprise Officers, Agriculture and Natural Resource Officers, and other A.I.D. personnel to incorporate policy concerns into programming for the agriculture sector. Its audience includes all professionals tasked with the responsibilities of designing, implementing, managing, and evaluating projects and programs that include agricultural policy issues.

This manual deals primarily with economic policies affecting agriculture. Such policies include macroeconomic policies, like exchange rate valuation and monetary and fiscal policies;

trade policies, such as tariffs, quantitative restrictions, and administrative barriers to trade; agricultural product policies, like price supports and consumer food subsidies; and agricultural input policies, such as fertilizer subsidies and direct government intervention in pesticide production and distribution. The manual will also address natural resource management, capacity building, and political dynamics, although here, too, the emphasis is predominantly economic. To focus attention on economic policy is not to downplay the importance to agriculture of investments in education, research, technology development, or physical infrastructure. It does, however, reflect a growing appreciation of the critical role that economic policy plays in shaping the performance of the agricultural sector and the central place of these issues in most policy dialogue and policy reform initiatives.

1.2 Organization of the Guidelines Manual

This manual may be read in its entirety or consulted selectively for practical guidance on project or program design, considerations of economic or agricultural policy issues, and for analytical methods or training approaches. The manual makes extensive use of checklists to highlight the special concerns raised by policy programming. The manual emphasizes the practical while addressing key substantive issues involved in economic and agricultural policy making.

Following this introduction, Chapter 2 addresses the role of policy reform in A.I.D.'s agricultural development assistance activities. Chapter 3 examines key policy reform areas: macroeconomic adjustment and trade policy; sustainable agricultural production; and natural resource management; agribusiness development; and the political dynamics of economic policy reform. Chapter 4 surveys the methods and training approaches used in both APAP I and APAP II to support policy analysis, dialogue, and reform. Chapter 5 discusses Agency strategies, projects, and programs to promote policy reform. The annexes present case studies that illustrate key issues and analytical methods.

2. THE ROLE OF POLICY REFORM IN A.I.D. DEVELOPMENT PROGRAMMING[1]

The increased recognition being given to policies as determinants of agricultural development performance implies a need to reexamine A.I.D. assistance programming for agriculture. Three areas deserve special attention:[2]

- Assessing the impact of existing policies on A.I.D.'s assistance strategy for the agricultural sector, in particular on A.I.D.-supported agricultural projects, including determining conditions precedent and establishing special projects that help foster policy change;

- Using program assistance to encourage and support the host government in making needed policy reforms; and

- Engaging the host government in a policy dialogue when policy is a serious constraint to sectoral development and when USAID Mission priorities and resources can support and maintain the dialogue process.

In a given country, action may be appropriate in some, all, or none of these areas. Even when the existing set of policies poses a serious constraint to agricultural growth, it may not be feasible for A.I.D. to emphasize policy in its assistance program because of other constraints such as lack of infrastructure or appropriate technologies in the host country, limited A.I.D. resources, or broad programming considerations (e.g., U.S.-host government relations, other donor activities, and mission staffing levels). Conversely, the absence of major policy problems does not reduce the need to consider carefully the possible impact of policies on planned or ongoing projects; nor does it imply that there is no need to help the host government build its capacity to analyze alternative policies and implement reforms. Agricultural policy issues are of concern in both project and program assistance.

2.1 Agricultural Policy Issues in Project Assistance

Because project assistance constitutes A.I.D.'s main activity, relevant agricultural policy assistance should support and be supported by projects. The A.I.D. emphasis on policy has served to underscore this approach of linking policy and project assistance. In the design and evaluation of A.I.D. agricultural projects in the past, policy issues were generally treated as part of the external environment affecting project success rather than as factors to be dealt with in

---

[1] Adapted and revised by William T. Levine from A.I.D. Evaluation Special Study No. 61, *Agricultural Policy Analysis: A Manual for A.I.D. Agricultural and Rural Development Officers,* 1989.

[2] Using project assistance to build domestic analytic capability to in turn support long-term improvement of agricultural policy making is dealt with in Chapter 5.

the management cycle. For example, in designing crop production projects, the negative consequences of low-price policies may have simply been acknowledged and left at that.

This approach may be acceptable where policy barriers are relatively minor. When policy distortions are significant, project designers should consider including measures that foster better policies in the project design. Such measures may include policy analysis and dialogue, conditionality, and financial support to meet costs associated with the necessary policy change. Even if such an approach is not adopted during project design, a consideration of policy impacts should be included in evaluation plans and in the terms of reference for evaluation teams. Policy problems are no longer relegated to the "assumptions" column of a project's logical framework, but rather have become an explicit concern in project assistance.

Although policies that reduce project effectiveness are generally a major source of concern, policies that artificially enhance project effectiveness can also present problems. For example, if the success of a project intended to encourage the production of a crop depends on the continuation of a subsidy, the efficacy of the project should be questioned.

Box 2.1 briefly reviews the main policies that are likely to condition project implementation and influence project outcomes. Project designers should determine whether such policies are being pursued and, if so, the extent to which they could foster or endanger the success of the project. Potential conflicts between project objectives and current macroeconomic and sectoral policies should be explored and, wherever possible, resolved before project approval. Several of these issues are explored in greater depth in Chapter 3.

Agricultural projects undertaken in an environment of substantial government intervention will almost always encounter policy-related barriers during project implementation. As changes occur in the social, political, or economic environment, the adverse effects of pervasive policies often worsen and raise problems not anticipated during project design. For example, an analysis indicating that a proposed cropping pattern is profitable despite government-regulated prices may be rendered invalid if the assumptions about future yields prove to be too optimistic or if world prices of inputs rise faster than designers had expected. Such situations require a flexible project design to allow for known policy problems as well as active monitoring of changes in relevant policy and effects during project implementation.

When existing policies threaten the success of an A.I.D.-supported project, the Agency has the right and the responsibility to intervene. In such cases, several courses of action are possible:

- Cancel the project or reduce the level of assistance.
- Redesign the project so that the impact of the adverse policies is reduced.
- Incorporate measures to encourage policy change.

BOX 2.1 Identifying Policy Problems During Project Design and Implementation

Economy-wide Policy Considerations

Fiscal Management

- ***Large budget deficits*** cast doubt on the government's ability to meet financial commitments on time, sometimes impeding the flow of A.I.D. funds to the implementing agency and may interfere with the ability of a country to acquire structural adjustment loans, or, at the sectoral level (sometimes impeding the flow of A.I.D. funds to the implementing agency).

- ***Government wage and employment policy*** may make it difficult to attract or retain high-quality personnel in analytical or advocacy positions, or to provide permanent staff for project-created programs and institutions.

- ***The system of national accounts (SNA)*** fails to measure the value of a country's natural capital; i.e., its natural resources. By ignoring the relationship that exists between the environment and the economy, it fails to take account of the loss of capital that occurs when natural resources are consumed beyond their capacity to recover.

- ***Large public sector borrowing*** reduces the capital available to private investors such as agribusinesses, and may drive up interest rates.

Monetary Policy

- ***High inflation*** discourages long-term investment by the private sector, such as construction of irrigation systems, and may lead to overvaluation of the currency, which makes imports more attractive than local products and discourages exports.

- ***Controls on interest rates and credit*** can be a deterrent to saving and may reduce the capital available for investment as well as constrain new investment.

- ***Increasing the money supply to finance large public sector budgets*** promotes inflation and weakens the currency.

BOX 2.1 Identifying Policy Problems During Project Design.... (cont'd)

Trade and Exchange Rate Policy

- ***Overvalued exchange rates*** make local products less competitive with imports and less profitable as exports; they may also artificially reduce the cost of imported inputs (e.g., fertilizer).

- ***Licensing, quantitative restrictions, and other controls*** may prevent the private sector from importing inputs needed for project-supported activities, or from exporting certain products deemed scarce or essential. Quotas may also cut off key imported inputs or create a black market with artificially high prices.

- ***Tariffs and other taxes on imports*** and exports may make project-supported activities in agriculture and agribusiness less profitable.

- ***Government monopolies*** on trade in project-related imports (e.g., irrigation pumps) or exports (e.g., coffee) may make the use of project-supported technologies less profitable or impossible for the average farmer.

Economic Regulation

- ***Price controls*** may make project-promoted activities less profitable or prevent the smooth operation of agricultural markets and businesses and thereby impede the marketing of project-related products or reduce farmer access to inputs.

- ***Margin controls*** on commercial trading activities tend to discourage local traders from carrying modern agricultural inputs and reduce the level of after-sales service and other support provided by private suppliers of agricultural equipment and commercial inputs. Agribusiness may be hampered if loans against inventories of perishable outputs are margined.

- ***Restrictions on internal trade***, such as the prohibition of grain transport across provincial borders, impede the development of private markets for agricultural inputs and outputs and thereby discourage production and the use of new technology, and discourage development of agribusiness.

- ***Interest rate controls and credit rationing*** constrain investment.

BOX 2.1 Identifying Policy Problems During Project Design.... (cont'd)

Sectoral and Subsectoral Policies

Output Prices and Marketing

- ***Depressed prices*** for agricultural outputs, i.e., below world prices, reduce the profitability of new technologies.

- ***Subsidized prices to consumers*** may lead to development of a black market if the government cannot supply the full amount demanded at the lower price; removal of a subsidy may reduce demand for a project-related product (e.g., milk).

- ***Government monopolies on domestic trade*** tend to result in poorly functioning markets and underdeveloped agribusiness, in which there is less demand for farmers' products and lower prices than would otherwise be the case.

- ***Excessive regulation of domestic trade*** in key crops prevents the development of effective marketing channels and discourages production.

Input Prices and Marketing

- ***Subsidies on inputs*** are often a response to shortages in their availability, especially to small farmers, which might otherwise result in black markets. Input subsidies also often accompany low administered output prices for farm products. They can encourage use of inputs beyond the amounts needed to maximize productivity. Overuse can damage the long-term productivity of the land.

- ***Government monopolies*** on input supply often result in reduced farmer access to inputs for new technologies.

- Lower expectations of project success.

- Make continued project funding conditional on changes in policies.

In certain cases, several of these responses may be combined, for example, by building policy analysis and dialogue into the first phase of a project and making policy change a condition precedent to subsequent phases of activities. The design and implementation of projects or project components aimed at building the policy analysis capacity of the host country are discussed fully in Chapter 5.

2.2 Agricultural Policy Issues in Program Assistance

Program or sector assistance is now widely used to influence policy change. The World Bank, through its structural and sectoral adjustment loan programs, continues to champion the use of nonproject loans for policy purposes. A.I.D. is also expanding the use of program loans and grants in the agricultural sector. Monitoring these changes is key to program success, providing the basis for A.I.D. to determine whether satisfactory progress has been made according to agreed-on performance indicators.

Program assistance funds typically provide foreign exchange to help balance a country's external accounts or provide budgetary support to the government for ongoing programs of interest to the donor. The uses of the funds are secondary to the program's purpose, however, which is to promote policy reform. Compared with project aid, program assistance has several *advantages* as a means of supporting reform:

- Implementation of program assistance generally requires few conditions, allowing most of the leverage to be focused on policy reform. This contrasts with the typical development project, for which the host government must supply resources and often make other concessions on how the project should be designed.

- As a rule, program assistance makes fewer demands on USAID Mission management time per dollar expended than does project assistance (P.L. 480 assistance may be an important exception to this rule.[1]) Consequently, more attention can be paid to policy analysis and dialogue than would otherwise be the case.

- When program assistance is conditioned on policy reform, a direct relationship can be established between resource transfers and policy change. With project assistance, however, it is usually difficult to cancel activities midway through implementation, especially if the funds are "tranched" and disbursed as policy conditions are met.

[1] Legislative changes in P.L. 480 contained in the 1990 farm bill, especially the new Title III bilateral food aid grant program administered entirely by A.I.D., give USAID Missions new programming flexibility in using food aid commodities or local currencies in support of agricultural development assistance projects or programs.

- Program assistance gives the host government more flexibility to use funds for its own priorities. Any disruption in such flexibility will provide more effective leverage than cancellation of projects that may or may not have a high priority for the government.

- The visibility of program assistance is controllable. High visibility can be created to increase the amount of leverage inherent in a given loan or grant. Program assistance can also remain invisible, when linkage to donor pressure would be counterproductive or otherwise undesirable.

At the same time, providing program assistance to induce policy reform raises a number of *issues* for A.I.D.:

- If program assistance is contingent on policy reform, appropriate criteria must be specified for measuring progress. The selection of these criteria must be based on careful analysis (the capacity for which must be available to USAID). If unattainable or inappropriate criteria are selected, the policy reform process will fail.

- Some types of reform impose political or budgetary costs on the government. The removal of tariffs on agricultural products, for example, may lower government revenues, which may then need to be replaced by other sources.

- The level of program assistance must be balanced with the degree of change required and with other donor assistance. Even if a country program is too small to effect a large-scale policy change, a carefully-targeted program of sector assistance can be designed to achieve more limited objectives, often in conjunction with other donor actions such as a World Bank structural adjustment program aimed at wider reforms.

- The targets of program assistance need to be determined according to the kinds of policy reform desired. Program assistance may direct budgetary support to agricultural agencies, to balance of payments requirements of the national government, or to the private sector.

- The host government may need technical assistance to implement policy reform. For example, the privatization of a parastatal may require that credit and managerial assistance be provided to private entrepreneurs to help them get established.

2.3 The Policy Dialogue

Existing guidance on policy dialogue provides a thorough discussion of issues concerning the dialogue process. This section is therefore limited to three topics of special concern to agricultural development officers:

- A checklist for designing and implementing policy dialogue activities (Box 2.2).

- The role of the agricultural development officer in agricultural policy dialogue. (section 2.3.1)

- Opportunities for dialogue on agricultural policies (section 2.3.2).

2.3.1 The Role of the Agricultural Development Officer in the Policy Dialogue

The policy dialogue usually focuses on highly sensitive issues like exchange rate determination, wages, food prices, input subsidies, the role of the state in agricultural markets, and prices for major export commodities. Consequently, the dialogue typically will be carried out with the central ministries, such as the ministries of finance, trade, investment, and planning, if it is to go beyond an exchange of views. The sectoral ministries, such as agriculture, rural development, agrarian reform, and irrigation, must also be involved in the dialogue, but their role in setting major policies that affect the national economy is limited in many countries.

USAID Mission representation for the policy dialogue must parallel that of the host government. To lend greater credibility to the dialogue process, the Mission Director or the U.S. Ambassador will often take the lead in launching discussions with senior host government personnel, with active support provided by the agricultural development officer, the program officer, program economist, and other mission staff. "Showing the flag" in this fashion will have considerable bearing on the degree of credence and seriousness with which host country counterparts perceive policy dialogue efforts.

The agricultural development officer and the staff of the agricultural office have three primary responsibilities:

- To **monitor policy developments** affecting the sector as the basis for identifying policy problems requiring Mission attention;

- To **provide technical support** for the dialogue in the form of data on agricultural sector performance, analysis of current policies, formulation of alternative reform packages, monitoring agreed upon changes, and estimation of the impact of alternative policies; and

- To **coordinate with sectoral counterpart institutions**, such as the ministry of agriculture, to support their involvement in the dialogue and to ensure that conflict with ongoing projects and programs is minimized.

A number of tools are available to help the agricultural development officer and his or her staff in fulfilling these functions. Box 2.3 presents the principal characteristics of several useful mechanisms available for supporting and stimulating the dialogue.

BOX 2.2 Checklist for Policy Dialogue Activities

Activity	Key Questions
Decision to Begin the Dialogue Process	Are agricultural policies a major constraint to agricultural development?
	Are macroeconomic policies a major constraint?
	Does the USAID Mission have adequate information to demonstrate to the host government that its policies are restricting the growth and development of the agricultural sector?
	Would dialogue on agricultural policy issues conflict with other U.S. Government interests?
	Is the host government actively engaged in or seriously examining policy reforms?
	Are existing policies clearly prejudicial to the interests of A.I.D. projects or programs?
Establishing Dialogue Content	Does A.I.D. have sufficient information on alternative policies and the impacts of these policies in order to engage in an informed dialogue?
	Is there consensus among key A.I.D. staff on the desired direction of policy change?
	Do A.I.D. views on desirable policy changes coincide with those of other donors?
	Do A.I.D. views coincide with those of key leaders in host government institutions?

BOX 2.2 Checklist for Policy Dialogue Activities (cont'd)

Activity	Key Questions
	Have other USAID Missions in the same region successfully carried out a dialogue on this policy issue and, if so, what can be learned about their experience?
Mobilizing Country Team Resources	What role should the USAID Mission Director and the U.S. Ambassador play in the dialogue?
	Can USAID Mission analysts provide sufficient support for the dialogue, including analysis of alternative reforms?
	If not, are financial resources available to supplement Mission personnel?
	What other A.I.D. analytic resources can be applied to supplement Mission resources—project staff, centrally funded projects, regional support offices?
	Are program resources available to support the policy dialogue, for example, P.L. 480, Development Assistance, Development Fund for Africa funds or Economic Support Funds for program assistance?
Identifying Institutional Actors	Which host government institutions are involved in setting policy in this area, and what are their respective positions on reform?
	Which institutions provide supporting information?

BOX 2.2 Checklist for Policy Dialogue Activities (cont'd)

Activity	Key Questions
	Which institutions are currently involved in implementing the policies? What is the role of other donors—the World Bank, the IMF, U.N. agencies, bilateral donors-in policy dialogue with the host country?

2.3.2 Opportunities for Policy Dialogue

When policy dialogue is not linked to the programming of funds for the agricultural sector, it must often compete with the project portfolio for staff and other resources. In a time of increasing resource scarcity, it is critical to take advantage of opportunities in the A.I.D. programming cycle to further the policy dialogue. While each portfolio has its own constraints and opportunities, four points in the programming cycle typically offer the best openings for A.I.D. policy discussions:

- At the time of negotiation of food aid and Economic Support Fund programming and in the case of African countries when Development Fund for Africa (DFA) projects or programs are being negotiated;
- During sector studies or other major reviews of the A.I.D. portfolio;
- During the design of projects in subsectors in which policy problems are severe; and
- During evaluation of projects adversely affected by existing policies.

Another opportunity for policy dialogue may present itself when multilateral development banks and host countries discuss agricultural sector adjustment loans. Increasingly, USAID Missions are dovetailing their assistance programs so as to synchronize policy objectives with development banks and other donors.

BOX 2.3 Tools for Stimulating Policy Dialogue

Tool	Principal Characteristics
Contacts by Ambassador/ Mission Director with host country President/Ministers	High-visibility means of focusing on policy issues and judging host interest in in policy concerns.
Policy Seminars, Workshops, and Conferences	Can be directed at policymakers and analysts of different levels of seniority. Forum for pointing out costs of policies and alternatives. Means of generating demand for analysis.
Joint Program/Agricultural Sector Assessment	Engages host country in targeted review of policy environment.
Policy Inventory and Diagnosis	A joint in-depth examination of policies affecting agricultural development. Flexible in scope and content. Means of identifying specific policies for dialogue, analysis, and reform.
Institutional Mapping/ Policy Environment	May be used as an internal study aid for developing strategy for policy dialogue. Means of identifying critical institutions and actors for policy projects.
Specific Policy Analyses	Means of enhancing the quality of policy dialogue by filling information gaps discovered during policy inventory. Can serve as basis of policy project design.
Technical Assistance to Project Design and Evaluation	Means of building policy analysis and dialogue into projects. Evaluates project feasibility and progress in terms of major agricultural policy constraints.

Opportunities for policy dialogue associated with Public Law 480 (P.L. 480) food aid programming deserve special attention. In the past, food aid programs have not always been fully integrated into the agricultural portfolio, particularly when the USAID Mission organization had placed P.L. 480 food aid management in another program, such as voluntary assistance. Consequently, USAID Missions may not be taking advantage of the opportunities presented when negotiating uses of commodities or local currencies under the new bilateral food aid grant program and by the additional flexibility inherent in the program after recent changes.

This situation has changed rapidly as P.L. 480 legislation and Agency guidance require the integration of food aid and DA. Missions are seeking innovative ways to apply food aid resources to supplement other funds and support policy reform.

- Negotiation of **Title III bilateral food aid grants** is often the only instance when the host government is formally required to discuss policy questions with the USAID Mission.

- **Innovations in the P.L. 480 food aid legislation** have created opportunities to use local currency generations to support policy reform, particularly in countries facing chronic deficits. Box 2.4 provides a list of the ways local currency might be used.

- **Title III Bilateral Grant** can be used to support policy reforms directly or indirectly, by financing analysis, helping to meet the local costs of reform-oriented projects, and providing budget support to the host government.

In some cases, the need to coordinate food aid among donors has served as the basis for closer cooperation on the policy front as well. The Mali Cereals Market Restructuring project and the Niger Food For Work conservation effort are examples of multi-donor programs that have attempted to use food aid to accelerate reform. Box 2.4 lists thirteen uses of food aid commodities and local currencies spelled out in the legislation creating A.I.D.'s new bilateral Food for Development grant program (Title III of P.L. 480).

BOX 2.4 Uses of Commodities and Local Currencies in Bilateral Food Aid Grants

- The promotion of specific policy reforms to improve food security and agricultural development within the country and to promote broad-based, equitable, and sustainable development;

- The establishment of development programs, projects, and activities that promote food security, alleviate hunger, improve nutrition, and promote family planning, maternal and child health care, oral rehydration therapy, and other child survival objectives;

- The promotion of increased access to food supplies through the encouragement of specific policies and programs designed to increase employment and incomes within the country;

- The promotion of free and open markets through specific policies and programs;

- Support for United States private voluntary organizations and cooperatives and encouragement of the development and utilization of indigenous nongovernmental organizations;

- The purchase of agricultural commodities (including transportation and processing costs) produced in the country;

- The purchase of goods and services (other than agricultural commodities and related services) to meet urgent or extraordinary relief requirements;

BOX 2.4 Uses of Commodities and Local Currencies in Bilateral Food.... (cont'd)

- The payment, to the extent possible, of the costs of carrying out a program of farmer-to-farmer technical assistance (Title V);

- Private sector development activities including loans to financial intermediaries for use in making loans to private individuals, cooperatives, corporation, or other entities;

- Activities of the Peace Corps that relate to agricultural production;

- The development of rural infrastructure such as roads, irrigation systems, and electrification to enhance agricultural production;

- Research on malnutrition and its causes, as well as research relating to the identification and application of policies and strategies for targeting resources to address the problem of malnutrition; and

- Support for agricultural research (including collaborative research which is mutually beneficial to the United States and the recipient country), education, and extension activities.

3. KEY POLICY REFORM ISSUES

Agricultural development is affected by both macroeconomic and sector-specific policies. Policies are often conceived, however, to address certain problems or to achieve certain objectives. This chapter examines some of these problems and objectives, particularly those that are of high current concern in developing countries or are likely to become so in the future. Structural adjustment and trade policy reform are changes in policies that have economy-wide as well as sector-specific impacts. Sustainable agricultural production, natural resource management, and agribusiness development are influenced by these policies, as well as by policies that are more specific. Many countries are trying to design or implement policy reforms that rely on inherently political processes. Thus, the political dynamics of policy reform require attention by A.I.D. development professionals.

The objectives of this chapter are to identify the most important issues in these five key areas—structural adjustment, trade policy, sustainable agricultural production, natural resources management, agribusiness development, and the political economy of policy reform—and to delineate the interrelationships among them. This discussion aims to enhance the understanding of the means of reforming policies in these key areas and the tradeoffs involved in making such reforms. Chapter 4, *Supporting Policy Reform and Analysis with Appropriate Methods and Training*, presents methods for analyzing the policy issues discussed in this chapter.

3.1 Structural Adjustment

Structural adjustment refers to a group of macroeconomic and sectoral policy reforms which in the short run are aimed at promoting a sustainable net foreign exchange balance and in the long run at establishing the preconditions for sustained economic growth. The reforms are frequently controversial because their short-run impact is often seen to be in conflict with longer-run objectives. For example reforms can result in falling real wages and increasing poverty while at the same time being promoted as adjustments necessary to stimulate future employment growth. Similarly, these programs recognize the key role played by the tradable agricultural sector in the economic growth process but at the same time often call for eliminating fertilizer subsidies. Macroeconomic crisis is the immediate cause for the introduction of structural adjustment reforms, and as the reforms move from addressing the shorter to the longer-run objectives, their difference from more general development strategy policies of the pre-structural adjustment era becomes less distinct.

During the latter half of the 1970s and throughout the 1980s, many developing countries experienced macroeconomic crisis characterized by growing foreign exchange deficits and a resistance on the part of private banks, the International Monetary Fund (IMF), the World Bank, and other donor agencies to fund these deficits with cheap credits. The immediate causes of these crises varied by country and time but include such factors as increasing prices for petroleum imports, falling commodity export prices, and rising interest rates following excessive foreign borrowing during the commodity price boom of the mid-seventies. The longer-run causes include

a growing imbalance between government expenditures and revenues, low-productivity public investment programs, and policies which directly or indirectly promote inefficient resource use and low economic growth.

The principal components of structural adjustment programs are macroeconomic stabilization, exchange rate adjustment, pricing policy reforms, capital market reform, restructuring of public expenditure, and promotion of private sector marketing and investment. While early programs emphasized stabilization and the related exchange rate adjustment objectives, recent programs have been broadly based, reflecting a more sophisticated understanding of the potential conflicts and complementarities between the crisis-driven stabilization component and the more growth-oriented structural components. As this understanding has improved, so has the understanding of agriculture's role in structural adjustment.

Macroeconomic stabilization. In virtually all cases, the initial stimulus for structural adjustment programs has been macroeconomic crisis, with stabilization policy leading the reform package. The short-run objectives are to reduce the domestic inflation rate and to bring the foreign exchange current account into a range of sustainable deficit. Stabilization reforms work mainly through the demand side of the economy. They reflect a macroeconomic model that posits a close relationship between government expenditure and revenue (the "internal balance," on the one hand), and net foreign borrowing (the "external balance") on the other. Excess government expenditure, financed largely by the central bank's expanding the money supply, generates income which exceeds the value of goods and services produced in the domestic economy. As this income is spent, it absorbs both domestic and foreign goods and services. This is reflected in the national accounts item called "absorption," an important measure in structural adjustment analysis. As the Government deficit increases, so does the demand for imports, but there is no corresponding increase in foreign exchange earning exports, resulting in an increasing external deficit. The foreign exchange required to finance the external deficit must come from foreign investment, loans, or grants, or by depleting the country's foreign exchange reserves. When these sources of foreign finance are restricted or reduced, a macroeconomic crisis is precipitated. Imports become increasingly scarce, raising their price in domestic currency terms and leading to disruption of domestic production that uses imported inputs. The response of many governments is to administratively ration foreign exchange movements through licenses, multiple-tier foreign exchange arrangements, and other controls.

As foreign financing is restricted, so is the possibility of "venting" a sufficient amount of the excess demand into the world market through imports. This demand, generated by the internal deficit, is now redirected into the domestic market where it cannot be accommodated by increasing supply, thus leading to domestic price inflation. A typical response to this is government intervention in markets to administratively stabilize prices.

Reflecting the perspective outlined here, stabilization programs focus on reducing excess demand. The principal instruments are a reduction in government expenditure and an attempt to improve and broaden revenue collection. These programs are economically contractionary,

been focused on the critical issues of political feasibility, reform sequencing and the length of time over which the reforms are implemented, the particular expenditure reductions involved, the implications for people in poverty, the relationship between the short-run contraction and the longer-run growth objectives of development strategy, and the design of complementary policies that can generate results on the supply side, so that the economic contraction required to establish sustainable deficits is less severe.

Exchange rate adjustment. Excess demand for foreign exchange generated by the macroeconomic forces discussed above can be reduced through economic contraction and/or by raising the price of foreign exchange, a devaluation of the domestic currency. This policy measure does not change world prices but does raise the price in domestic currency of imported and exported goods and their close domestically-produced substitutes, so long as other market interventions do not impede this pass-through.

Exchange rate adjustments operate on both the demand and supply side of the external balance. A deeper understanding of these relationships requires a distinction between the "nominal," or market, exchange rate and the "real" exchange rate. In the short run, a devaluation of the market exchange rate has an impact principally on the demand side of the market by raising the price of imported consumer items and intermediate inputs. In this sense it complements and reinforces the impact of contractionary stabilization policy. The longer run objective of devaluation, however, is to stimulate the production of exports and import substitutes. To meet this objective, however, supply side investments are often required.

The economics of structural adjustment classifies domestic resources and domestically produced goods and services as being either "tradables" or "non-tradables." While the economic definition of these concepts varies according to the nature of the policy issue in question, for the purpose of structural adjustment analysis, these categories are distinguished by how their prices are formed. Tradables are identified by a high degree of integration with international market forces, so that their domestic price is directly influenced by changes in the exchange rate and in world prices. By contrast, the price of non-tradables is determined by domestic supply and demand forces. Domestic resources such as land and labor are usually non-tradables, as are service activities, highly perishable products, and commodities that face high international transportation costs relative to their value. There is usually an important group of non-tradable commodities which are created by policies such as quantitative trade restrictions and other market interventions, which artificially de-link their domestic prices from the influence of world market forces.

The excess demand forces which precipitate a macroeconomic crisis raise the price of non-tradables, thus encouraging their production at the expense of tradables. A principal objective of structural adjustment is to increase the production of tradables in the economy in order to promote foreign exchange earning and economic efficiency. It is here that the relative price of tradables to non-tradables, called the "real exchange rate," enters structural adjustment analysis. The price index of non-tradables relative to that of tradables is the conventional measure of this strategic price. In comparison with the nominal, or market, exchange rate, it

is a better conceptualization of the incentive to reallocate resources between tradables and non-tradables.

When the nominal exchange rate devalues, so does the real exchange rate, in the short run, since the devaluation raises the domestic price of tradables relative to non-tradables. However, if excess demand in the macroeconomy is not corrected by a sufficient contraction in expenditure, demand pressure on the price of non-tradables will continue, and their prices will inflate, thus offsetting the initial impact of the nominal devaluation. As the real exchange rate once again revalues, the incentive to reallocate resources to the production of tradables, and foreign exchange earning, is diminished. This problem has occurred repeatedly in countries that are unable to establish internal fiscal balance. A discouraging result is the need to again devalue the market exchange rate within a year or two of the initial exchange rate reform.

While an understanding of the macroeconomic forces behind relative price formation is at the core of structural adjustment analysis, capturing these effects in a simple, single measure has proved to be difficult empirically. When trade liberalization accompanies budgetary and nominal exchange rate reforms, the prices of tradable exportables and tradable importables, respectively, relative to non-tradables often move in opposite directions. Having raised this caveat, a further elaboration of these issues exceeds the bounds of this essay.

The concepts behind the real exchange rate are a strategic element in structural adjustment because when properly managed this rate represents an important incentive for economic expansion and the use of domestic resources, particularly labor, that are dislocated by contractionary fiscal policy. Management of the real exchange rate is critical in making the transition from short-run stabilization to longer-run economic expansion and growth.

Pricing policy reforms. Just as proper exchange rate management reduces the burden on contractionary fiscal policy of restoring sustainable internal and external balances; pricing policy reforms reduce the burden on market exchange rate devaluation. There is a strong tendency during periods of macroeconomic excess for governments to intervene in markets to offset the undesirable results of macro policies. For example, quantitative import restrictions are placed on specific commodities in order to reduce the demand on scarce foreign exchange. Governments attempt to replace market forces with administered pricing to mask underlying inflationary pressure in the economy. Reducing and eliminating these interventions is an important feature of structural adjustment programs.

Pricing policy reforms have two main objectives:

- Eliminating quantitative trade restrictions (e.g., quotas, import licenses) and replacing them with moderate tariffs to reduce incentives for corruption and to restore the link between domestic and world prices, i.e., increasing the share of tradables in the economy.

- Bringing closer alignment, through the reduction of border taxes, between the domestic and world prices of tradables in order to promote employment and foreign exchange generation and an efficient use of resources through comparative advantage.

These adjustments are strongly complementary with exchange rate devaluation. Research shows that the strongest source of pricing bias facing the agricultural sector often comes from overvalued exchange rates which depress the domestic price of tradable farm products.[1] Using pricing (and trade) policy to increase the share of tradables in the agricultural sector improves the foreign exchange generating leverage of devaluation. Closer alignment of domestic with world prices is aimed at further improving the productivity of sector resources.

Capital market reforms. Capital market reforms constitute a strategic link between the short-run objectives of stabilization programs and the longer-run objectives of structural adjustment. Prior to these reforms most countries have strict controls on the outflow of capital, and the inflow of capital is inhibited by suppressed interest rates, outflow controls, and other regulations. Reduction or elimination of controls on interest rates is a first-step reform. This encourages market rather than administrative rationing of investment and promotes domestic saving. Without this step, full foreign exchange market liberalization is unrealistic. In many countries, this reform has resulted in a net inflow of off-shore capital. In the longer run, financial deregulation is critical to the emergence of a strong private sector.

Private vs. public sector roles in the economy. As the macroeconomic crisis abates, attention of structural adjustment programs shifts to laying the groundwork for longer-term economic growth. An important feature is a reconsideration of private and public sector roles in the economy. In general this involves a shift away from public sector enterprises and the administered prices, protected market practices, and inefficient resource use that are often associated with them. Agricultural marketing and processing parastatals are often a principal target. Asset divestiture is one set of public policy issues that arise in this context, but the larger challenge is to promote private sector investment in a competitive market environment. Capital market reforms and expectations of a stable political and economic policy environment are important facilitating factors.

This aspect of structural adjustment is complementary with macroeconomic stabilization policies aimed at reducing government expenditure. The strong presumption is that resources freed up from public sector management can be more effectively invested by the private sector. At the same time there is consensus that some strategic investments, types of infrastructure and agricultural research, for example, promote private sector profitability but are likely to be forthcoming only under public support. In this sense, the longer-term success of structural adjustment programs depends on the composition of public investments that are undertaken following a reduction in government's aggregate role in the economy.

---

[1] See Krueger, Schiff, and Valdes, 1988.

3.1.1 Agricultural Sector Issues

Agricultural prices. The combination of nominal exchange rate adjustment and contractionary fiscal policy discussed above is aimed at devaluing the real exchange rate and enhancing the relative profitability of tradable economic activities. To what extent do these "macro" policies actually have an impact on agricultural prices? The answer will differ from one economy to another. The "pass-through" of exchange rate policies, for example, can be inhibited by quantitative trade restrictions and administered prices, which effectively turn potential tradable activities into non-tradables. Recent research shows that in most countries world price forces are quickly passed through to domestic prices for agricultural exports, although there are some notable exceptions in developing countries. The pass-through issue is more problematic for domestic food crops and other import substitutes, where quantitative restrictions and administered prices are more likely to prevail.

A second set of issues has to do with agricultural price stabilization policies. Price reforms under structural adjustment aim to eliminate administered price systems and the costly excesses of grain marketing parastatals. Yet there are important economic problems associated with unrestrained price fluctuations in the markets for strategic commodities, important wage goods, or commodities that account for a large share of consumer expenditure. Although such commodities are very few in number, there is generally a public interest in dampening their price variance while maintaining consistency with world price trends. Effective policies usually involve a mixture of public sector inventory and international trade management. Because of the uncertainties which underlie domestic and world agriculture, the annual costs of these programs are unpredictable. Costs can be contained, however, by a realistic spread between floor and ceiling prices and by keeping the domestic target price in line with the recent trend in world prices. Indonesia, for example, uses these principles to manage its rice price stabilization program. Designing policies which accommodate this price stabilization objective is a difficult challenge for countries going through structural adjustment. Technical assistance in policy design and analysis is often needed by developing countries with such policy aims.

Agricultural supply response. How quickly and how much can the agricultural sector respond to a change in relative prices? This is a question raised by critics of structural adjustment programs who are skeptical about the heavy dependence on pricing policy reform. It is well known that the short and medium-run aggregate supply responses from the agricultural sector are low. This is because the agricultural sector of developing countries relies on a large share of farm-specific, or fixed inputs, such as land and family labor, rather than variable inputs from outside the agricultural sector. When the price of tradables, for example, goes up, an increase in tradable production comes largely from resources that are shifted away from agricultural non-tradables. The result is a low aggregate response. While this is correct, it somewhat misses the point. The foreign exchange generated by such a shift in resources is likely to be much larger than that implied by the aggregate supply response measure. Similarly, by shifting the output mix more toward that associated with the country's comparative advantage, there is an efficiency and value gain that is not captured in the traditional aggregate supply response measure.

Nevertheless, supply response skeptics raise important issues about the limited medium-run growth potential of the agricultural sector. In parts of West Africa, for example, non-tradable food crops, such as millets, yams, and plantains, comprise over half of total food calories, making them strategic wage goods in the tradable export component of the agricultural sector. This condition, where a reallocation of scarce labor to agricultural export production entails a contraction of the domestic food supply and an increase in real wages, places difficult constraints on achieving structural adjustment objectives. Additional concerns about agricultural supply response stem from the severe depletion of agricultural production, processing, and marketing infrastructure that typically results from protracted macroeconomic mismanagement. This infrastructure, such as roads, mills, and irrigation systems, upon which agricultural growth depends, cannot be replaced or rehabilitated quickly. Structural adjustment-based growth strategies that ignore this, or rely too much on the inducement mechanism of pricing policy, will encounter significant obstacles. This is an area where the complementarity between public and private investments is critical.

Controversial role of input subsidies. Although structural adjustment programs place emphasis on rehabilitating the agricultural sector, public sector expenditure cuts usually include fertilizer and other agricultural input subsidies. In addition, exchange rate devaluation raises the domestic price of imported fertilizer. Proponents argue that output price increases and marketing system reforms more than offset the disincentive of the removed subsidy. Skeptics worry about the disruptive potential of subsidy removal. Some argue that with so many policies acting as disincentives to the agricultural sector, the fertilizer subsidy is an offsetting, cost-effective, targeted and "second-best" intervention. The importance of this issue depends on the contribution of fertilizer to productivity in the agricultural sector, particularly to agricultural tradables. In countries where the input has become strategic, subsidy elimination should be phased over three or more years and carefully monitored so that policy makers can assess the impact of the supportive elements in the structural adjustment program.

