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ALTERNATIVE RURAL
DEVELOPMENT STRATEGIES

FOOD SECURITY IN
AFRICA

PROJECT PAPER
AMENDMENT

S&T/RD

June 1, 1984

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE

A = Add
 C = Change
 D = Delete

Amendment Number

DOCUMENT

CODE
3

COUNTRY/ENTITY

Worldwide

2. PROJECT NUMBER

931-1190

BUREAU/OFFICE

3. PROJECT TITLE (maximum 40 characters)

S&T/RD

10

Alternative Rural Development Strategies

PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
09 30 87

7. ESTIMATED DATE OF OBLIGATION
(Under "8" below, enter 1, 2, 3, or 4)

A. Initial FY 77

3. Quarter 3

C. Final FY 88

8. COSTS (\$3000 OR EQUIVALENT \$) =

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	650		650	5,683		5,683
(Grant)	600			2,615		2,615
(Loan)						
1 Missions	50			2,068		2,068
2 Africa Bureau				1,000		1,000
East Country InKind	10			510		510
Other Donors)						
TOTALS	650		650	5,683		5,683

9. SCHEDULE OF AID FUNDING (\$000)

APPRO- PRIATION	3. PRIMARY PURPOSE CODE	C. PRIMARY TECE CODE 1. Grant/2. Loan	D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
			1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
FY	191	059	1,687		928		2,615	
TOTALS								

SECONDARY TECHNICAL CODES (maximum 3 codes of 3 positions each)

639	120	140	250	242	943	11. SECONDARY PURPOSE CO	100
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SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	BR	BU	BS	RAG			
B. Amount							

PROJECT PURPOSE (maximum 40 characters)

To assist LDCs, particularly in Africa, in formulating effective strategies and management processes for dealing with food security problems.

SCHEDULED EVALUATIONS

MM YY Final MM YY
09 87 09 87

12. SOURCE/ORIGIN OF GOODS AND SERVICES

100 941 Local Other/Specify

AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of 2 page 2P. Amendments)

Extension of termination date of this project through FY 87 and increase in funding level from \$1,687,000 in ST/RD funds to \$2,615,000. Mission funding for project increased by \$1,607,000 from \$460,728 to \$2,067,728. Africa Bureau funding will total \$1,000,000. TOTAL funding for project is \$5,682,728.

APPROVED BY

Signature

[Handwritten Signature]

Title

13. DATE DOCUMENT RECEIVED BY AID/W. OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

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EXECUTIVE SUMMARY

Subject: Alternative Rural Development Strategies (ARDS) - A Cooperative Agreement between the AID S&T/RD/RI and Michigan State University (MSU)

Purpose: To extend the cooperative agreement with MSU for three years in order to assist LDCs, particularly in Africa, in formulating effective strategies, institutions and management processes for dealing with critical food security problems.

Background: ARDS was established in 1977 by AID and MSU in response to a need for developing new rural development strategies. In recent years, food security has become a major rural development problem, especially in Africa. Critical knowledge gaps and the need to design new approaches to food security have emerged as the view of food security has evolved from only macro food supply concerns towards a more comprehensive and necessary approach which involves a combination of production, distribution and consumption relationships. This is a joint S&T and Africa Bureau project extension.

Major Focus: During the three year extension period, ARDS will focus on a) The design of improved incentives, (as reflected in a combination of prices, technology and institutions) to expand rural production, income, and effective demand; b) alternative roles and responsibilities of both the public and

private sector in the development of production and reliable food systems effectively coordinated through input and output markets; and c) alternative uses of food aid and related administrative procedures that will more effectively contribute to medium - and longer-term food security goals.

Outputs:

- o Operational guidelines on more effective public and private sector roles in improving national food systems and food security;
- o Guidelines on institutional and human capital investments needed to complement food security infrastructure investments;
- o Improved programs and policies necessary to expand both farm and non-farm effective demand and food security, especially for the rural poor;
- o Improved knowledge about alternative arrangements for achieving specific food system development and security needs;
- o Dissemination of relevant information to different target groups including LDC decision-makers, policy and planning analysts, and food system managers;
- o Design and testing of short-term training programs for donor and host country participants on a range of food security topics.

- o Improved methodologies for conducting food security assessments, for comparative institutional analysis and; improved quantitative techniques and understanding of critical data for designing food system security projects, programs and policies;

Approach: Three types of mutually reinforcing activities will be carried out to achieve the expected outputs:

- o Applied Research Comprehensive research activities will be undertaken in two African countries involving assistance in conducting national food security assessments and designing alternative strategies to most effectively deal with the problems. More sharply focused applied research on specific problems or issues will be conducted in six to eight additional countries, the major objective of which will be to examine specific alternative institutional and operational solutions to food security problems that are similar to those of the two countries involved in the more comprehensive research programs.

- o Networking will be accomplished by an active exchange of working papers with relevant food system research and development practitioners primarily in Africa. Seminars, workshops and information activities will be designed to facilitate exchange of information and methodological developments in order to incorporate the results of a broader spectrum of independent research.

- o Dissemination/Training Activities will produce additional information and publications for targeted audiences including a comprehensive final report toward the end of the three-year project extension. Targeted audiences include LDC policy makers, planners, food system managers and technicians, professional staff in AID and other donor agencies as

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well as other U.S. and international food systems researchers and operators. These publications will present the results of research activities, while research methodologies will be the focus of the networking. On-the-job training will be provided to LDC professional and clerical staff as part of the in-country applied research activities. The series of proposed seminar-workshops on selected topics and issues emerging from the field work will also provide valuable training for LDC and other participants. Further, MSU plans to design and test short-term training programs toward the end of the three-year period for replication in future years.

Implementation: The design and conduct of all project activities will be done collaboratively with host countries and AID missions in some of the 25 African countries in which AID has agricultural policy/planning projects. Tentative candidates for the 2 comprehensive research efforts are Upper Volta, Niger, Mali in the Sahel Zimbabwe, Kenya, Malawi and Zambia from Eastern and Southern Africa.

Seven MSU faculty members will provide 100 to 110 person months on-campus and in the field over the three-year period. An additional 24 to 36 person months of faculty participation in specialized areas will be provided plus another 60 to 80 person months of adjunct faculty and research associates. Further, there will be 10 to 15 U.S. and LDC graduate-level students employed in addition to substantial numbers of host country professional and clerical staff associated with the proposed field studies.

Budget: The total cost of the proposed project amendment is estimated at \$4.075 million of which approximately 50 percent is expected to be derived

from core funding and 50 percent from AID Mission and host country in kind contributions. \$3.7 million of the total is proposed to be divided equally between the two comprehensive country projects and the several more focused country studies.

Project Paper Amendment

I. BACKGROUND AND RATIONALE FOR PROJECT AMENDMENT

A. Alternative Rural Development Strategies Project - Performance and Evolution

The Alternative Rural Development Strategies Project (ARDS), which is being implemented by the Department of Agricultural Economics at Michigan State University (MSU) under a Cooperative Agreement, was authorized in 1977. The primary purpose was to build at MSU a skilled group of professionals to help AID Missions and developing countries in planning and developing strategic programs and projects in rural development.

The motivation for the ARDS project arose from a belief that misdirected theoretical debates and inaccurate assumptions about the realities in rural areas were hindering effective design and development of projects. Rural development projects often tried to deal simultaneously with too many problems such as farm production, off-farm employment, local development, health, education and infrastructure, rather than focusing on the critical issues which could be effectively addressed on a short to mid-term basis.

Although a substantial amount of direct support to missions was provided initially, as the project proceeded MSU and AID/W remolded the work plan in order to concentrate more on applied research and reflection on the



rich body of literature on rural growth problems. A result of this effort was a deeper understanding of the basic elements of rural development including:

- the role and behavior of farm households;
- the critical role of growth in farm production and productivity;
- the major constraints to change, i.e., inappropriate technologies, marketing institutions and government policies;
- the need to develop relevant and adaptable technology at the farm level and appropriate rural marketing institutions within a national food systems context; and
- the critical links between micro-rural level problems and macro-agriculture sector policies and institutions.

As the understanding of the MSU core of professionals grew, they began to concentrate on such central issues as: (1) developing research approaches for the design of small farmer production technologies, including improved data analysis techniques for a better understanding of small farmer constraints and opportunities; (2) designing more effective and efficient rural marketing strategies through adjusting farm output to demand and to national food, employment and income goals; (3) forging improved links between macro policies and rural needs and realities.

In a recent review of nine Cooperative Agreements funded by S&T/RD, the Harvard Institute for International Development concluded that the ARDS project "...has generated important research outputs, some of which have been influential in stimulating the adoption of new approaches to understanding old problems. This has been particularly true of research on farming systems,

marketing and techniques of data analysis." The ARDS Cooperative Agreement "...is notable for the attention it has given to addressing academic, mission, and host country audiences with the results of its research. Often this has occurred less through its publications than through its efforts to influence mission activities and capabilities, to train and supervise graduate students, and to involve host country nationals in ongoing research tasks. In this regard, MSU has encouraged a multiplier effect for its research findings."^{1/}

In recent years food security has emerged as a critical rural development problem. There is a pressing need for applied research to develop new conceptual and operational strategies, particularly in order to link short to mid-term food security to longer-term rural development strategies. Many current rural development programs are being adversely affected by the more immediate need to deal with short term food supply and distribution shortfalls. As a result, in some cases capital investments aimed at achieving long term rural development goals are being threatened. In Africa, especially, these concerns are commanding major attention from national governments and donor agencies.³

As a result of the strong micro-research foundation developed by ARDS in its work on farming and rural marketing systems and the insights MSU has gained into micro-macro linkages, it is clear that the search for solutions to problems of food security cannot be addressed in isolation from such strategic issues of rural development as domestic agricultural production and marketing productivity. Rather, food security must be placed in a national food system context, and be seen as part of the problem of managing the dynamics of rural-urban linkages and growth.^{4/5/6/}

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The ARDS Project has proved to be an effective mechanism for collaborative and indepth problem-oriented applied research. MSU project staff have demonstrated their capability and willingness to collaborate with S&T staff, Regional Bureaus and AID field missions in establishing a flexible and effective mode for conducting applied research and development assistance. They have also demonstrated their capability to produce new insights and knowledge about key rural development problems. The resource base that has been developed through the ARDS Cooperative Agreement and through other cooperative programs with AID can now be used to design new strategies and operational approaches to national food security issues, as an integral part of the longer-run search for solutions to the complex problems of rural development.

B. Rationale for Project Amendment

1. Evolving View of Food Security

The term "food security" first came to prominence during the World Food Conference in 1974, and in the ensuing ten years both the concept of food security and perceptions of how to achieve it have changed significantly. Discussions of food security at the World Food Conference were strongly influenced by the events of the early 1970s, especially the rising real prices for foodgrains that resulted from world-wide shortfalls in production and from increased demand due to population growth in low-income countries, and income

growth in middle-and high-income countries. Higher international grain prices combined with insufficient domestic production in many low-income Asian and African countries to raise the specter of mass starvation. The World Food Council (1984) describes how these events influenced early debates on food security:^{29/}

The first and overriding assumption in the minds of many delegates in 1974 was that the world was entering a period of tight food supplies brought about by population growth, without a cushion of large reserves, and that mass starvation was a distinct possibility. Demand was in danger of outpacing available supplies in the developing regions, especially in Asia. At the same time, demand for grain and meat was expanding in high-income developing countries. In these circumstances, the major food-producing countries would not be able to produce enough grain to meet the demand; nor did it appear likely that such large projected import requirements could even be transported, assuming foreign exchange to pay for them. Moreover, since the balance of supply and demand would at least be close, with little surplus, recurrent food crises were more likely, given climatic variability and man-made disruption. Therefore, new international mechanisms were needed to ensure adequate food supplies.

The view that achieving food security primarily involved ensuring adequate food supplies on a national or sub-national level was reflected in the proposals that emerged from the World Food Conference and from subsequent debates on food security. These proposals focused on (a) increasing food

production in food-deficit countries, thereby reducing their dependence on unstable international markets; and (b) creating a coordinated system of national and international grain reserves to ensure adequate food supplies during emergencies resulting from shortfalls in local production and disruption of food distribution systems due to natural or man-made disasters. The early analyses paid little attention to demand issues, such as ensuring that nutritionally vulnerable groups had the resources necessary to gain access to an adequate diet.

Several events since 1974 have led to a re-evaluation of this approach to food security. First, the recovery of global food-grain production in the mid and late 1970s combined with slackening aggregate demand (due to world recession) led to the re-emergence of grain surpluses in many grain-exporting countries. This has eased fears that the 1980s will be characterized by global food shortages and rapidly increasing real prices for grains. At the same time, world grain markets have become increasingly unstable, in part because many nations have attempted to insulate their domestic food systems from the world market in order to avoid disruptions like those suffered during the early 1970s. For many countries, particularly in Asia, an important part of food security has, therefore, come to involve issues of risk management and the coordination of national policies with the international market, as well as increasing domestic production and maintaining food reserves.

As the short-term food crises of the early 1970s eased, attention shifted from how to deal with acute food crises, such as famines, to the more intractable problem of dealing with chronic hunger. Despite ongoing debates over the number of people suffering from protein-calorie malnutrition,

researchers, government officials, and donor agencies became increasingly aware that a significant proportion of the world's population faced chronic, as opposed to acute, malnutrition. Furthermore, it became apparent that most of these people were malnourished not because the aggregate supply of food was inadequate but because they lacked the resources needed to gain access to that supply. Greater attention began to be given to factors influencing the poor's effective demand for food, including the ability of the food system to generate employment and income for the families of the malnourished.

Accordingly, the definition of food security broadened from one of simply assuring an adequate supply of food to one that stressed the need to ensure that "food-deficit countries, or regions or households within these countries...meet target levels of consumption" a view that incorporates the effects of both supply and demand.^{27/} In addition, there was increasing recognition that understanding the supply side of food security required more than simply understanding international trade and domestic farm-level production. The functioning of agricultural product and input markets determined the ability of Third World countries to provide an adequate supply of food for their citizens, and understanding how such markets work was seen as absolutely critical in developing ways to improve food security.

The need to understand the domestic food system has been reinforced by the changing food-security goals of developing countries. As global food supplies increased in the late 1970s, many countries replaced their goal of "food self sufficiency" (autarchy) with the broader goal of "self reliance", i.e., developing an appropriate mix of domestic production, price, trade,

technology, marketing and other policies to meet their food-security objectives. Developing such a mix requires a much more detailed understanding of the food system than that proposed by earlier, more rigid and unrealistic food security goals.

Since 1970 there has also been increasing recognition that domestic policies, particularly price, monetary and fiscal, foreign exchange, credit and marketing policies, have contributed to the food insecurity of many developing countries, particularly in Africa, by discouraging domestic agricultural production, creating barriers to effective food distribution and storage systems, and limiting income growth of the poor, particularly in rural areas.^{3/16/} This has led to a number of donor-assisted efforts to help Third World countries reform their domestic food policies (e.g., S&T's Agricultural Policy Analysis Project and the Africa Bureau's 20 bilateral policy reform projects). It has also given rise to a debate over the degree to which price policy reforms can increase food system efficiency without complementary investments in agricultural research, extension and institutional reform.^{19/21/26/}

Since 1974, the focus of international food security concerns has also shifted increasingly towards Africa. Although the absolute number of malnourished is greatest in Asia, the incidence of malnutrition is higher in Africa.^{29/} Moreover, most Asian countries have made great strides in increasing domestic food production and reducing their dependence on imports over the past decade. "Africa, on the other hand, seems to be living out the 1974 fears. Food production has fallen well behind population needs, and

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external food supply has become increasingly essential."^{29/} Food security analysis during the 1980s will, therefore, have to pay increasing attention to the reasons why African food systems have been performing so poorly.