3.1.2 Structural Adjustment and Poverty

The economic contraction associated with the stabilization components of structural adjustment programs raises concern about the economic well-being of vulnerable groups in the population. Although the concern is not misplaced, it is sometimes overlooked that the alternative to these programs will probably produce a far worse result. Continued macroeconomic excess in the face of reduced availability of foreign resources (loans and grants) results in runaway domestic inflation and economic collapse.

In general, structural adjustment and stabilization programs tend to raise agricultural producer prices and food prices. The contraction of aggregate demand also lowers the real price of non-tradable commodities (including some foods) and resources, of which labor is an important component. The impact of these programs on rural poverty, therefore, depends in part upon the relative importance of net food producers vs. net food consumers in rural areas. A mitigating feature for those in rural areas who are net food consumers may occur through the rural labor market. As producers respond to increases in agricultural prices, the demand for

agricultural labor increases, thus increasing employment in agriculture. The net impact on rural workers depends, however, on the role and performance of the non-agricultural rural labor market. In some countries, for example, the period of macroeconomic expansion preceding a crisis results in demand for rural construction and other labor. These jobs may be lost during the stabilization period.

The immediate impact of economic contraction may be less ambiguous in urban areas, where employment falls and food prices increase. This is a difficult political economic environment for introducing the pricing policy reforms discussed above. There is, nevertheless, often scope for redesigning food subsidy programs so that through "targeting" they are more cost efficient at reaching vulnerable urban consumers.

Over the past decade there has been considerable research on the issue of structural adjustment and poverty using actual country case studies. Most research shows that the impact on poverty groups has not been as severe as many expected. This is partially because in many countries, donor agencies have supported an extended adjustment process, so that economic contractions have been less strong than would be the case with shorter adjustment periods. In addition, the country-specific impacts have depended upon economic structure, the actual programs involved in public expenditure cuts, and in various "safety net" interventions, such as public works projects.

3.1.3 Structural Adjustment and Economic Growth

The greatest test of structural adjustment programs is whether or not they usher in periods of sustained economic growth. Economists and others are still struggling to understand the process of economic growth, particularly the public policy factors which influence it, so it is no surprise that the clarity of analysis which underlies stabilization and structural adjustment diminishes as the time horizon of the analysis is extended and as the objectives shift from shorter-run macroeconomic sustainability to longer-run economic growth.

It is certainly a high priority of these programs that the short-run economic contraction of the stabilization programs have some longer-run benefit to society. In this context it is particularly important that public expenditure reductions do not jeopardize investments and recurrent expenditures that generate high rates of social return. Although an easily stated objective, this is difficult to implement in practice. Poor analysis, a priority place for military and public security expenditures, and well-entrenched vested interests play havoc with public budget rationalization. This is compounded by the very real problem of investment design and implementation in the areas of public activity which are generally considered appropriate, in rural infrastructure, for example.

Economic growth can be decomposed into the following sources:

- Improved efficiency of resources already employed;

- Fuller use of existing resource capacity;
- Augmentation of resources; and
- Technical change, including the social learning that is associated with improved human capital and more productive institutions.

The primary objective of depreciating the real exchange rate in the context of structural adjustment is to promote the improved efficiency objective. The full potential of these policies to generate employment and improved productivity is realized over an extended time, while in the shorter run the contractionary effect of public expenditure reductions may worsen the employment picture. When economic growth does occur in the initial stages of structural adjustment it is usually supported by a fuller use of existing resources. Sustained economic growth, however, must reflect an augmentation of production capacity, through the familiar saving/investment process or via the less well understood, but more dynamic, technical change/social learning process.

Does the agricultural sector play a unique role in the growth process? There is no clear answer, but in countries where agriculture accounts for a large share of economic activity there are reasons to suspect that it does. There is evidence for Asia, for example, that growth in the agricultural sector stimulates growth in the total economy substantially in excess of the sector's direct contribution to value added or GNP.[1] The large growth multiplier associated with the agricultural sector seems to come from the pattern of spending, and hence employment generation, that occurs in the rest of the economy following an initial economic stimulus in the agricultural sector.

Although it is generally agreed that market pricing and a dynamic private sector are components of a growth-producing environment, finding and implementing an appropriate role for government in the economy is more problematic, particularly against the background of often poor public sector performance. Yet at the same time, most analysts conclude that important "market failures" exist in developing countries. The critical question is whether the benefits of public intervention in these economic gaps exceed the cost.

The stabilization and structural adjustment programs of the 1970s and 1980s have resulted in important improvements in the macroeconomic position of many countries. The challenge of the coming decade is to convert these short-run gains into long-run economic growth. That challenge is likely to be met with a combination of continued emphases on macroeconomic and sectoral adjustment policies and accompanying investments in institutions and infrastructure.

[1] Hwa, 1988.

3.2 Agricultural Trade

A sound policy for agricultural trade is an essential part of agricultural policy reform. This policy should be consistent with overall trade policy, with macroeconomic structural decisions, and with sector-level program choices. An agricultural trade policy should also provide unambiguous price signals for project appraisal and for private investment. This section outlines some of the strategic decisions that need to be taken in the trade field. It is convenient to start with the trade relationship with other countries, before discussing the choices open to a developing country in implementing trade policies and defining its relationship with domestic agricultural policies.

3.2.1 Relationship with Other Countries

Trade policy refers to those decisions which govern the treatment of imports from and exports to other countries. Such policy operates within a framework of trade agreements. For example, a country has a choice as to whether to participate fully in multilateral agreements, in particular the General Agreement on Tariffs and Trade (GATT); whether to enter into regional or bilateral trade agreements, usually offering preferential trade terms; or whether to follow an independent path to maintain maximum freedom of decisionmaking in matters of trade. Each option has advantages and disadvantages.

Multilateral trade relations. GATT membership has been chosen by 105 countries, including an increasing number of developing nations, with a number of others voluntarily following GATT procedures. GATT membership ensures access to other countries' markets under "most favored nation" terms. It is virtually a prerequisite for attracting foreign capital for the purposes of building export capacity. In addition to GATT membership, signing the various codes that have been negotiated, in particular in the Tokyo Round (1973-79), can be important in attracting investments. Active participation in the GATT, including coordination with like-minded countries, is a way of ensuring representation of national viewpoints on trade issues.

The current Uruguay Round negotiations, which began in 1986, aim to extend GATT rules to include services and intellectual property rights, as well as setting up a permanent trade body (the Multilateral Trade Organization). A successful conclusion of these negotiations would reinforce the benefits gained from joining the GATT. The costs of GATT membership (besides the commitment of scarce diplomatic resources to meetings) are that significant restraints are placed on the conduct of national trade policy. Whereas until recently the actions of developing countries were rarely challenged in the GATT, such de facto immunity is unlikely to continue. Both trade policies and domestic policies that have an impact on trade will have to conform

broadly to GATT articles and codes in the future, subject to derogations and other qualifications coming under the heading of "special and differential treatment" for developing countries.[1]

Regional and bilateral trade relations. Countries often face a second choice: whether to join a regional trade association. This is rarely an alternative to the GATT: most regional trade groups are made up of GATT members and are broadly sanctioned by GATT. The benefits of such groups are that they allow better access to regional markets and encourage investment designed to take advantage of the larger markets thus created. Disadvantages include the additional constraints placed on national autonomy in such areas as tariffs, quantitative restrictions, and investment policy.

Many regional trade arrangements were set up in the 1960s, in both Latin America and Africa. Until recently these free trade areas and customs unions played relatively little role in influencing trade patterns in their regions. African exports remained predominately to Europe and those from Latin America, to both Europe and the United States. Intra-regional trade has remained at a low level. The last few years has seen a revival of interest in such areas with the formation of the Southern Cone Common Market, the Andean Pact in central South America, Economic Community of West African States (ECOWAS) in West Africa, and the preferential trade area in southern and eastern Africa. In Asia, discussions have included extending the role of Association of South East Asian Nations (ASEAN) to include a free trade pact, named the Asian Free Trade Area (AFTA), and trade cooperation under the auspices of the Asia-Pacific Economic Cooperation (APEC) meetings.

Preferential arrangements often exist as a result of existing or former political ties with industrial countries. The main examples of such arrangements are the Lomé Convention which links the 69 African, Caribbean, and Pacific (APC) countries to the EC through a series of bilateral trade agreements and aid commitments, and the Caribbean Basin Initiative, which gives preference to many of the Caribbean countries in the U.S. market. Such preferences have given advantages in terms of access and assistance, but have often been premised on political allegiance or cultural ties. Such preference schemes are likely to be less advantageous in the future. Agro-industries are vulnerable to changes in preferential trade arrangements, as illustrated by the recent debate between the EC and ACP countries over changes in the EC's preferential treatment of bananas. As a result of geopolitical changes, the value of politically-determined trade and aid has been reduced. Successive rounds of trade liberalization in the GATT have reduced the value of preferences. Moreover, the industrial countries themselves are granting preferences to countries within their own regions that erode the value of previously granted preferences for developing countries. Such preferences also have the effect of channeling investment funds to these regional partners.

---

[1] One derogation used extensively has been that which allows import restrictions based on balance of payments problems. The operation of this clause is at present being examined with the idea of making it less generally applicable. The provisional Uruguay Round draft includes a more extended period for developing countries to phase in changes in agricultural trade policy mandated by the agreement.

Unilateral approaches. Many developing countries have adopted policies of unilateral trade liberalization in recent years. The GATT Secretariat reports that 51 developing countries and formerly centrally-planned economies have embarked on unilateral liberalization programs since 1986. Latin American countries have taken the lead, but many countries in Africa and Asia have also taken steps to reduce trade barriers. This has come in past from the realization (by countries and international agencies) of the importance of including trade policy in the general reform of economic policies, but it may also reflect frustration with the slow pace of multilateral trade liberalization. Such unilateral liberalization, by removing non-tariff barriers, has made it easier for countries to participate fully in the activities of the GATT and also to negotiate free trade agreements on a regional basis. These policy changes have the additional effect of reducing the degree of preference given to particular industrial countries under pre-existing preference schemes, and hence stimulating regional trade among developing countries.

3.2.2 Trade Policy Instruments

The decision on the type of commercial relationship with other countries helps to determine the policy instruments used by a developing country. These decisions include the treatment of imports, the encouragement of exports, and the policy toward foreign investment.[1] Of these, import policy sets the tone. An import policy that is oriented toward protecting inefficient domestic sectors raises domestic prices. This acts to the disadvantage of consumers, and contributes to inflation. Such price rises increase domestic production costs, acting indirectly as a tax on export industries. It also attracts investment to these protected sectors which may not be profitable at underlying "social" prices (see section 4.3). Occasionally the protected industry becomes truly profitable after a time, a so-called "infant industry." However, it becomes increasingly difficult to reduce protection that has become built into expectations of return and costs of production. Direct assistance with such investment, through visible subsidies, is generally superior to indirect help through import protection. A policy which is based on generally low and uniform protection levels avoids these problems.

The choice of the protective instrument is also important. Quantitative import restrictions appear attractive as a direct way of controlling imports. Unfortunately, such policies encourage large bureaucracies, state trading, and close connections between state bodies and private traders. There is a tendency toward administrative allocation of quotas (and foreign exchange) with the opportunities for abuse that this provides. As countries move toward reform of internal markets, import tariffs become the best instrument for commercial policy. They are transparent to both domestic and outside interests, and yield accountable government revenue. Moreover, they are consistent with GATT articles, which single out bound tariffs as the only acceptable trade barrier, and with the easy negotiation of free trade areas and other preferential trade zones.

---

[1] Underlying all these issues is that of the exchange rate. The importance of choosing an appropriate exchange rate policy has been emphasized above, in the discussion of structural adjustment. The use of commercial policy to offset inappropriate exchange rate choices is theoretically possible but practically difficult. Constant variations in import and export taxes and subsidies to offset exchange rate imbalances are not feasible.

Export policy poses similar problems, but the cost of inappropriate policies can be even greater. Subsidizing non-competitive exports not only reduces income by wasting domestic resources but, if the country's output is large enough, it may also depress world prices.[1] Governments have to raise taxes to pay for export subsidies, and trading partners are likely to object to unfair competition. As a result, most countries will choose to avoid direct export subsidy programs. Export policy is perhaps better seen as a part of domestic investment decisions. If a firm or sector has export potential, there may be a case for facilitating investment from public or private sources, at home or abroad, so as to take advantage of this potential. Some temporary investment assistance may be called for if private finance is inadequate. Export policy would then be aimed at making it easy for the sector to have access to finance, to be able to import components and supplies without undue taxation, and to be able to meet health, safety, and technical standards required by foreign markets.

Other actions are often required to allow export potential to be realized. Upgrading transportation infrastructure, particularly that geared to trade (container ports, cold storage facilities, etc.) is often a key to allowing such export expansion. Stimulating the provision of key trade and investment services may also be necessary. This is one area where regional trade associations may be able to play a useful role in export development. Allowing for the importation of such services from other countries may also serve to assist exports. These measures are analogous to complementary investments needed to make structural adjustment a growth-oriented development strategy.

3.2.3 Agriculture and Trade Policy

Should agricultural trade policy be different from general trade policy? The general requirements for trade policy apply with equal force to agriculture. A transparent import policy is one based on low and uniform tariffs; avoidance of undue export promotion for industries that are not competitive; private participation in trade decisions to avoid bureaucratic trade policy; and correct exchange rates to allow domestic sectors to compete on both domestic and overseas markets. These would all help agricultural trade development. Agricultural trade policy must take account of both international and domestic differences specific to agricultural markets. In international markets, agricultural goods are subject to strong price fluctuations. In these cases it is difficult to argue that "world prices" should always prevail on domestic markets. Domestic price-stability schemes can be tied to average price levels, but this requires state-trading, quantitative restrictions, or variable tariff policies to avoid importation of price fluctuations. Variable tariff policies (using supplementary tariffs triggered by low world prices) may be the most appropriate trade policy response for imports. In export markets, some limited pooling of

[1] Import restrictions also lower world prices, but this acts to the benefit of the importer. In practice, world prices are unlikely to be much influenced by developing country trade policy, except in a few cases where these countries account for much of the export supplies in that community.

export earnings over time to even out annual fluctuations may be necessary for export development.[1]

Incorporation of agriculture into the full trade rules of the GATT, a process started in the discussions on agriculture in the Uruguay Round, will help developing countries in the long run. Greater access to developed country markets, the move to tariffs to replace quantitative restrictions, and the limits on export subsidies will each lead to a more stable world market. In the short run, there may be some reduction in supplies moving through both commercial and concessional channels, leading to firmer world cereal prices. The benefits from more stable and predictable agricultural markets as a basis for domestic planning should outweigh any negative impact for cereal importers. Those exporting agricultural products to industrial markets should benefit progressively from greater access.

Agriculture is often treated differently from other sectors in regional trade schemes. As a result of extensive domestic intervention in food and raw material markets, many countries have been unwilling to see open regional trade in these products. In fact such trade may be of significant value to regional trading partners, and an effort should be made to include the sector in such plans. Not only is it easier to maintain food security in a wider regional market, and to moderate market price fluctuations, but the development of regional specialization is likely to increase incomes in all participating countries. When agricultural goods make up significant shares of intra-regional trade, such specialization can be particularly useful. It will also tend to reduce reliance on unstable overseas supplies.

Though much agricultural trade is based on natural climatic and resource differences, investment can often substitute for such natural conditions. Agriculture is becoming less like mining and more like such activities as textile manufacturing, where investment in value-adding processes, available low-cost labor and skilled management can develop a viable industry. This again argues that agricultural trade policy follow the same lines as general trade policy. Transparent open markets, with limited government involvement, will facilitate and provide the appropriate climate for investment. This is more likely to be successful than closed or thin markets dominated by parastatal activity.

3.2.4 Interaction of Domestic and Trade Policies

Agricultural trade policy will always reflect a mix of domestic and international pressures. But the clearer is its role in preserving the international competitiveness of the agricultural sector, the more useful it will become in the developmental effort. As trade policy determines the conditions for competitiveness, so domestic policies must reinforce rather than distort that competitive position. The importance of gearing investment policy to this aim of competitiveness has been mentioned. It is just as important that domestic price policy and marketing strategies be consistent with a country's trade stance.

---

[1] Attempts to even out annual fluctuations among commodities are generally less satisfactory, where different groups of producers are involved in each commodity.

In most developing countries, government involvement in agricultural markets is extensive. This ranges from input markets and credit availability to the processing and marketing of the output. Fixed prices for inputs and output, administered by parastatal agencies, often without regard to location or season, appear to give a firm foundation for stability and development. Unfortunately, the result has too often been inadequate incentives to production, coupled with the lack of necessary inputs and capital. In addition, significant problems have arisen when parastatals have chosen the wrong price level to guarantee to farmers. When world prices exceed those paid by parastatals, producers have an incentive to move goods to market by other channels. When domestic prices are too high, large budget deficits can be incurred, and inward flows of commodities from neighboring countries can result.

Domestic market reform involves sending appropriate price signals to producers as to what goods are needed and wanted by consumers (at home and abroad) and allowing them access to productive inputs and capital for investment. This usually means relaxing government restrictions, in particular those that keep prices of farm products down, and will often involve more private sector marketing. Where government agencies continue to purchase commodities, prompt payment to farmers is also required.

Where domestic price increases cause hardship, as with the urban poor, special programs may be needed. In addition, stabilization programs can usefully protect domestic industries from the vagaries of short term world market price fluctuations. Often these stability programs will call for strategic reserves of food products, though the significance of more liberal trade on the availability of regional supplies should not be overlooked. Freer trade will reduce the need for domestic storage, both public and private, though there will always be a place for adequate pipeline stocks. Stabilization policies should not mask the longer-term trend of prices on world markets: the use of moving averages of import and export prices as a basis for stabilization policies can avoid such problems.

3.3 Sustainable Agricultural Production

3.3.1 Sustainable Agriculture as a System

Sustainable agriculture[1] (SA) is a component of a broader concept of sustainable development. The Brundtland report, *Our Common Future*, of the World Commission on Environment and Development in 1987 defined *sustainable development* as "development that

[1] This manual somewhat arbitrarily divides resource management issues into sustainable agriculture and natural resource management of forests, watersheds and wildlife areas. In practice, sustainability concerns a gradation of coexistant land use systems in any given landscape—from intensive cropping through cattle ranching, agropastoralism, silvopastoralism, agroforestry, plantation forestry to natural forest management. National Research Council, 1993.

meets the needs of the present without compromising the ability of future generations to meet their own needs."[1]

The above definition can be applied to agriculture and made workable. Sustainable agriculture may be defined operationally, at the level of the farm, as a synergistic system combining four components: (1) Integrated Resource Management, as in soil and water conservation; (2) Integrated Pest Management, as in biological control of pests; (3) Integrated Nutrient Management, as in use of forage legumes in rotation to reduce dependence on synthetic nitrogen fertilizer; and (4) Integrated Farm Management, as in use of crop-livestock systems to more fully utilize legumes and farm labor.[2]

Sustainable agriculture emphasizes natural resource conservation and the prudent use of synthetic chemicals to ensure safe and adequate supplies of food and water for the well-being of both current and future generations. Sustainable agriculture envisages agriculture as part of an interdependent farm, agroecological, institutional, and socio-cultural *system*. That integrated system is illustrated in Figure 3.1 and discussed below, especially as it applies to developing countries.

Farm. The core of the system is the farm household, which supplies labor, capital, and management. The four main, farm-level components of sustainable agriculture are discussed below.

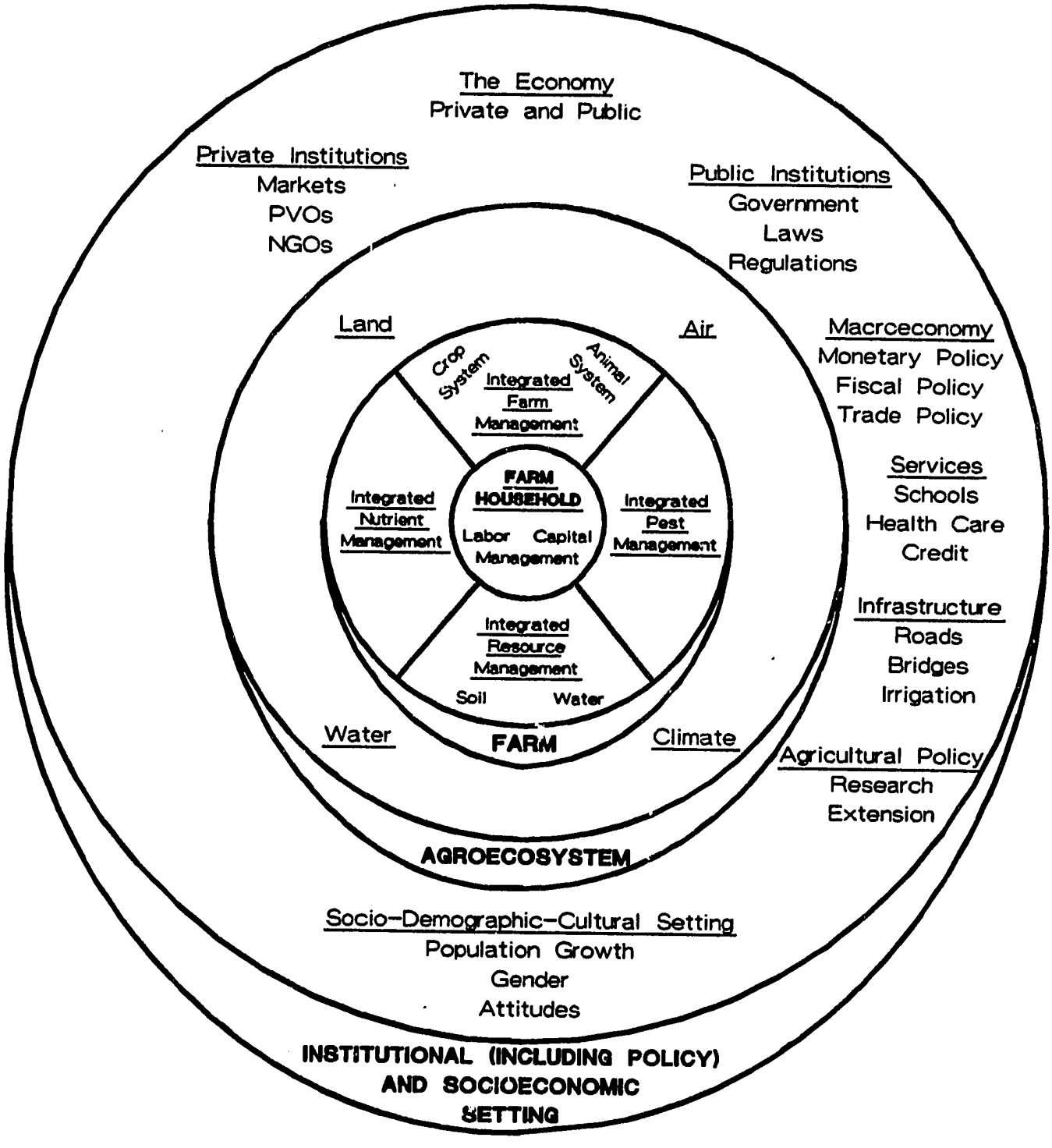
1. **Integrated Resource Management (IRM).** Emphasis in IRM is on soil and water conservation. The objective is not preservation (non-use) but conservation (wise use). Use of nonrenewable resources is consistent with sustainable agriculture as long as marginal social benefits exceed marginal social costs, where social costs include the *full* costs or benefits to society *over time*, whether or not they are reflected in market prices. IRM focuses on reducing soil erosion and degradation while maintaining or increasing soil fertility.

   IRM is likely to feature *conservation tillage* in one of its various forms such as *no tillage* or *minimum tillage*. If feasible, some crop residue is left on the land to reduce wind and water erosion. Clean plowing that exposes the soil to heavy rains or wind is avoided to reduce erosion. An effort is made to hold soil loss below

[1] A recent National Research Council (NRC) report summarized the common characteristics of agricultural sustainability as: *"long-term maintenance of natural resource and agricultural productivity; minimal adverse environmental impacts; adequate economic returns to farmers; optimal production with purchased inputs used only to supplement natural processes that are carefully managed; satisfaction of human needs for food, nutrition, and shelter; and provision of social needs of health, welfare, and social equity of farm families and communities."* NRC, 1993, p. 22.

[2] See Tweeten, 1992, p. 41.

FIGURE 3.1 Sustainable Agriculture: A Systems Model[1]



[1] Model adapted from unpublished SANREM Proposal prepared by the Ohio State University International Consortium.

tolerance levels-loss will be greater than zero but low enough to avoid long-term reduction of productivity-while maintaining soil structure and organic matter. Inaddition to on-farm effects, downstream costs of erosion such as siltation of streams, reservoirs, and irrigation systems are reduced. Downstream costs frequently are larger than on-site costs of soil erosion. The distinction is important, because self-interest motivates farmers to restrain on-site costs but not necessarily downstream costs.

Publicly provided irrigation water frequently is underpriced. The result is excessive use of water near irrigation heads causing waterlogging and salinization, and inadequate water supplies at the tail. Water use efficiency and yields are low.

There are important interactions among the components of sustainable agriculture. A tillage system and rotation system combined to conserve soil and water can make most effective use of nutrients. But sometimes the interaction is negative—crop residues left on the surface to conserve soil and moisture may harbor plant pathogens. Herbicides used to control weeds in soil-conserving no-till may contaminate drinking water supplies.

2. **Integrated Pest Management (IPM).** IPM emphasizes biological control of pests. Synthetic pesticides are sometimes used but only after pest infestation has reached a critical threshold that would entail significant economic losses. Narrow-band pesticides sparing beneficial species such as predators of pests are the treatment of choice. Use of crop rotations, pest-resistant varieties, natural predators of pests, and very selective use of pesticides may require considerable management skills and technical support. Sometimes IPM and other sustainable agricultural practices substitute labor for chemicals. This will suit developing countries if they have low-cost agricultural labor. On the other hand, labor may be in short supply at critical times. Like other components of sustainable agriculture, IPM does not suit all farmers or all geographic areas.

3. **Integrated Nutrient Management (INM).** Crop rotation systems including forage legumes are key tools of INM to maintain soil fertility and structure. Shifting cultivation[1] has traditionally been the rotation of choice in some areas of the humid and sub-humid tropics. Population growth, lack of alternative employment, and poverty have interacted to intensify pressure on the land to produce food. For example, what was a sustainable system with a 20-year rotation of 2-3 years in crops and 17-18 years in bush fallow becomes an unsustainable system on fragile soils and a 5-year or less rotation. With high population density and lack of alternatives to agriculture, the shifting rotation may have to be abandoned altogether. Efforts of the

[1] Slash and burn.

International Institute of Tropical Agriculture in Nigeria to find alternatives to shifting cultivation in those humid tropics have to date shown only limited success.[1]

Although a successful INM system of annual crops is likely to be a *rotation* containing a crop legume to supply nitrogen, food, and/or feed, sometimes tree crops are the best alternative. A study in Liberia indicated that the household of a typical farm could supply itself with three times as much of the local staple, rice, by producing and marketing tree crops and purchasing rice than by producing its own rice.[2] Trees, the native vegetation, were better for the fragile laterite soil and were sustainable, while the annual crops produced in the shortened slash-and-burn rotation were not.

Other difficult decisions must be made. For example, environmentally sustainable latex for rubber production is possible in the mature forests of the Amazon basin, but yields are low from mature species, and costs are high because trees are scattered. This system cannot compete economically with the intensive rubber production of Malaysia, which also is environmentally sustainable. The tradeoff then in the Brazilian system is between species diversity and habitat with the mature forest system versus economic feasibility with intensive rubber production. Well-planned, diversified farming systems can reduce risk, make fuller use of farming resources, protect the environment, and be economically viable, but no system is likely to be superior to another in all dimensions.

4. **Integrated Farm Management (IFM).** IFM ideally integrates components of a sustainable farming system to produce a whole greater than the sum of the parts.[3] By themselves, a soil-conserving system, or a synthetic chemical-saving system, or a crop rotation system may reduce the real output of a farm. Sustainable agriculture should combine all components in a system that sustains the farm output level and growth compared to conventional agriculture. For example, for some farmers, a livestock system will complement a crop system by utilizing grains, forages, and crop residues and providing manure, while supplying food and fiber for home consumption and for sale.

   Sound management and improved technology are essential to maintain the economic viability and sustainability of the agroecosystem. Such management requires supportive technical and general education services—as discussed below.

---

[1] Barker and Chapman, p. 486. On the other hand, Sanchez reports success using higher but still modest capital inputs with continuous cropping in some regions in the humid tropics: cropping with acid-soil tolerant rece and cowpeas followed by duczq coupled with modest applications of lime, phosphate, and potassium sustains output in a low-input system. Additional analysis will determine how widely this and related IRM systems can be applied.

[2] Epplin and Musah, 1985.

[3] Tweeten, 1992.

Agroecosystem. Farms operate within an agroecosystem including air, water, land, and climate (Figure 3.1). The ecosystem can be viewed as two components. One is local; the producer both influences and is influenced by it. Actions of the producer can uplift or degrade that system. The second, larger global ecosystem, although not depicted in Figure 3.1, influences the producer (e.g., global warming) but the individual producer cannot influence it perceptibly. The global ecosystem may be viewed as including not only the agroecosystem but the entire Figure 3.1 with its institutional and socioeconomic "layer."

In developing countries, agriculture frequently competes with forests for the resources of the ecosystem. The loss of tropical forests to agriculture, and unsustainable agriculture in particular, currently is a global concern because it entails loss of species habitat, carbon dioxide build-up, and soil and water loss. Tropical forests are helpful in converting into oxygen the carbon dioxide produced disproportionately in developed countries.

Institutions and Socio-Cultural Setting. Agriculture functions in a larger system that includes input supply firms, farms, product marketing firms, public institutions (including policies), culture, and population (lower layer, Figure 3.1). In addition to being environmentally sustainable in the agroecosystem described above, agriculture must be economically and socially sustainable. Institutions have a major impact on agriculture at the farm level. They influence technology and economic and social sustainability.

To be *economically sustainable*, systems must be viable as measured by perceived and actual benefits exceeding costs to producers. Farmers may be coerced to conserve in the short run, but farmers need economic incentives to perform in the public interest in the long term. Worldwide evidence indicates that producers do respond to economic incentives. Hence a useful approach to foster sustainable agriculture is to use taxes and subsidies to align private costs (returns) with social costs (returns) and depend on farmers to respond. A goal in economic sustainability is not to preserve every farm or rural village, but to establish correct prices and let the market transmit information to individuals making decisions.

Science and technology also are part of the lower layer in Figure 3.1. Technology refers to physical, chemical, and biological processes relating inputs to outputs. Given certain resources, technology defines the limits of growth. However, through scientific research and development, human beings have continually improved technology. Thus we may be able to develop the biological pest controls and the greater pest, frost, salt, and drought resistance necessary to meet growing food and fiber needs without undue pressure on the environment and natural resources.[1]

A developing country may wish to conserve not only its natural resources but also its socio-cultural heritage. *Social sustainability* may be expressed in terms of maintenance of family farms or rural villages. The term also may refer to the need for sustainable agricultural

[1] See CAST, 1988.

practices and policies to be socially acceptable. Preservation can be costly. How much to subsidize agriculture to preserve family farms and rural villages is as much a political as an economic issue. Not even the richest countries in Europe and North America have been able to preserve all their family farms, despite expensive commodity programs.

Population density, growth, and culture greatly influence the overall system within which agriculture functions. Cultures differ in propensities to work, save, invest, accumulate goods and services, and conserve resources. One must recognize the importance of culture in sustainable agriculture, although the roles of institutions such as markets and government policies are emphasized in subsequent sections.

3.3.2 Applying the Concept of Sustainability to Agriculture

The term "sustainable" derives from the concept of maximum annual yield of a forest or fishery that is sustainable over the long run. Too rapid exploitation will deplete tree or fish stocks, and yield will drop over time. While sustainable agriculture has an analogous meaning, food and fiber industries are challenged to meet the needs of a world *growing* in population and income.

Some 90 million people currently are added to world population each year. Thus, according to World Bank estimates, global food output will need to more than double before population stabilizes early in the next century.[1] Productivity per unit of natural resource must increase because most of the world's land and water resources suited to agriculture have already been brought into production. Much of the potentially arable land lies in tropical rain forests, semi-arid savannahs, and drought regions with undeveloped infrastructure. It is environmentally fragile and of low physical and economic productivity.

Key problems. The objective of sustainable agriculture is to maintain or increase crop, forest, and animal productivity by wise use of natural and other resources over time. In contrast to conventional agriculture, sustainable agriculture gives greater attention to ameliorating the agroecological problems listed below.[2]

---

[1] This assumes conservatively that food output will need to keep pace with projected population growth (see World Bank, 1992, pp. 254, 255). Income growth will further raise food demand.

[2] Global warming from greenhouse gases, especially carbon dioxide, is a prominent environmental issue. A related issue is ozone depletion from chlorofluorocarbons and other sources. These issues were not listed above for developing nation SA because the major source of gases is fossil fuel consumption in developed countries. Low income countries also are sources. For example, China is currently a major producer of CO_2 and within a decade is predicted to rank number 2 among all nations because of increased burning of its abundant coal resources. Developing countries are predicted to exceed developed countries in production of greenhouse gases by the year 2000.

Whatever the source, greenhouse gas impacts will be felt in developing countries. Farm workers will be subject to skin cancers from atmospheric ozone depletion. Higher carbon dioxide levels accelerate plant growth and extend temperate cropping farther north. On the other hand, hotter temperatures and more unstable weather may increase drought and desertification in areas previously suited to cropping.

1. **Degradation and depletion of soil resources.** Soil erosion remains the major environmental problem in agriculture. Overgrazing, inappropriate cultivation practices, and overpopulation strip land of protective vegetation and expose it to wind and water erosion (desertification).

2. **Contamination of food and water supplies by fertilizers and pesticides.** The concern is mainly with synthetic chemicals, but manure also can be a source of contamination.

3. **Tropical deforestation.** Forests are often defined as part of agriculture. Whether so defined or not, forests often interact with agriculture because they are watersheds, are sources of farm household food and firewood, and are cleared for farming.

4. **Loss of species and hence of biological diversity and genetic stock.** Agricultural commercialization can raise land-use intensity and bring monoculture. Loss of species diversity means more risk to remaining species from intolerance to drought, pest, disease, or other pestilence. Clearing forests for farming or grazing may cause species extinction and reduce bio-diversity. The diminished genetic pool offers fewer options to breed resistance to pests and in other ways improve beneficial species.

3.3.3 Policies and Programs for Sustainable Agriculture

Economic growth is essential to lift people out of poverty, either directly through enhanced personal earning power or by transfers from others, and to support schools, roads, health services, and agricultural research and extension essential for food security and sustainable agriculture. Income provides for savings and investment in human, material, and technological capital formation.

Goods and services can be allocated by the public or private sectors. Because people are responsive to incentives, markets are the most efficient allocators of resources where use by one consumer diminishes use by another and where access can be controlled. Countries that have rejected markets have the worst environmental degradation. At the same time, markets

---

Although developing countries are not yet the major source of global warming, they are an important part of any cure. Farming practices that raise soil organic matter can reduce CO_2 in the atmosphere. Tropical forests are especially critical in converting carbon dioxide into oxygen and in tying up massive stocks of carbon in vegetation. Conversion of forest to farmland reduces the capacity of the biosphere to absorb carbon dioxide.

A case can be made that a tax on fossil fuel consumption in developed countries could be used to compensate developing countries for preserving forests. If compensation is not forthcoming, at issue is the appropriate stance for developing countries. Environmental protection is in developing countries' own best interests with or without compensation. Poorly managed forests (cleared of logs for export at prices below the market level, after which marginal, fragile lands are settled by farm squatters) and "paper" national parks (also settled by farm squatters) do not serve domestic public interests. A nation's interests are better served by more careful forest management. An example is more intensively managed forests with sequential harvests and replanting with improved species coupled with national parks to preserve species—all protected from settlement.

BOX 3.1 ***Recognizing Circles and Interactions in Sustainable Systems***

An example from Sub-Saharan Africa illustrates the interaction of agriculture, population, and environment in an unsustainable system (see Cleaver and Schreiber). Key linkages are among traditional crop and livestock production methods, land tenure systems, women's responsibilities, and methods of forest resource utilization.

As population grew, shifting cultivation rotations became shorter and people no longer could move to where conditions were favorable. An ineffective agricultural research and extension system coupled with poor infrastructure and public services restrained emergence from subsistence. Inappropriate price, trade, and macroeconomic policies precluded productivity gains and intensified poverty and destructive land-use practices. Local woodlands, the common property of all and the responsibility of none, were stripped, so women and children had to travel ever farther to gather firewood.

Men frequently go off to cities seeking work. Consequently, women are responsible for raising children and providing food. In Zambia, for example, women were working an average of 8.5 hours per day in agricultural tasks and 5 hours per day in household tasks. With declining farming productivity, fewer men to help, and longer distances to firewood and water, women seek to reduce their work load by bearing more children to supply labor and "social security."

The circle is vicious. Women are kept out of schools to work at home. They marry young and have many children. Rapid population growth contributes to further land, water, and forest degradation, and to greater demand for labor (children) to help provide necessities. Fragmentation of land holding among family members diminishes opportunities to realize scale economies.

Reversing this circle requires increasing agricultural productivity, infrastructure development, family planning, conservation, property rights, improved schools and primary health care, sound macroeconomic policies, and higher status for women. The latter status implies giving women greater access to schooling, jobs, extension services, and credit. Outside help from donor agencies can be crucial to break the circle of social, economic, and environmental degradation depicted above.

Poverty is often blamed for development pressures on land, forests, and wildlife but such blame is oversimplified. Aborigines, poor by almost any standard, have a history of intervening little with primordial nature. Agriculture and irrigation, dating back perhaps 10,000 years, began serious intervention in nature. There is no turning back, however, because only a few of the world's current population could be fed using the food gathering methods of aborigines. Thus the environmental problems of developing countries are caused not by poverty alone but by poverty compounded by population growth and mismanagement of resources.

alone will not properly attend to natural and environmental resources. A lean but effective public sector doing a few things well is essential for sustainable agriculture.[1]

[1] See Tweeten et al., 1992.

The historic pattern is for environmental degradation to initially worsen and later to improve as economic growth progresses. A strong economic base made possible by market-led, broad-based, sustainable income growth can finance public measures supporting an environmentally sound agriculture.

Policy Environment. Sustainable farm level activities will be feasible only with a proper institutional and economic policy environment. Basic elements include:

- **Security and administration.** Legal provision for private property, and a stable government that respects and protects property and human rights are essential for long-term investment plans to be made and carried out.[1] Improvements in public administration are often essential before other reforms and policies can succeed. In particular, policy reviews underway at local, national and international levels must be broadened to consider the negative effects that policies have had on sustainable land use. These reviews should assist in recognizing the full economic costs and benefits from resource use, including the key environmental services they provide, the potential for sustainable use of the resource, the opportunity costs involved in land conversion, and the rights of future generations to resource services and products. Where possible, these costs and benefits should be expressed in standard economic measures, with cost and benefit streams discounted to a common base.

- **Monetary and fiscal policy.** A nation cannot long maintain the unsustainable practice of living beyond its means—consuming more than it produces and spending more than it earns.[2] The results, besides excessive borrowing and debt, are likely to be printing of money and inflation. A money supply properly increasing only at the rate of real national output avoids inflation, an overvalued currency, and distorted interest rates.

  After an initial phase of living beyond its means, a nation must adjust to reality by going through a stabilization or recessionary phase. The greater instability and slower economic progress associated with this phase is avoidable with sound macroeconomic policies.

- **Agricultural price and trade policy.** Overvalued currency and high import and export taxes impoverish nations and lead agriculture toward subsistence, while open trade speeds development. To raise the revenues that even frugal governments need, value added, sales, and property taxes are less damaging to the economy than export taxes.

---

[1] In Africa, some tribal arrangements provide access to property for long periods without legal title or rights to buy and sell. Such arrangements often have shortcomings, but each system needs to be judged on its individual merits.

[2] Tweeten, 1989.

When the public sector charges farmers less than the marginal cost of electricity, fuels, and other inputs it supplies, the result is excessive use by farmers and fiscal problems of government. In Indonesia, for example, severe environmental problems originated from excessive application of synthetic fertilizers and pesticides made cheap by government subsidies. In developed countries, farm commodity prices are often subsidized at a cost to consumers and taxpayers and at a loss of production resources. In developing countries the problem is more often reversed—farmers are taxed by being overcharged for inputs and underpaid for their products by the government or its agencies. Food price ceilings and taxes on export crops diminish farm income, some of which could have been used to develop resource-conserving practices and structures.

The view must be rejected that trade is inconsistent with environmentally sound agriculture because it encourages specialization and monoculture, and "wastes" energy and other resources for transportation. If taxes and subsidies are used to align private and social costs, consumers can be relied on to make sound decisions. With proper pricing, buying a commodity where it can be obtained most cheaply, at home or abroad, will minimize resource use. Resource savings through specialization, economies of size, and comparative advantage can offset energy costs for transport, making trade the efficient alternative. The result is overall renewable and nonrenewable resource savings consistent with sustainable agriculture.

Social services. Improved farm management is essential for sustainable agriculture. Farm practices and management cannot be improved significantly without farm literacy and numeracy. Basic education and primary health care help to support sustainable agriculture. Education of women is especially important. Women play a major role in farm management and operations in developing countries, especially in Africa. No nation has been successful in achieving high living standards and reducing birth rates toward zero population growth without attention to the education and status of women. Health care can begin with basic services such as immunization, family planning, and sanitary drinking water supplies.

Infrastructure. Without the infrastructure of roads, bridges, and port facilities, agriculture tends to subsistence and poverty. Improved roads permit the modernization of agriculture essential to raise productivity, reduce pressures on natural resources, and raise food security. However, environmental impact assessments (EIA) of infrastructural development projects should be broadened to consider anticipated changes in land use systems and their subsequent social effects. The synergism and sequencing of sustainable agriculture are apparent: Rising productivity raises income, which supplies income, savings, and investment for human, material, and technological capital formation. This capital provides resources to finance education, science, technology, and infrastructure to bring further productivity of resources along with environmental protection. Higher income and better health lower population growth, further reducing pressure on the environment.

Underpricing of publicly supplied irrigation water is widespread. The result is excessive use of irrigation water in some instances and inadequate funding to construct needed irrigation facilities in other instances. Excessive use can deplete underground aquifers and cause attendant farm and rural decline along with other problems noted earlier.

Agricultural research and extension. Agricultural research and education are especially important for sustainable agriculture. In developing countries, adaptive applied research rather than basic research is appropriate. Unless agricultural productivity is raised to avoid having to extend cropping to cutover forests and fragile lands, the battle for an environmentally sound agriculture in the developing world will be lost. *The struggle to save forests will be decided by productivity gains in existing agricultural areas.* Sustainable agriculture is not yet an operational system for many ecosystems in developed or developing countries because technology is inadequate.[1] Many developing countries cannot afford basic or even much applied research. Hence many of the practices and technologies for sustainable agriculture must be adapted to local needs from the work of the Consultative Group on International Agricultural Research (CGIAR) system and from developed country research systems. Active liaison of a developing country's research and extension programs with global research networks is essential for successful technology transfer.

Research is essential to develop energy-saving, resource-saving, and environmentally sound technologies such as biological pest control to make sustainable agriculture feasible. Science applied to raising yields reduces pressures to crop fragile lands.

Research should address numerous problems including how to maintain soil organic matter and soil structure, prevent soil erosion and degradation, supply nutrients and water, and control pests, diseases, and weeds. Controlled scientific experiments in plots will be essential to determine crop responses to new inputs, but research for sustainable agriculture places greater emphasis than conventional research on sustainable production from the *whole farm* rather than individual crop or livestock enterprises.

Often these whole farm settings will be existing private farms operated by local families. Extension and research personnel can work with farmers not only to demonstrate sustainable agriculture to producers but also to learn from farmers.[2] The challenge for extension is especially keen because sustainable agriculture requires enhanced farm management skills that sometimes must be transmitted person to person in developing countries. As indicated earlier, the job of extension is made easier if attended by investment in basic literacy and numeracy.

---

[1] Tweeten, 1992.

[2] In this context, the knowledge base of indigenous peoples is an especially important and underutilized resource for sustainable land use.

3.4 Natural Resource Management

Concerns about the links between resource use and development are now widespread in developing countries. Many developing countries with high population densities cannot afford to wait for future income improvements to attend to water supply, sanitation, and pollution control problems. Developing countries with poor populations increasingly moving onto marginal lands have found that sound resource management and the quality of the human environment are matters of overriding importance. Still other countries, dependent on their natural resources for employment generation and economic development, now realize that efficient use of these resources is critical to long-term growth. This section explores the impact of both the general policy environment and resource sector-specific policies on natural resource management in rural areas of the developing world. It emphasizes the links between agricultural development and resource management issues in the forest, biological resource and wildlands, and water resource sectors.

Notwithstanding aggressive national environmental campaigns, most developing countries now face a number of major environmental problems in the rural sector:

Deforestation. Deforestation is occurring at high rates, threatening wood supplies and secondary forest products and reducing the provision of critical ecological services such as the protection of watersheds and the preservation of important natural habitat.

Land degradation. Marginal lands best left under forest cover or best suited for grazing are being converted to agriculture with significant on- and off-site social and environmental costs, including on-site erosion and soil fertility declines, downstream siltation, and encroaching desertification.

Water shortages. Increasing water demands and deforestation have induced shortages in dry years, irregular runoff, and increased erosion. These can create problems for irrigation and drainage systems and changes in inflow and sediment delivery can contribute to waterlogging and salinity problems. Groundwater over-exploitation, inducing land subsidence, well abandonment, and saline and toxic intrusions into aquifers, are also growing concerns, particularly where rural industry and mining intensify water quantity and quality problems.

Water pollution. Silt runoff from upstream erosion increases turbidity downstream and damages aquatic life, increases water treatment costs, and increases deposition on streambeds. This induces flooding as well as navigation and hydropower generation hazards. Organic pollution from human waste and garbage is also a major problem, particularly in poorer rural areas. Agricultural runoff, including both pesticides and fertilizer residues, also contributes to water pollution.

3.4.1 Main Themes

Two central themes run through most discussions of sound natural resource management. **First, many natural resource problems are remarkably interrelated, so some of the most effective policies can solve several problems simultaneously.** For instance, a comprehensive watershed management program, supported by appropriate macroeconomic policy, can fight soil and water erosion in fragile uplands, contribute to poverty alleviation and employment generation, reduce urban in-migration, lessen siltation of downstream reservoirs and irrigation systems, improve the predictability of runoff, promote inland navigation and fisheries, and ensure estuary control.

A second major thrust is that while conventional regulatory approaches have been effective, they are not always entirely appropriate to developing country requirements and need to be supplemented. Setting uniform standards or requiring specific control technologies is a difficult and expensive method to achieve environmental improvements. The key to reducing inefficient natural resource use and environmental degradation is to ensure that consumers and producers face the true costs of their decisions—not just their direct costs, but the full social and environmental costs of the consequences of their actions. Regulatory systems do not provide any basis for reflecting the full social costs of resource use—there is no feedback between the social costs incurred by particular actions and the level of the regulatory standard.[1] There are also significant efficiency losses incurred under regulatory systems, especially where economies of scale exist. By enforcing "best technologies" on resource exploiters "across-the-board," regulatory policies require that resource users reduce harvests (or limit resource use) uniformly regardless of harvest reduction cost differentials (due to differences in management, technology, age, etc.).[2] The efficient least-cost solution would set a schedule of regulatory standards such that the marginal costs of reduction were equalized across resource users, thereby minimizing aggregate reduction costs without disrupting the efficiency of short-run private or long-run public harvest levels. The massive informational demands and administrative costs of such a "point-to-point" regulatory scheme, however make it largely impractical. Finally, the complexity and national focus of regulations makes them especially susceptible to manipulation by powerful special interests.

By contrast, economic incentive systems provide various ways to reflect social and environmental costs: removal of market barriers that promote inefficient resource use, removal of unwarranted subsidies of environmentally destructive activities, and imposition of appropriate resource use fees and pollution charges. For these incentive-based systems to be effective, public agencies, whose past mission has focused on policing and protecting natural resources, must shift to an emphasis on participatory community comanagement of

---

[1] For instance, the determination of the appropriate *level* of a limit on irrigation water use has nothing to do with the relative costs induced downstream from using that level of irrigation at that command.

[2] It may be relatively costless for water-rich and wasteful irrigators at headworks to reduce water use 25% but far more costly for a water-short conserver at the tail.

resources that blends conservation with sustainable exploitation. With properly designed and adequately supported incentive-based systems, the tens of thousands of decisions of individual farmers and small-holders can bolster scarce public-sector resources, permitting greater levels of protection for any aggregate cost of control. Rather than dictating to resource users how they should produce, incentive-based systems impose a cost on resource degradation, leaving it to individual users to decide amongst themselves how to achieve the required level of protection.[1] Market forces will drive these decisions toward least-cost solutions and toward the development of new control practices.[2] Incentive-based approaches have an added benefit; they can make the environmental debate more understandable to the general public by focussing on environmental goals, rather than on difficult technical questions concerning technological alternatives for reaching these goals. Unlike command and control approaches, incentive-based resource management systems are less susceptible to opportunistic behavior due to their transparency.

3.4.2 The Natural Resource Policy Environment

Impact of macroeconomic policy on natural resource management. Resource degradation stems from both market *and* policy failure. While past literature has emphasized market failures as a primary cause of resource degradation, analysts have recently come to believe that policy failures have equal, if not greater, influence on exploitation and degradation of natural resources and the environment. Generally, macroeconomic policy is concerned with the impact of policy on productivity, growth, employment, equity, and development, without much consideration of the impacts of policies on resource use and management. Many current policies not only fail to reflect the real opportunity costs of resource utilization, but they perversely encourage even greater and more rapid exploitation and degradation of environmental resources than would market forces in the absence of policy stimuli.[3] In general, the more stable the macroeconomic regime and the less distorted and more open its industrial sectors and trade, the less pressure there is for undue resource exploitation. Economic growth will also be more broad-based and sustainable, thereby reducing the incidence of poverty-induced environmental deterioration. A matrix of economic policies for sustainable development is presented in Table 3.1.

Monetary and credit policies. Contractionary monetary policies decrease the level of overall economic activity and reduce investment. Potentially, this can contribute to economic stagnation, high unemployment, and worsening poverty, putting unsustainable pressures on natural resources, especially through short run resource appropriation and extraction from fragile

---

[1] By contrast with the limits on the level of irrigation, an incentive-based approach might favor a volumetric water fee. Water users would be free to choose any technology or level of water use, subject to fee payments directly related to the incurred social costs.

[2] By contrast, regulatory approaches discourage innovation once the "best technology" is achieved.

[3] Repetto, 1988.

TABLE 3.1 Matrix of Economic Policies for Sustainable Development

Macroeconomic Policies			
Policy Area	**Stated Objectives**	**Proposed Actions**	**Environmental Impact**
National Economic Planning	To have plans and national income accounts reflect fully the role of natural and man-made capital	Establish national natural resource accounts systems	Balanced management of resource base
		Establish operational ways of valuing natural resource depletion (including risk assessments)	Economical use of natural resources
		Broaden the Environmental Impact Assessment (EIA) concept to cover national and regional policies and programs	
Monetary/Credit Policies	Maintain balance between supply and demand for money such that real interest rates neither discourage long-term investment required for economic growth nor investment needed for maintenance and improvement of the resource base	Identify links between changes in the real interest rate and sectoral investments and resource use	Balanced management of resource base
		Reduce government intervention in credit markets	Improve investment in maintenance and improvement of resource base
		Eliminate credit subsidies to resource-degrading activities	
		Find innovative ways to lend to rural smallholders facing financial constraints and/or monopsonistic rural credit markets	Create job opportunities for low-income smallholders to reduce reliance on exploitation of vulnerable open-access lands
Trade/Exchange Rate Policies	Valuation of currency without implicitly taxing agriculture or natural resource sectors	In inward-looking economies, remove anti-agriculture, anti-resource sector, anti-export biases from trade and tariff policies	Reduced rural smallholder dependence on open access resources
	Liberalized trade and tariff policies without increasing pressure on resource using sectors	In economies undergoing liberalization of trade, monitor effects of liberalization on resource use to avoid unsustainable resource extraction due to liberalization-induced expansion in export sector	Improved rural incomes/employment reduces migration to urban areas slowing environmental destruction in peri-urban areas
Fiscal Policies	Reduce deficits and improve deficit financing	Reduce government deficits and external debt	Balanced budget reduces pressures on vulnerable open-access lands
		Improve efficiency of factor and product markets	
		Debt-for-nature swaps	Debt swaps protect sensitive ecosystems
	Eliminate biases against resource sectors	Introduce indirect price-based incentive systems	Internalized external costs of resource use make resource users more conscious about costs of resource exploitation
	Harvest "social rents" from resource sectors without disruption of efficiency of markets	Introduce and improve assessment and collection of resource user fees	Increase financial resources available for resource maintenance and improvement

TABLE 3.1 Matrix of Economic Policies for Sustainable Development (cont'd)

Sectoral Policies			
Policy Area	**Stated Objectives**	**Proposed Actions**	**Environmental Impact**
Forests	Encourage efficient and sustainable management of renewable resources	Abolish concession license and permit systems that allow extracting parties to retain most of surplus value or rent and leave a depleted area	Discourage short-term rent seeking behavior
		Concessions should be inspected by independent firms on the basis of competitive international bidding	
		Concession periods and pricing should be firm and consider proposed end use	
		Replace logging concessions with forest management concessions	Encourage long-term management of resources
		Institute public auction/exchanges for rights to log	
	Secure additional public revenue to finance essential government programs	Annual concession fees should replace multiplicity of forest fees	Identify alternative public revenue sources at local as well as national level
		Tax rents more fully	Generate funds to support proper management and monitoring of resource exploitation
	Secure more equitable distribution of rents	Concessions awards should consider local needs	Ease tensions between existing and new residents
Water Resources	Promote efficient water production	Shift public spending from new schemes to O&M and rehabilitation	More efficient land and water use
		Delegate O&M responsibilities to farmers	
	Promote conservation in water use	Enforce full cost recovery from end users	Less salinization and waterlogging, reduced flooding and downstream disruptions
		Remove barriers to the development of markets for water and water services	
	Promote protection of public waters	Strengthen priority rights to groundwater	Reduce conflicts over water use
		Seek compensation for damages to public waters and use revenues to acquire water rights for legitimate public use	Reduce health hazards
		Reorient land protection towards water quality protection	
Wildlands and Biodiversity	Ensure that biological resources and biodiversity are sustained and even increased in use	Assess flora and fauna	Ensure the provision of adequate ecosystem services
		Expand role of EIAs to include effects of wetlands destruction	Balance exploitation of multiple use lands
		Give incentives to managers of public lands to maximize total benefits of multiple-use lands, not just short-term cash flow	Maintain option value of biological resources

open access lands. On the other hand, expansionary policies affect price levels and can give rise to unacceptably high inflation, which increases both the level and volatility of real interest rates, discouraging investments in resource conservation.

Government intervention in credit markets, whether through controls or subsidies, changes sectoral investment patterns and influences the adoption and development of activities with impacts on natural resource allocation and use. Two such interventions have especially deleterious effects on the environment: constraints on the availability of long-term credit for smallholders; and credit subsidies for short-term, large-scale export cropping and livestock farming. The vast majority of farmers in environmentally vulnerable regions are landless tenants or smallholders with insecure title to small, marginally productive farms. Interest rates are usually higher for these farmers because lenders face higher administrative costs and uncertainty when lending to small isolated operators about whom little is known and because there may be monopsonistic practices in rural credit markets. These conditions are aggravated by the lack of an acceptable collateral for raising the loans, usually a consequence of poorly defined property rights. At least in part, constraints on smallholder capital are responsible for chronic rural underemployment and poverty, excessive resource exploitation, and movement onto and development of vulnerable open-access lands. In addition, the ready availability of subsidized credit for large ranching or export crop operations will encourage development of these activities even where they might otherwise be uneconomic. This induces overgrazing, excessive conversions to rangeland, inappropriate crop selection, and inefficient resource use.

Trade and exchange rate policies. Trade policies help determine labor absorption, intersectoral and regional production patterns, and the allocative efficiency of markets, ultimately shaping the scope and distribution of employment, income, and resource use in a country. Trade policies may create substantial employment effects and distort the relative profitability of sectors. Overvalued exchange rates reflect a bias against agriculture that increases rural unemployment and results in underinvestment in resource conservation and pressure on open-access resources.

Inward-looking policies, which protect the domestic industrial and import-competing sectors while taxing the rural sector, tend to:

- Limit the labor absorptive capacity of the industrial sector, locking labor into agriculture or urban unemployment;
- Lead to economic stagnation in the rural sector;
- Create growing fiscal deficits and external accounts imbalances; and
- Cause under-investment in the provision of public goods (and hence the preservation of nonrenewable resources).[1]

[1] Because food is a wage good in many of these economies, political pressures exist to maintain low nominal urban food prices, inducing lower nominal wages but higher real wages, a benefit to urban households. This inevitably means lower agricultural prices, eventually leading to economic stagnation of the rural sector. To confront this stagnation, governments pursuing "inward policies" often subsidize agricultural inputs and monopolize agricultural marketing and/or import staple foods to sell at low subsidized prices. As the rural sector is implicitly taxed relative to the urban industrial

These policies induce cost inefficiencies in the domestic protected sector and encourage a rent-seeking political economy.[1] Cost inefficiencies imply extensive use of natural resources per unit of output. Effective protection for agricultural goods can often be negative, undervaluing agricultural output relative to other sectors. This discourages rural production, increases rural unemployment and outmigration, and encourages encroachment on the common "free" resource base. The result is a polity that induces resource degradation and exhaustion.

While policy liberalization, potentially including devaluation and tariff reform, may cause an expansion of trade, the environmental effects of such shifts need to be examined on a case-by-case basis. Some shift in relative cropping patterns may be environmentally beneficial. Some may be offset by other policy intermediation, i.e., increased pesticide use resulting from devaluation-induced increases in short-run, non-traditional export cropping may be offset by reductions in pesticide subsidies. Others will clearly be harmful. In the short term, exchange rate devaluation may actually increase pressure on the resource base by promoting more intensive use of the soil or expansion onto marginal lands. Consideration of resource-ameliorating policies will be needed before such reforms are undertaken and before unsustainable resource-mining takes place.

Deficits and debt financing. Attempts to slow deficit growth have concentrated on reducing capital expenditures resulting in reduced funding for maintenance and improvement of the resource base and damage to longer-term productive capacity. Deficits are usually financed from external sources, increasing balance of payments shortfalls in external accounts and limiting government investment programs, as more of GDP is earmarked to interest payments on external debt. In turn, increasing external debt limits the availability of more development funds, further curtailing investments in conservation. The consequences of foreign exchange shortages and diminished government investments are reduced agricultural growth, due to cuts in government funding of production and marketing infrastructure, increased rural unemployment and poverty, and increased pressure on open access lands.

From a natural resource management perspective, debt-for-nature swaps are an appealing response to this situation. Typically, a debt-for-nature swap involves the purchase of some portion of a country's debt by some group, like an environmental non-government organization using donated funds, at a deeply discounted price in the secondary debt market, and the

---

sector, the underpricing of natural resources and the declining profitability of the rural sector combine to limit incentives to invest in the maintenance of natural resources. Further, the economic distortions induced by such "inward policies" invariably create fiscal deficits, which raise the opportunity costs of public resources, and domestic protection limits the role that trade can play in providing a mechanism to internalize negative environmental externalities. Hence, even when inward-looking countries do address these externalities, they typically underinvest in the re-alignment of externalities. Obviously, the very forces that lead a country toward inward-oriented policies tend to resist addressing resource exhaustion issues, since that would imply reduced protection of the urban industrial economy, forcing it to incur additional costs of environmental compliance (Johnston et. al., 1992).

[1] The concentrated—often single firm—industries cannot attain economies of scale, cannot compete in international markets, and are only marginally profitable.

cancellation of that debt in return for environment-related action in the debtor nation. Such transactions provide support for resource protection activities, while reducing debt-related pressures. Appendix D illustrates the extensive use, albeit for only a small portion of developing countries' debt, of debt-for-nature swaps.

Tax, price, and revenue policies. Tax and pricing systems can also have an adverse impact on resource use by distorting the terms of trade between sectors and regions, and by creating inefficiencies in factor and product markets. Binswanger (1989) found that six different tax policies directly contributed to continuing deforestation in the Amazon. The World Bank (1989) noted that low taxes and royalties on forest concessionaires in Indonesia constituted a $1.2 billion revenue subsidy to the forestry sector fueling a "timber boom." These policies perversely encouraged producers to maximize harvests to capture excess profits, reduced incentives for efficient forest management, and greatly increased damage to natural forests.

In recent years, interest has focused on the use of local tax and resource-pricing schemes to internalize the external costs of resource use and to capture for society the economic rents from resource use. Most resource users are consumers and small-scale producers in agriculture, industry, and the informal sector. Thus, their use of the environment is extremely difficult to direct effectively through regulatory measures and controls. Indirect price-based incentives and disincentives have rarely been tried for such purposes. These new possibilities deserve to be explored with some urgency. Furthermore, opportunities are foregone to harvest for social purposes the economic rents now enjoyed by private concessionaires and asset-owners.[1] Resource user fees and taxes should not be designed to collect revenue but rather to recoup for social purposes the value of scarcities created by society itself; that is, governments should seek to recoup the economic rents which result from scarcity, particularly where this scarcity is artificially induced as a consequence of policy distortions. This "socially created" surplus can be tapped by government without disruption to the allocative function of markets, that is, with minimal disruption to efficient, private short-run or public long-term harvest levels.[2]

Institutional factors affecting natural resource management. Most developing countries have enacted a host of environmental laws and regulations, and many have also created national institutions charged with their enforcement. Generally, two major institutional failings are found in developing countries with regard to resource management. First, most resource use and management issues run across sectoral lines, yet there is usually no single institution capable of coordinating cross-sectoral resource use or mediating conflicts.

More importantly, past resource management policies in many developing countries have been hampered by the lack of adequate participatory approaches. For instance, under pressure from a variety of special interests to provide cheap feedstocks to industry, to generate rural

[1] This assumes that the national economy and poorer populations will do better from government department rent capture and resource management than they would from private rent capture and reinvestment.

[2] ADB, 1990.

employment opportunities for the landless poor, or to open new lands for settlers, forestry departments in developing countries have focused primarily on revenue extraction. Yet two-thirds of tropical forested area lies outside of the domain of government forestry departments in open access woodlots and on farms. The key to sustained-yield management of these areas lies in mobilizing local communities and small farmers. Similarly, biological resources are often under threat because the responsibility for managing them has been removed from the people who live closest to them. The opportunity costs of not harvesting the resource are borne by the local communities, and in areas of greatest biological diversity, these people are often the poorest of the poor. Under such conditions, villagers become poachers or clear "paper" national park lands. The key institutional measures to induce prudent management of biological resources include: the delegation of some management authority to local institutions, the strengthening of community-based management systems, the provision of replanting, and the provision of security of resource property and use rights and tenure arrangements.

In addition to macroeconomic policy impacts, natural resource use and management is affected by sector-specific policies. Box 3.2 presents the major government approaches typically adopted to reduce sector-specific resource problems.

3.4.3 Production from Natural Forests and Agroforestry

Forests are extensively utilized by millions of small farmers and local communities that rely on these degraded forests for fuelwood, fruit, fodder, poles, and other basic needs. Forests in developing countries have declined by nearly half in this century, and rates of deforestation are still increasing. Recent remote sensing and ground surveys agree that between 17 and 20 million hectares of forest are being lost each year, primarily tropical moist forest.[1] The loss of tropical moist forests is especially troubling because these forests have a much greater influence on the global climate than do the other main types of forest (tropical dry forests and temperate forests). They are also a major repository of biological diversity. In the arid tropics, increasing human and livestock pressures, erosion of traditional woodland and rangeland management systems, and drought have led to deforestation and desertification of tropical dry forests. Overexploitation of tropical forests can also cause severe forest degradation, including soil erosion, weed infestation that ultimately ends in conversion to grassland, increased susceptibility to fire and pest attacks, and desertification.

Deforestation occurs because someone finds it profitable. Deforestation seldom involves only one type of decision maker, and the actions of one can lead to subsequent interventions by others. The tropical moist forests are being lost primarily to agricultural settlement (about 60% of the annual cleared area), with the balance split among logging and road construction, urbanization, and fuelwood.[2] The main causes of deforestation in recent years have been:

---

[1] World Bank, 1991

[2] Although fuelwood gathering accounts for the largest share of wood use in the developing world (80%), its impact is concentrated in the tropical dry forests and in nonforested wooded areas (World Bank, 1991).

- Population pressures;
- Declining income opportunities in settled agricultural areas, leading to increased migration and encroachment on forested lands;
- Infrastructural development, in particular road building, which has dramatically improved access to the forest frontier;
- Subsidies that encourage alternative land use, logging, and frontier settlement,
- Weak property rights in many forested areas; and,
- High private discount rates, especially among the poorest, for whom it is particularly unattractive to tie up scarce capital for the relatively long payoff period involved in tree planting, and who thus encroach the commons until the forest is severely degraded.

Forest management systems. Less than 1% of tropical forests are managed in a way that encourages sustainable timber production, much less preservation of biodiversity and other environmental or recreational forest objectives. Generally, the management problem is not a technical matter; sound management depends more on the social, economic, and political environment. Four conditions are essential for sustainable production: a permanent forest estate with guaranteed security; adequate control of harvesting, silviculture, and other forestry operations; reasonable profitability; and adequate information on the resource base and markets. The balance between reliance on (and investment in) plantations and natural forests will depend on the level and nature of demand on forest resources and the capacity of forests and plantations to meet these demands.[1] There may be potential in semi-arid and arid regions for plantations providing fuelwood and poles to reduce pressures on natural woodlands, but there have been notable failures in these regions, primarily due to social reasons and lack of expertise. Considering the circumstances of rural societies and land scarcities in much of the non-industrial world, integration of other crops with plantation forestry may be more successful than monoculture plantation programs. Agroforestry holds considerable promise as a sustainable approach to agriculture and land management, particularly in degraded or converted forest areas between settled agricultural zones and the intact forest.

Given the highly site-specific nature of agroforestry, sustainable agroforestry must be incorporated into farming systems-oriented agricultural, livestock, and forestry projects. Greater use can also be made of "non-conventional" agroforestry in the reclamation of degraded lands, such as using grasses, shrubs, and trees in severely eroded areas; salt-tolerant multipurpose woodlots in saline areas; and silvipastoral systems on acidic grasslands and degraded savannas. The success of agroforestry components is fundamentally dependent on a full appreciation of local social and cultural values, customs and traditions, including rights to tree and forest resources, gender-based distinctions in factor allocation, and land tenure issues.

[1] However, since tropical softwood and eucalyptus plantation outputs (industrial sawnwood and pulpwood) are not substitutes for high-quality natural forest hardwoods (difficult to grow in plantations), plantation establishment will not reduce pressures on natural moist forests.

BOX 3.2 ***Major Problems Requiring Public Intervention and Additional Government Approaches***

Problems /Instruments	Buy out	Reg. w/ taxes	Reg. w/ taxes & subsidies	Uni-ize	Provide Free Info	Special Savings and income taxes
A. Monopoly/Oligopoly	X	X				
B. Water pollution	X	Some				
C. Air pollution	X	Some				
D. Strip mining		X				
E. Road congestion			X Subsidize public transport			
F. Common property: Oilpools		X		X		
G. Common property: Fisheries		X		X		
H. Pest control		X	X Subsidize prevention		X	
I. Insufficient Forestry Replant.		X	X Subsidize replanting			
J. Future generations: Minerals, recreation areas	X Public parks					X

Note: X indicates that an instrument and problem have often been found together.
Source: Hartwick and Olewiler, 1986, p. 473.

Two agroforestry approaches that have shown good results are *family-centered* strategies and *group-centered* strategies. Family forestry programs in Haiti, India, Nepal, Nigeria and elsewhere have shown that good results can be obtained by programs that provide the family farm with a balanced combination of economic incentives, secure ownership of the trees, and technical assistance, while giving the farmer full autonomy in decisionmaking. Group-centered strategies, linking specific groups of people with surplus labor resources to well-defined, unused, or underused land plots that can be brought under tree cover, have also been successful in India, Japan, and Pakistan. Group farm forestry programs have shown that, due to the traditional gender division of labor, women have specific needs, interests, and expertise in forestry that have often been ignored by forestry projects. If these programs are to successfully involve women, women's tenure rights to land and newly planted trees need strengthening. Assistance must also be given to women's groups to undertake their own plantation or rehabilitation schemes, to gain access to wider markets, and to undertake processing of primary forest products. Women must be directly involved in management. Finally, public investments in both family and group farm forestry programs show promise of attracting large complementary investments by local participants.

Value of forest resources. Important externalities lead to a divergence between private incentives to cut or plant trees and the real economic costs and benefits of these actions for the nation. These externalities arise because some forest products, particularly forests' environmental protective functions and role in sustaining indigenous peoples, are not valued in the marketplace. Although methodologies have been developed to estimate these nonmarket

values,[1] until the true social costs are reflected in incentives affecting people using and managing the forest, significant underestimation of social values will continue to lead to pressures to overexploit the forest.

Government policies that should be directed at moving private behavior into conformity with social interest sometimes do the opposite. Policies that subsidize tree cutting, underprice concessions to logging companies, or link land-titling to forest clearing, effectively drive a wedge between private behavior and the common good. Policies can be developed which specifically favor forests thereby increasing the value of the forest in relation to nonforest use of the land. Such policies include the formalization of customary land rights, the provision to communities of security of property and usufruct rights, the adoption of cooperative community and government comanagement of forests, the establishment of extractive reserves (protected areas sustainably managed by the communities that live in and know the forest), and the development of nature tourism and of markets for nontimber forest products such as medicine, berries, and fodder.

Sound forest pricing and management. Concessionaires should be required to care for the forests in their area, not just to harvest them. A system of long-term, transferable, forest management concessions is preferred over short-run logging concessions. Concessionaires, being on the spot and generally having greater resources than government forestry departments, will be better able to protect and improve forests and carry out regeneration where necessary, provided a good system of incentives is in place. Concessionaires might not be willing to pay as much for these contracts, because the management concession entails new costs in protection, management, and silviculture. Government revenues may decrease (concessionaire willingness-to-pay may decrease but the replacement of the multiplicity of fees with a single concession fee will increase collections), but so will costs.

Stumpage fees are very difficult to collect, as they require extensive measuring of logs in dispersed and inaccessible forest areas. If instead, these fees were replaced by a single annual rent payment, this payment should be 100% collectible and both government administrative and concessionaire compliance costs would be reduced. The introduction of bidding for concessions would allow governments to capture more of the economic value of timber, reducing corruption and speculation, and the resulting higher timber price will reduce demand pressure on the forest and induce conservation. Local communities can be given greater weighting or price advantages in their bids, and concessionaires can be required to pay a portion of concession rent to local

[1] Consumptive use can be derived from estimates of consumptive use by species and assigned a price of a close directly marketed substitute, (Krutilla and Fisher, 1975; Caldecott, 1988; Oldfield, 1984; and Western, 1984). Nonconsumptive values are much more difficult to estimate. Generally, amenity valuation requires careful application of survey techniques to obtain the underlying data necessary to assess consumer willingness-to-pay. Magrath and Arens, 1989 develop an approach based on natural resource accounting to estimate the costs of on- and off-site erosion and sedimentation in Java. Whittington et al, 1989 applied such techniques to estimate the value of water sanitation, and Amacher et al, 1991 used a travel cost approach to assess willingness-to-pay for fuelwood in Nepal. Gregersen and Contreras, 1979 is the standard guide for amenity valuation in multiple value forestry in developing countries.

communities. This would give local communities a stake in forest conservation and reduce pressures for forest conversion to agriculture.

3.4.4 Management of Wildlands

Effective management systems can ensure that biological resources not only survive, but in fact increase while they are being used, thus providing the foundation for sustainable development and for stable national economies. Unfortunately, instead of conserving resources, current development processes are depleting many biological resources at such a rate that they are rendered essentially nonrenewable. The major obstacle to conservation is that biological resources are not given appropriate prices in the marketplace. The benefits of conserving biological resources are often intangible, widely spread, and not fully reflected in market prices. At the national level, the implication is that conventional measures of national income do not recognize the drawing down of natural capital stocks, and instead consider the depletion of resources as net income. At the project level, this means that the benefits of protecting wildlands are seldom fully reflected in formal cost-benefit analysis, and the full social and environmental costs of exploiting biological resources are seldom borne by those exploiting the resources.

Value of Biological Resources. In order to compete for the attention of government decision makers, conservation policies must be based on analyses that demonstrate in economic terms the value of biological diversity to a country's social and economic development. This requires assessing the value of nature's products that are directly consumed without passing through markets (e.g., food, fuelwood, and fodder), pricing directly marketed production (e.g., timber, crop, fishery and livestock outputs, and medicinal plants), and assessing the indirect values of ecosystem services (e.g., watershed protection, photosynthesis, soil production, regulation of climate). Krutilla and Fisher (1975), Caldecott (1988), Oldfield (1984), and Western (1984) give examples of some of the methods used to estimate the value of environmental services contained in forests; many of these approaches can also be used to estimate the value of biological resources. The challenge is to bring the benefits of these resources to the local communities who are bearing the opportunity costs of not harvesting the biological resources.

Sound Wildlands Management. In addition to the usual assessments of stocks of timber, fish, and minerals, rapid initial national compilations of flora and fauna—at a minimum higher plants and vertebrates—should be undertaken.[1] Only then could an estimate be made of the economic contribution of biological resources to the national economy. This evaluation includes inter alia the development of methods, appropriate to the country, for assigning values to non-marketed biological resources, ensuring that national accounting systems make explicit

[1] These assessments could then be followed by institutionalized biological surveys (perhaps carried out by university biology departments), and ultimately, national programs aimed at monitoring the status and trends of biological resources, linked to international systems (e.g., UNEP's Global Environmental Monitoring System or the World Conservation Monitoring Centre).

the value judgments and tradeoffs regarding impacts on biological resources not measured in monetary terms, and the assessment of the cross-sectoral impacts of resource utilization.

A second key component of an appropriate wildlands management policy is community comanagement. National policies bearing upon biological resources must address the basic needs of local people who depend on the biological resources for their prosperity. The rural population should be involved in the design of projects to conserve biological resources, not just in their implementation. Managers of public lands should be given incentives to maximize the "multiple values" of those lands, instead of being rewarded for increasing short-term cash flow. This "multiple value" approach recognizes the importance of both non-consumptive values of public lands (i.e., the environmental amenities the lands offer and their recreational and nature tourism potential), and consumptive uses (including fuelwood gathering, timber harvesting, and mineral exploitation). Wetlands are particularly valuable biological resource reserves, yet they are often afforded the least protection.

3.4.5 Watershed Management

Forty percent of the developing world's farmers live in valleylands and floodplains and are affected in part by the activities of the ten percent of the developing world's population who reside in forested upstream catchments. Clearing these catchments changes water flows in two ways: runoff increases when vegetation is removed, and deeper-rooted trees are replaced by shallower-rooted, less water-using vegetation. The most obvious effect of these changes is the drastic increase in flood potential, whether directly through increased runoff or indirectly through erosion-induced aggradation of streambeds. However, other indirect impacts are also unsettling.

In many parts of the developing world, communities experience almost continuous shortages of water. In many water-short communities, household needs are supplied by local streams, lakes, and ditches contaminated by pollutants and human excreta. Indeed, 135 million more rural inhabitants of the developing world are now without access to clean water or adequate sanitation than in 1970, and water-borne pathogens account for 80% of all disease and for 90% of infant mortality in developing countries.[1] Inappropriate management of forested catchments, by diminishing the conservation of soil moisture upstream, can also reduce critical dry season irrigation flows downstream.

Equally troubling are the impacts of disrupted water flows on irrigated agriculture, arguably the most potent engine of rural economic growth in the developing world over the last four decades. Curiously, few of the large-scale water and sanitation or irrigation expansion programs have safeguarded the principal source of their water supplies, forested catchments. Meanwhile, the proliferation of successful watershed management programs has been hampered

[1] Myers, 1988.

by perceptions that the high costs of soil and water conservation programs are not justified given the relatively small on-site benefits.