2. Gaps in the Knowledge Needed to Address Food Security Issues

Since 1974, a substantial effort has been focused on international trade issues and macroeconomic factors at the national level which affect food security such as price policy and exchange rates. The World Food Council sponsored Food Sector Strategy studies in many African countries have also contributed to better understanding of national level policies and investment strategies which need to be reformed if food security goals are to be achieved. However, these latter strategies often do not view the food system in its entirety, linking macro-policies and investment strategies with the critical micro factors such as farm level incentives, marketing system operational realities and institutional and administrative capacity. Often the implementation plans that result from the strategy studies lack realistic short to mid term priorities and alternative policy, investment, and project plans. Although advances are being made, based on our discussions with WFC and other researchers working on food security issues, the state of knowledge is such that a comprehensive, systematic and interdisciplinary approach to the food system is still lacking and many important issues have not been addressed properly within this framework. This section outlines major gaps in the knowledge needed to design effective food policies and programs and how the ARDS Project will help fill these gaps.

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Previous research has focused on five dimensions of food security:

- (a) grain reserves, imports and food AID; (b) domestic food production; (c) domestic marketing of food and agricultural inputs; (d) food consumption, and
- (e) national food security planning and the design of food strategies.

A. Grain Reserves, Imports and Food AID

Research on grain reserves and imports has been a major focus of work by the USDA, IFPRI, and other international organizations. Much of this has focused on the appropriate design of storage facilities, the management of stocks, the relative efficacy of using food reserves versus insurance approaches (such as the IMF's new compensatory financing facility) to ensure stable food supplies, and the possible roles of commercial imports and food aid in achieving food security. For examples of how this research helped create the IMF Cereal Import Facility, see Adams, who discusses the research of Valdes, Konandreas, Ramangkura, and Huddleston.^{14/} These researchers have provided valuable insights into several aspects of food security, including the high cost of trying to maintain food security solely through a system of international grain reserves. Yet the research has often implicitly assumed that most agricultural production passes through well-functioning markets and that governments hold a significant share of total grain stocks, assumptions that are particularly inappropriate for the poorest countries, especially those in Africa.^{20/} Similarly, relatively little attention has been paid to private storage as an important part of national food systems, and the perverse policy and institutional incentives

that are a barrier to effective storage and distribution from existing (or potential) reserves.

There is widespread agreement that Food AID is likely to become increasingly important to African countries during the coming decade, yet research has given relatively little attention to the effects of expanded quantities of food aid, and especially to the management and creative use of the resources generated by this food aid (both the foreign currency derived from food aid sales and the physical capital created through food-for-work projects). Given the food shortages and budgetary constraints facing many low-income countries in the coming decade, however, the resources generated by food aid may be one of the few means available to finance needed improvements in domestic food systems to enhance food security. A recent study by Huddleston reaches a similar conclusion: "But without clear provisions for using food aid and the funds it generates to improve the marketing systems...use of food aid may meet short-run needs at the expense of long-run development. Much more research is needed on the policy processes and institutional constraints within countries before policy makers can know how much food aid they can use effectively."^{17/}

Research to be conducted under the extended AFDS Cooperative Agreement will focus on how domestic food systems and farmers and marketeers react to price policies, import procurement programs and international markets. This is a needed complement to previous and ongoing work at the more macro and international level, and it will provide more realistic information about how merchants, farmers, and consumers are likely to react to changes in

national institutions and policies. For example, MSU researchers will investigate how both uncertain and inappropriate practices and policies determining imports of foods affect private incentives of producers and merchants to store grain, and how these procedures and policies could be modified to achieve desired results with regard to stabilizing producer prices, food supply and consumer prices. Such operational approaches as price risk management, forward contracting, fixed grain import ceilings and private sector marketing agreements will be considered in terms of the impacts on the total system performance. MSU will also look at ways in which policy makers can set up a strategy within the import strategy framework for the effective utilization of food aid to achieve food security and development goals. Some important approaches that will be tested are: long term food aid programs with flexible commodity mix; use of commodity imports to change demand patterns to fit food consumption goals and realistic food production potential (e.g., increase consumption of sorghum and millet and reduce maize mono-consumption patterns in Southern Africa).

By also addressing priority issues related to the use and management of food aid, and the resources created by it, the ARDS Project will develop policy guidance in an area that is increasingly important in Africa.

B. Domestic Food Production

Efforts to expand domestic food production in developing countries have long been supported by AID and other donors. The ARDS Project has been deeply involved in these efforts, particularly through its work on food marketing and farming systems research and extension. In addition to

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encouraging expanded research and extension, donor efforts have focused on the creation of improved infrastructure (e.g., input supply and distribution, including irrigation; grain warehouses; output assembly and distribution; slaughter and other processing facilities) and more recently, the reform of agricultural and macro price policies.

The payoff in these efforts, however, is critically dependent upon complementary institutional reforms. For example, the lack of appropriate institutions and management skills have severely limited the actual benefits realized from sizable investments in grain storage and livestock slaughtering facilities, in new rural assembly and wholesale markets, and in fertilizer production and distribution plants. The needed complementary institutional arrangements include functional linkages of new infrastructure with adjoining production and marketing stages in the food chain. There are many examples where needed facilities are greatly under utilized, are rapidly deteriorating, and in some cases, have been abandoned. There are also cases of large investments in inappropriate infrastructure. MSU will look for operational criteria and means to establish priorities for infrastructure investments which include judging institutional capacity and which satisfy the real food system requirements in terms of other system components, marketing efficiency, etc.

Similarly, the payoff to reforms in price policy often depend on complementary institutional reforms and the coordination of price policy with agricultural research and extension. How a change in price policy affects farmers' production decisions depends on how the private and public marketing

systems work, the nature of the farmers' technology, their access to additional production resources, and their alternative income-earning possibilities. In order to plan effective price policy, knowledge of these relationships is essential, yet much of the discussion of price policy remains at a macro level and has paid insufficient attention to these micro relationships. Shapiro, using World Bank data for Africa, demonstrates that without complementary research, extension, and institutional reforms, price policy is unlikely to have a marked impact on increasing aggregate food production.^{26/} Krishna comes to a similar conclusion for Asia.^{19/} MSU's work will be focused on short term operational approaches to assure consistency and complementarity in the development of technologies, policies, institutions. One area to be explored is how to capitalize on farmers' production knowledge of drought resistant crops such as sorghum and millet through coordination of price policy, adaptive research and marketing systems improvements to complement production of other less drought resistant food crops such as maize. Another area of importance is a review of comparative experience in countries where price policies have achieved increases in food production to determine what other technological, input supply and extension systems improvements were necessary and sufficient. The hope is that operational criteria can be developed for the kind and level of complementary investments in the production and marketing support systems to make price policy effective.

C. Domestic Marketing of Food and Agricultural Products

A third area of research related to food security has focused on the functioning of domestic marketing systems and the design of market policies and institutions. MSU researchers have pioneered the subsector approach to analyzing food system performance. 5/7/23/24/27/29/ Its approach is interdisciplinary and integrates market and price policies, regulatory factors, demand and consumer behavior, institutional structure and performance and commodity system flows. 15/18/

Although past research has contributed greatly to our understanding of how food systems work in many countries, significant gaps remain. For many countries, particularly in Africa, basic descriptive and diagnostic studies of the food system are still lacking, and without these, designing food policies becomes an exercise in "planning without facts." For example, the conclusion that the way to increase small farmers' incomes is to raise the prices of the grain they grow may be completely wrong if those farmers have to sell their grain at harvest and later buy it in the market place for consumption.

Even where diagnostic studies have been carried out, significant barriers to the design of effective policies may remain. In particular, the institutional options open to countries to solve food security problems have not been addressed in the context of operationally effective solutions which fit into the existing food systems. For example, diagnostic studies, including short-term technical assistance missions by AID, the World Bank, FAO

and others, have often documented the poor performance of parastatals in carrying out marketing activities. Although it is clear that alternatives to parastatals are needed in the food system, it is not always clear what these alternatives could or should be. In many developing countries, the market for agricultural inputs such as fertilizer or for agricultural processing services may be so small that it can support only one or a few efficient-sized plants. Simply turning these plants over to private entrepreneurs may, therefore, lead to serious problems of monopoly or monopsony. Alternative institutional arrangements will be explored such as franchising, management contracts, and cooperative ownership for providing these inputs and services. Analyzing alternative institutional solutions is as necessary a complement to policy analysis in the marketing area as it is in the production area.