At the root of the inattention to watershed management lie interrelated institutional and economic characteristics of watersheds ("market failures") that interfere with the efficient allocaiton of costs and benefits:

- Watersheds may be common property or open access resources: many individuals have virtually free and direct access to water and forested catchments, but none has an incentive to conserve because s/he will not be able to capture the additional benefits; and

- Those enjoying some of the benefits of well-maintained forested watersheds-downstream residents, irrigators, hydorpower generators, shippers, fishermen, and tourists-usually do not incur the costs of woning or managing the catchments.

As often as not, these problems are exacerbated by unsound management policies. Policies that cede land title only to cleared watersheds, that limit tenure or usufruct rights or impose user right systems at conflict with customary community rights, and policies that perversely reward water waste and penalize soil conservation will only accelerate watershed degradation. Watershed management policies that recognize the strong links between poverty and environmental degradation and stress broad participation in defining and sharing development benefits are critical.

Sound water use policies. Many governments regulate and allocate water from conveyance systems on the basis of historical use or obligation. As water becomes scarcer, such policies contribute to pressures to further develop new water supplies even when there are significant allocative inefficiencies, which, if overcome through trading, could free up under-utilized or wasted supplies and contribute to conservation. There are now a number of successful examples of water markets in developing countries: the highly competitive water markets in India, the development of hire markets for tubewell services in Pakistan, and the deregulation and privatization of the tubewell market in Bangladesh. Fears that smallholders would be subject to monopolistic water pricing seem unfounded given the intense competition seen in these markets.[1] Many of the externalities produced by canal irrigation systems—waterlogging, root zone salinity buildups, and increasing salinity of return flows—could be minimized through the expansion of markets for water and tubewell investments in and around canal commands.

Water is the most subsidized of all agricultural inputs. However, efforts to promote irrigation cost recovery usually are not linked to the volume of water used and, generally, are centrally set at levels that do not reflect local conditions or multifunctional use. As such, these

[1] Rosegrant and Svendsen, 1992.

efforts have little beneficial impact on conservation. In conjunction with more appropriate pricing of water, governments should seek to reduce subsidies on irrigation equipment, credit, and energy, which encourage costly and inefficient investments and resource misuse, and create continuing pressures on strained government budgets.

Appropriate water quality policies. One of the most important and least appreciated benefits of water is its ability to flush, diffuse, and degrade human and industrial wastes. A variety of measures need to be taken to protect the quality of rural water supplies. First, more attention needs to be focused on protection of the ultimate water source, forested catchments. Programs oriented towards setting aside protected lands should be reoriented toward water quality protection. Second, both funding and institutional capacities for managing rural water supplies and sanitation need enhancement; in particular, more attention needs to be paid to the role of the community, including its ability to share in the cost. Finally, compensation for damage to public waters should be sought from both private and government water users and the resulting revenues dedicated to acquiring water rights for public uses.

3.5 Policies for the Development of Agribusiness: Constraints and Opportunities

In the past, governments in many developing countries have actively intervened in both the agricultural and agribusiness sectors. These interventions have included policies promoting parastatal agribusiness companies engaged in production and marketing, and price policies that affected the supply of farm outputs to agribusinesses. Many governments' attitudes toward the roles of the public and private sectors are now changing. Reform is becoming less of an ideological event and more analytically-driven. On the other hand, some government officials still look on marketing as a parasitic activity, even though an agribusiness entrepreneur must invest and take risk and agribusiness activity adds value to agricultural products. In many developing countries, agribusiness is a very substantial part of all manufacturing and commerce, although this is often not apparent from national accounts.

USAID has funded many studies on agricultural policies. Many of these studies have significant implications for agribusiness policy as well, particularly those that elaborated the policy and regulatory constraints to the marketing of particular commodities. USAID and other donors have also had a number of policy reform successes in the 1980s, including restructuring of parastatals. These have or will affect agribusiness through changes in pricing and regulation. Recently agribusiness projects per se have become more common. In future projects and programs, policy reform will often be a necessary condition for agribusiness development. Project assistance to roads, credit, information, and input distribution systems will also improve the functioning of marketing systems and agribusiness.

3.5.1 Definitions and Importance

Defining agribusiness. A good definition of agribusiness is important for at least two reasons. First, it facilitates a better understanding of the linkages between agribusiness and agricultural and other policies. In addition, government policy may target agribusiness for

development; a clear definition will make the incidence of such policies apparent. The definition that is most appropriate will depend on the task at hand.

There are at least two ways that one can define agribusiness, by including or excluding production agriculture. Agricultural producers are serviced by an agribusiness system which includes input suppliers and output marketers, processors, and exporters (pre- and post-production). A definition of agribusiness based on this concept explicitly excludes farming itself. However, agribusiness may also include production agriculture if it is vertically integrated.

In defining agribusiness, one might ask, How far up the marketing chain does "agribusiness" go? After the harvesting of horticultural products, for example, transportation, removal of field heat, storage, processing, packing, and sales might follow. There seems to be no logical way to include some of these activities and exclude others. From the point of view of good policymaking, a broad definition of agribusiness is preferred: If incentive programs are based on such a definition, they will introduce fewer distortions in the economy. Once agribusiness is defined, enterprises can also be classified into formal and informal, or large and small, firms. This might suit USAID's microenterprise thrust.

Importance of agribusiness. The size and scope of agribusiness, including its contribution to income and employment, will partly determine the resources required for programs and projects that target this sector. Because most developing countries have large agricultural sectors, agribusiness is often a very important economic activity as well. It is often difficult to document this, however, because agribusiness is not a separate category in traditional statistical systems. In particular, agribusiness may fall under both manufacturing and commerce. Thus data on agribusiness may have to be constructed from the details of national accounts. One place where such constructed data may have been used, and analyses may be available, is studies based on input/output models.

3.5.2 Determining the Constraints to and Feasibility of Agribusiness Development

Opportunities to promote agribusiness often exist because there are policy constraints that can be remedied. Removing or reducing constraints to development of subsectors like agribusiness is the primary activity (or the ultimate objective) of policy-based projects and programs. Determining constraints is a key step in this process. Traditionally, agricultural policy analyses focused on providing incentives to farmers. With a shift of focus to agribusiness, the scope of the analysis changes.

Agricultural commodity policies that have familiar effects on producers and consumers can also have strong effects on agribusinesses. These effects are among the following.

- Price policies that make an agricultural commodity cheaper (whether they are domestic or trade policies) lower the production of what is an agribusiness input, so less supply is available for processing.

- Allocation of limited resources to research also results in lower production of certain commodities and less improved processing or production technology (used or sold by agribusinesses) being available.

- Depressed farm prices create a subsidy to processors and exporters, and may lead to excessive investment in the processing of commodities with depressed prices, but this does not necessarily increase value added.

- Lower prices decrease the working capital requirements for buying commodity inputs.

- Price policies may have unintended effects. For example, a subsidy on a staple food may result in its being used as livestock or poultry feed.

- Pan-territorial pricing (especially in conjunction with a government distribution system) discourages normal investments in transport.

- Constant pricing throughout the year discourages both storage and investment in storage facilities. (Often the government performs this function).

- Government distribution and the malpractices that sometimes accompany it decrease the quality of the product received for processing and discourage the establishment of grading.

- Government trade monopolies and other trade restrictions deprive the private sector of the chance to (develop or) maintain contacts and experience in fulfilling basic marketing services.

- Policies flowing from an "exportable surplus" approach, like temporary export bans, disrupt relationships between exporters and importers, thereby depressing incomes and employment in export industries.

- Government credit programs that focus on certain agricultural or agribusiness subsectors result in overfinancing of these and underfinancing of others.

- Navigating a maze of indirect taxes, drawbacks, and exemptions raises the cost of doing business.

- Ad hoc (volatile) policies create uncertainty, which decreases agribusiness investment.

More generally, subsidies require resources that could be used to develop infrastructure and human capital that would foster the growth of agribusiness. Furthermore, by intervening pervasively, government becomes responsible for the success or failure of certain industries, generally making policy reform more difficult. On the other hand, if there is an ideological shift

or budgetary pressure becomes significant, the responsibility of the government for the problems of the sector is clear, so the path to reform may also be clear.

A broad approach to analyzing the effects of policies on agribusiness, encompassing a complete agribusiness system, can yield important insights into the likely success of agribusiness investments. Such an approach is thorough and practical, as a useful business analysis should be. The scope of the analysis will vary depending on the relations among different subsectors. For example, an analysis of the constraints to development of the livestock subsector would include an examination of the feed industry, which in turn would include both grains and oilseeds. Production of a new oilseed variety might be hampered by a lack of investment in processing facilities or by depressed prices. This constraint would affect the viability of feed millers, who need affordable sources of protein. The impact of inferior or expensive feed would be felt in the livestock industry. An approach that did not consider cross-commodity relationships and alternative commodity uses might miss the true constraint to development in the livestock subsector.

The agribusiness systems approach is demand-driven. The customer determines what the system produces: what quantity, what quality, at what time, and at what price. The implications of consumer demand feed back through all levels of the system. International customers are likely to have more sophisticated and stringent requirements, but domestic consumers in developing countries also appreciate higher quality and are willing to pay for it. Thus the consumer is the starting point for the analysis as well, and the analytical framework extends all the way back to production of the raw commodity and the inputs required.[1] An analysis using this approach will often point out the existence of an "exportable surplus" notion, which is popular in some countries. Under this concept, domestic consumption requirements are fulfilled before exports are permitted. The attraction of this regime is primarily political: the electorate (or key interest groups) is kept happy with an ample supply of food. The problem with the approach is that the domestic industry is not subjected to the demands of the world market, so it does not develop the capability to export. No relationships with importers are established, little new technology is acquired, and little income and employment are generated. The exportable surplus will often be small or zero, and will tend to stay in that state.

The agribusiness systems approach detailed above generally starts with a particular commodity. An even broader approach is the analysis of agribusiness history, along the lines of structure, conduct, and performance. This sort of analysis can reveal structural problems like stagnation in the transition from family to corporate business entities, and the mercantilist aspects of policies. Another approach is case studies of individual agribusinesses. These may reveal

[1] An analysis based on the agribusiness systems approach may be time-consuming. For the details of a quicker way to look at commodity subsystems, see section 4.2.

policy constraints, in particular those that were binding constraints for particular firms. They may also provide clues to successful changes in policies.[1]

BOX 3.3 ***Market Window Analysis***

From an analytical point of view, the entrepreneur is interested in the comparative advantage that his or her country has in the production and marketing of a particular agricultural product. One way to assess this advantage is through a market window analysis. This will focus on the times at which the market in question is currently supplied and on the selling price of the commodity at those times. It also reveals competitors, prices and their stability, volumes shipped, and product attributes like grade, color, and freshness.

By working back to the domestic price at which the commodity would have to be available, a window analysis shows whether there are opportunities in that market. From that point, one needs to check the "width" and "depth" of the market window: Will additional exports lower the price, and thus the viability of exports, rapidly? Market window analysis is often employed to examine export opportunities, but it can also be used to study a domestic market. As in all analyses, the assumptions made, in this case about yield and other basic parameters, can change the results. Hence, thorough sensitivity analysis is important. Market window analyses are often carried out to check the profitability of a new technology. All of the risks associated with this technology and concomitant variability in returns should be included in the analysis. Finally, if at all possible the markets in question should be visited in person. This allows direct comparison of one's product to those of competitors.

At the most aggregate level, an analysis of the policy constraints to the development of agribusiness should examine the relative attractiveness of agribusiness as an investment vis-a-vis other sectors of the economy. This calls for a study with a broad scope. Whether such a study can be done succinctly depends on the complexity of the incentives offered to various sectors.

Complementary to studies of constraints are analyses of feasibility. Like the former, good feasibility analyses adopt the approach of the entrepreneur, whose initiative will produce benefits for the society if conditions are conducive. The entrepreneur (and his or her banker) is generally interested in risks and returns. Policies and their volatility affect both risks and returns.

While each commodity and country may be different, some starting points for feasibility studies are indicated. Livestock, poultry, fisheries, and horticulture are likely to be growth areas because of their generally high income elasticities of demand.[2] Because of limited

[1] Case studies of successful companies may also reveal information that would be helpful to potential entrepreneurs about sources of finance, ways to upgrade technology, and sources of timely, reliable market information.

[2] Through coordination, USAID Missions and regional offices may be able to play a role in preventing overinvestment in certain export commodities.

infrastructure, limited overseas contacts, foreign exchange problems, and other reasons, many immediate business opportunities are likely to be domestic. In very poor countries, thin markets, limited ability to pay for value-added processing, and high transport costs suggest that processing of staple commodities should be relatively small-scale and decentralized.

3.5.3 Understanding Intersectoral Linkages and Comparisons

Agribusiness is affected by more than just agricultural policies. Macroeconomic policies like exchange rates,[1] investment incentives, and the status of supporting sectors like finance and research are also very important. Investment incentives include corporate income tax rates and tax-based incentives, profit repatriation, and the handling of foreign exchange receipts from exports.

Many governments in developing countries have felt the need to encourage new business formation, particularly in the non-agribusiness areas of manufacturing. They have granted various incentives or concessions that are available only to new enterprises or to enterprises in certain fields. Generally these concessions have been income tax holidays or exemptions, but exemptions from import duties have also been important. While this may have seemed a good idea, there is no inherent reason why investment by a new company will be any more productive than by an existing company. Indeed, someone who is already operating a business will often have more knowledge of the area than a new investor. In special (e.g., high-technology) fields, a temporary subsidy may be necessary to reduce the risk associated with start-up. As a general policy, however, promoting only investment by new enterprises distorts the allocation of resources in the economy. By promoting more companies rather than larger ones, it may also hamper the development of enterprises that can take advantage of economies of scale or vertical integration. In agribusiness, vertical integration may result from incorporating contract growing with farmers of new and more profitable varieties. Certain technologies, like fertilizer production based on natural gas and solvent extraction of edible oil, may require relatively large investments to be profitable.

A country's financial system can directly affect the relative incentives to engage in agribusiness or other economic activities. A shortage of working capital is apparently a chronic problem among agribusinesses in developing countries. In some countries there may be an overall shortage of capital, so mobilization of resources may be a major objective. In addition, government or private bank policies may encourage or require either deletion of working capital from loan applications or very high collateral. This is particularly true of agribusinesses, because the inventory they pledge to supplement fixed assets is often perishable. On the other hand, banks may reduce the amount of working capital supplied if they believe that the client is not capable of managing the funds properly, or worse, that s/he may make non-business expenditures from these funds. Thus a shortage of working capital may not always be a policy

[1] See section 3.1.

issue, and training in financial management might be very useful to many agribusiness entrepreneurs.

The structure of the financial system can affect the ability of the agribusiness sector to obtain credit. Banks that are operated or heavily influenced by the government may favor parastatals or industries that are not agriculture-based. Through policy reform, there may be opportunities to influence the development of institutions that will cater to small or other agribusinesses, including during programs that privatize commercial banks. Another opportunity for financial reform is during the negotiation of structural adjustment loans, part of which may facilitate rationalization of the financial system.

Many agribusinesses operate in the informal sector. They generally do so because the costs of entering the formal sector are higher than the benefits. Thus there are many potential lessons on constraints to be learned from analysis of the informal sector. With the formal sector often protected by government policies, there are also lessons on competitiveness that study of the informal sector can reveal.

Research is a key support service to agribusiness. In addition to new varieties of crops and livestock species, the research system can generate new technology for processing agricultural commodities. For example, it might study the efficiency of handling grain in bulk rather than in bags. Because this is a new area of research for many countries, representation of the agribusiness community on the national agricultural research council is important. Even if research to aid agribusiness is made a priority, however, operating funds in the research budgets in developing countries are very limited. One way to circumvent this problem is through the sharing of personnel. The government might provide the services of a trained researcher, in return for which the private sector (an enterprise or a trade association) might agree to fund his operating expenses. This kind of arrangement is conditional on a policy decision by the government.

3.5.4 Promoting Appropriate Roles for the Public and Private Sectors in Agribusiness Development

Discussions of policy aspects of agribusiness development raises questions about the appropriate roles of the public and private sectors. To a large extent, this is because many governments have operated agribusinesses (or marketing boards, which perform some of the functions of agribusinesses). Often these activities have incurred financial losses or encountered operational problems, or production of the commodities they handle has been hampered. Governments may be in the midst of divesting themselves of these enterprises or streamlining their functions. Thus there may be excellent opportunities to influence policy reforms contemplated or underway.

The policy issues involved in the determination of appropriate roles are the following:

- Efficient provision of agribusiness goods and services;
- Adequate provision of public goods; and
- Regulation and the setting of standards.

Most governments now subscribe to the notion that the private sector can provide most goods and services more efficiently than the government. Conversely, it is unlikely that the private sector would provide an adequate supply of public goods like roads, education, and market information at a socially acceptable cost. Often these latter goods and services are key constraints to agribusiness development because the government has used its resources to subsidize parastatals or other activities and has neglected the provision of these basic needs.

Providing useful market information to farmers and traders is more difficult than meeting the needs of policymakers and government analysts. Because the information is used to make business decisions, it must be of the highest accuracy and timeliness. Governments in developing countries are rarely able to provide information of this caliber, so there may be a role for a private organization to do so.

If there is competition in a market, including the credit system, the profit incentive will drive the private sector toward efficient provision of (non-public) goods and services. It may also lead some entrepreneurs to practices the society deems unacceptable. Thus a role only the government can perform is to regulate business practices. This includes enforcing health and safety standards for both workers and products. The government can also play a useful role in setting product standards or grades. When price differentials are attached to these grades by the market system, these result in a better selection of products, higher utility for the consumer, and stronger incentives for producers to grow produce that better matches demand patterns. Processors will also incur lower operating costs when better quality inputs are available. Even in poor countries, processors are willing to pay more for higher-quality products, like wheat for milling, when they know the result will be better throughput and less wear on their machinery.

Enforcement of financial regulations is particularly important for the development of agribusiness. Areas of particular concern here are the stock market, standards of accounting, and the banking and credit system.

A common notion is that capital is scarce in developing countries. Countries that have undertaken privatization or foreign exchange liberalization programs have sometimes found that capital, held both domestically and abroad, was more plentiful than they thought. The capital was not apparent, however, because the capital markets were not developed, so it was difficult for the possessors of capital to learn about sound investment possibilities. In this context, all aspects of the capital market should be seen as candidates for development, including the stock

market. With lower literacy and a sometimes less-developed press, there will be a need for stringent standards of conduct and enforcement of them.

Accounting may seem like an arcane topic to some, but the impact of inadequate accounting standards can be quite dramatic. When companies are required to present standardized accounts to the public (e.g., when they are public companies), there is much greater potential for investment flowing to those companies that are efficient. Similarly, in the banking and credit system, regulation is very important. This should not be confused with control of credit allocation, which should be done on the basis of risks and rewards by independent bankers, not the government. One institution the government could create or foster is a credit bureau, which would disseminate information on liens taken and credit history. Good information is a key part of sound lending and investment.

The capacity of governments in developing countries to regulate may be limited due to scarcities of funds and/or trained personnel. Moreover, new regulatory powers may lead to rent-seeking behavior. On the other hand, the government may be privatizing or streamlining enterprises it runs. In this case, there are likely to be employees who could be retrained to perform regulatory functions in the industry with which they are already familiar. If areas must be prioritized, the banking sector is a good place to start, given its potential impact on both agribusiness and the rest of the economy.

Because their resources are limited, all governments make tradeoffs between providing public goods and services and providing economic regulation. In developing countries, it is likely that the balance will be fairly heavily tilted toward basic infrastructure, although some countries have sophisticated sets of laws in various areas of regulation. Few, however, enforce these laws. Given the natural tendency of governments in developing countries to lean towards infrastructure and the long lead time to develop effective regulatory institutions, it may be wise to include improvement of regulation in a policy reform program.

Some specific questions raised by a shift in the roles of the public and private sectors include the following:

- What role is there for existing agribusiness parastatals? Should they be privatized? If so, how? Can they be a role model for corporate management (in contrast to the family-based management of traditional businesses), or do their limited incentives to perform efficiently preclude this?

- Who should pay for, build, operate, and own specialized infrastructure (e.g., cold storage, market information systems)? (Improving market information systems in countries where data were limited or poor is a good way to assist in monitoring policy reforms.)

- What role is there for the public sector in agribusiness promotion and feasibility analysis? How can it assist the private sector (e.g., through training, funding, and/or sharing staff)?

- In the process of promoting cooperation and dialogue with agribusiness, does the government need a separate policy to promote agribusiness? Can the public and private sectors work together to lower the costs of entering the formal sector?

3.5.5 Promoting Agribusiness Investment

Because agribusiness is a substantial part of the economy in most developing countries, it is logical for agencies promoting economic development to consider promoting agribusiness. In general, assistance from the government and from USAID will benefit the society most—measuring the benefit in total income—if it fosters the growth of efficient companies, rather than targeting small or large, public or private companies, or certain subsectors of the economy. This can be done through improving infrastructure and through policy reform to achieve competition. These broad measures will not necessarily lead to the creation of the most jobs, or jobs for particular groups of individuals. To achieve these objectives, programs or incentives that are in some way targeted may be required. Some of the groups that USAID may target include small farmers, women owning agribusinesses, and women controlling commodities and marketing channels.

In designing and operating programs to promote agribusiness trade and investment, the following points should be remembered.[1]

- Reliable information on the local economy and on the investment and regulatory climate is of overriding importance to investors.

- Where the policy climate is good, programs that provide information and referral services to local and foreign investors are cost-effective.

- Where the policy environment is not so good, a targeted approach is more appropriate; resources should be focused on those enterprises that can benefit from them.

- There are important roles for local private sector organizations (like trade associations), including promoting public-private cooperation, lobbying for improved policies, and facilitating contact between local and foreign businessmen.

---

[1] Keesing and Singer (in the Hogan, Keesing, and Singer volume) argue that government promotion of trade is ineffective. Hogan is more enthusiastic. If implemented, though, such a program needs a strong private sector orientation.

With regard to future USAID programming, this discussion points to the possibility of projects that:

- Return to infrastructure as a key aspect of development, placing specialized emphasis on infrastructure for agribusiness and other subsectors, like roads, cold storage, and market information systems.[1]

- Re-emphasize education and training, again with a particular focus, like training bankers to evaluate proposals for loans to agribusiness.

- Provide assistance in improving systems of regulation.

3.6 Political Economy of Policy Reform

Over the course of the last decade, A.I.D. has moved ever deeper into policy-oriented activities in the agricultural sector. In particular, A.I.D. has played a leading role in efforts at agricultural policy reform, building on the Agency's long experience in development projects within this area. These efforts were quite successful, especially for food crops, and became a model for later agricultural policy reform efforts at the broader sectoral level.

In a number of countries that have been most successful in undertaking reform, agricultural production has been substantially increased, economic growth rates have risen, and export volumes have begun to expand. On the other hand, in general, the implementation of agricultural policy reform, like economic reforms in general, has proven to be significantly more difficult than had been foreseen by donor agencies. Targets in agricultural sector reform programs have had to be continually adjusted downward, and the timing of such programs has had to be extended. In particular, institutional reforms have proven to be much tougher and to take much longer than envisioned. In a number of countries, reform efforts were only half-heartedly undertaken by governments that were seeking donor resources, or became victims of political unrest.

Political factors are important in understanding the context within which economic reform takes place, whether or not reform programs are initiated, and how reform programs are (or are not) implemented and sustained. There is no easy political formula for successfully undertaking and sustaining agricultural policy reform.

A wide range of political factors impact upon agricultural policy reform efforts. It is useful to think about the political dynamics of reform as having international and domestic dimensions, while recognizing that these two levels are not separate, but in fact directly and indirectly influence one another. Let us begin by exploring the political dynamics at the international level, focusing on *conditionality* and the role of policy-based foreign assistance.

---

[1] For the government, providing infrastructure, especially in rural areas, is a good substitute for giving special financial incentives.

3.6.1 Role of Political Factors

There are two competing models concerning the relationship between policy-based resource transfers and economic reform. The optimistic model is that financing provided by donors facilitates policy reform by lowering the political risks attached to it and by increasing the speed and likelihood of a supply response. The pessimistic model is that donor financing limits the imperatives for fundamental adjustment, especially in contexts where governments continue to dominate the economic and political landscape, because it enables them to keep inefficient and money-losing parastatals going and to avoid the politically difficult process of trimming bloated public agencies.

Empirical evidence can be found to support either of these scenarios, which implies that the role of external financing is not pre-determined, but depends on the specifics of the context. The point for A.I.D. officers is that they need to keep the pessimistic model in mind, lest it become a self-fulfilling prophecy. The lesson is that policy-based program support is inherently risky business; it does not automatically support agricultural reform efforts, and can sometimes have the perverse effect of limiting the likelihood of reform. Program assistance is not an instrument that can be easily or indiscriminately wielded in a wide range of circumstances. This is not at all to suggest that policy-based program assistance cannot be an effective tool for promoting agricultural policy reform, but that the potential for negative unintended consequences is probably greater than in the case of project aid.

The effectiveness of conditionality has often been over-emphasized. For political reasons, both donors and recipients have strong incentives to publicly stress the influence of conditionality. But research on the politics of economic reform has emphasized the practical weakness of conditionality. A.I.D. officers need to realize that conditionality has only a limited capacity to promote agricultural policy reform. While conditionality has been effective in placing the issue of policy reform on the agenda of many governments and in *initiating* some reform efforts, it is far less capable of playing a positive role in *implementing and sustaining* reform.

3.6.1 Conditionality and Policy Reform

Conditionality efforts display an interesting "macro-micro" inconsistency. It is undoubtedly the case that conditionality has had a large overall effect; i.e., it has been critical in placing the issues of efficiency, markets, and an increased private sector role on the policy agenda of developing countries. But the utility of conditionality in any specific context is far more limited. Case studies of the politics of reform have demonstrated that donor leverage is virtually never a sufficient condition for producing successful policy reform. Thus, A.I.D. officers should not assume that program conditionality is in any way sufficient to achieve agricultural policy reform targets.

One of the most interesting findings of the literature on the politics of economic reform is that donor conditionality has had the greatest influence *after* the donors withdrew at least a

portion of program funding. This suggests that holding back resources is an important instrument in gaining credibility for conditionality, and thus effective leverage for policy reform. A.I.D. officers should avoid rushing into program agreements prematurely. Trending of disbursements as reform benchmarks are met is frequently used to maintain leverage.

Conditionality also has a serious downside, with two especially pernicious features. The first is that conditionality tends to turn into a game, whereby donors attempt to "buy" as much policy and institutional reform as they can with a given amount of money, while recipient governments try to get as much money from the donors as they can for as little reform as possible. This draws government attention away from the serious need for an appropriate policy setting by creating a context in which the benefits of reform become identified as increased donor resources rather than improved economic performance. Decisions concerning economic reform became responses to external pressures and attempts to maximize external resource flows, rather than efforts to grapple with imperative domestic problems.

The second negative effect of conditionality is that it has driven intense donor involvement in the initiation stage of policy reform. This, in turn, has generated an "ownership" problem for the reform process. A general lesson of donor policy reform efforts is that the process has been too one-sided and narrow: one-sided in that during the dialogue, donor influence has overwhelmed local influence; too narrow in that a domestic political consensus over the issues involved has often not been achieved and also in the sense that those involved in implementation of the reform process have often had no role in its formulation, weakening the likelihood of effective implementation. One of the most important features of policy dialogue is the opportunity it gives to A.I.D. officers to assess host government commitment to a reform program. This cannot be done unless the dialogue is truly two-way.

Policy dialogue, effective technical assistance, and conditionality are the most important ways in which A.I.D. can help support host governments in their efforts at substantial agricultural policy and institutional reforms. In fact, the most appropriate way for an A.I.D. mission to think about conditionality is that it "buys" an opportunity to engage in a meaningful dialogue with the government over a particular issue or set of issues.

3.6.2 Domestic Political Reform

The "ownership" issue provides a good transition to examining the domestic political dynamics of agricultural policy reform. In general, the policy changes associated with economic reform are characterized by uncertainty about both the consequences of the changes and the durability of the new policies. This is especially the case when the thrust of the reforms run counter to hitherto prevailing political patterns and conflict with the political operations and interests of at least a section of the political leadership. This is true for agricultural sector reform efforts as well as broader efforts at economic reform. It is thus not surprising that agricultural policy reform has been politically difficult.

Certain political patterns of agricultural reform have emerged. The first is that agricultural sector reforms have generally depended upon prior, or at minimum, simultaneous efforts at the macroeconomic level. In particular, the lack of exchange rate reform makes agricultural policy reforms much more difficult. This implies that agricultural policy reform efforts should remain modest in the absence of sufficient macro-level reforms, and that A.I.D. officers involved in agricultural policy reform have to be cognizant of the policy environment at the macro-economic level.

The second is that the reform of agricultural pricing has been somewhat easier to achieve than the reform of marketing. This is because, although pricing is often implemented by parastatals, pricing reform can sometimes be accomplished without substantial reform of the parastatal itself, whereas marketing reform might entail significant changes in, or elimination of, the parastatal. Experience also has shown that price policy reform can be used as a lever for subsequently promoting reforms in marketing.

The third is that, especially in Sub-Saharan Africa, the political context for food crop-oriented policy reform has been more conducive than that for export crop-oriented policy reform. The impetus to reform of food pricing and marketing policy is two-fold: first, the increasing financial costs, and second, the diminished political value, of pre-existing arrangements. In some countries, cereals boards ran up massive deficits in trying to defend floor prices that were set too high. Often marketing boards became the dumping ground for politically-driven job creation. At the same time, in a number of countries, there was the practical breakdown of the state-dominated marketing channels and the shift of trade into the informal sector. Thus, in many countries, either the political benefits of the old system had already largely worn away, and/or the costs of maintaining those benefits were becoming prohibitive.

The prospects for food crop marketing reform have been heavily influenced by weather and other supply-influencing conditions. In general, marketing reform efforts have been put at political risk by drought and other supply-reducing factors. In these circumstances, governments have been wary of giving up control over food distribution, fearing either private sector hoarding and speculation, or a failure of markets to deliver goods to certain areas.

In Sub-Saharan Africa, foodcrop reforms that have raised incentives for farmers have generally not been at the expense of consumers. Part of the reason is that, in many countries, few consumers in practice had access to officially-priced food. Part of the reason is that lower marketing margins generated by increased efficiency throughout the marketing chain have allowed both producers and consumers to gain. It is not surprising, then, that food policy reforms have tended to be politically sustained.

Reform of pricing and marketing of export crops has been more difficult due to export crops' continuing role as a major source of revenue for many developing country governments. While the incidence of export taxation has diminished in many countries, governments have generally viewed that as all the more reason to maintain their ability to tax what they can. Thus,

the reform imperative has been much weaker in the export crop sector than it has been in the food crop sector.

The fourth pattern in agricultural reform efforts is its dependence upon a benign political context for success. In some countries, in the context of a weak domestic environment for reform, external agencies such as A.I.D. have become the main protagonists for reform efforts. Such a situation is not conducive to sustaining reform. In a negative political environment, it might make more sense to withhold financing for agricultural reform efforts and let governments learn through experience the high costs of failing to reform, rather than attempting to push through a politically unrealistic agricultural reform program before the conditions are appropriate.

A.I.D. can also undertake activities that promote the organizational strength and capacity of those sectors that are "winners" from agricultural policy reform, but have thus far been politically weak in most developing countries, especially farmers and traders. This does not necessarily mean supporting the traditional institutions, especially coops, that represented such interests. For instance, in Uganda, it is not clear that a large investment to rehabilitate agricultural cooperatives has been the best strategy for USAID to facilitate agribusiness development. Support to nascent producers' organizations among horticultural exporters is an alternative strategy that has greater potential.

3.6.3 Design and Implementation Issues

Political liberalization in many countries is creating a context in which these types of activities are likely to become more viable than they have been in the past. Support can be provided either through projects that facilitate specific policy reforms or in project activities that are not "policy-based."

Central to an enabling political environment is effective host-country leadership in promoting reform. In general, it appears that "reform champions" are an almost necessary condition for the success of agricultural policy reforms. While in the long run, reform is sustained by a combination of the benefits garnered from the reforms and a set of transparent incentives and penalties attached to the reforms, in the short run, there is no substitute for high-level support. These individuals not only champion the reform when "doing lunch" with the A.I.D. mission director, but are pro-active in the dialogue process. Pro-active does not mean supporting the mission's line completely; it means actively engaged in seeking to fashion a political consensus in favor of the reform and actively looking for ways to ensure that the reform succeeds. The lesson here for A.I.D. officers is that if there is not a very enthusiastic and competent senior government official actively promoting the reform program, the program activity should probably be reconsidered and postponed.

Designing Policy Reform. Even in the context of a positive political environment, there are inevitably tough political issues that A.I.D. officers face in the design of agricultural reform programs. The first is the need to reconcile technically optimal policy options with existing

political realities. Donors, including A.I.D., have been fixated with appropriate technical analysis as the cornerstone of successful policy reform while the best technical analysis is sensitive to political and institutional issues. A.I.D. officers must keep in mind that policy reform is an intensely political process, in which appropriate technical analysis is one part. Technical analysis can sometimes generate choices that, for political reasons, are counter-productive.

To better understand how this happens, consider the case of export promotion. As a strategy for enhancing growth and reigniting foreign investment, many developing countries are attempting to promote exports. A.I.D. missions are involved in a number of these efforts. Exchange rate depreciation is the technically easiest and most straight-forward mechanism for enhancing export competitiveness, which is a key element in generating new foreign investment. But a rapid depreciation of the exchange rate, especially in a context in which foreign exchange transactions have predominantly remained in the formal economy, will sharply decrease real wages and may very well generate political unrest. In the context of unrest, new foreign investment is almost inconceivable, while domestic investors are unlikely to shift from domestic-oriented to export-oriented production because they fear that government will not be able to maintain the new exchange rate policy. In such a context, even if the policy reform is maintained in the medium-term, export growth is not achieved. Thus, the political dimension of reform can render the "technically efficient" choice counter-productive in a very practical sense.

The lesson here for A.I.D. officers is the need to strike a balance between economically viable and politically feasible reform initiatives. What is called for is effective integration of economic analysis with strong political and institutional analysis. In general, practitioners should be wary of "first best" policy alternatives; they may not work. The world of policy reform is often the world of second- and third-best choices. This suggests the need for technical analysis that is informed by political realities and is focused on generating range of choices. Usually, this is a much more difficult exercise than developing optimal choices. A challenge for such technical analysis is to determine a minimum threshold for reform impact, below which reform efforts become meaningless.

A related political issue that A.I.D. officers face is "how much" reform should be attempted on a particular issue. This is partially a technical issue, especially at both ends of the continuum. But the question is also a political one whose answer depends on a series of factors. The most important is the context of the reform. In general, when governments are initiating a major shift in policy orientation, e.g., a shift to export promotion, a large and significant initial reform is needed to "signal" the government's seriousness to the private sector.

As a rule, A.I.D. officers need to look at three factors when assessing the issue of "how much" reform to seek: (1) the fit between the proposed reforms and the views and priorities of key officials; (2) the potential for political mobilization against the reforms; and (3) the institutional capability for implementation. Getting the "how much" question right has important political consequences in that policy reform failure (or irrelevance) can often generate cynicism

both on the part of government officials and among the groups in society, such as farmers and businessmen, whose responses are crucial to the economic success of reform.

Implementing Policy Reform. Political issues also arise in the implementation phase of agricultural reforms. A major lesson from policy reform efforts thus far is that donors have consistently overestimated the capacity of organizations involved in the implementation of reform while underestimating the complexity of the reforms themselves. This makes it very difficult to judge whether or not reform programs are on track. As a general rule, to assess this issue, A.I.D. officers need to liaise both with government officials and with the private sector groups that are affected by particular reforms.

In implementing agricultural reforms, missions have to maintain a difficult balance between the need for firmness and the need for flexibility. Those in government who are responsible for implementing reform need discretionary authority, especially given the difficulty of designing complex sectoral programs and the continuing vulnerability of developing countries to external fluctuations. At the same time, firmness is needed to prevent government from using "flexibility" as an excuse for essentially avoiding the reforms. Unless the A.I.D. mission is carefully monitoring the reform program and following the various issues involved, it will not know when flexibility is needed and when firmness is called for.

A second difficult political issue in the implementation phase is the relationship between the mission and A.I.D.-supported technical assistance teams involved in the policy reform activity. For such long-term assistance to be effective, the team should remain at arms' length from the A.I.D. mission. One lesson of technical assistance in support of agricultural policy reform is that donor efforts to "control" TA generally have led to the loss of credibility of technical assistance teams and to frustrations on all sides.

3.6.4 Political Analysis

Political analysis has an important role to play in the design and implementation of agricultural policy reform programs and projects. It is important to stress, however, that political analysis is not, and cannot become, a technocratic "fix" that can be easily and directly applied to improve the performance of agricultural policy reform efforts. A.I.D. officers looking for such a "fix" will go away disappointed. Nevertheless, political analysis can be a useful tool for policy-reform practitioners. The literature on the politics of policy reform contains important insights, findings, and questions that, if kept in mind and applied thoughtfully and consistently, will enable A.I.D. officers involved in agricultural policy reform work to do a better job at the very difficult tasks that they face.

In general, A.I.D. officers need to take various political issues seriously into account at the design stage of agricultural policy reform programs and projects. For agricultural sector assistance programs, A.I.D. missions should build political analysis into the design process itself, in order to better ensure that the outcome of the process is a politically feasible program. The political viability of policy reform programs is enhanced if the analytical and design

processes are highly collaborative. Such collaboration should include voices from both government and from non-governmental actors who are expected to play an important role in the aftermath of the reform, especially the private sector.

Such an approach improves political viability in several ways. First, collaborative technical analysis and design increases the likelihood that host government (and private sector) participants will feel "ownership" towards the policy and/or institutional reform package developed, rather than seeing it as a donor imposition. Second, collaborative analysis and design gives the A.I.D. mission insight into the assumptions that various actors bring to the process, and will help generate specific ways in which political feasibility can be combined with economic good sense. Finally, collaborative technical analysis and design will give insight into an effective political strategy for ensuring the viability of the reform package, including whether specific political compensation efforts might be needed to sustain the reform package.

A thorough set of political economy analyses that begins at the very early stage of program design can throw light on a range of political elements that will have an important impact on whether or not an agricultural reform program is likely to work. Five separate analyses should be undertaken by missions.

The first is a **donor-government bargaining analysis**. Such an analysis explores the on-going relationship between donors and government on economic reform issues. It should look at (1) the credibility of conditionality in the particular country circumstance, (2) the balance-of-payments picture to assess government "need" for program resources, (3) the political status of key technocrats, and (4) the general relations between key donors, especially the IMF and the World Bank, and the host government. This specific analysis is likely to be highly politically sensitive and might be impossible to undertake in a collaborative mode with local officials and analysts.

The second is a **decision-making analysis**, which examines the nature of decision-making within the agricultural sector, with special attention to who the key decision-makers are, the stability of patterns of decision-making in a particular issue-area, and the style of the decision-process, i.e., hierarchical, consensual, or idiosyncratic.

The third is a **current stakeholder analysis**, which examines how the current policy regime and institutional arrangements in the agricultural sector (and for the specific policy issue areas under consideration) affect different groups in the society. This analysis should be broadly cast and needs to look at the stakeholders within various government agencies as well as those groups outside of government such as farmers and traders. The analysis should also include a component that examines the extent to which organizational structures have developed to support, or oppose, a particular policy or institutional arrangement and discusses the nature of these organizations, their links to other political interests, and how they operate.

The fourth is a **potential winner-loser analysis**, which details how the various stakeholders will be affected by the proposed policy and institutional reforms in the short, medium, and long terms. Again, such an analysis needs to be very broadly cast.

The fifth is an **implementation capacity analysis**, which examines the process by which the particular policy and/or institutional reform will actually be implemented; e.g., which particular offices will be responsible for which tasks and how communicaitons among agencies and between the central government and local authorities will be handled. This analysis should assess the ability of the institutions involved in implementation to actually get the job done.

The purpose of these analyses is to guide mission management in both the design of the reform program and in beginning to structure an effective dialogue with government. For instance, gaining an understanding of stakeholders in the existing policy regime provides insight into whether a "frontal assault" approach or a more gradual approach to policy and institutional reform is likely to be more appropriate. The decision-making analysis is especially important in determining who are the key policy-makers in government and for structuring the policy-dialogue. This is not always as straightforward as it seems. Agricultural policy reform effects often have focused too narrowly on ministries of agriculture while real decision-making was occurring in the core economic ministries of finance and planning, the central bank, or even in the office of the president.

The winner-loser analysis is particularly important in assessing the potential for active opposition to the reform process. Understanding potential winners and losers will allow dialogue between A.I.D. and host governments over whether or not the policy reform agenda should include some "compensation" for losers as a means of diminishing opposition to reform. Compensation—even if largely symbolic—to powerful groups opposed to reform to offset the impact of reforms on their interests is but one possibility. Ghana's Program to Ameliorate the Social Costs of Adjustment (PAMSCAD), ostensibly intended to offset the social impact of adjustment on the poor, also promised to provide jobs for some of those released from government employment. While never large enough to make a substantial impact on its targeted beneficiaries, PAMSCAD was a useful political symbol for government's continuing concern with social welfare. A.I.D.'s ability to finance such programs on a grant basis enhances their attractiveness to governments. A.I.D. officers should consider such mechanisms for diminishing opposition to reform as part of the general process of assessing the political context of reform.

4. SUPPORTING POLICY REFORM AND ANALYSIS WITH APPROPRIATE METHODS AND TRAINING

The approaches used by policy analysts to respond to day-to-day questions from decision makers tend to differ considerably from the activities of researchers investigating the impact of government policies in the longer run. The *rhythm* of on-going policy debates and decisions places a particular premium on methods that, while rigorous, require a minimum of computational skill to implement, have modest data needs, and can be explained easily to decision makers whose training in economics may be limited. Moreover, in such policy environments, timeliness overrides all other considerations. Even the most persuasive and relevant analysis, delivered *after* a crucial debate, is of no value—until a "window" on that particular issue arises again in the future. Although longer-run policy studies do appear in some ministries and agencies, these come about largely under pressure from outside donors who have made policy and program loans conditional on research findings. Even under these circumstances, however, the pressures of time and resources have frequently dominated the investigation, and researchers have been forced to use the data at hand and less sophisticated analytical methods than they would have liked in order to meet bureaucratically determined deadlines.

Although policy analysis and academic research on policy issues tend to require different analytical approaches, there is obviously no hard and fast line that separates the two. Much depends upon the skill and experience of the analyst and the circumstances that prevail in a particular institution at a particular time. Without being dogmatic, however it is possible to discern certain methods that are more suited than others to the realities encountered by analysts working in developing country governments. These approaches often begin with a simple policy inventory or a rapid reconnaissance that enable multidisciplinary teams of analysts to identify key policy constraints or assess the impact of existing or proposed policies. These techniques are discussed in some detail in this chapter and illustrated with case study examples in the annexes.

More rigorous quantitative techniques that employ partial equilibrium concepts are also widely used by "working" analysts and have figured prominently in APAP methodology discussions. These include budget-based approaches such as the policy analysis matrix (PAM) and market-level models that employ traditional supply and demand analysis.

Agricultural sector models and computable general equilibrium (CGE) models, although employed in several APAP projects, fall at the research end of the spectrum. Typically, their use in a policy agency is made possible by a substantial outside investment in data collection and analysis. The results of these more comprehensive approaches often provide important insights that can be used in the interpretation of partial equilibrium methods. For that reason, some of their strengths and weaknesses are reviewed in this chapter.

This chapter also discusses approaches to training policy analysts. Experience teaches that results obtained by outside experts using analytical tools that cannot be explained to local decision makers have little impact. This enhances the importance of developing the capacity of local analysts who are in daily contact with policy situations and in whom decision makers have personal confidence. The need for local credibility underscores the importance of developing training programs that impart both analytical and presentational skills.

4.1 Policy Inventories

This section discusses an analytical technique, the policy inventory that can be used to clarify the policy environment and to help set an agenda for policy reform. The section will focus on this method as it is adapted to natural resource issues.

The policy inventory consists of a systematic identification of existing policies and laws that influence a given objective or problem, and a qualitative assessment of policies' impacts on the given objective or problem. The methodology has several characteristics in common with the rapid appraisal diagnostic technique, discussed below in section 4.2. It is carried out over a relatively short period of time (four to eight weeks). It relies on informal techniques of data collection, generally through culling of existing information or informal interviews of carefully selected individuals. In accordance with the short time frame and reliance on non-parametric data, policy impacts are generally assessed qualitatively. The use of more rigorous analytical techniques for assessing policy is not precluded, but goes beyond what is normally referred to as a policy inventory.

A policy inventory is best undertaken by a multi-disciplinary team of experts. Team composition will vary with problem areas specific to the country, but generally includes experts in such key areas as macroeconomic and agricultural policy. Experts already knowledgeable about the local policy environment are strongly preferred, as they require less time and effort for policy identification, allowing more time for analysis of policy impact and setting policy priorities. The specific steps involved in developing a policy inventory are addressed below.

The policy inventory is based on the premise that government policies often hinder achievement of development objectives. The policy environment in most developing countries is often not very clear, at least to outside observers. One reason is that policies are generally developed on a piecemeal basis and implemented by a myriad of government agencies, departments and ministries. Very few government agencies have a complete picture of the policies affecting a single issue. Communication among government agencies and institutional memory within agencies are also often poor. Policies may conflict with one another. Moreover, descriptions of policies on paper often differ from what is actually implemented.

Development of a policy inventory is a good first step toward understanding the policy environment. An inventory documents all existing policies that affect the issues of interest and, by doing so, also identifies gaps in policy. It exposes conflicts among policies as well as implementation that is ineffective or inconsistent with the policies' intent.

It is also common from examination of the policy environment to find that several policies may be in need of reform or that reform of any of a number of policies could help achieve some objectives, at least partially. Some policy changes will clearly have less impact than others and realistically, only a few policies can be effectively addressed through dialogue. Development of a complete inventory of policies and the assessments of policy impacts provides the basis for setting priorities for policy reform. Where the impacts of policies are not entirely clear, the inventory method will provide a basis for setting priorities for further research. Policy changes also tend to involve trade-offs between objectives or implicitly between the interests of different groups. Impact assessments that are a part of the policy inventory process highlight the trade-offs that are crucial to understanding the political dynamics underlying policy reform.

The inventory process also reveals institutional roles and responsibilities for designing and implementing policies. Consequently, the inventory helps pinpoint problems with institutional capability or gaps between stated responsibility and an institution's actual authority. Problems with overlapping responsibilities or jurisdictions between institutions will also become clearer.

The assessment of impacts of current policies also provides a basis for estimating likely impacts of changes in policies. This will be discussed in more detail below.

4.1.1 Use in Agricultural Policy Analysis

The policy inventory method was originally developed by APAP to identify and examine policies that affect the agricultural sector. An underlying premise of agricultural policy inventories is that agricultural development is affected predominantly by policies at three levels:

- **Macroeconomic:** Policies that affect the entire economy, such as monetary and fiscal policies or exchange and interest rate policies.

- **Agricultural Sector:** Policies that affect the entire agricultural system, such as agricultural trade, taxation or tariff policies.

  Agricultural Subsector: Policies designed to affect a particular commodity or group of commodities, such as price supports for rice production or fertilizer subsidies.

Development of agricultural policy inventories are generally part of a four-phase process. The phases are: (1) policy identification, (2) impact assessment, (3) discussion with government officials and other interested parties to review inventory findings, and (4) development of an agenda for policy reform and further research.

In the policy assessment phase, each policy is examined in terms of country-specific economic and social performance criteria that generally relate to USAID Missions' development objectives. In El Salvador, policies were assessed by their impact in five main areas:

production, import expenditures, domestic consumption, export revenues, and government revenues. (Table 4.1)

Critical objectives of these inventories are to keep to the analysis as uncomplicated as possible and to present the analysis in a format appropriate for policy makers. Many agricultural inventories employ a simple system for ranking policies by their impact and presenting it in a tabular format. The policy inventory methodology has also been adapted to examine the impact of policies on more specific topics, such as small rural enterprises and on women in agriculture.[1]

4.1.2 Natural Resource Policy Inventory

The policy inventory has also been adapted and applied very successfully to natural resource policy issues in Central America. The method appears to be particularly well-suited to address natural resource issues for two important reasons. First, the range of policies that affect natural resource use and conservation is very broad. Policies regarding the macroeconomy, population, land tenure, settlement, energy, agriculture, livestock, pollution control, forestry, parks and reserved areas, wildlife, and coastal development can have significant impacts on natural resource use. As implied in the categories listed above, policies affecting natural resources are designed and implemented by diverse institutions. Consequently, the policy universe tends to be complex for natural resource issues.

Second, natural resource use and conservation are influenced as much, if not more, by indirect effects of broad policies developed largely without consideration of natural resource use, such as population or macroeconomic policy, than policies designed specifically to regulate use of a resource, such as forest policy. The indirect impacts of many policies are not well documented or understood. Hence, by highlighting these linkages, a natural resource policy inventory can help bring natural resource considerations into the dialogue on policies that are not natural resource-specific.

Preparing a natural resource policy inventory is a five-step process: (1) problem identification, (2) policy identification, (3) institutional description, (4) policy impact assessment, and (5) discussion with government officials and setting an agenda for policy reform and further research. This differs from the agricultural policy inventory primarily in the addition of the preliminary problem identification step. This first step is not absolutely necessary, but is recommended to focus the analysts' attention on policies with significant impact, or policies that affect problems of particular interest to the mission. Without a priori identification of problems,

[1] For additional information on agricultural sector policy inventories, see Block et al., 1989 and USAID, 1989.

TABLE 4.1 Impact Assessment Table from El Salvador Agricultural Sector Policy Inventory

Policy Intervention/ Impact Sector	Purpose	Implementing Institution	Impact Assessment					Explanation of Policy Impact	Principal Alternatives Suggested for Analysis
			Production	Import Expenditures	Domestic Consumption	Export Revenue	Government Revenue		
MACROECONOMIC POLICIES, FISCAL									
Level and structure of taxation /agriculture	Revenue generation	Ministry of Finance	-1	0	-1	-2	+1	Taxes extracted from the agricultural system have averaged 10-11% of agricultural value added, 90-95% of the sector's fiscal contribution originates in the coffee export tax, which at current prices and exchange rates, has strong negative impact on the profitability of coffee production. Declining coffee output is closely related to falling agriculture employment, income, and consumption.	1. Revise coffee export tax to more nearly approximate an income tax rather than a gross sales tax. 2. Broaden the agricultural tax base. 3. Improve tax administration and collection
Level and structure of expenditures /agriculture	Provide public goods, services, and infrastructure	Ministry of Finance	-1	-1	-1	?	+1	Central government expenditures on agriculture at 6-7% of total expenditures, are now low compared with agricultural sector tax revenues and agriculture's contribution to GDP. Expenditures favor livestock and export crops.	1. As conditions permit, increase real levels of expenditure. 2. Revise intrasectoral allocation of expenditures in light of short- and medium term national objectives.
MACROECONOMIC POLICIES, MONETARY									
Interest rate regulation/ agriculture	Regulate supply and demand for financial resources; influence costs	Monetary Board Central Bank	+1	0	+1	+1	+1	The government has adopted an interest rate structure designed to provide a positive real rate of return to savers and full cost recovery on lending operations agricultural borrowing rates are only modestly lower than in other sectors. Through its impact on savings, this policy should enhance investment and growth over the medium term.	1. Implement this policy more actively through more flexible and frequent interest rate revisions. 2. Study interest rate measures to foster the development of long-term financial investments.
Supply of credit/ agriculture	Support production, processing and marketing	Central Bank Commercial banks Agricultural Finance Bank Cajas de Credito	-2	-1	-1	-2	-2	While efforts have been made to increase agriculture's share in total lending, new credit to the agricultural sector has fallen 25% in real terms since 1979. Refinancing has grown from 9% to 33.5% of total credit to the sector, while arrearage and debt-service obligations continue to accumulate.	1. Refinance outstanding overdue loans on extended payment terms. 2. Increase volume of new credits to agriculture. 3. Study restructuring of agricultural credit to provide finance for non-traditional crops, agricultural processing, and marketing.
-2 = highly unfavorable, - 1= unfavorable, 0 = neutral, +1 = favorable, +2 = highly favorable.									

the process of policy identification can take on census proportions. For example, to focus the inventory undertaken in Honduras, the following four major areas were defined:

- Sustainable agriculture issues, including land use, soil fertility and pesticide use.
- Production from natural forest issues, including deforestation, reforestation, and forest management.
- Wildlands and biodiversity issues, including endangered species protection and park and reserve management.
- Watershed management issues, including water use, water quality, and water management.

An inventory undertaken in Costa Rica included a fifth problem area, coastal and marine management. A priori problem identification can be based on secondary documentation or informal interviews of key public and private sector participants. Identification of problems also provides a framework for organizing the policy assessment and facilitating the steps that follow.

The second step is the data collection and compilation phase. The analyst identifies the content and objectives of major policies through an examination of secondary sources and interviews with government officials and key private sector participants. The analyst should focus the scope of the policy search as keenly as possible to policies that have strong potential for impact on the problem areas. The analyst must look to economic theory, documentation of other country experiences, and observation of interviewees to suggest possible linkages between policies and problem areas to help define the extent of the policy search. See Table 4.2 for an example of the types of policies examined in a natural resource policy inventory.

The third step, which stems from collection of policy information, is a description of key institutions involved in formulation and implementation of policies affecting natural resources. This description outlines relative roles and responsibilities of relevant government and private sector institutions. It helps highlight institutional overlap, gaps and capabilities. The range of institutions involved in the regulation of natural resources also provides some insight into the nature of the country's overall approach to resource management. For instance, environmental policy in some countries is often implemented primarily by a single government agency, such as the EPA in the United States. In many developing countries, however, responsibility for environmental policy is diffused throughout the government and implemented by different line ministries.

The fourth step entails a qualitative assessment of policies. In contrast to agricultural policy inventories, natural resource inventories tend to assess policy more in terms of impact on problems—deforestation, water pollution—than impact on objectives. As mentioned above, this step in the process is not rigorously defined, but relies on the judgment and skill of the analyst to select assessment methods and criteria that are appropriate to local conditions. In general,

TABLE 4.2 Policy Framework for Honduras Natural Resource Policy Inventory

POLICIES	SUSTAINABLE AGRICULTURE	PRODUCTION FROM NATURAL FORESTS	WATERSHED	WILDLANDS BIODIVERSITY
MACRO/ MONETARY	Exchange rate Interest rate Money supply	Exchange rate Interest rate Money supply	Exchange rate Interest rate Money supply	Exchange rate Interest rate Money supply
MACRO/ FISCAL	Land tax Income tax Public expenditure Gov't budget deficit External debt	Land tax Income tax Public expenditure Gov't budget deficit External debt Stumpage fee	Land tax Public expenditure Gov't budget deficit Water use fee External debt Water surcharge	Land tax Public expenditure Gov't budget deficit Conservation stamp External debt (debt for nature) Hunting fee/license
MACRO/ TRADE	Export taxes Import tariff and barriers Pricing policies Export promotion	Export taxes Import tariff and barriers Export controls Pulp, paper import subsidies	Import tariff and barriers Export promotion Export taxes	Export quotas Export control-endangered species Quality control Non-traditional export promotion
SECTORAL/ REGULATORY	Land tenure framework Agrarian reform policies Land bank regulations Price control policies - consumer Basic grain law (incentives and supports for grain production) Ag. development bank's structure and management policies Grain marketing parastatal's structure and functioning	Land tenure framework Tenurial issues in forestry (including tree ownership, integrated management areas and tributary areas) Forestry regulations Role of forestry parastatal for development in production and marketing Fuelwood policies	Land tenure framework Water law Fisheries law Mangrove Commission regulations Procedures for coastal land concessions Pollution and waste management Plant protection law	Land tenure framework Int'l agreements governing sale of endangered species (e.g., CITES) Decrees creating national parks, wildlife refuges and biospheres Fisheries law
DEVELOPMENT/ ENVIRONMENTAL	Industrial development law Development agency programs Irrigation, roads, infrastructure	Development agency programs Private sector programs Agro-forestry Reforestation and forest production	Water master plan Planning laws Municipal laws Master road plan Irrigation development Energy development Municipal dev. policies Environmental conflict prevention and mitigation Environmental education Shrimp development Government decentralization	Promotion of tourism Parks, recreation Development agency & NGO programs Environmental education

though, the assessment should identify and discuss linkages, intentional and unintentional, between policies identified in step two and the problems identified in step one. For instance, land settlement schemes in Central America often require the settler to improve land to receive legal title. This unintentional linkage between settlement policy and the problems of deforestation and loss of biodiversity and wildlife habitat should be discussed.

The assessment should also address the important trade-offs between short and long-term impacts that are inherent in natural resource use and conservation. For example, concessions for removing timber from public lands that are granted for a length of time less than one cutting cycle do not provide any incentive for the resource user to consider management of resources for sustained long-term use. The resulting trade-off between short-term economic benefit and long-term use should be discussed. Similarly, trade-offs among multiple and often conflicting objectives of policy options (economic growth, welfare, and conservation) should be clearly spelled out. If policy options involve trade-offs among the interests of different groups, these trade-offs should also be addressed.

The fifth step is setting priorities for policy reform and establishing an agenda for further research and analysis. The process of setting priorities for reform relies on the informed judgment of the analyst and government officials, A.I.D. representatives, and other interested parties. It requires ranking the problem areas in terms of relative importance and identifying which existing policies, if changed, or new policies, if adopted, would have the greatest impact on the problems identified. The process also implicitly involves making trade-offs among multiple objectives.

4.1.3 Advantages and Disadvantages of Policy Inventories

The policy inventory has demonstrated its value in several ways. The flexible nature of the approach has allowed it to be adapted to different conditions. Policy inventories are also relatively low in cost, and are uncomplicated in comparison to some of the more data-intensive approaches to policy analysis. Most importantly, the inventories have been used effectively by USAID missions as a basis for policy dialogue and as input for project and program design.

Both the agricultual and the natural resource policy inventories have some limitations. Because they are essentially analytical techniques that are a framework for organizing thought, methods for specifying the scope of the policy search, assessing the impact, and setting priorities for policy reform and further research are not rigorously defined. Hypothesized causal relationships between policies and outcomes are not tested statistically, but are supported primarily by simple observation and case examples. Every effort is made to ensure that the data that are collected are accurate and unbiased, but no effort is made to instill statistical rigor. Hence, the technique relies predominantly on the capability and judgment of the analyst. As such, it is vulnerable to subjective assessments and analyst bias.

Similarly, the framework, lacking statistical underpinnings, does not have the predictive capacity of sophisticated statistical models. The analyst can use the qualitative assessments of

policy impacts as a basis for discussing potential results of changes in policy, but the policy inventory does not provide any guidance for making concrete, quantified predictions of outcomes in policy changes.

The policy inventory is also a snapshot of policies at a single date and time. As policies, institutional arrangements and other factors change, an inventory inevitably becomes obsolete. The window of time in which the inventory is useful to the policy development process varies entirely with the frequency of changes in policies, institutions, and the general economy.

4.2 Rapid Reconnaissance: A Diagnostic Tool for Subsector and Industry Analysis

Rapid reconnaissance surveys (RR) or rapid appraisal (RA) refer to a mixture of formal and informal methods of inquiry.[1] The defining characteristics of RR are:

- RR is carried out in less than three months, from study inception to completion of a final draft report.
- RR is usually multi-disciplinary and typically led by an economist, agricultural economist, or agribusiness specialist.
- RR focuses on a particular commodity subsystem or 2-3 related commodity subsystems, or a particular agro-industry.
- RR combines the skills of both senior analysts and junior analysts, for whom RR constitutes a form of on-the-job training.

Rapid reconnaissance is *not* an agricultural research method as such. Rather, it is a **diagnostic tool for identifying problems and examining constraints facing agricultural commodity subsystems and participants in those subsystems.** RR can help to define constraints and issues more sharply, identify testable hypotheses about farmer or trader behavior, and diagnose constraints to better performance. RR can be especially well-suited to investigating agricultural commodity subsystems about which little is known or for which secondary data are notoriously unreliable.

The theoretical underpinning of rapid reconnaissance studies is the structure, conduct, performance (SCP) paradigm of industrial organization theory. The SCP paradigm has been adapted to examine vertically organized subsystems in addition to horizontally organized industries by Marion and others (see Marion, 1976 and 1986). An important underlying concept of the SCP framework is that the way in which an industry or subsystem is organized has a profound effect on how participants in the industry or subsystem behave and in turn perform as an industry and subsystem.

---

[1] Rapid reconnaissance studies from West Africa concerning ruminant livestock production and on vegetable seed production in Nepal are discussed in greater detail in Appendix C.

Rapid reconnaissance is a useful **micro-level complement to more broadly gauged agricultural policy studies.** RR can serve as a reality check on government pronouncements and perceptions of the organization and operation of agricultural commodity subsystems, the effectiveness and impacts of policy reform, and the views of government officials concerning subsystem constraints, which are often quite different from those of private agents operating in these subsystems. RR can be effectively employed to do the following:

- Learn quickly the key problems or **constraints** facing different participants in a commodity subsystem. It is recommended that RR precede the design of formal surveys in order to better focus these surveys on critical research questions.

- Update the findings of an earlier formal survey or set of formal surveys to determine if conditions and constraints have changed. Intensive, in-depth informal interviews can be used to generate valuable **quantitative information** on commodity prices at different transaction levels (farm, wholesale, retail, export/import), marketing costs and margins, processed throughput and processing costs, transport costs, and commodity flows during a particular, well-defined period.

- **Monitor and evaluate the progress and impacts of agricultural policy reform programs.** Again, RR can inform in a useful way the design of formal monitoring and evaluation surveys.

- Provide a crosscheck of the validity and reliability of ongoing formal data collection (at the farm, firm or market level).

Rapid appraisal techniques were devised in large part as a reaction against formal surveys in developing countries. Recent advances in designing, implementing, and processing formal surveys by IFPRI and U.S. universities such as Michigan State University have greatly improved the state of the art in formal survey research.[1] Micro-computer technology and well-designed statistical software, such as SPSS/PC+, have helped to speed up survey data entry, verification, processing, and analysis. Nevertheless, as Chambers (1981) and many others have argued, formal surveys are often poorly conceived (all too often with little input from prospective respondents), poorly designed, difficult to implement effectively, and often generate data which are never analyzed or only partially analyzed. Formal surveys typically force analysts to become logistics coordinators and managers, leaving little or no time for probing, thoughtful interviews. In many formal survey programs, it is difficult to change the focus of the research on the basis of what researchers learn as they do the research. On the other hand, formal surveys are really the only effective way to gather reliable data on flow variables, such as income, transactions, labor use, and trader product flows, given that many households and firms in developing countries do not record transactions and income, and that accurate recall is limited to one month or less in most cases.

[1] For IFPRI, see Tatian, 1992 and for MSU refer to Crawford et al., 1988.

Rapid reconnaissance surveys engage analysts in the research process in a way that is rarely possible in formal survey research. RR allows senior analysts to probe during interviews with farmers, traders, consumers and processors, eliciting their (unprompted) responses and perceptions of key issues and problems.[1] Informants can also help to shape the policy agenda by identifying gaps or weaknesses in public sector performance and ways in which public policies, regulations and institutions could better support private sector activities. Probing interviews also allow for questions about the rate and direction of change, emerging strategic considerations, and uncertainties faced by private agents that constrain investment.

The key techniques of information-gathering and analysis in RR are:

- Direct observation of agricultural production, marketing and processing practices.
- Structured informal interviews, conducted by analysts and not by enumerators.
- Analysis of available secondary data.
- Review of firm records, where accessible and available.

A fundamental premise underlying RR is that valuable information, sufficient for many purposes, can be gathered by analysts interviewing small numbers of key informants. The analyst maintains control over the research process in RR, while formal surveys are potentially rife with non-sampling errors.[2] Furthermore, the more costly that the possible negative consequences of a policy decision are, the more likely that decision makers will wish to invest in a formal survey. In all types of field research in developing countries, analysts need to weigh the costs and benefits of obtaining greater precision through larger and more complex formal surveys.

Some of the weaknesses of RR are:

- Potential (selection) bias in choice of informants, production and marketing sites, and period of observation.

[1] It is noteworthy that the Policy Analysis Matrix (PAM), discussed below, relies on structured informal interview guidelines, rather than formal questionnaires, to generate primary data. PAM researchers and research assistants carry out in-depth, individual interviewers with purposive samples of farmers, traders, processors and transporters in order to generate data for use in enterprise budgets, which form the base of PAM analysis.

[2] Common examples of non sampling errors are fuzzy definition of important concepts or variables about which data are being collected, missing observations for important variables, hard-to-explain outliers which cannot be verified, inaccurate translation from a local language to the *lingua franca* used by the interviewer and to record the response, misrecording of information obtained in interviews, enumerator and respondent fatigue leading to response and recording errors, and key-punching errors at the point of data entry.

- Small samples, chosen non-randomly, which limit what one can say about a broader population.

- Potentially high opportunity cost of using expatriate analysts or scarce, high-cost local analysts.

RR Preparation and Implementation. The more advance preparation that goes into the design of a RR survey, the more likely RR is to be effective. Several team meetings are recommended, and analysis of available secondary data should, if possible, precede RR. Ideally, one or two key commodities are the focus of investigation. Geographic coverage is best limited to important, representative production zones and consumption centers. Several teams of 2-3 analysts each cover different subzones to maximize coverage and the number of interviews. After several days to a week of field work, the teams are advised to meet and discuss preliminary findings, hypotheses, and areas for further investigation. By developing outlines at the beginning of RR, field work is focused and drafting of a report at the end of the field work is facilitated. RR findings should be written up in country and presented to the study sponsor for preliminary feedback. Finalization and polishing of the report can take place later and, if expatriates participate, out of the country.[1]

RR field work can be a valuable training opportunity for junior analysts to work with senior analysts, whether local or expatriate, from whom a lot can be learned in a short period about food system organization, operation, and performance. Intensive interviewing and observation, characteristic of RR, can help to shatter misconceptions that many public sector analysts have of private sector actors. Indeed these interviews can give government analysts a new appreciation of the constraints and uncertainties that private agro-entrepreneurs face in most developing countries.

In Niger, analysts of the Agricultural Marketing Improvement Strategies (AMIS) Project carried out policy-oriented RR surveys of several exportables, including cowpeas, onions, hides and skins, livestock, and vegetables/garden crops.[2] With the exception of livestock, all of these subsystems have been under-researched, and there is little reliable secondary data. All six of the studies generated useful diagnostic information and fed into the policy reform process. Unlike many rapid appraisals, the Niger studies were followed up, with a lag of one to three years, with focused updates and national workshops attended by representatives of the public and private sectors. The workshop participants commented on key study findings, and a representative committee formulated an action agenda with the help of an AMIS workshop leader.

---

[1] For a detailed discussion of how to conduct RR studies, see Holtzman, 1986.

[2] Rassas et al., 1989; Lev and Jadbois, 1988; Ouédraogo, 1991; Mooney et al., 1990; Kulibaba, 1991; and Nicholson and Stathacos, 1992.

4.3 Budgeting Methods

Enterprise cost and return studies, often referred to as enterprise "budgets," have long been used in policy analysis. When they seek to intervene in commodity markets, governments typically begin by carrying out cost and return studies, which they then use as an input into the determination of output procurement prices and input taxes and subsidies. Such crop budgets ordinarily include physical input-output data and are found in many developing country ministries of agriculture or agricultural lending institutions. The private profits computed from these data help form the government's judgment about the adequacy of grower incentives needed to achieve food security, income distribution goals, and desired levels of foreign exchange earnings.

Policy analysts working on efficiency issues may also use data drawn from budget studies by computing costs and returns at social prices.[1] For example, the most frequently calculated measure, the "nominal protection coefficient" (NPC), describes the ratio of gross revenues at domestic and international prices. (A similar measure may be calculated for divergences between private and social input costs). The NPC provides an indication of the transfer of resources between producers and the rest of the economy as a result of taxes, subsidies, and exchange rate manipulations; a value less than one indicates that producers are being explicitly or implicitly taxed. Calculation of an NPC is an important first step in assessing the degree of market distortion for a specific commodity.

A somewhat more comprehensive calculation, the "effective protection coefficient" (EPC), recognizes that taxes (subsidies) on outputs might be offset or compounded by subsidies (taxes) on inputs. The EPC is therefore calculated as the ratio of value-added at private prices to value-added at social prices and captures the sum of all interventions due to distortions in tradable commodity markets.

The DRC or "domestic resource cost" coefficient is a popular efficiency measure also based on crop budgets. DRCs are defined as the ratio of domestic resource cost to value-added when both numerator and denominator are valued at their opportunity cost. A DRC less than one indicates that a country can obtain value-added in a commodity at less than its cost in domestic resources and hence has a comparative advantage in its production.

4.3.1 The Policy Analysis Matrix

Although the coefficients described above meet the criteria of computational simplicity and minimal data requirements, they present a piece-meal picture of the extent of government policy intervention and lack intuitive expository appeal. An improved format for presenting budgetary data, proposed by Monke and Pearson, has been dubbed the "policy analysis matrix"

---

[1] For a detailed description of how budget-based measures of protection and comparative advantage should be calculated, see Tsakok, 1990.

or PAM.[1] The format of the PAM is shown in Box 4.1. Budget calculations based on physical input-output data and private prices are presented in the top row. Gross revenues and variable costs (e.g., fertilizers, seeds) are obtained by multiplying physical input-output coefficients per unit of land or water times private prices. Factor costs (labor, capital) are obtained by making similar computations.

BOX 4.1 The Policy Analysis Matrix

	Revenues	Costs		Profits
		Tradable Inputs	Domestic Factors	
Private prices	A	B	C	D
Social prices	E	F	G	H
Divergence	I	J	K	L

Private profits:	D = A - B - C	NPC =	A/E
Social profits:	H = E - F - G	EPC =	(A-B)/(E-F)
Output transfers:	I = A - E	DRC =	G/(E-F)
Input transfers:	J = B - F		
Factor transfers:	K = C - G		
Net transfers:	L = I - J - K		

The second row reflects the same physical data used in the private profits calculations, but computations are done using international prices for tradables and opportunity costs ("shadow prices") for domestic resources. In PAM studies, the latter are usually obtained by adjusting domestic prices of factors for observed imperfections in factor markets such as extensive unemployment or capital rationing.

The analysis of the matrix focuses on two accounting identities: the first defines private and social profitability as noted above; the second measures divergences that are interpreted as

[1] Eric Monke and Scott Pearson, 1989.

either policy effects or market failures. Private and social profits, shown by D and H in the right hand column, are calculated by subtracting costs from revenues for each row. The calculation of private profitability provides information on incentives to producers and on the competitiveness of commodity systems at actual market prices. The same computations using social prices provide information on comparative advantage.[1]

Policy effects and market failures, shown in the bottom row, are the difference between private and social values of outputs, inputs, and resources. These divergences provide insights into the extent of policy interventions such as taxes, subsidies, trade restrictions and exchange rate distortions. They also point to imperfections in the functioning of commodity and factor markets. The sum of the policy effects constitutes net transfers for a particular crop.[2]

As Box 4.1 makes clear, the actual data required to compute PAMs do not differ from the data needed to compute older measures such as private costs of production, NPCs, EPCs and DRCs. However, arranging the information in the form of a matrix has several important benefits. First, it pulls together all aspects of the budget-based approach in a coherent form rather than presenting them in the form of a seemingly unconnected table of ratios. Secondly, the analogy between private profits, a historical focal point of policy makers, and social profit as a measure of comparative advantage, has immediate intuitive appeal to policy makers unaccustomed to considering efficiency in their decisions.

The disaggregation of divergences that make up the bottom row of the PAM is also helpful to policy makers in assessing the difficulty of implementing the reforms that would be needed to insure efficient resource use. The institutional problem of correcting a divergence due to an intervention in a single commodity output market, for example, is generally an order of magnitude smaller than mobilizing the investments that would be needed to correct divergences rooted in fundamental imperfections in the land, labor and capital markets. Removing tariffs on a commodity requires only a government directive. Improving the functioning of a labor market, however, may involve complex investments in infrastructure that facilitates the flow of people and information in the economy. Assessment of these implementation issues may ultimately play a decisive role in determining what changes are feasible in an existing policy regime.

4.3.2 PAMs and Environmental Policy

In recent years, the traditional agenda on agricultural policy has been extended to include considerations of environmental and natural resource policy. Efforts to include these wider

[1] A positive social profit means that costs are less than value-added when all estimates are valued at their opportunity cost to the economy, i.e., the DRC is less than 1.

[2] Net transfers are also reflected in the difference between private and social profits for the commodity system.

concerns within a PAM-type framework are in their infancy.[1] However, the same timeliness and data considerations that prompt the use of budget-based approaches in analyzing traditional agricultural policy are also in effect when decision makers seek to broaden their policy concerns.

Several approaches to incorporating environmental considerations such as "sustainability" have been proposed. One possibility would be simply to incorporate externalities and unrecognized user costs directly into the framework of the PAM by adjusting the social costs of domestic resources. For example, if land degradation were occurring as a result of, say, overgrazing, the long-term decline in the land's productivity could be included as part of the opportunity cost of land. Land would "cost" more socially than it does privately if foregone future production were also included as a cost or if the negative effects of erosion on other production systems were accounted for.

In most environmental policy situations, however, it is desirable to make explicit the interaction between physical systems that gives rise to negative production externalities. Developing such information provides an impetus for the creation of new input-output systems that eliminate negative interactions, or at least reduce them to some "acceptable" level. For example, if pesticides applied to rice are adversely affecting fishing communities downstream, budgets for alternative rice farming systems are needed in order to ascertain the "cost of compliance" to various standards at both private and social prices.[2]

The construction of systems whose physical characteristics minimize negative externalities leads to a second PAM, one which again contains budgets based on private and social prices. Comparison of the current practice budgets with the budgets of sustainable systems simultaneously provides comparative evidence on (a) social distortions due to economic policies, and (b) social distortions due to physical externalities. This juxtaposition of "with" and "without" PAMs reflecting conserving and non-conserving production environments leads naturally to a combined PAM/cost-benefit analysis in which returns to investments and regulations are assessed at both private and social prices.[3]

Alternative production systems, i.e., systems that limit externalities to some acceptable level, are obviously difficult to discern. But it is sometimes possible to identify sustainable practices being carried out by unique producers whose approach encompasses strong conservation objectives. Experiment stations or specialized research centers may also have evidence on alternative ways of carrying out sustainable agricultural activities. In virtually every case, however, attempting to incorporate resource and environmental considerations in a

---

[1] For an early effort in this direction, see Cory and Monke, 1991.

[2] Replacing standards with budgets that reflected the impact of alternative levels of pollution on the fishing community would be even more desirable in reaching decisions about pesticide regulation, but these types of data are extremely difficult to obtain.

[3] See Pagiola, 1991.

budgeting framework will require new approaches to policy analysis that explicitly incorporate the assistance of physical scientists from various agricultural disciplines.

The limitations of the PAM approach are the limitations of all single commodity budgeting approaches:

- When looked at from a multi-commodity farming systems point of view, unit-based budgets standardized on one hectare of land or one cubic meter of water do not contain information about the competition for fixed resources at the farm or sector level. They are, in a sense, one-constraint models in which the optimal use of land would dictate planting the entire area to the single most profitable commodity. As a result, it is difficult for policy analysts to respond to questions about the magnitude of the changes that national policy reforms would produce, except to refer to regions that would go in or out of production.

- In the PAM framework, demand considerations are not taken into account. Hence it contains no mechanism for including the impact of price reforms on the size of such important trade-related variables as exports and imports, foreign exchange earnings, and budget savings.

Despite the limitations of all budgeting approaches, however, they continue to be important because their strengths speak directly to the constraints on policy analysts noted in the introduction. They are simple to implement and understand, they minimize data requirements, and they can be carried out in a timely way with modest investments in computer hardware and software. The insights they provide about the *direction* that policy reforms must take if governments are to improve efficiency is often the single most critical piece of information in reaching a policy decision.