D. Food Consumption Issues

Factors affecting levels of food consumption, both in the aggregate and by nutritionally vulnerable groups, have received considerable research attention. Analyses have ranged from investigation of the nutritional consequences of agricultural development projects (Pinstrup-Andersen)^{22/} to inquiries into the consequences of and alternatives to generalized food subsidies (Scobie).^{24/} Food aid, targeted food subsidies and supplements, retail price policy, and how food policies affect the income earning opportunities of the poor, have also been addressed. The research has underlined a basic dilemma: food prices play a dual role in the economy, serving as incentives to food producers and as major determinants of the real income of the poor. Therefore, "reforming" food policies by simply raising

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food prices in order to promote agricultural production may severely affect the nutritional well-being of the poor. Many countries, however, are facing increasing pressure from the IMF and other international organizations to raise farm prices and reduce food subsidies in order to promote more efficient long-term growth. Yet the ability of these countries to undertake such reform is often very limited. The privation such price increases would inflict upon the poor are a genuine concern as are the political consequences of such action (witness the recent food riots in Tunisia, Brazil and the Dominican Republic). Furthermore, in many countries, the government is a major employer and hence, higher food prices which usually lead to higher urban wages, imply a burgeoning government deficit. Timmer, Falcon, and Pearson argue that developing means for countries to deal with this basic dilemma is the major challenge of food policy analysts in the coming decade.^{28/}

One way of addressing the problem is through reducing marketing margins for food. Marketing margins in Africa are high. In many instances, these margins reflect high costs of assembly, transportation, storage, transformation, and risk rather than the extraction of monopoly gains by merchants. The typical "solution" to these high margins in the past has been the imposition of price and margin controls and the creation of parastatals to handle the marketing functions more "efficiently" than the private trade. These solutions have seldom worked. Alternatives are needed to help developing countries capitalize on one of their few opportunities to increase farmers' incentives to produce food without adversely affecting consumers, particularly the already malnourished. Institutional arrangements such as

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voluntary wholesale/retail chains, cooperative wholesale/retail chains and the role of government in stimulating these institutions, are subjects which need to be researched.

E. National Food Security Planning and the Design of Food Strategies

A fifth major food security activity has been national food security planning, including the design of national food strategies. Designing a food strategy involves working with policy makers to spell out food system goals, designing policies and programs consistent with the country's resource constraints, and trying to coordinate the actions of various ministries and interest groups to help achieve those goals. For national food security planning to become more than simply an exercise that is rapidly performed by short-term expatriate consultants and rapidly forgotten by government ministries, it is essential that developing-country researchers and government officials be trained and intimately involved in the generation and analysis of data on the food system and in the planning activities. The ARDS Project will attempt to determine what constitutes an institutional minimum critical mass to develop, implement and continuously manage an effective food security strategy in terms of the human capital, data requirements, and methodology/analytical tools. This will include an emphasis on developing and/or utilizing microcomputer applications software to assist in cost effective analyses and planning to solve selected critical food security problems.

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3. MSU's Capability to Help Fill These Knowledge Gaps

a. Michigan State University has a unique and important capability to deal in a systems context with problems of rural and agricultural development. This proven operational ability to approach and understand the complex world of development problems and their interactions has emerged from work on constraints to improved farming and marketing systems in the ARDS Cooperative Agreement, and from prior AID funded projects in agricultural systems analysis, marketing systems and rural employment generation. MSU is recognized as one of the important national centers of excellence that has contributed directly to AID and developing countries improved conceptual approaches and ways of looking at rural development problems, new knowledge about the nature of the food and agricultural systems and component interactions in developing countries and; the production of well trained development problem solvers.

The earliest contributions of MSU to a systems approach to agricultural sector growth through its system's/simulation models has led to not only a comprehensive analytical capacity of the MSU faculty but improved understanding and action of the international development community including AID. Since the early 1970s it has been an accepted and institutionalized approach to development to do sector assessments and sector analyses particularly in dealing with agricultural development problems. MSU's work, although often viewed in a controversial atmosphere by some development

practitioners, helped greatly to not only advance the idea of systematic and systems approaches to agricultural development but also defined many of the critical variables such as national macro-economic policies which must be included in an analysis and design of any intervention strategy in agriculture.

The same systems view was extended by MSU to its intensive research the problem of marketing in agriculture, long viewed as a problem and often attacked in such narrow terms as market place infrastructure, roads and grading and standards. The MSU contribution was to redefine the market as a system of interactions among producers, marketers, transporters, assemblers, wholesalers, retailers and consumers operating within policy, institutional and profit oriented relationships. Development practitioners and LDC policy makers are beginning to understand important a role the market plays in negotiating the producer/consumer terms of trade and its potential as the means for energizing growth in trade.

Systematic analysis of the dynamics of rural growth and the impact of increased agricultural productivity and income in the early 1970s by Mallor and others led MSU to consider the interactions and supporting relationships of on-farm and off-farm employment and the synergistic effort of growth in income in one area or the other. MSU's work in off-farm employment has provided a strategic approach to this problem and contributed a systematically derived knowledge base for future action.

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Again, under the current ARDS project, MSU applied its conceptual framework and systems tools to the problems of technological innovation in agriculture viewing broadly the way the real world operates and the critical role that the farm family plays in decisions that affect the pattern of growth. The result of its efforts is a new set of assumptions about the income optimizing strategy of the small farm family and the critical importance of adapting technology to meet the farmers' real problems. Their work did not define the need for a "farming systems" research approach to small farmer problems but confirmed its validity.

The conceptual/systems approach of MSU has been further extended and is being applied to the problem of food security within the food systems framework in African countries. Some of the early concepts have been characterized by Shafer in his articles on food systems. This work, which expands on earlier work in marketing systems and agricultural sector dynamics is expected to lead to more critical perceptions of the food sub-system and a richer comprehension of the interaction of policy, institutions, organizations and people in food production and consumption activities.

MSU has developed a unique competence to address many of the identified critical food security research and policy issues within a food systems framework. Such capabilities are needed to help fill the critical knowledge gaps that have emerged as the view of food security has evolved from only macro food supply concerns towards a more comprehensive and necessary

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approach which involves a combination of production, distribution and consumption relationships. The ARDS core staff group has both a strong commitment and substantial experience in dealing with these issues in many parts of the world and the skills of the core staff in the Agricultural Economics Department are complemented by faculty from business and technical fields of food production and processing.

7/ MSU's over 20 years of experience in micro-level production and marketing research in Africa, along with its strong ties with African research and policy institutions, will serve as an important foundation for much of the work to be carried out in Africa. In addition, insights drawn from the experience of MSU researchers in Asia and Latin America will facilitate comparative institutional analyses which might involve, for example, comparing grain supply stabilization institutions and formal and informal contracting mechanisms across several countries.

More recently, MSU has been deeply involved in several applied research and human resources development activities related to food security in Africa. Most notable of these are the Senegal Agricultural Development and Planning Project and MSU's involvement in Zimbabwe. In the Senegal Project, MSU staff are working collaboratively with Senegalese to develop both micro-and macroeconomic analysis units within the Senegalese Agricultural Research Institute. These units will analyze farm-level, marketing, institutional and international trade constraints to food security in Senegal, and design ways of relaxing these constraints. Research under the extended ARDS Project will be closely coordinated with work of the Senegal Project.

Since 1983, MSU has also been heavily involved in Zimbabwe through the ARDS project. Carl Eicher has spent the last 16 months in Harare, working with the RDO/Southern Africa Regional Program on a number of issues related to agricultural development and food security in Southern African countries. The College of Agriculture and Natural Resources at MSU recently was awarded a multi-year institution-building contract with Penn State to help the University of Zimbabwe develop and improve its curriculum and faculty training in agriculture. Research under the extended ARDS Cooperative Agreement will build upon the knowledge and institutional ties developed from these activities.