4.4 Market Level Methods

Traditional market level methods utilizing supply and demand curves also have a long history as tools for analyzing agricultural policy. Analytically, they improve on the budgeting methods described earlier by (1) incorporating the demand effects of price changes, and (2) providing a mechanism for including the impact of prices on the marginal production decisions of producers. These richer adjustment possibilities lead, in turn, to the ability to investigate the effects of reforms on international trade, government budgets and, in general, on the relative welfare of producers and consumers.

The ability to draw such sweeping conclusions comes, of course, from the price and quantity information contained in supply and demand elasticities. Estimating these elasticities for market-level models has become, as one analyst put it, a "cottage industry" and summaries

of work done over the past several decades are available in a number of publications.[1] Although there are often disconcerting differences in estimates for the same commodity in the same country depending upon the time period and estimation technique used, careful evaluation of the original studies from which the elasticities were drawn can avoid many of the obvious difficulties. Particular care should be exercised in ascertaining the time period from which the data were drawn. Estimates made for periods when traditional agriculture was relatively stable may be inherently misleading in projecting the impact of policy reforms on developing country agricultural sectors that are currently undergoing profound structural and technological change.

Regional concerns are also difficult to address adequately in most market-level models. Often, the disaggregated data needed to compute regional supply responses simply do not exist. Consequently, policy makers, ever alert to the distributional impact of policies on the areas they represent, are frustrated to find that market-level models give them little insight into the regional effects of national commodity policies.

Most single-commodity, market-level analyses focus on the effects of divergences between private and social prices on the output side. The original estimation of the supply schedule is, of course, based only on private responses to domestic prices. It is the analyst who then interprets certain of these price levels as export or import parity (social) prices.

Policy interventions in the input markets, however, are more difficult to incorporate. Subsidized input prices, for example, produce a downward shift in the supply curve. In most studies, however, the level of aggregation is such that it is difficult to isolate the effects of subsidies on particular items such as fertilizer and pesticides. Proper inclusion of the effects of input and factor price distortions requires the further specification of markets for these components of the production process and a description of how they are linked quantitatively to the supply function of the commodity being studied. Most analysts using market level approaches to commodity policies have neither the time nor the data to go this far.

Reference to the need for incorporating input markets raises the more general question of how far analysts need to go beyond a simply single-commodity analysis to draw useful conclusions for decision makers? A multi-market framework becomes important when at least some significant cross-price elasticities between commodities have been identified.[2] The presence of such effects leads to feedbacks from policy reforms in a single market to other commodities and, in the presence of goods whose prices are determined domestically (non-tradables), back to the commodity in which the original intervention was carried out.

---

[1] Askari and Cummings, 1976 and Tsakok, 1990. The use and abuse of econometric techniques for elasticity estimation is beyond the scope of this review. The reader is referred to such standard texts as Chambers, 1988.

[2] Multi-market modeling that uses simple spreadsheet models can be found in Braverman, Hammer, and Gron, 1987. Work on multi-market models has been summarized by Pagiola, 1993.

To the extent that commodity prices in the economy are determined by international markets or by policy choices, feedback mechanisms will not reach beyond the first round, i.e., beyond the impact of reforms in one market on quantities for a competing or complementary good. Such models can be formulated and solved with a simple spreadsheet calculation because prices are assumed to be exogenous; trade is the equilibriating variable. However, should non-traded commodity markets be significant, the analyst will need to obtain the solution to a system of simultaneous equations for the required answers. Moving away from the assumption that prices are either constrained by international markets or determined by policy choices substantially increases the level of computational skilled required to determine the outcome of policy reforms.

Market-level analysis can also provide a conceptual framework for examining resource and environmental and resource issues.[1] Figure 4.1 suggests that conceptually, a commodity supply curve would shift up in response to the removal of input subsidies. It would shift up even further if the costs of negative production externalities were included as well. Optimal social production is less than optimal private production, both because economic policies have distorted profitability, and because the lack of public regulation has permitted producers to avoid paying the true social costs of the resources they are using.

In this framework, data are again the obvious stumbling block. If it is not possible to know how much the supply curve estimated at private prices should be shifted up to account for distortions in the prices of inputs, it is obviously even more difficult to determine what its proper position would be if significant negative externalities of production existed. Nevertheless, the entire apparatus is useful in that it directs attention to the possibility of showing rigorously what the magnitude of the tax on producers should be in order for socially optimal amounts of the commodity to be produced.

4.5 Optimization Methods (Agricultural Sector Models)

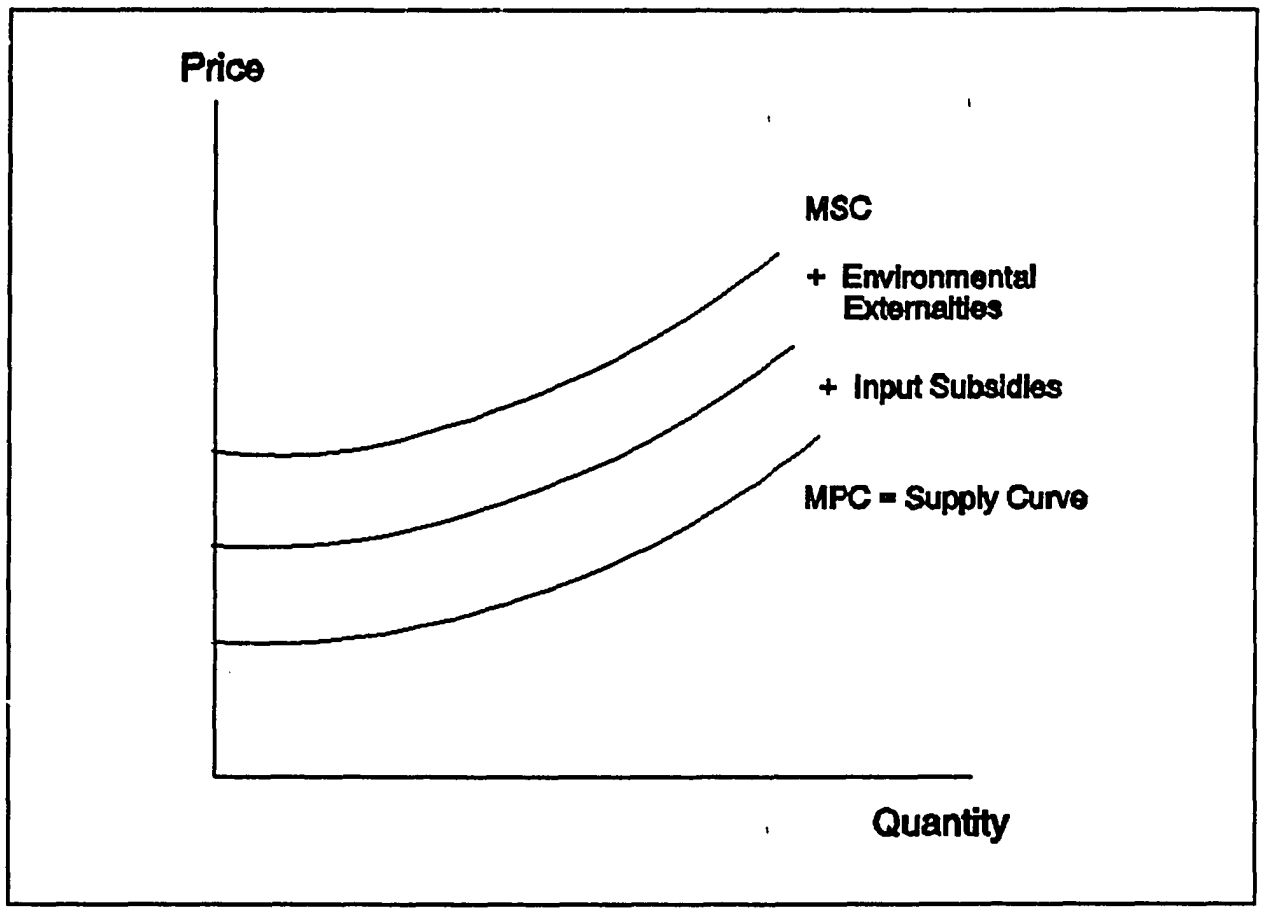
The use of optimization methods such as linear and non-linear programming in agricultural sector models can be viewed as a response to (1) the inability of budgeting tools to incorporate multiple fixed factor constraints and therefore to develop estimates of supply response, and (2) the concern about the realism of the econometric estimates of supply response given the data available in most developing countries.

Optimization methods, especially at the sector level, provide answers to both of the questions raised above.[2] Using micro-level data and the assumption that farmers are profit maximizers, they provide a means by which supply response can be incorporated into the analysis of reforms, including the effects on supply of removing input subsidies. Adding

[1] For theory and computer exercises on the use of a market level approach to environmental policy, see Josling, 1992.

[2] For a definitive discussion of the development and interpretation of agricultural sector models, see Hazell and Norton, 1986.

FIGURE 4.1 Private and Social Marginal Cost Curves



demand functions and using the technique of producer-consumer surplus maximization makes it possible to endogenize prices, simulate a competitive equilibrium, and explore the regional impact of commodity policies. Such models also offer sophisticated opportunities to investigate the effects of policies on "sustainable" technologies and on such environmentally sensitive areas as soil erosion, water quality, and overgrazing.

Unfortunately, to obtain useful results, optimization methods require substantial technical skills and the time to refine and organize significant amounts of highly disaggregated data. They are thus rarely available to answer the day-to-day questions that arise in ministries and agencies, and are primarily a tool used by researchers on government policy. In principle, once developed, these research models would be relatively easy to transfer and to maintain by agencies concerned with the sector-wide implications of policy. In practice, this has rarely happened, and most models have ended up collecting dust once the impetus provided by outside consultants is gone.

Full-blown sector models are not for the faint-hearted. It is not, as is sometimes thought, a matter of requiring more farm level data than would be needed for a country-wide PAM-type budgeting exercise. The two are very similar in their data requirements. However,

in a budgeting framework, the analysis can be broken down into a series of individual commodity budgets. The sector model's utility, on the other hand, is based on organizing information for the entire sector into a single consistent framework. The additional theoretical and computer skills required to analyze the data in this more sophisticated form are formidable and unlikely to be found in most host country agencies.

4.6 Computable General Equilibrium (CGE) Models

The desire to incorporate general equilibrium effects formally in policy analysis stems from a concern that the indirect effects of policy interventions may be significant. For example, in Asian countries where rice forms a large part of the consumption basket, trade liberalization in the agricultural sector may have important effects on such aggregate variables as consumption and capital formation.[1] It may also have significant distributional consequences that can only be captured by disaggregating household types in a social accounting matrix (SAM) that forms the core of CGE models. Single commodity budgeting or market level models obviously do not have the links between production, factor markets, and household incomes that a CGE modeling framework incorporates, and hence the appropriate comparisons cannot be made.

Like the agricultural sector models that are often based on existing budget data, the majority of the data on which CGE models are based are estimates available from national accounts or inter-industry tables. But the sources of data are usually more diffuse and major efforts may be required to develop a coherent set of numbers that are internally consistent. Developing the matrix of technical coefficients is often less an exercise in data collection than an exercise in judgment about how to best disaggregate or aggregate data that have been collected for other purposes.

The entire exercise of constructing and manipulating a CGE model requires a level of economic and computer expertise that is well beyond what is found in most planning organizations. Programmers at the World Bank who produced the optimization package GAMS (General Algebraic Modeling System) also sought to lessen the burden of constructing a CGE model with a software package called HERCULES that acts as a solver for CGE models. However, the use of the so-called "TV" or transaction value framework, while permitting users who are relatively unfamiliar with the construction and solution of CGE models to engage in CGE modeling, uses solution techniques that are not very robust when activity levels approach zero. Hence, care must be exercised to insure that activities are aggregated to a level where such a result is unlikely to occur.

Perhaps a more telling criticism of CGE modeling for policy purposes is the finding by a number of researchers that, when substantial adjustment is permitted in commodity and factor markets at a highly aggregate level, the effects of alternative policy scenarios on a static model are quite negligible. Longer run effects of distorted trade regimes on investment and the

[1] See Gaspay and Gotsch, 1992.

development of technology seem to be much more important. These are ordinarily not captured in the current crop of CGE models. Under these circumstances, it is not surprising that CGE models seem safely ensconced in the camp of researchers on policy rather than as a source of immediate policy advice.

4.7 Policy Analysis Training

Rising concern about the very limited capacity for carrying out economic policy analysis in many developing countries has focused attention on the role and feasibility of remedial training. Policy reforms and policy management have played an important role in those developing countries that have experienced rapid economic growth. For those countries that have been less successful, the lack of effective policy analysis has become evident as economic difficulties have increased and as donors have turned to policy conditionality to leverage their financial assistance.

Although still insufficient, substantial funds have been directed toward training of young economists at the bachelor's, master's, and Ph.D levels. Unfortunately the applied policy analysis offerings in many university economics curricula, even at the graduate level, are not particularly strong. The emphasis of policy analysis training is on economic theory, econometrics, and research skills. Policy problem identification and the application of core economic concepts to common policy issues is not stressed. Consequently, young economists who return to their countries as policy analysts are often poorly prepared.

In addition to the problems of individual capacity, there are important institutional weaknesses that constrain policy analysis capacity. Economics policy units are often appended to rather than integrated into ministries and departments. Unit leaders may lack civil service seniority, and personnel management is often fragmented. The inevitable reactive or "fire-fighting" role of policy units is a difficult one for junior economists who lack "quick and dirty" analysis skills, thus reinforcing the lack of confidence of senior policy managers. In turn these managers often lack organizational skills, resulting in poor work programming, undelegated responsibility, and poor staff accountability. "File pushing" rather than policy analysis may characterize the regular work of these economists. In this environment, short-term policy analysis training can play an important role in improving capacity.

4.7.1 Training Objectives

Choosing appropriate training programs depends on training objectives. Most training programs are designed to meet a range of objectives, but the range and emphasis varies substantially. For example, some programs place their focus on "issue awareness." These programs are more appropriate for senior policy makers who are available for only short time periods. The emphasis is on introducing new policy issues or new approaches to old issues. One important goal of these programs is to improve the content and quality of dialogue between government officials and donor agencies. Such training programs may work best if they provide opportunities for the exchange of ideas among participants and between participants and staff.

Ultimately, however, a real improvement in policy discussions must be based on an analytical understanding of issues, which may go beyond the limits of short, policy awareness type programs.

Issue identification and policy design are based on "analytical frameworks" that take a problem and translate it into cause and effect relationships. Using and understanding these frameworks is critical to good policy analysis. It introduces coherence and flexibility into policy analysis and discussions. It enables policy makers and analysts to transcend a rote understanding of issues and unthinking application of technical skills. In economics these analytical frameworks can become very abstract and cast in excessively mathematical form. An intuitive understanding of the core concepts behind most policy analysis and prescription can be gained without resort to this level of sophistication, however. Short-term training programs that aim at this level of understanding are potentially of high value.

Technical skill development is an important objective of short-term training. Some programs aim at enhancing research skills, which may be most appropriate for in-service training of university researchers or those in more sophisticated policy analysis units where real research is undertaken. By and large, however, short-term training aims to improve the on-the-job analytical skills of economists who work with limited data and where results and recommendations must be produced quickly.

Another important objective of short-term training is to improve the management of policy analysis units. This is an area where the training pay-off is likely to be high but the training opportunities are very limited. Topics such as establishing an analytic agenda, structuring a work program, integrating a regular schedule of outputs (e.g., reports and updates) with reactive "fire-fighting," staff reward and accountability, data base management, and microcomputer use are just some of the topics that should be covered by programs in this area.

Finally, short-term training may be aimed at training trainers. This may be an especially important objective where in-country training programs are planned. It is important that those earmarked for such training possess strong analytical skills, some experience in policy analysis, and a substantial interest in policy issues. It is not possible for short-term programs to take individuals without these pre-requisites and bring them up to an appropriate standard. The main objective of training in this area is to help with curriculum development and teaching approaches and skills. In both of these areas, the requirements for designing and leading effective in-service training programs may be quite different from those employed in the typical university lecture course.

An effort to improve the clarity of the objectives of both prospective participants and training programs should result in more effective placement. In addition, training funds available for a particular country, sector, or even project will be more productive if they are managed as a portfolio aimed at accomplishing the various objectives mentioned above.

4.7.2 Appropriate Level of Sophistication

The technical level of policy analysis displayed in academic journals is very high. This sophistication reflects the true complexity of many policy issues, yet moving from a basic analysis to one of great complexity may yield little marginal gain in reliable policy guidance or understanding. Moreover, the training and capacity of most economists in developing countries or the time and data constraints of the policy analyst's environment often preclude effective use of sophisticated tools. Ironically a "quick and dirty" tool kit used by policy advisors is not accessible to young economists. It is not taught in universities, and apprenticeships are not easily available. Short-term training programs can help bridge this gap.

Although there is an appropriate role for microcomputers in policy analysis and in training, there is also a role for pencils and graph paper. In skill development training, it is particularly important to carry out an honest assessment of participant skills. Too often, economists with master's degrees can differentiate equations and state the axioms associated with regression analysis, but they cannot deflate data, understand the difference between a real and nominal price index, or calculate growth rates. Similarly, they may know the keystrokes required to run a regression line using Lotus 1-2-3, but have difficulty identifying the key variables most likely to be involved in a policy issue or drawing the expected relationship and expected functional form on graph paper.

A critical issue in policy analysis is the role of economics optimization analysis. In this approach the analyst must specify the policy maker's objectives in strict mathematical form. Aside from the issue of presupposing the appropriate weights on competing objectives, this approach to analysis involves high mathematical sophistication. An alternative approach is to analyze the impact of alternative policy packages on a set of unweighted objectives. Although some judgement about preferred packages is possible, this approach allows policy makers, individually and in groups, to reach decisions based on improved knowledge about possible implications. A further advantage is that this philosophy of policy analysis can be carried out with less sophisticated tools.

"Multi-market" analysis and the use of a policy analysis matrix lend themselves to this approach. Even in these cases, however, there are a range of application techniques, from simple to quite sophisticated. It is important for training programs to make a reasonable accommodation between the limited skills that participants bring with them and the minimum sophistication required to get useful results.

Training programs which stress issue awareness and understanding of analytical frameworks also face the issue of technical sophistication. If, for example, an intuitive grasp of the economics behind pricing policy and border price concepts is an objective, working with microcomputer based simulations of policy choices and impacts that are driven by a multi-market "black box" can be effective. There is no need for participants to understand the formal relationships in the model which drives the simulation. By comparing the results of various scenarios, participants become sensitized to the policy trade-offs involved. In addition, trainers

can use the same exercise to help participants reconstruct key features of the multi-market model. An alternative approach, requiring time and more technical skill but not necessarily more policy content, is to train participants to build and then use a multi-market model.

4.7.3 Active vs. Passive Learning

It is tempting to structure in-service training programs in the mode of typical university courses, with a heavy emphasis on lectures and reading. While these are important dimensions of any training program, it is important to recognize their limitations. Many participants do not come from a strong reading tradition and, consequently, are slow readers. Course strategies which expect participants to devour ambitious reading lists are probably unrealistic. Lectures, if well organized and presented, are effective but generally require reinforcement from other teaching techniques. Unlike university courses where time and scheduling of other unrelated courses limit the range of techniques which can be employed in the classroom, a short-term executive workshop has great potential.

Active, learning-by-doing approaches are powerful techniques for teaching policy analysis. In many cases policy analysis exercises that are integrated with and reinforce the lecture material are more effective than backup reading. Experience shows that participants tend to take these assignments seriously. Working in very small groups and working with data from real countries, preferably the participants', is an effective incentive, as is regular de-briefing in groups working with faculty members. Case teaching of specific country policy experience is an excellent change-of-pace from the lecture mode and encourages participants to approach policy issues from a management and problem-solving perspective, rather than the mechanical application of economic policy models.

In a similar vein, technical skills can be taught in a problem solving environment where negotiation and agreeing on policy interventions rather than getting the correct answer are emphasized. For example, in the area of food security analysis there are a range of skills that economists must learn, such as how to use food balance sheets, interpret crop predictions, estimate demand, and project prices in world markets and at home. Exercises can facilitate learning these skills, but moving from these skills and the numbers they produce to a policy decision about the level and use of food assistance, for example, is a jump from black and white to gray. It is important for policy economists, especially those with a strong bent toward optimization techniques, to recognize that policy analysis does not necessarily produce the "right" number. Economists using the same skills and developing the same numbers can reach opposing conclusions regarding appropriate policy directions. These situations can be simulated in two-stage assignments, where two or more small groups work on the same data independently and then come together to work out a policy decision. In such environments, the groups can explore how much of their differences are due to calculation error or different techniques applied to the same data, and how much is due to a difference of opinion about acceptable tradeoffs.

4.7.4 Microcomputers and Policy Analysis Training

Microcomputers can play an important and many faceted role in policy analysis training. The expectation of learning new skills involving micro-computers is an important incentive for most participants. Generally, learning comes quickly, and the satisfaction evolving from this carries over into a positive attitude toward the other aspects of training. It does not always turn out this way, however. Microcomputer training can generate frustration and can work to the detriment of other policy analysis training objectives. It is important that participants and trainers keep in mind that for most applications the microcomputer is a fast calculator. If the participant does not understand the purpose of the calculation, when to use it, or how to actually do it on a calculator, going to the computer first may be frustrating.

In the interest of course integration and to save valuable time, it is tempting to introduce neophytes to the microcomputer through spreadsheet exercises designed to teach a substantive element in the economics curriculum. Some who have tried this wish they had not. If someone is trying to learn about index numbers and how to create them, doing it while trying to keep track of spreadsheet commands and cursor positions may be more confusing than edifying. Although it is time consuming, it is often best to separate the micro-computer teaching from the rest of the curriculum until basic command and spreadsheet management skills have been learned.

Micro-computers can play a powerful role in policy analysis teaching through the use of interactive simulations. Simulated general or partial equilibrium economies can be created to drive policy analysis exercises and games. Anything from simple multi-market to complex CGE models can be used to motivate these training tools. Participants need not know much if anything about the technical aspects of the models. They interact with them through the selection of various policy instruments—border taxes, administered prices, foreign exchange instruments, or quantitative restrictions—that are fed into the economy (the model) and produce impacts on production, consumption, income distribution, or measures of efficiency. These policy impacts are displayed on a separate spreadsheet screen. Participants should be required to use their knowledge to predict the impact of their policy decisions and to make judgements regarding why actual impact deviates from the expected. These simulations can be used to teach underlying conceptual frameworks, as well as to promote sensitivity to the wide-ranging impact of economic policies and to enhance negotiating skills in the context of policy games. See Box 4.2 for additional discussion of microcomputer-based policy analysis skills.

4.7.5 Conclusion

Weak analytical skills and institutional constraints are now recognized as serious obstacles to sound policy design and management. Practical, hands-on training can be helpful in alleviating the analytical skills problem, particularly in easing the transition from formal university training to the daily job requirements of the policy analyst. Short-term executive training programs, tailored to the organizational and work program needs of policy units, may be effective in building some of the needed management capacity. Success depends on the

BOX 4.2 *Lessons from Agricultural Policy Analysis Training*

Although it is always difficult to draw general lessons that would apply to other training courses, APAP II's experience suggests the following:

1. Screening of participants is very important. Each year several participants arrive who are unsuited for the type of work being presented. Inevitably they are officials who have been awarded the trip on the basis of seniority, but who have no computer skills and no responsibility for the kind of analysis being taught. This type of participant requires a disproportionate amount of supervisory time, and will usually have little or nothing to show for their efforts at the end of the session.

2. Two types of students seem to get the most out of the hands-on approach to policy analysis. The first is a mid-career professional with a master's degree in economics who is currently active in the planning department of a government ministry or agency. These people are responsible for reviewing options being considered at the policy level, and an improvement in their conceptual and computer skills can be translated directly into the work they do. As a result, they have a strong motivation to make the most of their training opportunity. USAID direct hire personnel who are responsible for helping conduct the agency's policy dialogue with the government also fit into this category.

   A second group that has found the course useful are university academics or participants who come from private or government "think tanks." This group benefits from the course in two ways. First, although many have advanced degrees, e.g., Ph.D's from western universities, few have had direct exposure to the methods being taught or the microcomputer technology on which it is being implemented. There is therefore an immediate improvement in their ability to do the type of policy-related consulting work for government agencies in which most of them are engaged.

   In the case of academics, the approach and the materials provided in the course can become the basis for curriculum development in their own institutions. Preparing course materials for hands-on presentations is time-consuming and costly and is rarely undertaken under the time pressure that most host country academics face. However, the long-run effects of this kind of technology transfer have the greatest leverage on improving the capacity of individuals to do policy analysis. The government ultimately draws its staff from the country's universities, and improvements in training, particularly at the master's level, are likely to have a substantial payoff in the long run.

3. Transplanting a modular, hands-on training program to regional or country settings is relatively easy, given the necessary lead time. The most efficient sequence consists of three steps. First, an individual is selected from the institution that is the focal point of the local or regional exercise, and s/he attends the course. Subsequently, this individual acts as a liaison and teaching assistant when the course is presented in-country. In the final step, the host institution presents the course on its own with assistance and observation from experienced trainers.

4. Ideally, a training exercise should attempt to create a critical mass in a particular department or agency. A single individual, especially if that individual is a key player in the department, may not find much time to apply his/her training. A critical mass of 5-10 people from the same or related institutions, on the other hand, can support one another. The presence of a group that has trained together significantly increases the probability that at least some efforts at implementation will be successful.

clarity of training objectives, calibrating training to an appropriate level of sophistication, and using active rather than passive teaching techniques.

Short policy analysis courses should be seen as remedial, however. They are too short in scope and duration to substitute for adequate degree training in this area. On the other hand, the curricula that have been developed for many policy analysis short courses and the wide range of teaching techniques involved should not be overlooked as possible models for strengthening university teaching. Although it would require new training material, teacher training, and innovative approaches to scheduling, there could be a very high payoff to such innovations in the economics master's degree programs of developing countries.

5. IMPLEMENTING POLICY REFORM: STRATEGIES AND LESSONS LEARNED[1]

5.1 Undertaking Policy Reform

In an overall assistance strategy for agriculture, policy can either foster and enhance development or act as a constraint within which other assistance must operate. In either case, USAID missions must address the following questions when considering policy reform efforts:

- Are current government policies a major constraint to sustainable agricultural development? to agribusiness development?
- Which policies present the most serious barriers to accelerated agricultural development?
- Is A.I.D. action appropriate to promote change in these policy areas?
- If action is appropriate, what approach should A.I.D. take to promote change?
- How do agency or mission policy initiatives affect other elements of the assistance program or other U.S. interests?

The objective of this chapter is to present guidance on using combinations of A.I.D.'s development resources to foster appropriate policy reforms. This guidance assumes that the USAID mission has developed adequate knowledge concerning agricultural policy by undertaking activities such as the following:

- A policy inventory and diagnosis to determine whether policy is a major constraint to agricultural development and to identify priority problems.
- An institutional mapping of participants in the policy process to identify appropriate points of intervention and the need for improved analytic capacity.
- Policy analyses of key issues including sectoral, macroeconomic, and political dynamics, to support the policy dialogue and the policy reform process in general.

The question of whether a given policy is damaging to the economy is quite separate from the question of whether A.I.D. should do anything about it. It may not be desirable for A.I.D. to take action in the policy area because of the following:

---

[1] Adapted and revised by Rosemary Hyson from A.I.D. Evaluation Special Study No. 61, *Agricultural Policy Analysis: A Manual for A.I.D. Agricultural and Rural Development Officers*, 1989.

- Host government reluctance to enter into a policy dialogue.

- Insufficient mission resources (financial or human) to support a dialogue or an agricultural policy project.

- An adequate dialogue underway with other donors.

- Overriding U.S. or A.I.D. policy concerns.

If A.I.D. determines that it should play an active role in influencing policy, an integrated program for doing so should be formulated. In many cases, such a program will include a combination of project assistance and program support.

5.1.1 Strategies to Promote Reform

The strategy chosen to promote improvement in agricultural policies depends on the resources available to the mission and the priority assigned to policy reform in the near term. A wide range of tactics is available to support the strategy chosen, from informal dialogue with host government officials to a major commitment of funds against policy reforms negotiated in detail. The principal tools available to promote reform, in order of increasing involvement, are the following:

- Informal dialogue, carried out, for example, during evaluation of an ongoing project adversely affected by existing policies.

- Formal dialogue, backed up by policy analysis, to clarify issues and alternatives, and carried out in the context of government-to-government discussions, such as the negotiation of P.L. 480 bilateral food aid grants or ESF-funded programs.

- Project assistance to policy analysis units in the host government, directed at a specific analytic agenda and designed to increase policy analysis capabilities.

- Project assistance to support particular reforms, such as management assistance to reorganization of a parastatal marketing organization.

- Conditions precedent (CP) mandating specific reform measures for technical projects backed up by witholding of funds if CPs are not met; and

- Program assistance, providing financial resources in direct or indirect support of particular policy reforms, backed up by tranching disbursements as policy reforms are implemented and witholding funds if reforms are not implemented.

In a given situation, an appropriate strategy may involve several tactics used in combination, such as formal dialogue and project assistance for policy analysis to help the

government formulate a reform program, followed up with program assistance to support implementation. No reform initiative can progress without at least a minimum level of policy dialogue with the host country government.

There is not a one-to-one correspondence between a tactic and an A.I.D. funding source. Policy analysis may be funded from operating funds, Program Development and Support (PD&S) funds, local currencies, project funds, or program funds. Program assistance may be packaged as a project using Development Assistance (DFA funds in the case of African countries), Economic Support Funds, local currencies generated from P.L. 480 commodities, or other (non-project) sources.

The remainder of this section examines three topics related to the implementation of A.I.D.'s policy reform strategy: the selection of program or project assistance modes to support reform, management of policy analysis, and monitoring of policy change.

5.1.2 Selecting Project or Program Assistance

Many studies have examined the effectiveness of project assistance, program aid, and project versus program aid. The general findings indicate that both project and program aid can be used to promote policy reform, albeit in different ways. The more appropriate mechanism depends primarily on resource constraints and mission and country conditions. In general, programs have had more success in effecting policy reform; the benefits from such reforms can be short-lived however, without developing host-country capacity for policy analysis to implement such reforms. Project assistance has had more success in building capacity for policy analysis.[1]

Table 5.1 provides a summary of the key differences between project and program assistance modes that may be useful in showing when one is more appropriate than the other. The primary structural difference between the two is the link between fund disbursement and host government action. In a project, the link is direct: project funds finance a specific program of action, be it research on cowpeas, construction of rural roads, capacity building, or policy analysis. Conditions precedent accompanying projects are another means of effecting reform, by mandating that the government take specific policy reform actions before the project, or the next phase of the project, is initiated. The link is indirect in a program where resources are provided on the condition that the government undertake certain actions, the direct cost of which may have little or no connection to program funding.

In some programs, it may be preferable to specify the use of the funds, to the extent possible, particularly when the government's commitment to reform is uncertain. Small portions of funding can be allocated as "projectized" components that are linked to specific outputs. The ability to specify how the funds or a portion of the funds can be used can also be more effective

[1] Tilney et al., 1991.

TABLE 5.1 Key Differences Between the Policy Project and Program Assistance Modes

Item	Project Mode	Program Mode
Fund Use	Specified in detail based on specific activities	Not usually specified in detail; sometimes not specified at all (cash transfer)
Fund Source	DA accounts, DFA, or ESF, P.L. 480 commodities or local currencies (local costs)	DA accounts, DFA, or ESF, P.L. 480 commodities or local currencies, other sources
Documentation	PID, Project Paper, Project Agreement	PAAD, Program Agreement (PID, Project Paper also used)
Outputs	Specific program of activities	Policy changes or other host government actions
Conditions Precedent and Covenants (projects)/ Conditionality and Benchmarks (programs)	Often fully satisfied in first year of project	Closely linked to disbursement throughout the program; generally phased over the life of the program
Disbursement	Upon meeting of any CPs; then as needed to finance planned program of activities	Conditional on government implementation of agreed-on reforms and other actions; also phased as reforms implemented

Note:DA = Development Assistance, DFA = Development Fund for Africa, ESF = Economic Support Fund, PID = Project Identification Document, PAAD = Program Assistance Approval Document.

leverage than the threat of withholding for non-performance. For example, in the Mali Cereal Market Restructuring Project (a program, despite its name), a multidonor committee, rather than the government, determined where food aid-generated local currencies were to be directed. In other cases, such as the on-going Niger Economic Policy Reform Program (NEPRP), the use of the funds is left wholly to the host government's discretion.

A primary consideration in deciding whether to use program assistance is the depth of the government's commitment to reform. The program mode should be used to assist a government in making changes that its leaders believe are necessary. The program funds make

it easier for them to do so by covering costs associated with the reform and/or rewarding movement in the right direction.

If the government is not yet ready to make a broad commitment, then A.I.D. assistance to policy reform should use the more limited and controlled project mode. Under this mode, A.I.D. can finance specific actions that have been mutually agreed on to further the reform, such as the restructuring of a parastatal. In the medium or long term, projects for training, institutional support and development can help to improve the government's preparedness to consider policy reform. Project or program funds can also underwrite studies or technical assistance to help the government identify other appropriate actions.

5.1.3 Managing Policy Analysis and Information in Reform Initiatives

An important part of policy analysis is the application of analytic tools, primarily but not exclusively economic techniques, to the design and evaluation of alternative policy measures. The techniques and analytic approaches used for this purpose are as varied as the problems to be addressed; there is no right way to conduct policy analysis. Nevertheless, a policy analysis exercise should include certain general elements if it is to be complete and useful for policymakers. A.I.D. is more likely to get a study that serves its immediate needs if the scope of work specifies the following four elements:

- A statement of the economic problem in the context of the political-economic climate. This requires identifying the objectives of government policies and the nature of the problems that existing policies are designed to overcome.

- Identification and analysis of the direct and indirect economic impacts of current policies and alternative approaches for dealing with the problems specified.

- Evaluation of the budgetary implications of alternative policies in terms of both expenditures and revenues for each alternative.

- Assessment of the practicality of alternative policies in terms of the institutions, information, and personnel available to implement them, and political realities.

Although in particular instances one or another concern may be paramount, policy analysis should address all four of these concerns to the extent feasible. For example, an examination of input subsidies may be motivated by a government's wish to cut costs, but the analysis of alternatives should assess their political feasibility and their likely impacts on input use, production, and farmer income, at a minimum, in addition to their effect on government expenditures. In some cases, missions have funded entire activities to first analyze the policy and sector environment before launching programs or projects aimed at policy reform.

These four points can serve as the basis for developing the scope of work for individual studies. In refining the scope to meet the needs at hand and in supervising the implementation of the study, the following points should also be kept in mind:

- Clear, precise definition of the problem is key to producing useful analysis. To continue the example mentioned above, is the government trying to encourage the use of modern inputs, to compensate farmers for low output prices, or to expand sales of government-produced inputs? Real objectives should be distinguished from those commonly stated in planning documents.

- The problem should determine the nature of the analytic tools used, not vice versa.

- More sophisticated analytic tools do not necessarily produce better results than simple techniques, particularly when reliable information is scarce and the need is for clear exposition of the issues in a timely form that helps, rather than dazzles, decision makers. (See Chapter 4.)

- Close collaboration with host country government or private sector is extremely valuable in establishing a basis for future discussions and follow-on work. Such cooperation also serves to reduce political tensions associated with the analysis of sensitive issues. In addition, key persons from other ministries (finance, planning, transport), government institutions (central bank), and the private sector (chambers of commerce, trade associations), should be kept abreast of, if not involved directly in, project and policy issues relevant to their domain.

- Whenever possible, the analytic output should be presented in terms of a range of possible outcomes, not a single estimate, especially when hard data are scarce or participants in the discussion disagree on key variables (e.g., the size of the nutritionally at-risk population to be served by food subsidies).

- The policy environment is not static. If possible, the analysis should produce analytic formats that USAID mission personnel can modify to reflect new alternatives or update as circumstances change (e.g., a spreadsheet model of domestic marketing margins, which can be used to explore how various tariff and exchange rate combinations would affect the relative price and profitability of domestic and imported grain).

In general, USAID mission personnel should be assigned to work closely with the analytic team even when none of the personnel available have strong analytical skills. Close mission involvement helps ensure that USAID mission concerns are adequately reflected in the final report and that a basis exists for continued discussion and analysis after the initial study is completed.

5.1.4 Monitoring Policy Change

Whatever the priority of policy reform in the USAID mission's agenda for agriculture, it is extremely useful to monitor the policy developments that affect the sector. The mission's agricultural portfolio may be heavily concentrated on cereal research, for example, but the impact of this program could be seriously affected by a change in government policy on cereal marketing or imports, or developments in another commodity sector that competes with cereals for land or labor.

As staff levels shrink, it becomes increasingly difficult to maintain basic monitoring systems for policy, regardless of how useful these systems may be. Consequently, it is critical that available resources be used as efficiently and effectively as possible. Some low-maintenance-cost sources of information are the policy inventory and taxonomy described in Chapter 4 and a database of agricultural and other key prices over time. Both provide an excellent picture of the policy environment and once the initial investment is made to set up the systems, the inventory and database would require little staff time to maintain. In addition, the policy analysis matrices and rapid reconnaissance methodologies can provide mission staff with time-sensitive, low-cost analysis and information.

5.2 Policy Reform Through Projects: Building Policy Analysis Capacity

A.I.D. has had significant experience with projects to increase host country agricultural policy analysis capability. In some cases projects have been designed and implemented solely to create or strengthen agricultural planning and policy analysis units; at other times, capacity building has been part of a broader agenda. This section reviews the lessons learned from evaluations of A.I.D. agricultural planning and policy projects from 1970 to the present.[1] This review provides guidance on designing projects or project components to build policy analysis capacity and offers insights for project implementation and evaluation.

5.2.1 Project Design Considerations

Project goals and activities should be based on clearly identified constraints and problems in the agricultural policy environment.

No single project can bring about a transformation of a nation's agricultural policies, particularly if the focus is on analysis and training rather than on more direct support for reform (e.g., cash transfers). A lack of analysis is only one barrier to policy change; it is rarely the binding constraint. Moreover, attempts to address a broad and high-visibility policy reform agenda may actually conflict with development of analytic capacity within host country analytic institutions. Technical advisers faced with a heavy, short-term reform agenda tend to spend too much time on analysis and too little on training local staff. A policy unit in the early stages of

[1] See Agricultural Policy and Planning Project, 1984; Abt Associates, 1982; Tilney and Riordan, 1988; Tilney et al., 1991.

its development needs to build up its staff and strengthen its reputation and capability gradually; otherwise both may be damaged by being thrust too rapidly into the heat of high-level policy debates.

The ministry of agriculture may not alway be the best institutional location for a policy analysis unit.

Most projects designed to strengthen agricultural policy analysis capability have focused on developing a planning and analysis unit in the ministry of agriculture. Although the agricultural ministry clearly has a need for an analytic capability, other ministries typically play a much larger role in analyzing policies, particularly such policies as those affecting food and export crop pricing, which are important to a wide range of agencies. In such cases, consideration should be given to building the capacity of one of the central ministries, such as the ministry of planning, to analyze agricultural issues, particularly if there is no appropriate unit in the ministry of agriculture.

Alternatively, consideration can be given to building capacity in autonomous or semi-autonomous agricultural policy analysis institutions. For example, in the Dominican Republic, an A.I.D. grant funded capacity building for a special agricultural policy unit comprised of government, private sector, and university representatives which was to provide analysis for a national consultative body on policies affecting agriculture. A 1988 mid-term evaluation found the arrangement effective in providing policy analysis; however, the institution lacked political resiliency to withstand shifts in political power.[1]

Even within the ministry of agriculture, project location is a key concern. Designers often face a difficult choice: whether to strengthen an existing unit that has a statistical, research, or project monitoring focus but little or no role in policy, or to attempt to involve advisers at more senior levels of the ministry, where it may be difficult to identify a permanent institutional base.

Experience indicates that low government salaries make it difficult to retain trained analysts after the project is over. Poor salary and incentive systems have discouraged the most qualified analysts from the ministry of agriculture toward more lucrative positions with central banks, other financial institutions, parastatals, universities, research institutes, and multilateral organizations. One solution to this problem is to emphasize the role of non-governmental institutions, such as universities, where staff turnover is lower and opportunities for consulting can make the total salary package attractive to skilled analysts.

Such alternatives, however, should not preclude the development of analytical capacity within the government ministries. Within the ministry or institution, there should be at least one

[1] See Church and Castro, 1988.

senior-level decisionmaker with adequate training in both sectoral and macroeconomic issues to:[1]

- Effectively champion the reform process;
- Present results of policy studies to non-economist colleagues; and,
- Interact with colleagues in other ministries, monetary boards, and top-level policy decision entities.

Such informed leadership can also prevent non-governmental institutions and/or outside special interests from controlling or dictating the reform agenda. Lack of leadership and communication have diverted many qualified analysts to sector planning and assessment, rather than focusing on reform.

Technical advisers should assume a cooperative, advisory role rather than dominate the policy analysis activities of a project.

Lack of specificity in the roles of expatriate advisers has been a critical problem in past projects. For example, evaluations found that capacity building efforts enjoyed greater success and viability when advisers trained counterparts rather than providing expatriate advice to decision makers. Joint analysis led by expatriate advisors has proved to be an effective form of training. The most critical factor for project success is a qualified project team that works closely with host country personnel. Access to effective, committed decision makers is also critical.

Recurrent costs must receive serious consideration at the time of initial design.

The extreme limits on developing country government funds to expand staff and support ongoing programs make it imperative to design analytic activities consistent with a modest expenditure of funds. Governments should not be encouraged to establish institutions on a scale they cannot sustain.

A.I.D. experience with capacity-building projects for agricultural policy reveals that insufficient host country staff and resources were a serious problem even during project implementation. In fact, lack of host government support was the most commonly identified constraint to project success. This finding suggests that insufficient attention has been given during project design and implementation to ensuring that decision makers value and are willing to fund better analysis. In recent years, structural and sectoral adjustment programs have contributed to the creation of demand for the products of policy analysis. This has been particularly the case where disbursement of program funds is contingent upon implementation

[1] Coutu, 1991.

of policy reforms, making monitoring and evaluation of policies of critical concern to decision makers. If host government support does not exist before the project begins and is not developed during the project, then it is almost certain that the analytic capacity will not be institutionalized. Thus, a continuing lack of host government resources is strong evidence that the time is not right for capacity building, and consideration should be given to cancelling or scaling back the project.

5.2.2 Project Management and Implementation

Careful implementation plays a significant role in determining the success of a project. Tilney et. al. (1991) found good project management to be one of the most critical factors determining a project's success.

Separate technical from administrative duties.

Situations in which the chief of party is both project manager and technical expert are to be avoided. Too much of the adviser's valuable time must then be spent on administrative issues, to the detriment of technical objectives. Thus it is recommended that an on-site administrative assistant be assigned to support a chief of party who has sound technical policy credentials. While the COP will still have to make key administrative decisions, the delegation of management and administration issues to an assistant will enable the COP to focus on technical objectives.

Emphasize efforts to achieve interagency cooperation.

Lack of communication among project agencies and donors has been a major constraint in the past. Policy issues cut across many institutions, often exacerbating long-standing "turf" conflicts. As a means of avoiding this problem, formal working groups representing all principal agencies have been useful in some cases (e.g., Sri Lanka). Careful institutional mapping can also help in managing this type of problem, by identifying the institutions likely to be involved in or affected by implementation of a particular policy reform. Agencies will have an incentive to cooperate if they share in project benefits, such as access to computers, training, and other project resources.

Intra-mission dialogue and periodic meetings with other donors can provide useful and insightful information regarding means by which to establish more effective relationships and facilitate policy dialogue. Such relationships have proved particularly useful in implementing policy reforms.

Provide ample training to meet technical and institutional needs.

Time requirements for analytical training are consistently underestimated by mission human resource officers and their clients. Often there are not enough staff with the minimum skills required for advanced degree programs. More on-the-job training should be built into

projects, and graduate students should perform at least some of their thesis research in their home country. Quality of personnel is much more important than number, so training should be concentrated on analytic staff if resources are limited.[1]

Long-term and short-term training serve different needs, and if possible, ample amounts of both should be included in the project design. The need to send the most promising staff members for long-term training demonstrates the conflict between long-term capacity building and short-term analytic outputs, as well as the general advisability of stressing the long-term perspective when using the project mode of assistance. Separate policy analysis training projects can minimize policy project conflict.

Analysts must be given as much opportunity as possible to apply their academic skills to specific policy problems once they return from training, because formal training in developed countries tends to be stronger on theory than on application. Formal training in policy analysis should be provided to managers and decisionmakers. While managers and decisionmakers within the ministries often do not need as extensive a background in analysis, some training is required to guide the policy agenda, understand the output of staff, and interact across ministries on substantive policy issues. These upper-level decisionmakers must also possess the management skills to coordinate with other government agencies, donors, and the private sector on policy issues affecting agriculture.[2]

Provide for continuity and flexible response.

Policy analysis requires the ability to respond flexibly to the changing needs and concerns of decision makers. This flexibility must be designed into policy projects as well. Several aspects of policy flexibility deserve special attention.

- Changes in the policy environment (e.g., a significant change in exchange rates) can radically affect project objectives and the chances for its success. Should such changes occur, consultations should be held with the host country officials to review and revise project objectives and organization.

- Project integration into the country policy system must not be left to the final year. There is the danger that projects become ends in themselves, resulting in no impact on the policies they are analyzing or the institution they aim to strengthen. The project and its outputs (specific analyses, periodic or regular reports, seminars, or workshops) must be effectively linked to the country's policy system, i.e., to the information needs of clients, whether they be farmers or decision makers.

---

[1] The argument for the converse is that highly trained staff will not stay, so you need a pool to keep promoting from. A few key staff can refine the outputs of many junior staff.

[2] Coutu, 1991.

- The USAID mission should be alert to the implications of project outputs for its entire portfolio, including both policy and non-policy activities. A mission agricultural policy analyst should monitor the agricultural sector and provide information on developments and their potential implications for A.I.D. projects. This analyst can also be a valuable resource for the mission agricultural development officer in conducting evaluations and designing new projects. Such interaction will also strengthen the visibility of the unit and underscore its usefulness to decision makers.

- Large model-building exercises or surveys that tie up project resources for years should be considered very carefully before they are undertaken. The results of such efforts have been very disappointing and often cannot provide timely answers to decisionmaker concerns and policy crises. Such models also require considerable sophistication for interpretation and use. Emphasis should be placed on effective, lower-input policy analysis techniques.[1]

5.2.3 Project Evaluation

The dual concerns of policy reform and institutional capacity carry over into the evaluation of policy projects. Even if the project aims primarily at capacity building, the evaluation should examine whether the project appears to have had an impact on policies or at least whether useful information was provided to decision makers. The long-term viability of policy project outputs should also be examined.

Reviews of A.I.D. experience under APAP I and II found that, regardless of whether the project was intended to build institutional capacity or to promote immediate reform, it was far more likely to have an impact on capacity building than on policy reform.[2] Most projects demonstrated at least some positive impact on host country analytic institutions, and several have been quite successful in this area, but very few could be clearly linked to substantive policy change.

The framework used for reviewing A.I.D. experience with agricultural policy analysis and planning projects provides a good starting point for developing a scope of work for the evaluation of most policy projects (or policy components in broader projects). This framework examines project impact and performance in four areas:

- Impact on **institutional capacity**, including staff development, strengthening of data and information management systems, and expansion of policy analysis and dissemination activities.

---

[1] See Chapter 4 for a discussion of such techniques.

[2] Tilney and Riordan, 1988; Tilney, Block, et al. 1991

- Impact on **interinstitutional relations**, including provision of data or information to support decision making and analysis in other institutions affecting the agricultural sector, as well as expanded cooperation and coordination.

- Impact on **decision makers**, including their awareness of and demand for policy analysis, their commitment to supporting it, and their direct involvement in managing it. The project's apparent impact on decision makers' understanding of policy issues and options and the expected impacts of alternative reforms under consideration should also be examined.

- Impact on **government policies and programs**, in terms of actual changes attributable at least in part to project-sponsored analysis and dissemination of the findings.

5.3 Policy Reform Through Programs

When A.I.D.'s assistance strategy is directed toward policy reform, program assistance may offer a better vehicle than the traditional project approach. The two assistance modes share many similarities; nevertheless, the program mode differs from the project mode in several respects. The effective design, implementation, and evaluation of program assistance must reflect these differences. This section briefly highlights the major concerns in program assistance as they apply to the agricultural sector, drawing on recent A.I.D. and other donor experience to extract lessons learned in program design, implementation, and evaluation.

5.3.1 Program Design Considerations

Four issues are central to the design of program assistance for policy reform:

- The linkage between funds provided and the reform program.

- The definition of reform measures, analytic capacity of the mission or technical advisor, and steps toward their achievement.

- The degree of government support for the reforms.

- Program elements other than funds transfer.

In program assistance, the reforms undertaken by the host government have broad goals, with specific steps to be undertaken. Examples of goals include liberalization of agricultural markets, reduction of government deficits, or increased agricultural exports. The steps toward the broader objective or output must be precisely defined and quantified so that they can be monitored during project implementation. These steps take the form of benchmarks, which must be met according to a schedule set out at the beginning of the project.

Defining reform benchmarks is probably the most difficult and definitely the most important task associated with program design. Many of the difficulties encountered by programs in the past can be traced to benchmarks that were too specific or too general, poorly defined, or too far-reaching. Benchmarks must be defined to fit the specific country situation and capacity of the host country government to implement the reform. The host country government should take the initiative in defining these measures to ensure a sense of ownership in the reforms.

Other lessons emerge from recent experience. Policy reform benchmarks must be easily monitored during the reform program, quantified (not just quantifiable), and clearly linked to government performance. Table 5.2 gives some examples illustrating both inadequate and adequate benchmarks.

There are two basic types of benchmarks, and the choice of which to use will shape both program design and implementation. Policy reform programs usually specify a timetable for the achievement of both kinds of benchmarks:

- **Action-oriented** benchmarks define specific steps that the government will take, such as reducing subsidies by a given amount or rescinding regulations on private trade.

- **Results-oriented** benchmarks define the outcome that will result from the reform program, such as an increased percentage of grain trade moving through private channels or a reduction in the deficit in the price stabilization fund, but these benchmarks do not explicitly define the measures to be taken. A mission policy advisor can assist the host country government in developing and implementing policy reforms to meet results-oriented benchmarks.

Although it might seem that the specificity of action-oriented benchmarks would make them the best choice in most situations, this is not necessarily the case. Efforts to define specific measures can easily overwhelm the discussions in technical details. This kind of discussion puts the donors at a disadvantage because of their lack of information and leaves too much scope for opponents of the reform to take countermeasures that can undermine the reform efforts.

Experience shows that the most effective programs are those that help the host government take the steps that it recognizes to be necessary but difficult. A program that pays a government simply to take actions it would have taken anyway is obviously a waste of money. At the same time, the evidence is overwhelming that program assistance cannot be used to make a government take steps that its leaders do not support. The record of donors' carrying through on the threat to withhold funds for nonperformance is not an encouraging one, particularly for important allies of the U.S. In the cases where the threat of withdrawing aid has been real or a portion of funding has been withheld, policy reform programs have a better record in terms

TABLE 5.2 Distinguishing Between Effective and Ineffective Benchmarks for Policy Reform

	Inadequate	Better But Not Good Enough	Adequate
Benchmark:	Increase agricultural production by 5%.	Raise expenditures on agricultural support services.	Raise operating budget of agricultural research and extension by 25%.
Problem:	Change is not wholly within government control	Too vague for verification	
Benchmark:	Reduce subsidies on agricultural inputs.	Reduce subsidies by 25%.	Bring fertilizer price in main region to within 10% of import price plus domestic marketing costs.
Problem:	Too vague for verification	Subsidies are not sufficiently defined	
Benchmark:	Liberalize grain market.	Reduce government marketing share to less than 25%.	Reduce government marketing activity to less than 320 MT.
Problem:	Too vague, not quantified	Difficult to verify if production data are weak; hard for government to plan in advance of harvest	
Benchmark:	Bring all prices to world levels.	Increase wheat and rice prices by 50%.[a]	Bring wheat and rice prices to within 10% of import parity.[a]
Problem:	Too sweeping	May be superseded by changes in world or local markets (e.g., large fall in world price)	

[a] The "better" and "adequate" options each has a desirable characteristic. In the former, the government holds up its part of the bargain, but reform is "thwarted" by an exogenous factor, world prices. In the latter, the objective is noble, but not under the government's control.

of meeting their benchmarks.[1] The flexibility to specify how funds will be disbursed or used can also strengthen incentives to meet policy benchmarks.

Despite good-faith efforts on all sides, time pressures and uncertainties during negotiation of program assistance may result in the development of reform benchmarks that are not fully defined when the agreement is signed. In these cases, traditional project-type funding can be used to carry out the analysis or other measures needed to finalize the reform program. Also, outputs of subsector development projects can provide information useful in designing both subsector specific and overall agricultural sector policy benchmarks. Project-type funding may also be included in a program to finance monitoring activities or the direct cost of specific actions associated with the reform. For example, a program that includes liberalization of cereal markets implies a need to gather information on the prices (and, if possible, volumes) of grain as it moves through official and open-market channels. The price information may then be broadcast in direct support of better market operation. Both the collection and the dissemination of price data are suitable for direct financing as part of the program.

There are almost as many ways to configure an assistance program as there are ways to design an agricultural extension project. Table 5.3 displays some of the options for the various major elements of program design.

5.3.2 Program Implementation

Program assistance generally requires less staff time per dollar expended than does traditional project assistance, an important consideration in an era of shrinking staff size and operating budgets. Nevertheless program assistance still requires implementation. The difficulty does not lie in fund disbursement, which is usually straightforward.[2] Rather, it arises from the need for regular, often intense discussions with the host government, backed by ongoing monitoring and analysis of progress under the reform program. It is one thing to say that fertilizer imports will be liberalized; it is quite another to verify with local importers that tariffs, licensing requirements, and access to foreign exchange are favorable to private importing; to work out any problems with the appropriate authorities; and to monitor private importation and sale of fertilizer.

Four major lessons are suggested by program assistance experience.

Keep the initiative on the host government side.

When donors and the host government disagree on how to implement a particular reform (or whether it should be implemented or even whether it has been implemented), stepped-up

---

[1] Tilney et al., 1991; Gordon, 1992.

[2] Unless commodity procurement is involved, as it is in a commodity import program (CIP) or P.L. 480-based program.

TABLE 5.3 Design Options for Program Assistance

Design Element	Options
Level of Funding	• Performance-based: more reform, more money • Tranches: disbursements approved annually if reform benchmarks achieved • Reform-linked: funds provided to finance reforms themselves (e.g., transition costs) • One-time payment: either before or after reform is implemented
Form of Funding	• Direct loan or grant of foreign exchange from DA, DFA, or ESF) • Commodity import program • Allocation of local currency from U.S., host country or joint sources (e.g., P.L. 480) • Specific commodities (e.g., P.L. 480)
Benchmarks	• General targets defined in advance, with specific measures negotiated annually • Precise targets negotiated in advance, with schedule of annual measures
Use of Local Currency	• Not specified (host government choice) • To finance specific development programs (not A.I.D. projects) • To finance local cost of A.I.D. projects (may make it difficult to withhold disbursements if reforms are not made on schedule)
Coordination with Other Donors	• Independent program, with consultation • Joint program, with common benchmarks or other procedures to coordinate disbursements • Coordinated program, with related reforms (e.g., A.I.D. program in agricultural sector, IMF/World Bank in industry and trade)
Technical Assistance	• Programmed level of long- and short-term technical assistance • Fund for studies, controlled by government • Fund for studies, controlled by Mission • For training and capacity-building only • None (if program is well defined)

donor efforts to define acceptable reform measures are rarely the answer. Attempts by donors to overwhelm local influences creates an ownership problem in implementing the policy reforms. A consensus between donors and host country groups involved in the implementation process should be the objective to achieve meaningful policy reforms.

The initial definition of specific reform packages to meet benchmarks is better left to the host government. In some cases the government may be in a better position to identify measures that will achieve the agreed-on benchmarks at the lowest political and practical cost. The USAID policy advisor can assist the host country in developing appropriate benchmarks as well. The donors must then evaluate what the government proposes and accept or reject it on the basis of the best information available to them, taking into account the fact that outside impetus may be a way to make important changes feasible by "blaming" these changes, including their initiation, on someone else, i.e., donors.

Follow through on withholding funds for non-performance.

In theory, the logic of program assistance for policy reform requires that funds be withheld if the government does not institute the agreed-on measures. In fact, the pressures to continue disbursements are very high. One recourse is USAID's ability to change the terms of disbursement. For example, funds from a commodity import program are much less desirable than balance of payments support, i.e., direct cash given to the government. In all cases, efforts should be made to reduce the risk of a one-sided program by developing policy reform measures that are sufficiently well defined, have full government support, and are feasible. This requirement is not met if:

- Reforms are defined in such general terms that it is impossible to determine whether the benchmark has been met;
- So many reforms are included on the list that the standard for acceptable performance is unclear; or,
- Reforms are defined so specifically that any change in economic circumstances is almost sure to render them irrelevant.

For example, it is rarely advisable to set specific price targets several years in advance, as was done in at least one A.I.D.-supported reform program. Changes in world prices, variations in domestic production conditions, and local inflation quickly make any such specific schedule obsolete.

The need for specificity in benchmarks must be balanced by sufficient flexibility to accommodate unforeseen changes in economic conditions.

The specific nature of benchmarks cause them to be easily derailed by changing economic circumstances. Price increases for basic foodstuffs may be agreed to in a period of

low inflation and fiscal balance, but they may become politically unacceptable if prices start to climb or the IMF imposes a wage freeze on government employees. It is impossible to foresee every macroeconomic or political eventuality and design a program that is impervious to them all. But it is possible to predict with confidence that, over a five-year period, at least one large, unexpected, unpleasant, and uncontrollable change will hit the country in question. A balance must be struck between measurable standards of programs and flexibility in light of changing economic conditions. Protective, yet flexible tactics are very difficult to apply in practice because the need to achieve significant reform tends to imply a multi-year process. The need, however, for clear, measurable standards of performance and a finite time frame often conflicts with the need for flexibility for unforeseen developments.

Pursue multidonor collaboration.

Multidonor action can be a powerful tool to promote reform. Each donor operates under different internal restrictions (on fund use, for example), and consequently a group of donors has more options and more funds than any single donor. If donors can form a common front, they can exert considerable pressure in favor of key reforms. Most donors tend to be active in a particular sector, e.g., USAID in the agricultural sector, the World Bank and the IMF in the financial sector, but there is great potential for collaboration across sectors. For example, USAID in Pakistan took the lead in agricultural sector reforms, but the World Bank and the Asian Development Bank joined in pressing for reductions in fertilizer subsidies. Although the overriding objectives of the donors may have differed, the result was a common front on a key policy issue. If several donors are active in promoting reform, coordination among them is important.

With few exceptions, the United States is no longer the principal donor in most recipient countries. In order to maximize the impact of its smaller assistance programs, USAID is increasingly finding it necessary to cooperate with like-minded donors on specific policy reform initiatives.

However, as more donors become involved in the process, the harder it is to reach agreement on what the reforms should be. Each donor has its own, slightly different view of development priorities and the appropriate policy response. If these priorities are too divergent, attempts to forge a common proposal for a specific reform are likely to be very general, very bland, internally inconsistent, or all three.

5.3.3 Program Evaluation

Evaluation of program assistance requires a somewhat different set of criteria than those used for project assistance. The performance of a program must be judged on at least four grounds:

- **Purpose:** Did the reforms implemented achieve the intended impact on the economy? For example, if the purpose was to end a government monopoly over fertilizer trade, did the private sector actually take over a substantial portion of the fertilizer market?

- **Output:** Regardless of whether the desired impact was achieved, were the reforms actually implemented? Did the government change marketing regulations, remove price controls, raise producer prices, and so on?

- **Process:** Regardless of whether the reforms were actually implemented, did A.I.D. do all it could to promote reform? Were there regular discussions with the government? Was the policy environment conducive? Was sufficient analysis done to support proposals?

- **Inputs:** Were the practical aspects of program implementation carried out in an acceptable fashion? Were funds disbursed quickly when appropriate? Was agreed-on technical assistance provided?

Although each program must be evaluated on its own terms, the checklist in Table 5.4 may be helpful as a point of departure in developing the scope of work for a program evaluation.

TABLE 5.4 Issues To Be Addressed in a Program Evaluation

Evaluation Criterion	Performance
Purpose	• Were the desired effects of the program clearly defined? • Were the desired effects achieved as a result of the program? • If not, was this due to unforeseen economic circumstances that caused the reforms to be ineffective or to a failure to implement the planned reforms?
Outputs	• Were the planned reforms implemented? • If so, were the necessary companion measures implemented to make them effective, or were other measures taken that rendered the reforms ineffective? • If not, was the failure to implement the reforms due to unforeseen economic conditions, misjudgment of government willingness to make the reforms, poor specification of the reforms, or insufficient support to remove roadblocks? • Did the reform package as initially defined remain valid throughout the period? • If not, was it possible to modify it to reflect changing circumstances?
Process	• Were the mechanisms established for A.I.D.-host government dialogue effective? • Was there sufficient donor coordination? • Was sufficient analysis done to support recommendation of specific reform measures? • Were host country analysts adequately involved throughout? • Was the dialogue carried out at a sufficiently high level on the host government side to achieve results? • Were appropriate U.S. agencies (State, Commerce) involved? • Was sufficient information available to monitor progress toward reform, and was it used effectively?
Inputs	• Were funds disbursed smoothly as conditions were met? • Were funds withheld if conditions were not met? • If counterpart funds were generated through a CIP or similar mechanism, did this work effectively? • If counterpart funds were to be used for specific purposes (e.g., support of local costs for A.I.D. projects), was this mechanism effective and did it support reform? • Did pressure to generate counterpart funds compromise the reform process? • Was technical assistance, if any, effective?

REFERENCES

Chapter 2

Agency for International Development, Center for Development Information and Evaluation. 1989. *Agricultural Policy Analysis: A Manual for A.I.D. Agricultural and Rural Development Officers.* A.I.D. Evaluation Special Study No. 61, February 1989. Washington, DC.

Agency for International Development. 1982. *Approaches to the Policy Dialogue.* A.I.D. Policy Paper. Washington, DC: U.S. Agency for International Development, December.

Coutu, Arthur J. 1991. *The Failure to Institutionalize Public Agricultural Policy Analysis Units.* Agricultural Policy Analysis Project, Phase II Collaborative Research Report No. 318. Raleigh: North Carolina State University.

Tilney, John, et al. 1991. *Synthesis of Agricultural Policy Activities.* Agricultural Policy Analysis Project, Phase II Project Document No. 213. Washington, DC: Abt Associates Inc.

Tilney, John, and James T. Riordan. 1988. *Agricultural Policy Analysis and Planning: A Summary of Two Recent Analyses of A.I.D.-Supported Projects Worldwide.* A.I.D. Evaluation Special Study No. 55. Washington, DC: U.S. Agency for International Development.

Chapter 3

3.1 Structural Adjustment

Binswanger, Hans. 1989. "The Policy Response of Agriculture." *Proceedings of the World Bank Annual Conference on Development Economics.*

Bourguignon, Francois and C. Morrison. 1992. *Adjustment and Equity in Developing Countries: a New Approach.* Organization for Economic Co-operation and Development.

Chhibber, Ajay. 1992. "Exchange Reforms, Supply Response, and Inflation in Africa." In Ian Goldin, et al., eds. *Open Economies: Structural Adjustment and Agriculture.*

Corden, W.M. 1990. "Macroeconomic Policy and Growth: Some Lessons of Experience." *Proceedings of the World Bank Annual Conference on Development Economics.*

Corden, W.M. 1986. *Inflation, Exchange Rates, and the World Economy.* University of Chicago Press.

Cuddington, John. 1989. "Commodity Export Booms in Developing Countries." *The World Bank Research Observer,* 4(2).

Dornbusch, Rudiger. 1990. "Policies to Move from Stabilization to Growth." *Proceedings of the World Bank Annual Conference on Development Economics.*

Fischer, Stanley. 1986. "Issues in Medium-Term Macroeconomic Adjustment." *The World Bank Research Observer,* July.

Hwa, Erh-Cheng. 1988. "The Contribution of Agriculture to Economic Growth: Some Empirical Evidence." *World Development,* 16(11).

Krueger, Anne O., Maurice Schiff, and Alberto Valdes. 1988. "Agricultural Incentives in Developing Countries: Measuring the Impact of Sector-specific and Economy-wide Policies on Agricultural Incentives in LDCs." *World Bank Economic Review,* 2(September):255-272.

Mundlak, Yair, D. Cavallo and R. Domenech. 1989. "Agriculture and Economic Growth in Argentina, 1913-84." International Food Policy Research Institute abstract.

Oyejide, T. Ademola. 1986. "The Effects of Trade and Exchange Rate Policies on Agriculture in Nigeria." International Food Policy Research Institute abstract.

Sahn, David and A. Sarris. 1991. "Structural Adjustment and the Welfare of Rural Smallholders: A Comparative Analysis for Sub-Saharan Africa." *World Bank Economic Review* (May).

Valdes, Alberto and A. Siamwalla. 1988. "Foreign Trade Regime, Exchange Rate Policy, and the Structure of Incentives." In J.W. Mellor and R. Ahmed, *Agricultural Price Policy for Developing Countries.* Baltimore: Johns Hopkins.

3.2 Trade

de la Torre, Augusto and Margaret R. Kelly. 1992. *Regional Trade Arrangements.* IMF Occasional Paper No. 93. Washington, DC: International Monetary Fund. March. (Regional trade)

Goldin, Ian and Odin Knudsen, eds. 1990. *Agricultural Trade Liberalization: Implications for Developing Countries.* OECD/World Bank. (Models)

Hathaway, Dale. 1987. *Agriculture and the GATT.* Washington, DC: Institute for International Economics. (GATT)

Islam, Nurul and Alberto Valdés, eds. 1990. *The GATT, Agriculture, and the Developing Countries.* Washington, DC: International Food Policy Research Institute. (GATT)

Lloyd, Peter. 1992. "Regionalization and World Trade." *OECD Economic Studies,* No. 18, Spring, (Regional trade)

Tyers, Rod and Kym Anderson. 1992. *Disarray in World Food Markets: A Quantitative Assessment.* Cambridge University Press. (General trade)

Williamson, John. 1990. *The Progress of Policy Reform in Latin America.* Washington, DC: Institute for International Economics. (Trade reform)

3.3 Sustainable Agricultural Systems

Barker, Randolph and Duane Chapman. 1992. "The Economics of Sustainable Agricultural Systems in Developing Countries." Chapter 27 in Clive Edwards, et al., eds. *Sustainable Agricultural Systems.* Ankeny, IA: Soil and Water Conservation Society.

Batie, Sandra. 1989. "Sustainable Development: Challenges to the Profession of Agricultural Economics." *American Journal of Agricultural Economics.* 71(December):1083-1101.

Board on Science and Technology, National Research Council. 1988. *Sustainable Agriculture.* Contract No. BAN-5052-0-00-6307. Washington, DC: Bureau for Science and Technology, Agency for International Development.

CAST. June 1988. "Long-term Viability of U.S. Agriculture." Report No. 114. Ames, IA: Council for Agricultural Science and Technology.

Cleaver, Kevin and Gotz Schreiber. 1992. "Population, Agriculture, and the Environment in Africa." *Financing Development,* 29:34-35.

Cruz, Wilfrido and Christopher Gibbs. 1990. "Resource Policy Reform in the Context of Population Pressure: The Philippines and Nepal." *American Journal of Agricultural Economics,* 72:1264-1268.

Dixon, John and Louise Fallon. 1989. "The Concept of Sustainability: Origins, Extensions, and Usefulness for Policy." *Society and Natural Resources,* 2:73-84.

Edwards, Clive, Rattan Lal, Patrick Madden, Robert H. Miller, and Gar House, eds. 1992. *Sustainable Agricultural Systems.* Ankeny, IA: Soil and Water Conservation Society.

Epplin, Francis and Joseph Musah. 1985. "A Representative Farm Planning Model for Liberia." Chapter 4 in *Proceedings of the Liberian Agricultural Policy Seminar 1985.* Report B-23. Stillwater: Agricultural Policy Analysis Project, Phase I, Department of Agricultural Economics, Oklahoma State University.

Lele, Sharachchandra. 1991. "Sustainable Development: A Critical Review." *World Development,* 19(6):607-621.

Madden, J. Patrick and Thomas Dobbs. 1992. "The Role of Economics in Achieving Low-input Farming Systems." Chapter 26 in Clive Edwards et al., eds. *Sustainable Agricultural Systems*. Ankeny, IA: Soil and Water Conservation Society.

National Research Council (NRC). 1993. *Sustainable Agriculture and the Environment in the Humid Tropics*. National Academy Press: Washington, DC.

Sanchez, Pedro. 1992. "Tropical Regional Soils Management," in Vernon Ruttan, ed., *Sustainable Agriculture and the Environment*. Boulder, CO: Westview Press.

Southgate, Douglas, John Sanders, and Simeon Ehui. 1990. "Resource Degradation in the Africa and Latin America: Population Pressure, Policies, and Property Arrangements." *American Journal of Agricultural Economics* 72(December):1259-1263.

Tweeten, Luther, ed. 1989. *Agricultural Policy Analysis Tools for Economic Development*. Boulder, CO: Westview.

Tweeten, Luther. 1989. "The Economic Degradation Process." *American Journal of Agricultural Economics* 71:1102-1111.

Tweeten, Luther. 1992. "The Economics of an Environmentally Sound Agriculture." Vol. 10 in Ray Goldberg, ed., *Research in Domestic and International Agribusiness Management*. Greenwich, CT: JAI.

Tweeten, Luther, John Mellor, Shlomo Reutlinger, and James Pines. 1992. *Food Security Discussion Paper*. (Prepared for U.S. Agency for International Development.) Washington, DC: International Science and Technology Institute.

Warford, Jeremy and Zeinab Partow. 1990. "Natural Resource Management in the Third World: A Policy and Research Agenda." *American Journal of Agricultural Economics* 72:1269-1273.

World Bank. 1992. *World Development Report 1992: Development and the Environment*. New York: Oxford.

World Commission on Environment and Development (Brundtland Report). 1987. *Our Common Future*. Oxford: Oxford.

3.4 Natural Resource Management

Johnston, George et al. 1992. *The Green Book, Part 1: A Policy Taxonomy and Analysis of Policies Affecting Natural Resources and the Environment*. Agricultural Policy Analysis Project, Phase II Methods and Guidelines No. 406. Washington, DC: Abt Associates Inc. and Guatemala City: ROCAP/RENARM

Asian Development Bank, Office of the Environment. 1990. *Economic Policies for Sustainable Development, Manila.*

Amacher, G., W.F. Hyde, and K. Kanel. 1991. "Household Fuel Demand and Supply in Nepal's Hills." (draft) Washington, DC: USDA Economic Research Service.

Binswanger, H. P. 1989. *Brazilian Policies that Encourage Deforestation in the Amazon.* World Bank Environment Department Working Paper No. 16. Washington, DC.

Bohm, P. and C. S. Russell. 1985. "Comparative Analysis of Alternative Policy Instruments." Allen V. Kneese and James L. Sweeney. *Handbook of Natural Resources and Energy Economics,* Volume I. Amsterdam: North-Holland.

Bradley, Theresa, M. Basterrechea, Eduardo Villagran, et al. 1990. *Guatemala Natural Resource Policy Inventory.* Agricultural Policy Analysis Project, Phase II Technical Report No. 108. Washington, DC: Abt Associates Inc. and Guatemala City: Asociacion de Investagacion y Estudios Sociales.

Brinkerhoff, D.W., J.D. Gage and J. Yeager. 1992. *Implementing Natural Resources Management Policy in Africa.* USAID Bureau of Research and Development Project No. 936-5451. Washington, DC.

Caldecott, J. 1988. *Hunting and Wildlife Management in Sarawak.* IUCN, Gland.

Ewing, A. J. and R. Chalk. 1988. *The Forest Industries Sector.* World Bank Technical Paper No. 83, Washington, DC.

Gregerson, H. and A. Contreras. 1979. *Economic Analysis of Forestry Projects.* FAO/UN Forestry Paper 17. Rome.

Grut, M., J. A. Gray and Nicolas Egli. 1991. *Forest Pricing and Concession Policies.* World Bank Technical Paper No. 143. Washington, DC.

Hartwick, J.M. and Nancy D. Olewiler. 1986. *The Economics of Natural Resource Use.* New York: Harper Collins.

Johnson, D. Gale, Alberto Valdes, and Dennis McCaffrey. 1991. *LAC Bureau: Agriculture and Natural Resources Background and Options.* Agricultural Policy Analysis Project, Phase II Technical Report No. 116. Washington, DC: Abt Associates Inc.

Krutilla, J.V. and A.C. Fisher. 1975. *The Economics of Natural Environments: Studies in the Valuation of Commodity and Amenities Resources.* Baltimore: Resources for the Future/Johns Hopkins University Press.

McNeely, J.A. 1988. *Economics and Biological Diversity.* Gland: IUCN.

Magrath, W. and P. Arens. 1989. *The Costs of Soil Erosion on Java: A Natural Resource Accounting Approach.* World Bank Environment Department Working Paper No. 18. Washington, DC.

Myers, N. 1988. *Natural Resource Systems and Human Exploitation Systems: Physiobiotic and Ecological Linkages.* World Bank Environment Department Working Paper No. 12. Washington, DC.

Oldfield, M. 1984 *The Value of Conserving Genetic Resources.* U.S. Department of the Interior, National Park Service. Washington, DC.

Reppetto, Robert. 1988. *Economic Policy Reform for Natural Resource Management.* World Bank Environment Department Working Paper No. 4. Washington, DC.

Rosegrant, M.W., and M. Svendsen. 1992. *Irrigation Investment and Management in Asia: Trends Priorities and Policy Directions.* Agricultural Policy Analysis Project, Phase II Collaborative Research Report No. 320. Washington, DC: International Food Policy Research Institute.

Stavins, R. et al. 1988. *Project 88 Harnessing Market Forces to Protect our Environment: Initiatives for the New President.* Washington, DC.

Western, D. 1984. "Amboseli National Park: Human Values and the Conservation of a Savanna Ecosystem" in McNeely, J.A. and K.R. Miller, 1984, *National Parks, Conservation and Development: The Role of Protected Areas in Sustaining Society.* Washington, DC: Smithsonian.

Whittington, D., M. Mujuahucl, G. McMahon, and K. Chow. 1989. "Willingness-to-pay for Water in Newala District, Tanzania." Arlington, VA: WASH Project.

World Bank. 1989. *Indonesia Forest, Land and Water: Issues in Sustainable Development.* Washington, DC.

World Bank. 1991. *The Forest Sector.* Washington, DC.

3.5 Policies for the Development of Agribusiness

Abbott, Richard D. and Christine M. Erbacher. 1992. *Agribusiness Trade and Investment Promotion: Engaging U. S. Agribusiness in the Process.* Agricultural Marketing Improvement Strategies Project Staff Paper. Washington, DC: Abt Associates Inc.

Austin, James E. 1992. *Agroindustrial Project Analysis: Critical Design Factors.* EDI Series in Economic Development. Baltimore: Johns Hopkins University Press for the Economic Development Insitute of the World Bank.

Barriga, Claudio, in collaboration with Alejandro Leon, Manueal Saavedra, and Richard D. Abbott. 1990. *The Fruit and Vegetable Export Sector in Chile: A Case Study of Institutonal Cooperation.* Agricultural Marketing Improvement Strategies Project. Washington, DC: Abt Associates Inc. PN-ABG-836. October 1990.

Ender, Gary, Kenneth A. Smarzik, Imran Ali, Timothy J. Mooney, and Rubén Núñez. 1992. *Financial and Other Policy Constraints To Agribusiness Development in Pakistan.* Agricultural Policy Analysis Project, Phase II Technical Report No. 344. Washington, DC and Islamabad: Abt Associates Inc. and Enterprise Development Consulting (Pvt.) Ltd.

Hogan, Paul, Donald B. Keesing and Andrew Singer. 1991. *The Role of Support Services in Expanding Manufactured Exports in Developing Countries.* EDI Seminar Series. Washington, DC: Economic Development Institute of the World Bank.