The knowledge gained from earlier work as well as the current ARDS Project from studies of micro-level farm production and marketing issues and on cost-effective data gathering and analysis techniques also adds to MSU's foundation for future work. The Harvard review of the ARDS Cooperative Agreement recognized the high potential of MSU researchers to build upon previous ARDS research to address food security issues:^{1/}

There is room for the MSU research team to address a series of issues that is clearly related to their ongoing concerns. These range from research on the linkages between agricultural production and marketing to the policy framework for promoting more effective food security systems (see Shaffer, 1983). Both these broad topics imply research to explore urban-rural linkages more fully and to explore the relationships between macro policy and micro behavior. Related

also to MSU's interests in marketing are the issues of institutional innovations that would encourage greater efficiencies and comparative institutional analysis that would provide insight into alternative ways to improve performance.

Its role as a premier graduate training institution in agricultural economics and development, particularly as it applies to Africa, will enhance MSU's capability to carry out research under the Project. Graduate students from the countries in which the research is to be conducted will participate in designing and carrying out the research. Their knowledge of local conditions and institutions will contribute to more effective research, and their involvement will help build a core of local professionals knowledgeable and interested in the types of ongoing applied research necessary for developing countries to build successful food strategies.

II. DESCRIPTION OF AMENDED PROJECT

A. Project Purpose

The central purpose of the project is to assist less developed countries, especially in Africa, in formulating alternative institutions and management processes that deal with critical short- and medium-term food supply problems, and that are consistent with longer-term strategies for achieving more reliable, productive and dynamic food systems that benefit both producers and consumers.

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Specifically, the project will: (1) develop new knowledge, operational approaches and analytical methods that enhance the ability of governments to identify problems, analyze program alternatives, and formulate strategies that achieve food security goals; and (2) develop new understanding of how to upgrade institutional and professional capabilities for managing national food systems.

B. Conceptual Framework and Methodological Approach

The sensitive nature of research on policy and institutional alternatives makes it necessary to design research that addresses important problems within the context of the social, economic and political conditions of each country. The conceptual and operational framework for this project recognizes this constraint and draws upon the core project staff's experience in conducting collaborative field research on problems of agricultural production, market organization, agricultural sector planning and policy formation.

Selected food-security problems and policy issues will be analyzed within a "food system" framework, which facilitates the identification of operational constraints and the design of institutions and policies to bring about desired development results. Emphasis is on dynamic processes for achieving expanded food production, more productive use of resources at all stages in the system, and a politically acceptable distribution of the gains and losses that would occur with the proposed policy and program modifications.

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The MSU concept of a "food system" is comprehensive. It consists of major commodity sub-sectors such as grains, livestock, fruits and vegetables, each having unique characteristics that derive from the biological characteristics of the products and the institutional arrangements for coordinating their production, processing and distribution. The commodity sub-systems may also include components oriented towards export as contrasted to domestic markets and subsistence production. Input distribution, transportation services, research and information flows, and government policy and regulations are additional components of an organized food system. 7/27/

Food systems evolve within a broad pattern of economic development, which includes rapid growth in urban populations accompanied by shifts in demand for different types of food, increased specialization in farm-level production, growing rural household demand for purchased food, farm production inputs and consumer goods. In many African countries, this process is still in a relatively early stage within this more general evolutionary process. Furthermore, each country or region has a unique pattern of evolution that reflects that area's historical background and resource endowment.

The performance of a food system is dependent upon the effectiveness of coordination of markets which link participants in subsectors. The coordination problem is complicated by high levels of uncertainty in the real world. Special emphasis will be placed on finding improved means of coordination including institutional means of reducing uncertainty.

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The approach to the applied research that will be undertaken in this project will be pragmatic and eclectic. The approach to be taken to some food security issues might be characterized as an elaboration of the structure conduct-performance framework of industrial organization analysis, although efficiency assessments and the subsequent attempts to design and analyze possible modifications in policies and institutions will be within a more dynamic systems context than has been common in many other economic studies.^{5/23/} Furthermore, ARDS staff will utilize the micro level (rural household and marketing firm) research methodologies and findings that have emerged from the ARDS project in assessing firm level responses to changes in policies and institutions.

As indicated below in Section II-D, an important result of this project will be improved methodologies for conducting research on food security problems. Of particular concern is the need to develop cost effective methods that can be used by professionals in the developing countries.

C. Major Areas of Project Focus

It is essential to utilize a food system or economy-wide framework in sorting out and systematically advancing operational approaches to food security issues, although the project will not attempt to focus on all dimensions of the food system, nor to duplicate important research being done by others. It will, instead, give priority attention to a selected set of

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problem areas in an effort to fill the emerging gaps in knowledge needed to address a complete and internally consistent set of food security issues. The major areas of project focus include:

1. The analysis of how alternative structures of incentives, as reflected in prices, technology, and institutions, influence whether farmers devote their resources to expanding domestic food production, export crop production, or other employment activities which can increase their incomes and effective demand for food.
2. The analysis of alternative roles and responsibilities of both the public and private sector in the development of productive and reliable food systems effectively coordinated through input and output markets. This analysis will include investigation of investment needs and incentives, alternative ownership and management arrangements and other necessary institutional, infrastructural and technology changes, which structure the nature of the market.
3. The analysis of alternative uses of food aid and administrative procedures that will contribute to medium- and longer-term food security goals.

D. Outputs

Three activities will be carried out by the project: (1) applied research in selected national food systems; (2) networking; and (3)

training/dissemination. The expected outputs from these three sets of activities are the following.

1. Applied research results for AID and host country users on selected food security problems in 6 to 10 countries over the life of the project. Priority will be given to Africa, and at least two of these will be in-depth country studies. Research results will contribute to solutions in the following priority problem areas:
 - a. Operational guidelines on more effective public and private sector roles in liberalizing trade and marketing functions, and in improving the efficiency and effectiveness of national (input and output) marketing systems.
 - b. Identification of institutional and human capital investments needed to complement food security infrastructure investments like grain storage facilities, food and input processing plants, rural assembly and wholesale markets and others.
 - c. The effects of alternative import substitution and domestic food security policies on farm level production, income and food security, as well as on net foreign exchange savings.
 - d. The effects on food supply response to changes in price policy in relation to changes in institutions, technological and human capital improvements.
 - e. Improved approaches to using food aid and the resources it generates to improve national production and marketing systems.

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- f. Improved understanding of programs and policies needed to expand both farm and non-farm income and effective demand in rural areas, and thereby increase food security, especially for the rural poor.
2. It is expected that the work necessary to produce the primary outputs will result in methodological advances in the following areas to assist national food security planning.
 - a. Improved methodologies for conducting food security (strategy) assessments, based upon review and evaluation of assessment methodologies that have been used by the World Food Council, FAO's Committee on World Food Security and other organizations, and from assessments carried out as part of this project.
 - b. Improved quantitative techniques, with emphasis on applied food system analysis to permit quantification of basic food system micro-macro flows and interactions, and anticipated changes in these as a result of alternative programs and policies. This will include the development of cost-effective techniques to collect, process, manage and analyze food security data utilizing low-cost micro-computer technology.
 - c. Improved conceptual models for determining minimum critical data needs relative to designing and implementing food security projects.

- d. Improved methodology for conducting comparative institutional analysis and obtaining needed knowledge about the potential of alternative arrangements for coordinating food production, marketing, and consumption decisions. Primary focus will be placed on developing better methods to analyze alternative forms of market organization, standard business operating procedures, management practices, and public rules, regulation and facilitation practices.
3. A series of working papers and project reports as well as seminars and workshops will be used to disseminate relevant information to different target groups, including LDC decision makers, researchers and food system managers. The working paper series and workshops will also be used as a project coordination and implementation mechanism by serving as a means of obtaining and sharing information among project participants as well as analysts and researchers from outside the project. (This idea is explored in greater detail below in the discussion of the project's operational approach.)
4. Tested designs for short-term training programs for donor and host country audiences (decision makers, planners, analysts and operational personnel) on the research and methodological contributions described above.