Holtzman, John S., et al. 1992. *Agribusiness Development in Sub-Saharan Africa: Suggested Approaches, Information Needs, and An Analytical Agenda.* Agricultural Marketing Improvement Strategies Staff Paper. Washington, DC: Abt Associates Inc.

Newman, Mark D. 1990. *Design and Implementation of an Agribusiness Strategy: A Plan of Action for ANE Missions.* Agricultural Marketing Improvement Strategies Project. Washington, DC: Abt Associates Inc.

3.6 Political Economy of Policy Reform

Center for Strategic and International Studies. 1992. *The Politics of Economic Reform in Sub-Saharan Africa.* Washington, DC: CSIS.

Geddes, Barbara. 1992. "The Effect of Political Institutions on the Feasibility of Structural Adjustment."

Gordon, David. 1993. "Debt, Conditionality and Reform: the International Relations of Economic Restructuring in Sub-Saharan Africa." In T. Callaghy and J. Ravenhill, *Hemmed In: Responses to Economic Decline in Africa.* New York: Columbia University Press.

Grindle, Merilee. 1989. *The New Political Economy: Positive Economics and Negative Politics.* World Bank Working Paper.

Haggard, Stephen and S. Webb. 1992. "What Do We Know About the Political Economy of Policy Reform." Presented at the World Bank.

Klitgaard, Robert. 1992. *Adjusting to Reality: Beyond State Versus Market in Economic Development.* San Francisco: International Center for Economic Growth.

Mosley, Paul, et al. 1991. *Aid and Power: The World Bank and Policy-Based Lending.* London: Routledge.

Nelson, Joan. 1990. *Economic Crisis and Policy Choice: The Politics of Adjustment in the Third World.* Princeton: Princeton University Press.

Roemer, Michael and Christine Jones. 1991. *Markets in Developing Countries.* San Francisco: International Center for Economic Growth.

Sahn, David, ed. 1992. *Adjusting to Policy Failures in African Economies.* Ithaca: Cornell University.

World Bank/Operation Evaluation Department. 1992. *Structural and Sectoral Adjustment Operations: The Second OED Overview.* Washington, DC: World Bank.

Chapter 4

4.1 Policy Inventories

Block, Steve et al. 1989. *Research Themes and Findings of the Agricultural Policy Analysis Project.* Agricultural Policy Analysis Project Main Document No. 5. Washington, DC: Abt Associates Inc.

Bradley, Theresa and Fred Mangum. 1990. *Belize Natural Resource Policy Inventory.* Agricultural Policy Analysis Project, Phase II Technical Report No. 110. Washington, DC: Abt Associates Inc. and Belize City: The Belize Center for Environmental Studies.

Bradley, Theresa, Dennis MaCaffrey, et al. 1990. *Costa Rica Natural Resource Policy Inventory.* Agricultural Policy Analysis Project, Phase II Technical Report No. 112. Washington, DC: Abt Associates Inc. and San José, Costa Rica: The Tropical Science Center.

Bradley, Theresa, M. Basterrechea, Eduardo Villagran, et al. 1990. *Guatemala Natural Resource Policy Inventory.* Agricultural Policy Analysis Project, Phase II Technical Report No. 108. Washington, DC: Abt Associates Inc. and Guatemala City: Asociacion de Investagacion y Estudios Sociales.

Johnston, George, Jose Flores, et al. 1990. *Honduras Natural Resource Policy Inventory.* Agricultural Policy Analysis Project, Phase II Technical Report No. 111. Washington, DC: Abt Associates Inc. and Tegucigalpa: Honduras Ecological Association.

Johnston, George et al. 1992. *The Green Book, Part 1: A Policy Taxonomy and Analysis of Policies Affecting Natural Resources and the Environment.* Agricultural Policy Analysis Project, Phase II Methods and Guidelines No. 406. Washington, DC: Abt Associates Inc. and Guatemala City: ROCAP/RENARM

Núñez, Rubén, Francisco Serrano, et al. 1990. *El Salvador Natural Resource Policy Inventory.* Agricultural Policy Analysis Project, Phase II Technical Report No. 113. Washington, DC: Abt Associates Inc. and San Salvador: The Salvadoran Ecological Foundation Eco-Activo 20-30.

Agency for International Development, Center for Development Information and Evaluation. 1989. *Agricultural Policy Analysis: A Manual for A.I.D. Agricultural and Rural Development Officers.* A.I.D. Evaluation Special Study No. 61. Washington, DC, A.I.D.

4.2 Rapid Appraisal

Chambers, Robert. 1981. "Rapid Rural Appraisal: Rationale and Repertoire," *Public Administration and Development,* Vol. I: 95-106.

Crawford, Eric, John S. Holtzman, John M. Staatz, Chris Wolf and Michael T. Weber. 1988. *MSU Experience in Research Design and Data Processing/Analysis.* Paper presented at the Zambia Food Security Research Network Workshop. 24-25 May 1988, Lusaka, Zambia.

Holtzman, John S. 1991. *Rapid Appraisal: The AMIS Project Experience.* Paper presented at the AFMA/FAO/AMIS Seminar on Rapid Appraisal Techniques for Agricultural Marketing Systems in Asia and the Pacific. August 1991, Jakarta, Indonesia. Washington, DC: Abt Associates Inc.

Holtzman, John S. 1990. *Rapid Reconnaissance Methods for Agricultural Marketing and Food Systems Research in Developing Countries.* Paper prepared for the USAID PPC/CDIE Workshop on Innovative, Low-Cost Data Collection Methods in Development Settings: International Case Studies. 9-11 July 1990, Arlington, VA.

Holtzman, John S. 1986. *Rapid Reconnaissance Guidelines for Agricultural Marketing and Food System Research in Developing Countries.* MSU International Development Working Paper No. 30, Department of Agricultural Economics. East Lansing: Michigan State University.

Holtzman, John S., Jerry Martin and Richard Abbott. 1988. *Operational Guidelines: Rapid Appraisal of Agricultural Marketing Systems.* Agricultural Marketing Improvement Strategies Project. Washington, DC: Abt Associates Inc. and Post-Harvest Institute for Perishables of the University of Idaho.

Kulibaba, Nicholas. 1991. *Livestock and Meat Transport in the Niger-Nigeria Corridor.* Agricultural Marketing Improvement Strategies Project. Washington, DC: Abt Associates Inc.

Lev, Larry and Millie Gadbois. 1988. *Rapid Reconnaissance Study of the Nigerien Onion Subsector: A Policy-Oriented Analysis of Market Performance.* Moscow, ID: Post-Harvest Institute for Perishables of the University of Idaho.

Marion, Bruce and the NC 117 Committee. 1986. *The Organization and Performance of the U.S. Food System.* Lexington, MA: DC. Heath and Company.

Marion, Bruce. 1976. "Application of the Structure, Conduct, Performan.. Paradigm to Subsector Analysis." N.C. Project 117 Working Paper No. 7. Madison, WI.

Mooney, Timothy, Soren Nielsen, André Benoit, and David Benoit in collaboration with Idrissa Seydou, Gourou Amadou, and Hararou Djibo. 1990. *A Rapid Appraisal of the Hides and Skins Subsector in Niger.* Agricultural Marketing Improvement Strategies Project. Washington, DC: Abt Associates Inc. and Deloitte & Touche.

Nicholson, Dan and Charles Stathacos. 1992. *Niger: The Marketing and Processing of Garden Crops.* Agricultural Marketing Improvement Strategies Project. Washington, DC: Deloitte & Touche and Abt Associates Inc.

Ouédraogo, Ismael. 1991. *Niger: The Impact of Government Policies on Onion Production and Marketing in Tahoua Region: A Rapid Assessment of Recent Developments.* Agricultural Policy Analysis Project, Pahse II Technical Report No. 120. Washington, DC: Abt Associates Inc.

Rassas, Bechir, Millie Gadbois, R. Dixon Phillips, John S. Holtzman and Richard D. Abbott. 1989. *A Rapid Appraisal of the Marketing of Niger Cowpeas.* Agricultural Marketing Improvement Strategies Project. Prepared for USAID/Niger. Abt Associates and Postharvest Institute for Perishables. Washington, DC and Moscow, ID: U. of Idaho.

Taitan, Peter A. 1992. *Designing a Data Entry and Verification System.* Microcomputers in Policy Research Paper No. 1. Washington, DC: International Food Policy Research Institute.

4.3 Budgeting Methods

Cory, Dennis and Eric Monke. 1991. *Using the Policy Analysis Matrix to Address Environmental and Natural Resource Issues.* Agricultural Policy Analysis Project, Phase II Collaborative Research Report No. 334. Stanford: Food Research Institute.

Monke, Eric and Scott Pearson. 1989. *The Policy Analysis Matrix for Agricultural Development.* Ithaca: Cornell University Press.

Pagiola, Stefano. 1991. *Use of Cost-Benefit Analysis and the Policy Analysis Matrix to Examine Environmental and Natural Resource Problems.* Agricultural Policy Analysis Project, Phase II Collaborative Research Report No. 336. Stanford: Food Research Institute.

Tsakok, Isabelle. 1990. *Agricultural Price Policy: A Practitioner's Guide to Partial Equilibrium Analysis.* Ithaca: Cornell University Press.

4.4 Market Level Methods

Askari, Hossein and John T Cummings. 1976. *Agricultural Supply Response: A Survey of Econometric Evidence*. New York: Praeger.

Braverman, Avishay, Jeffrey Hammer, and Anne Gron. "1987 Multimarket Analysis of Agricultural Price Policies in an Operational Context: The Case of Cyprus." *The World Bank Economic Review*. 1(2).

Chambers, Robert. 1988. *Applied Production Analysis*. Cambridge University Press.

Josling, Timothy. 1992. *Social Equilibrium Analysis Using Market Level Models*. Agricultural Policy Analysis Project, Phase II. Forthcoming.

Pagiola, Stefano. *Notes on the Implementation of Multi-Market Analysis*. Agricultural Policy Analysis Project, Phase II. Forthcoming.

Tsakok, Isabelle. 1990. *Agricultural Price Policy: A Practitioner's Guide to Partial Equilibrium Analysis*. Ithaca: Cornell University Press.

4.5 Optimization Methods (Agricultural Sector Models)

Hazell, Peter and Roger Norton. 1986. *Mathematical Programming for Economic Analysis in Agriculture*, New York: Macmillian.

4.6 Computer General Equilibrium Models (CGE)

Gaspay, Manny and Carl Gotsch. 1992. *The Impact of Trade Liberalization on the Philippine Economy: A CGE Modeling Approach*. Agricultural Policy Analysis Project, Phase II Collaborative Research Report No. 326. Stanford: Food Research Institute.

Chapter 5

Agricultural Policy Analysis and Planning Project. 1984. "A Comparative Analysis of Agricultural Policy and Planning Projects in Africa, Asia, and the Near East. " Interim Report. Washington, DC: Office of Agriculture, Bureau for Science and Technology, Agency for International Development, October.

Agency for International Development, Center for Development Information and Evaluation. 1989. *Agricultural Policy Analysis: A Manual for A.I.D. Agricultural and Rural Development Officers*. A.I.D. Evaluation Special Study No. 61. Washington, DC, A.I.D.

Coutu, Arthur J. 1991. *The Failure to Institutionalize Public Agricultural Policy Analysis Units.* Agricultural Policy Analysis Project, Phase II Collaborative Research Report No. 318. Raleigh: North Carolina State University.

Gordon, David. 1992. "Strategies for Policy Reform: Targeting Key Issues—Political Dynamics." Draft.

Tilney, John, et al. 1991. *Synthesis of Agricultural Policy Activities.* Agricultural Policy Analysis Project, Phase II Project Document No. 213. Washington, DC: Abt Associates Inc.

Tilney, John, and James T. Riordan. 1988. *Agricultural Policy Analysis and Planning: A Summary of Two Recent Analyses of A.I.D.-Supported Projects Worldwide.* A.I.D. Evaluation Special Study No. 55. Washington, DC: U.S. Agency for International Development.

APPENDIX A

CASE STUDY: POLICY CONSTRAINTS TO AGRIBUSINESS DEVELOPMENT IN PAKISTAN

The objectives of this study[1] were to identify current constraints to agribusiness development and to recommend further actions needed to improve the environment for investments in this sector. Considerable policy analysis and experience had resulted from the policy dialogue which the Government of Pakistan and USAID had conducted under the Agricultural Sector Support Program, with support from APAP II. The study built on this knowledge and other USAID-funded studies.

There was concern in Pakistan that agribusiness growth was constrained by a lack of working capital. However, the study found that Pakistani financial institutions assess the working capital needs of businesses the same way as commercial banks across the world. Their means of securing loans are also the same, taking not only a pledge of inventory, but also liens on fixed assets. Bankers and clients both in Pakistan and elsewhere often disagree over how much working capital is needed to operate a particular business. Perishable inventories and difficulties in managing agribusiness working capital complicate the assessment of the need for and a shortage of working capital. Nonetheless, it was fairly clear that the shortage of working capital in Pakistan was most acute in small and medium-sized agribusinesses. The study recommended that the Government instruct development finance institutions (DFIs) not to remove working capital from loan applications. It also recommended that the Government find alternate ways to control speculation in food crops, not by limiting the amount of working capital that a bank can advance to an agribusiness against inventory.

The GOP's control over the money supply was also examined. In the past, due to high reserve requirements and directed credit programs (35% and 10% of total banking assets, respectively), the availability of capital to the private sector was, at the least, constrained. These policies also effectively controlled interest rates, leaving bankers with no incentive to pursue higher-risk ventures. Rather they chose to keep their excess funds in government securities or lend them to low-risk, large, family corporations. This situation was aggravated by low-markup credit schemes, including one for agricultural production. The low cost of this fungible capital made it attractive, and it found its way into businesses for which it was not intended. The study recommended that the Government continue its efforts to introduce competition into the banking system and gradually eliminate directed credit and credit schemes, as provided for under an IMF agreement. It also recommended that a project development facility be established for small and medium-sized agribusinesses and that a private DFI be established to serve this same sector as a lead institution.

---

[1] Ender et al., 1992.

The effects of price-distorting and related agricultural commodity policies on producers and consumers are well known. These same policies can also have damaging effects on agribusinesses. In Pakistan these effects included encouraging the use of wheat as poultry feed. Government intervention and domination in Pakistan crowded out legitimate private agribusinesses in many sectors from wheat storage to edible oil production. Inconsistent policies hampered agribusiness investment by creating uncertainty. Meanwhile, the lack of government-promoted grades and standards reduced both the quality of products available to domestic consumers and the country's international competitiveness.

Because the outputs of agriculture are often the inputs to agribusiness, the agricultural research system is very important to agribusiness, not only to agriculture. The research system can provide not only improved crop and livestock species but also new agricultural production and processing and handling technology, which can be sold or utilized by agribusinesses. The study recommended that the Government consider this system a vital long-term investment, both in the sense that it must be supported consistently over a long period of time and that its benefits continue to accrue over an even longer period of time. Given that the Government's resources are always limited, it should also try to facilitate the private sector's involvement in research, rather than substituting for it.

Pakistan's privatization program might have a significant impact on agribusiness development. To ensure a positive effect, the study urged that the momentum of the privatization program be maintained, and that the privatization of the banking sector and key agribusinesses like fertilizer and edible oil be completed as expeditiously as possible. The essence of privatization is a change in the roles of the public and private sectors. According to the study, the public sector needs to exert less control, but more regulation, over the markets for agribusiness goods and services. The private sector needs to plan more systematically, taking consumer needs into account more carefully.

Lessons learned from case studies of Chile and Thailand, countries that successfully promoted agribusiness development, included the following. First, winning strategies for agribusiness growth need to be commodity-specific.[1] In this vein, the study recommended that the AgriBusiness Cell in the Ministry of Food, Agriculture, and Cooperatives continue its efforts to facilitate investment in the oilseed processing sector. Second, a smoothly operating quality control system is of crucial importance, especially for agricultural exports. Third, a winning strategy for the agribusiness sector needs to pay very close attention to markets. Thus, the study highlighted the participation of the private sector in policy dialogues as an important factor that can contribute to agribusiness development. Fourth, foreign investment can play a key role in accelerating growth in the agricultural sector. Foreign firms bring not only financial resources, but access to technology that may be needed to develop fully a particular comparative advantage, and in-depth knowledge about export markets as well. Perhaps most important, winning

[1] There is some controversy over this issue. For the other side of the argument, see Steven M. Jaffee, nd, *Exporting High-Value Food Commodities: A Review of Major Developing Countries Success Stories*. World Bank Agriculture and Natural Resources Department and ECA/MNA Technical Department; particularly paragraph 3.38.

strategies have clearly defined roles for both the public and private sectors. Specialization and cooperation were hallmarks of these examples.

In Pakistan, the structural weaknesses of agribusiness development were reflected in a stalled transition from family capitalism to managerial capitalism. The study recommended steps by the Government to foster the development of companies, whether family-run or not, whether large or small, that function efficiently. These steps include the development of human capital and physical infrastructure (including well-trained managers) and the development and enforcement of grades and standards for both products and services (including accounting). Infrastructural development will foster the transition to managerial capitalism as agribusinesses increase in size to take advantage of larger markets. Other recommendations of the study include broader financing of agribusiness, specialized institutions for agribusiness finance, and simplifying investment procedures.

In the area of incentives to agribusiness and other sectors, the study found that agribusiness in Pakistan was not at a disadvantage. On the other hand, existing incentives often pertained to very specific sectors or industries, apparently the result of lobbying rather than a well-developed strategy. The study pointed out that income tax breaks will only serve as effective incentives for agribusiness development when the government has the capacity to enforce the tax laws. Thus, it recommended that the Government redouble its efforts to broaden the tax base, and that the system of direct and indirect tax incentives be streamlined. To encourage investment by efficient firms, financing of further ventures or expansion of existing capacity should receive the same credit and tax incentives as new projects of newly-formed firms.

APPENDIX B

CASE STUDY: A POLICY INVENTORY FOR SUSTAINABLE AGRICULTURE IN BELIZE[1]

The Natural Resource Policy Inventory was used in Belize under the Regional Environmental and Natural Resource Management Project (RENARM). This project examined sustainable agriculture, production from natural forests, management of water resources, and management of wildlands. The following pages summarize the method as it was applied to sustainable agriculture.

Sustainable development in the agricultural sector is defined as the management and conservation of the natural resource base and the orientation of technological change to ensure the attainment and continued satisfaction of human needs—food, water, shelter, clothing and fuel—for present and future generations. Such sustainable development conserves genetic resources and land and water resources, and is environmentally non-degrading, technically appropriate, economically viable and socially acceptable. Issues related to pesticide management, habitat destruction and disruption and biodiversity losses from agricultural practices and soil erosion are discussed under this theme.

Belize has good soils for agricultural production, with an estimated 19% of the land suitable for mechanized agriculture. Particularly appropriate for agriculture are the lands in the northern Cayo District and the lands of the northern sugar cane region. Soils of the Toledo lowlands are generally fertile and appropriate for long-fallow milpa agriculture or permanent tree crops. Recent soil surveys have been conducted in the Toledo and Stann Creek districts, and the other areas of the country will have soil surveys completed in 1990.

Problem Identification

Evidence of poor agricultural practices and soil erosion have been identified across the country. Recently, citrus production has been expanded on hillsides with inappropriate soils and land clearing and drainage for citrus in the Stann Creek Low Pine Ridge area and the Toledo District have also caused soil erosion problems. In the Cayo District, drainage on heavy clay soils has severely eroded the gullies.

With respect to pesticide and fertilizers, many interviewees identified heavy use by banana growers. Banana cultivation requires large quantities of pesticides and irrigation. This process adds fertilizers and pesticides to the water at times when the river flow is lowest and is least able to disperse pollutants.

---

[1] Edited for this publication by David Junius from Bradley and Mangum, 1990.

Policy Identification

The inventory identified 10 major sector policies with significant effects on sustainable agriculture. Only one of the 10 policies, however, was the direct responsibility of the Ministry of Agriculture and Fisheries: the comprehensive agricultural policy statement that sets the tone and direction for all the Ministry's efforts. Two other policies were administered by the Belize Marketing Board and the Pesticide Board, which are linked directly to the Ministry.

Perhaps the most important policy category concerning sustainable agriculture is land resources, which includes three laws that play especially important roles in shifting land to more productive agricultural use: the land tax law, the law to distribute public lands (Crown Lands Ordinance), and the law providing for road access.

Institutional Identification

The inventory identified 26 public and private organizations which have a major role in sustainable agriculture. This relatively large number of decision-making bodies leads to considerable complexity in policymaking, including duplication of effort and inadequate coordination of programs.

Some of the institutions involved with the above policies are the Lands Department, the Ministry of Natural Resources and Industry, the Ministry of Economic Development, the Ministry of Agriculture, the Belize Sugar Board, the Belize Cane Farmer's Association, the Citrus Control Board, the Citrus Grower's Association, the Pesticides Control Board, the Development Finance Corporation, the Ministry of Public Roads, the Belize Marketing Board, and the Ministry of Trade and Finance.

Policy Assessment

Policies affecting sustainable agriculture are evaluated in two ways. First, present policy is assessed as to its effectiveness. Second, gaps in these policies are pointed out.

These are the effected policies. Land laws are not effective in regulating land use. The transfer of additional land to agricultural use will damage the natural resource base. Anyone can apply to the Ministry of Economic Development for a tax holiday or a import duty concession, and more concessions have been approved for agricultural enterprises than for any other type of business. However, these concessions are granted without investigating the optimal use of the land.

Often disposition of public lands and the building of public roads is dictated more by political expediency than by sound policies designed to accommodate both economic growth and natural resource conservation. Adequate information is not available to justify changes in land use, which leads to decisions that damage both agriculture and the environment. The present allocation system is subject to political whims, which results in dereserving forest land that,

based on technical information concerning the natural resources, should be either retained in natural cover or only partially dereserved.

Policies to increase efficiency and production in the agriculture sector include regulations on pesticide use, agricultural credit, market and processing facilities, and fiscal policies to promote investment in productive agriculture. While favorable to agricultural development, these policies can harm the natural resource base in two ways.

First, they tend to result in more intensive agriculture by encouraging such practices as excessive fertilizer and pesticide use, heavy machine compaction of fragile soils, stream siltation, and burning of natural land cover. For example, credit is not specifically targeted to farmers using sustainable agriculture technology.

Second, Belize has very adequate regulatory policies, but only limited resources for monitoring and enforcing them. As a result, the government does not always respond to reports of river contamination and contraband pesticide is a problem. The Pesticide Board has not levied any fines for violations and prefers a policy of educating the public.

There is a policy prohibiting the cutting of vegetation along river banks However, this has never been enforced. Expansion of the banana industry, coupled with its heavy use of pesticides, has caused soil erosion and water contamination.

Control boards and producer associations for the three major commodities—sugar, citrus and bananas—increase grower profitability and expand output. However, there has been a deterioration in the natural resource base associated with this economic success. Citrus and banana production has been shifting from flat, fertile lands to marginal hillsides and poorly drained areas. Clearing of vegetation cover up to stream banks has caused siltation in streams that appears to be spreading all the way to the reef. Aerial spraying of chemicals has also contaminated streams. Continued expansion of these input-intensive commodities in relatively small, well-defined areas will exacerbate deterioration of the natural resource base.

Furthermore, present policies do not include a land use policy. There are no established standards for testing pesticide residue in crops or beef. Extension services are not geared toward the promotion of sustainable agriculture techniques, i.e., environmentally sound land clearing, plowing and drainage techniques.

Setting an Agenda for Policy Reform and Further Research

Belize has the potential to promote agricultural development without conflicting with the natural resource base. Because agriculture consumes only a small fraction of total land area, the expansion of this sector can remain as the top national development priority while the natural resource base is simultaneously preserved and maintained.

However, existing policies will have to be enforced if this objective is to be met. Enforcement will entail improving the data base for making decisions and to the extent possible, transforming land use decision making from an ad hoc, political process to an effort which conforms to a national land use plan. In addition, ministerial portfolios should be realigned to reduce the overlapping of responsibilities. In this process, the Ministry of Agriculture should play a greater role in the sector it is charged to develop. At present, the ministry administers few policies that have any influence on sustainable agricultural development.

Information is needed on soil types and the production capabilities of various land areas in Belize. A soils mapping project presently underway will provide some needed data, which should be supplemented with topography, ownership and type of use information, all consolidated in the Lands Department for immediate access. This lands information bank could become the basis to remove land-use decisions from as much political pressure as possible. The national land-use plan would be especially important in the distribution of crown lands for private use and for more intensive uses. Providing a logical basis for distributing and using lands would be a major step in preventing further natural resource deterioration. These efforts would be enhanced by use of a plan to develop roads and other public facilities and to define permissible uses of private lands.

Information is needed on the sale and use of pesticides in agriculture by type, application and location. Belize is in the process of shifting from a subsistence, largely milpa type of agriculture to a larger scale, more commercial system dependent on agricultural chemicals. At present little is known about the chemicals used, their rates of application or their impacts on the environment. Assistance needs to be provided to the relatively new Pesticides Board in obtaining this information, as well as data on alternative means of pest control and the levels of pesticide residue that humans absorb from foods and the impact of pest control on natural resources. With this information, policymakers can determine appropriate pesticide use in Belize.

APPENDIX C

CASE STUDIES: APPLICATIONS OF RAPID RECONNAISSANCE IN WEST AFRICA AND NEPAL

This appendix presents field applications of rapid reconnaissance (RR) surveys carried out under the Agricultural Marketing Improvement Strategies Project (AMIS). Both studies were classic RR surveys in that the commodity focus was restricted: ruminant livestock (cattle and small ruminants) in West Africa, and vegetable seed in Nepal. In addition, the RR studies focused on tradable commodities that are exported from producing countries to other country markets within the same region. Livestock are exported from Mali and Burkina Faso to neighboring Côte d'Ivoire, and vegetable seed grown in Nepal is exported to Bangladesh. In the case of both RR surveys, significant applied research was conducted in the terminal markets.

Rapid Reconnaissance Survey of Livestock Marketing in West Africa

The Sahel West Africa Office of USAID funded a rapid reconnaissance survey of livestock marketing and trade in a multi-country "central" corridor of West Africa, which includes Mali, Burkina Faso, Côte d'Ivoire (Holtzman, Kulibaba, and Stathacos, 1992). Two field trips were conducted by an economic anthropologist, who spoke the language of West African livestock traders and producers fluently, in late 1989/early 1990. A focused update was conducted by the same analyst in collaboration with an agricultural economist 15 months later. The RR study identified policy and regulatory barriers to livestock trade, as well as quantified in detail livestock marketing costs in the long-distance (Sahelian interior to coast) trade.

The RR benefitted from a comprehensive, three-year study of livestock marketing and red meat consumption in the same corridor, carried out by University of Michigan researchers in the late 1970s (Shapiro, 1979). The AMIS field work proved to be much more than a focused update of the earlier work, however. The AMIS analysts were able to quantify accurately "informal" marketing costs, which had increased significantly in the course of a decade and burdened West African traders who faced strong competition from non-African imports of chilled and frozen meat. Marketing costs were grouped into major categories at the analysis stage, including official costs, transport and handling, intermediary commissions, financial costs, and informal and quasi-official costs. Sensitivity analysis was performed to estimate the effect on marketing costs of several plausible scenarios for reducing costs. The analysis provided the basis for development of an Action Plan to liberalize trade in livestock products in the central corridor. The World Bank Sahel Operations Division funded the preparation of the Action Plan.

Key elements of the Action Plan, based on the RR findings, are as follows:

- Given the predominance of transport costs in livestock marketing, it is imperative to improve transport efficiency and competitiveness. Improving management of the railway running between Burkina Faso and the major terminal market, Abidjan, in

Côte d'Ivoire is one way to do this. Turnaround time (rotation of rolling stock) is unacceptably high, and delays due to poor management increase the cost and inconvenience of shipping livestock by rail (the cheapest mode).

- Trucking is currently the costliest but most rapid mode of shipping livestock to coastal markets. A second way to reduce transport costs is to deregulate international trucking between coastal West African countries and the Sahelian interior countries. This will expand the supply of backhaul (to the coast) trucks that are able to ship livestock, increase competition in trucking, and lower trucking costs.

- A necessary complement to reforming trade policies and regulatory practices (underway as part of World Bank-funded structural adjustment programs) is widespread and systematic dissemination of information to private livestock traders about the exact nature of policy and regulatory reform, and how the reforms will be implemented in practice. This information needs to be disseminated over the radio in several local languages rather than issued as a decree in French as many of the livestock traders are illiterate. Greater trader knowledge of trade regulations and their rights vis-a-vis public agents will reduce opportunities for rent-seeking on the part of public officials.

- In the West African environment, removal of formal trade barriers often leads to the emergence of informal marketing costs that offset in part the gains of liberalization. Certain groups of public agents (uniformed agents, customs officials) are adept at interpreting new policies or regulations to their advantage or at choosing not to enforce them. Periodic rapid appraisal focusing on in-depth interviews with livestock traders is an effective way to monitor implementation of new policies and regulations. Interviewing officials responsible for implementation, which is what World Bank review missions tend to do, is not an effective means of determining whether practice follows theory.

The major strength of the RR study was the informal interviewing skills of the analysts and their ability to obtain highly detailed and accurate data on livestock marketing costs. Given the sensitivity of cost and return information and the reticence of some traders to discuss costs, it is preferable to use highly experienced analysts with the requisite interviewing, language, and subject matter skills. A few probing, in-depth interviews by experienced analysts are superior to numerous interviews by enumerators who are instructed not to deviate from a fixed questionnaire and who cannot always match wits with traders.

A weakness of RR as a tool for obtaining data to construct representative budgets is that the number of cases is necessarily limited. In West African livestock marketing, where there are many transit itineraries and transport modal combinations, it would require many informal interviews to obtain sufficient observations per itinerary and transport mode to do statistical analysis. In this particular RR study, the objective was not statistical analysis but identification of major marketing cost categories and quantification of their relative orders of magnitude. With

this information, policymakers could prioritize efforts to reduce costs and have a good idea of the relative impact of alternative measures.

Rapid Reconnaissance Survey of the Vegetable Seed Subsector in Nepal

This RR study was really two different rapid appraisals—one by a team of vegetable seed specialists and a second by a team of agricultural economists. In both cases senior Nepalese analysts were paired with senior expatriate analysts. The principal objective of both RRs was to assess constraints facing the emerging private pro[illegible]n and trade in vegetable seed. The RRs were focused primarily on learning what the [illegible]ogressive private sector participants in the vegetable seed subsystem were doing and how the public sector could facilitate more rapid private sector development. Hence, the Nepal work was targeted primarily to innovators and how to promote their efforts.

A strength of this RR study was the effort that went into the design of structured informal interview guidelines for different groups of subsector participants. The hands-on private sector experience of the vegetable seed specialists was invaluable in providing technical sophistication to the RR study and in enhancing the credibility of the study team. The two RRs provided a balanced picture of technical, economic, and institutional constraints to private sector development of the vegetable seed subsector. Time and resource constraints limited the team's ability to cover the numerous, isolated geographic areas where vegetable seed is grown.

A shortcoming of the Nepal vegetable seed RR was the failure to mix disciplinary skills in the field work. Two teams of one vegetable seed specialist and one agricultural economist each would have provided a better disciplinary mix. More junior Nepalese analysts should also have participated; instead, they were used primarily to gather, enter, and tabulate secondary data.

The RR study was a valuable input into USAID/Nepal's design of an agricultural research and agro-enterprise promotion project. Based on the RR, the team proposed pilot innovations in vegetable seed harvesting and processing technologies. Mechanized but non-fossil fuel technologies developed to harvest and clean vegetable seed in other parts of Asia, such as Thailand and Taiwan, were proposed for pilot testing in production zones. The RR study also proposed institutional arrangements for organizing vegetable seed production and marketing in remote hill areas of Nepal (contracts between traders and villages of producers). The team also described the appropriate role for the emerging national vegetable seed association.

As noted in the introduction, the Nepal vegetable seed RR survey addressed, at least in part, the issue of export market potential and competitiveness. Separate informal surveys were conducted in Bangladesh (Zaman, 1989) and Thailand (Welsh and Kayastha, 1989). Several Nepalese exporters had already shipped vegetable seed to Bangladesh prior to the survey; the analyst focused on obtaining candid assessments of the quality of the Nepalese seed from Bangladeshi importers. He also examined vegetable seed import data and trade regulations. Market research was carried out in Thailand, because Thailand was viewed as a future market

of large potential. The RR survey in Thailand revealed that the market for vegetable seed was highly competitive and dominated by very high-quality, yet cost-competitive, hybrid Japanese seed. Nepalese exporters would have difficulty competing with the Japanese on quality grounds, and Thai vegetable growers are willing to pay a premium for the highest quality seed available on the regional market. Furthermore, Thailand has a much better-developed domestic seed industry than Bangladesh, providing prospective Nepalese exporters with another source of competition.

Conclusion

The **key distinguishing features** of rapid reconnaissance techniques used in these and other studies carried out by the AMIS Project are the following:

- They can be carried out and completed in shorter periods than longer-term, formal research programs (generally under four months).
- They focus on one or more related commodity subsystems.
- They are preferably **multi-disciplinary** investigations, though they tend to be led by agricultural economists or economists.
- They rely heavily on **structured informal interview guidelines** which are used to interview key informants in the commodity subsystem.
- They require direct analyst or **researcher participation** in the inquiry, rather than relying on enumerators who administer formal questionnaires.
- They also place a premium on **field observation** of marketing activities and facilities.
- They focus on **identifying** subsystem constraints or problems, and unexploited opportunities, leaving exhaustive inquiry of identified problems for later, more formal research programs.

The RR methods are useful, policy-relevant exercises at the beginning of longer-term programs of applied research and testing of marketing system innovations. RR can also be used to do focused study updates, and as a complement to a longitudinal, formal research program. Finally, RR surveys can be used to identify agribusiness opportunities, as well as to design, monitor and evaluate USAID-funded projects and policy reform programs.

When used properly and effectively, RR can be an excellent training tool. It engages analysts directly in the inquiry and gets them out of their offices. Junior analysts can work under the close supervision of senior, experienced analysts. Analysts with different disciplinary training and skills can learn from each other in the field, as well as complementing each other in handling different topics in structured informal interviews.

SELECTED BIBLIOGRAPHY

Holtzman, John S., "Using Rapid Appraisal Methods in a Diagnostic Assessment of Vegetable Seed Marketing in Nepal." Chapter in *Rapid Appraisal Data Collection Methods: International Case Studies.* Forthcoming, 1992. World Bank. Prepared originally as a case study for the USAID PPC/CDIE Workshop on Innovative, Low-Cost Data Collection Methods in Development Settings: International Case Studies, 9-11 July 1990, Arlington, Virginia.

Holtzman, John S., and R.B. Munankami. *Rapid Appraisal of the Vegetable Seed Marketing System in Nepal.* Agricultural Marketing Improvement Strategies Project. Bethesda, MD: Abt Associates Inc. 1990.

Holtzman, John S. *Rapid Reconnaissance Guidelines for Agricultural Marketing and Food System Research in Developing Countries.* MSU International Development Papers, Working Paper No. 30. East Lansing: Michigan State University. 1986.

Holtzman, John S., Nicolas P. Kulibaba and Charles J.D. Stathacos. 1992. *Livestock Marketing and Trade in the Central Corridor of West Africa.* Agricultural Marketing Improvement Strategies Project. Bethesda: Abt Associates Inc. 1992.

Shapiro, Kenneth. 1979. *Livestock Production and Marketing in the Entente States of West Africa: Summary Report.* Ann Arbor, MI: Center for Research on Economic Development, University of Michigan.

APPENDIX D

DEBT-FOR-NATURE SWAPS AS OF NOVEMBER, 1991

COUNTRY	DATE	PURCHASER	COST (US $)	FACE VALUE OF DEBT	CONSERVATION FUNDS GENERATED
BOLIVIA	8-87	CI	$100,000	$650,000	$250,000
COSTA RICA	1-91	RA/MCL/TNC	360,000	600,000	540,000
	3-90	SW/WWF/TNC	1,953,474	10,753,631	9,602,904
	4-89	SWEDEN	3,500,000	24,500,000	17,100,000
	1-89	TNC	784,000	5,600,000	1,680,000
	7-88	HOLLAND	5,000,000	33,000,000	9,900,000
	2-88	NPF	918,000	5,400,000	4,050,000
TOTAL, COSTA RICA			12,515,474	79,853,631	42,872,904
DOMINICAN REPUBLIC	3-90	PRCT/TNC	116,400	582,000	582,000
ECUADOR	4-89	WWF/TNC/MBG	1,068,750	9,000,000	9,000,000
	12-87	WWF	354,000	1,000,000	1,000,000
TOTAL, ECUADOR			1,422,750	10,000,000	10,000,000
GUATEMALA	10-91	TNC/CABEI	75,000	100,000	90,000
JAMAICA	10-91	TNC/AID/PRCT	300,000	437,000	437,000
MADAGASCAR	8-90	WWF	445,891	919,363	919,363
	7-89	WWF	950,000	2,111,112	2,111,112
	1-91	CI	59,377	118,754	118,754
TOTAL, MADAGASCAR			1,455,268	3,149,229	3,149,229
MEXICO	4-91	CI	180,000	250,000	250,000
PHILIPPINES	8-90	WWF	438,750	900,000	900,000
	1-89	WWF	200,000	390,000	390,000
TOTAL, PHILIPPINES			638,750	1,290,000	1,290,000
POLAND	1-90	WWF	11,500	50,000	50,000
ZAMBIA	8-89	WWF	454,000	2,270,000	2,270,000
GRAND TOTAL			17,269,142	98,631,860	61,241,133

Source: The Nature Conservancy and World Wildlife Fund, 1991.
Note: Funds generated may be cash or bonds. Figures do not include interest earned over the life of the bonds.

AID = U.S. Agency for International Development
CABEI = Central American Bank for Economic Integration
CI = Conservation International
MBG = Missouri Botanical Garden
MCL = Monteverde Conservation League
NPF = National Parks Foundation of Costa Rica
PRCT = Puerto Rican Conservation Trust
RA = Rainforest Alliance
TNC = The Nature Conservancy
WWF = World Wildlife Fund