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E. Operational Approach

1. Project Activities

(a) Applied research will be conducted in 6 to 10 countries during the proposed three-year extension of the project. The research will be conducted in African countries but other regions may also be considered. In at least two countries comprehensive intensive applied research activities will be undertaken to assist planners and analysts at the national level in conducting and/or implementing food security assessments and in designing alternative project, program and policy solutions to identified system-wide problems. More sharply focused applied research will be conducted in up to 8 additional countries. The objective will be to examine alternative institutional and operational solutions to food security problems which are similar to those of the two countries receiving the more comprehensive research focus. This approach will utilize cross-country comparisons of specific but generalized food system problems. The focused research agenda will be developed largely from key issues identified in the comprehensive work in two countries. However, there are some issues and problems in many African countries such as parastatal management of marketing, domestic incentive structure for food production and management of food aid and imports which are of such general concern that focused cross country comparative research can begin early in the project.

The focused research in 6 to 8 countries will not deal with only one issue. The intent is to develop comparative research findings in a sufficient

number of countries to assure general applicability of results. In any one country more than one issue will be researched so that the work in 6 to 8 countries will result in perhaps 20 to 25 studies. The distinguishing factor of the focused research is that it will not include in-depth assessment of the entire food system within a country.

It is expected that the research findings will be more extensive than the specific studies directly financed by the project as a result of two other operating characteristics of the project. The first is that in the two comprehensive research efforts, past and on-going studies by the host country and donors will be piggybacked. Second, the networking activities will seek to tap into and influence the design of other research and study efforts in African countries not involved in the applied research.

All applied research under the project will take into consideration the interrelationships and interdependencies of the various components of the food system. Particular attention will be given to the macro- and micro-economic linkages. In addition, a major effort will be made to build a ribbon-type connection with other pertinent research and technical assistance projects in order to exchange knowledge and insights with other professionals working on similar issues. (See b below, Networking).

All applied research done under the project will be complementary to and collaborative with food system and agricultural planning analyses, studies and projects of the host country and the AID mission. Applied research

project activities will be selected and developed by MSU in collaboration with ST/RD, Regional Bureaus, AID missions and host countries. Within selected countries, ARDS personnel will work with local public and private research institutions in designing and carrying out applied research. Research will be designed to produce useful results for the countries or regions being studied as well as of value to AID in formulating Agency policies and in analysis and design of programs.

During the first year of the amended project, at least one comprehensive and three focused applied research efforts will be initiated in Africa. Upper Volta, Mali and Niger in the Sahel and Kenya, Malawi, Tanzania, Zambia and Zimbabwe in Southern Africa, are possible candidates for comprehensive research. A second comprehensive applied research effort will be initiated the second year of the project along with several additional focused research activities. The first annual work plan which will be developed as the first implementation activity will specify the selected countries (also see para 2 and III A below).

(b) Networking: (Preliminary) working papers will be developed in the initial phase of the project dealing with the topics described in the output section. These papers will be based upon the accumulated knowledge of the project researchers, a systematic review of previous reports by outside researchers and discussion with AID and country officials concerned with food

security in countries being considered as research sites. Subsequently more refined papers, including results of operational research under this project, will be prepared on specific subjects and also disseminated through the network of participants in the project as well as to other interested parties in selected universities, international centers and in LDC institutions. These networking activities which are designed primarily to advance and exchange knowledge and information among researchers, should assist in placing the results of various independent efforts into a more comprehensive food system framework.

Seminars, workshops, and newsletters will be the principal means for facilitating the flow of ideas and knowledge among network participants. A workshop will be held during the first year of the amended project for the purpose of creating the network and incorporating the relevant participants. The workshop will consider such topics as:

- (1) identifying problem areas within the food system;
- (2) evaluating the efficiency of specific interventions; and
- (3) formulating researchable hypotheses; and
- (4) designing methodologies and procedures for collecting, analyzing and interpreting country specific data.

Subsequent seminars/workshops will be specifically designed and scheduled as the need and opportunities arise. A major international seminar toward the end of the project period is tentatively proposed primarily to serve as a focal point for a final comprehensive project report.

(c) Dissemination/Training: The networking activities and the working papers described above will be important means of disseminating project results. Additional publications will be prepared for targeted audiences including developing country planners and policy makers, professional staff in AID and other donor agencies, development practitioners and other researchers. A comprehensive final report will be prepared during the third year of the amended project.

Many of the proposed project activities contain training elements. Applied research and country assessments will be essentially combined research/technical assistance activities, wherein participants learn by doing. The project will employ host-country professionals and students in the data collection and analysis phases with on-the-job training as a major element. LDC officials in the countries where applied research is conducted will also benefit from regular contact with ARDS staff. Also, the proposed seminars and workshops will be designed to achieve training objectives for LDC participants. In addition, MSU will design and test pilot short-term training programs for LDC and other participants during the third year of the extended project by which time adequate methodological experience as well as actual research results should be available to extend to others in a more formal training mode.

2. Selection of Countries for Applied Research.

VII

In selecting the two countries for comprehensive study, one important criterion is to identify countries with significant differences in the way their food systems are organized. A second criterion is to pick countries with varying degrees of success in solving their food security problems. The scenario for selection based on discussions up to now with Africa Bureau and ST/RD personnel would probably be as follows:

One country from the Sahel would be selected from among Upper Volta and Mali and Niger. These countries have serious and persistent food deficits and have to rely on food aid and imports for basic food grains. They are primarily sorghum and millet consumers but there have been significant increases in rice and wheat consumption. They have serious problems in the structure of domestic incentives for basic grain production and; grain marketing boards, though they do not monopolize grain marketing, play a disruptive role in the market. These countries have a small farmer strategy.

The second representative regional area of concern is eastern and southern Africa. One country from among such AID countries as Kenya, Malawi, Zambia, Tanzania, Zimbabwe would be chosen. This region is primarily a maize consumption area but wheat and rice consumption are increasing rapidly. By and large these countries have recently been self-sufficient in maize production or have the current productive capacity to be self-sufficient (e.g. Kenya, Malawi,, Zimbabwe have exported maize in the recent past). All these

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countries have small farmer strategies but many are also dependent on large scale, high technology grain farmers. There is a need for adapted maize production packages for the region. With some exceptions, grain marketing boards dominate the food trade in a near monopolistic manner, but these boards may be phased out or have a reduced role in the market. Most of this region has had heavy government involvement in pricing policies which is being reconsidered by these countries. Interregional trade issues are also prominent in this area including such questions as market distortions created by South African grain production and market policies.

Other important criteria include the receptivity of the A.I.D. mission and country officials to the proposed research, the availability of in-country professionals to participate in the studies, the availability of secondary data and the complexity of the food systems (with preference for less complex systems). Another criterion is the potential for making a significant contribution to the achievement of food security through institutional innovation in food system organization, which requires at least some minimum level of political stability and willingness of the government to adopt policies to meet food security goals. Further, the two countries selected for more comprehensive applied research should have already participated in a food sector assessment or have made a commitment to carry out such an assessment in the next year or so.

The criteria for selecting countries for the more focused studies of specific institutions and/or problems would be similar to that for the more

comprehensive study countries except that emphasis in the former would be examples of success and failure to provide the basis for comparative analysis. For example, a comparison of more successful and less successful small farmer marketing cooperatives in two or more countries would be of interest for specific examination. Other issues which would be candidates for specific studies include: price stabilization arrangements, public and private agricultural input distribution agencies, commodity-based parastatals, food distribution parastatals, innovative private sector marketing agents at wholesale and/or retail level, and price and market regulations.

Using the preliminary working papers as a guide, the first step in conducting the two comprehensive studies in the selected countries will be a diagnostic review of food system performance especially related to food security. The emphasis will be on (1) identifying barriers to improved performance, (2) market, bureaucratic and political failures and (3) the identification of critical issues. This will be followed by analysis of probable consequences and problems in the implementation of institutional changes designed to improve food system performance. A report useful to policy makers planners, operators and research officials in the respective countries will be prepared at the end of the study period.

The studies of specific institutions will focus on issues believed to be critical to improved food system performance. An attempt will be made to identify institutional arrangements which are effective in promoting food security. Reports will be written to be useful to the various levels of policy, planning, operational and research staff in the countries in which the

studies take place as well as to similar officials in the two countries selected for comprehensive study.

The studies will not be limited to observations of existing institutional arrangements. Rather, ARDS staff will analyze the appropriateness of institutional innovations not presently found in the environments of the LDCs under study. This analysis will focus on predicting behavioral responses to changes in incentives associated with particular institutional arrangements. In each case, a working paper will be prepared on the results of this institutional analysis.

Drawing upon the working papers, reports from the country studies and accumulated reports from other sources, a series of reports on specific issues will be prepared and disseminated to decision makers, researchers and managers throughout the life of the project. These reports also should be helpful in planning training programs designed to be useful to decision makers in LDCs responsible for food policies and programs. Based upon the same sources a final report will be prepared at the end of the project addressing the general question of food security in LDCs.

3. Coordination with Related AID and Other Projects

The amended ARDS project will establish and maintain contacts with professionals carrying out related work in the World Food Council, the International Food Policy Research Institute, the World Bank, other universities and research centers. A concentrated effort will be made during

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the early stages of this effort to explore opportunities for coordinated development of research methodologies and programming approaches to food security problems. In addition, the networking activities described earlier will be an important mechanism for maintaining working relationships with other related applied research and analytical efforts underway in African countries (both AID and other donor activities).

It is of particular importance that this project both complement and supplement related AID research projects, especially the S&T/AGR Agricultural Policy Analysis Project (APA). The APA project emphasizes short-term technical assistance to AID missions and developing country agencies for policy analysis, and related design and evaluation of policy analysis projects. The primary focus of APA will be macro-level interventions in product and input pricing, subsidies, and foreign trade. The amended ARDS project will give greater emphasis to applied research involving more comprehensive, country-level assessments of food security issues in fewer countries with a primary purpose of developing improved methodologies, a better knowledge base for food system policy formation and effective institutional development. Because of its food system focus and long term applied research involvement within selected countries, the ARDS project requires a comprehensive approach in dealing with micro-macro and rural-urban relationships, as well as data management and analysis systems.

The APA and ARDS projects will both extend new knowledge and facilitate international cooperation through publications, workshops, seminars, and professional networking. Given the efficiencies and increased

effectiveness to be gained by the close collaboration of the two projects, the ST/AGR Project Officer who manages the APA contract will be invited to be a participating member of the ARDS project committee. To the maximum extent possible, the ARDS annual work plan will be formulated so that food security activities, especially in Africa, will build upon previous and ongoing APA-sponsored technical assistance. When and where possible, technical assistance from APA and applied research under ARDS project will be coordinated.

III. Implementation

A. Annual Work Planning.

The annual work plan will constitute the official basis for agreement between AID and MSU on work activities and planned expenditure of funds. The date for annual work plan reviews and execution will be stated in the cooperative agreement. The development of the first annual work plan will determine the selection of the countries for the first comprehensive research and the three focused research efforts which are to begin in the first year. The procedure planned at this point is laid out in paragraph B below.

The work plan will also contain specific addenda for each research activity which will state the objectives, proposed procedures, research methodologies, expected results etc.

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Memoranda of understanding will be developed for each country research site which will establish a collaborative agreement for the research among the involved Host Government institutions, USAID, private entities, other donors, MSU and appropriate AID/W offices. The procedures and content for the mechanism will be addressed early in the implementation phase.

As indicated above, possible candidates for the two comprehensive food system applied research efforts are Upper Volta, Niger, Kenya, Zambia, Malawi and Zimbabwe. Informal preliminary contacts/discussions have been undertaken by AFR Bureau and S&T. In addition, several other AFR field missions have expressed interest and wish to be contacted after approval of the project extension.

The nature of the proposed research and the difficulty of negotiating a collaborative effort with necessary host country ministries and AID/mission colleagues make pre-selection of research sites difficult if not premature. In addition to the requirement for effective working relationships in-country, the criteria for selection outlined above (IID2) will have to be applied in order to achieve some representativeness of the research.

B. Procedures for Country Selection

Upon execution of the project extension, a cable will go to all African missions requesting expression of interests, indicating the criteria

for selection and other pertinent information including pre-conditions for start-up of research, e.g.:

- a) negotiations with and agreement by all pertinent host country agencies involved in food system policy/management regarding the content of the applied research, the priority of the work, collaborative and coordinating relationships and responsibilities, host country contributions and participation including AID financing and other project inputs, etc.;
- b) Agreement with AID mission (in addition to above) on arrangements for coordination, cooperation and complementary research and study design efforts with relevant AID projects/contractors, including cross-utilation of research and mission project resources; and
- c) Agreement with AID mission on level of effort, shared costs and methods of joint funding.

Current plans calls for a joint team representing MSU, AFR/TR and S&T/RD to travel to the annual program planning meeting in REDSO/ESA Nairobi in September to negotiate the initial selections and lay the groundwork for in-country planning and negotiations for project research activities. The trip will also include discussions with World Food Council and FAO in Rome to determine possible areas for collaboration and joint networking activities.

Finally, the joint team will meet with AID/Harare and appropriate SADCC personnel dealing with food security to identify additional areas for possible collaboration.

C. Project Staffing

Carl Eicher and Michael Weber will provide management leadership for the project. Seven MSU tenured faculty members will work 100 to 110 person months on campus and on in-country activities over the three years of the project extension (see Annex II - Bio-data). This group will include, in addition to Eicher and Weber, the following persons:

John Staatz -	Assistant Professor
Eric Crawford -	Assistant Professor
James Shaffer -	Professor
Harold Riley -	Professor

A new faculty member now being recruited - Assistant or Associate Professor

An additional 24 to 36 person months of faculty participation will be drawn from a group that currently includes seven faculty members who have skills and experience in the following areas: risk management strategies, credit systems, farm management, information systems, pricing systems and price analysis, natural resource management and international trade policy.

In addition, temporary faculty, including visiting professors, non-tenured faculty with academic rank, post-doctoral appointees and research associates will provide 60 to 80 person months, mostly in the areas of in-country research, and training, etc.

Graduate students will have an important role in carrying out research activities, both in-country and on campus. In the initial phases of the amended project, students will assist in reviewing and preparing working papers. In-country project teams will include doctoral students who have completed their academic training and are ready for field research. Many will already have LDC field experience, such as Peace Corps, valuable language skills, and be strongly motivated to pursue careers in international development. LDC students, especially those from countries where the project is operating, also will be recruited into the program. Over the three-year life of the extended project, it is anticipated that approximately 10 to 15 US and LDC students will provide an equivalent of 300 person months of full-time service.

D. Schedule of Activities

Major project activities are shown in Table 1, with preliminary estimates of beginning and completion periods. Specific scheduling will be developed through annual work plans and on the basis of negotiations with missions and host countries.

E. Illustrative Budgets

Table 2 lists the total project illustrative budget, and Tables 3 and 4 are estimates of the costs of conducting an illustrative in-depth and focused country research activity, respectively. The total cost of the amended ARDS project is estimated at \$4.075 million, of which approximately 50% is expected to come from core-funding and 50% from Mission and host country in-kind contributions. As shown below, \$3.7 million is proposed to be divided equally between the two comprehensive country projects and the focused country studies.

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TABLE 1. SCHEDULE OF PROJECT ACTIVITIES

Project Activities	Transition Phase	Project FY 85	Extension FY 86	Period FY 87
<u>Applied Research</u>				
- Review and Develop Methodologies	_____			_____
- Identify FSS Issues	_____			_____
- Develop Quantitative Techniques and Software	_____		_____	_____
- Develop Institutional Analysis Techniques	_____			_____
- Conduct Comprehensive Country Esch Preliminary Contacts and Analysis	_____			_____
First Country		_____		
Second Country			_____	
- Conduct Focused Research 6 - 8 Countries	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
<u>Networking</u>				
- Develop Network Contacts	_____			
- Coordinate Research Plans	_____			
- Exchange Research Results	_____			
- Methodology Workshops		_____		
- Food Security Issues Workshops	_____			
- Regional and Local Decision-Maker Seminar			_____	_____
- Final Conference			_____	_____
<u>Dissemination</u>				
- Develop and Distribute Working Papers	_____			
- Develop and Distribute Research Report	_____			
- Develop and Distribute Decision-Maker Reports		_____		
- In-Service Training		_____		
- Short-Term Training		_____	_____	_____

TABLE 2. PROJECT ILLUSTRATIVE BUDGET
(000)

Source and Items	Transition		Project Extension Period		Total
	FY 84	FY 85	FY 86	FY 87	For 3 years
Core Funding					
Project Management	12	19	17	21	69
Research Faculty	64	110	130	143	447
Adjunct Faculty	32	8	14	25	79
Graduate Assistants	21	65	49	54	189
Admin. Support Staff	11	32	33	33	109
Salary Subtotal	<u>140</u>	<u>234</u>	<u>243</u>	<u>276</u>	<u>893</u>
Fringe	23	33	37	54	147
Travel	30	50	40	40	160
Other Direct Costs (Wkshps, Seminars, Publications)	45	30	30	54	160
Equipment	15	8	5	2	30
SUBTOTAL:	<u>253</u>	<u>354</u>	<u>355</u>	<u>427</u>	<u>1,390</u>
OVERHEAD	95	137	138	168	538
Cooperative Agree- ment Core Total:	<u>348</u>	<u>491</u>	<u>493</u>	<u>595</u>	<u>1,928</u>
In-Country Mission Funding					
MSU Personnel		150	150	75	375
MSU In-Country Support		100	100	50	250
MSU Travel		50	50	25	125
Research Personnel, National		100	100	50	250
Research Expenses		50	50	25	125
Travel & Per Diem, Nationals		60	60	30	150
SUBTOTAL		<u>510</u>	<u>510</u>	<u>255</u>	<u>1,275</u>
OVERHEAD 26%		133	133	66	332
TOTAL MISSION FUNDING		<u>643</u>	<u>643</u>	<u>321</u>	<u>1,607</u>
In-Kind Contributions of Host Govt.					
Research Personnel		100	100	50	250
Research Expenses		25	25	13	63
Travel and Per Diem		75	75	37	187
TOTAL HOST GOVT. FUNDING		<u>200</u>	<u>200</u>	<u>100</u>	<u>500</u>
TOTAL	348	1,334	1,336	1,056	4,035
Evaluation, External				(FY '87 =40)	40
				Overall Total	<u>\$ 4,075</u>

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TABLE 3. ILLUSTRATIVE BUDGET FOR A COMPREHENSIVE COUNTRY PROJECT

Items	Amount (Thousand Dollars)
<u>MSU Personnel</u>	
Resident Project Co-Leader	100
MSU Research Faculty, Short-Term	75
Graduate Assistants	40
Campus-based Research Faculty Support	50
Campus-based Administrative Support	20
SUB-TOTAL	<u>285</u>
<u>In-Country Non-MSU Personnel</u>	
Project Co-Leader	50
Administrative Assistant	25
Research Personnel	75
Support Staff (Interviewers, Data Processing, Clerical)	40
Consultants	40
SUB-TOTAL	<u>230</u>
<u>Logistical Support</u>	
Travel and Per Diem	
International	55
In-Country	30
Office Facilities and Equipment	30
Supplies and Service	30
SUB-TOTAL	<u>145</u>
Overhead on MSU direct support*	<u>113</u>
TOTAL	<u>773</u>

*(Campus based personnel & others @ overhead rate of 39%; country based MSU costs @ 26%)

TABLE 4. ILLUSTRATIVE BUDGET FOR A FOCUSED IN-COUNTRY STUDY

Item	Amount (Thousand Dollars)
<u>MSU Personnel</u>	
Research Faculty, Short-Term	15
Graduate Assistants	70
Campus-based Research Faculty Support	4
Campus-based Administrative Support	4
SUB-TOTAL	93
<u>In-Country, Non-MSU Personnel</u>	
Project Collaborators	20
Research Support Personnel	14
Consultants	5
SUB-TOTAL	39
<u>Logistical Support</u>	
Travel and Per Diem	25
Supplies and Services	10
SUB-TOTAL	35
Overhead on MSU direct support*	39
TOTAL	206

*(Campus based personnel and other costs @ overhead rate of 39%; country based MSU costs @ 26%)

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Table 5. ILLUSTRATIVE ALLOCATION OF PROJECT ACTIVITIES BY FUNDING SOURCE

		Thousand Dollars
Comprehensive Country Projects - 2		
Country Mission and Local Government		1,054
Core Funding		778
	Sub-Total	1,832
 <u>Focused Country Studies - 8</u>		
Country Mission and Local Government		1,054
Core Funding		782
	Sub-Total	1,836
Dissemination and Training		368
	TOTAL	4,035

TABLE 6

Alternative Rural Development Strategies Cooperative Agreement DAN-1190-A-08-2869-08
 Budget for Project Paper Amendment
 Core Funding
 Department of Agricultural Economics - Michigan State University - East Lansing, Michigan 48824

Grand Total

Line Items	Research Planning and Field Support		In-Depth Studies				Focused Studies		Research and Evaluation		Dissemination and Training		Total	
	Person Months	Dollar Amount	Country A		Country B		C-3 Countries		Person Months	Dollar Amount	Person Months	Dollar Amount	Person Months	Dollar Amount
			Person Months	Dollar Amount	Person Months	Dollar Amount	Person Months	Dollar Amount						
Project Management														
Water	3.5	11,222	3.0	9,026	2.5	2,290	0.0	13,048	0.0	13,043	0.0	13,044	21	68,037
Research Faculty														
Elmer	3.5	12,650	2.1	12,903	1.5	2,600	0.0	21,481	1.0	3,902	2.5	10,183	15	41,001
Riley	2.5	13,323	1.5	7,319	.5	2,800	1.5	2,025	1.0	6,001	1.0	3,020	3	43,096
Shaffer	2.0	18,384			.5	2,821	2.5	13,000	1.5	2,670	1.5	2,073	3	43,760
Starr	0.0	2,699	1.0	2,287	2.0	0,622	6.0	12,979	1.5	3,033	2.0	3,643	17	37,043
Crawford	1.0	3,533	3.0	3,013	2.0	7,069	2.0	7,069	3.0	10,723	1.0	3,370	10	33,303
Vincent (Replacement)	3.0	13,078	3.0	12,937	1.5	7,232	3.0	13,002	2.5	12,011	2.0	9,223	13	68,303
Other MSU Faculty	2.0	9,600	3.0	10,067	2.0	9,967	0.0	19,900	3.0	13,376	2.0	10,096	16	79,920
Programmers	3.0	13,668	2.0	3,332	2.5	7,137	6.5	18,636	3.5	10,620	.5	1,331	20	36,760
Staff Faculty														
Adjunct Faculty	3.0	12,030	3.5	10,720	.5	2,290	3.0	12,030	0.0	18,703	0.0	18,232	18	78,003
Students Assistance														
Research Assistants	30.0	98,700	9.0	10,090	3.0	0,801	18.0	30,231	18	31,938	18	30,382	96	160,692
Administrative Aides (Students)	7	7,097	3	2,999	2	2,062	6	6,196	3	3,170	3	3,102	28	28,390
Admin. Support Staff														
Administrative Assistant	0.0	2,738	2.0	0,399	2.0	0,399	3.0	6,770	0.0	9,181	3.0	4,770	18	40,177
Secretary	10	12,872	7	2,500	0	3,296	11	10,096	11	10,006	11	10,096	30	69,336
TOTAL SALARIES	80.5	191,306	41.5	112,018	26.5	77,122	70.5	196,737	63	163,876	50	107,000	303	893,603
FRINGE BENEFITS		26,732		10,078		13,630		33,930		29,899		20,113		106,798
TRAVEL/TRANSPORTATION/PER DIEM		31,000		13,000		21,000		31,000		27,000		37,000		160,000
OTHER DIRECT COSTS														
Subscriptions		37,000		13,000		2,000		16,000		37,000		09,000		160,000
Workshops & Seminars		13,500		2,000		2,000		3,500				9,000		30,000
EQUIPMENT														
TOTAL DIRECT COSTS	80.5	300,178	41.5	199,296	26.5	121,752	70.5	283,211	63	239,783	58	264,199	303	1,390,401
INDIRECT COSTS (OVERHEAD)		113,237		62,132		07,392		110,883		102,607		101,793		537,338
TOTAL COSTS	80.5	413,415	41.5	221,428	26.5	149,140	70.5	393,696	63	342,372	58	367,790	303	1,927,739

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