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DEVELOPING AGROINDUSTRIAL CAPABILITIES TO EXPLOIT
DOMESTIC AND INTERNATIONAL MARKET OPPORTUNITIES

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Staff Paper

DEVELOPING AGROINDUSTRIAL CAPABILITIES TO EXPLOIT DOMESTIC AND INTERNATIONAL MARKET OPPORTUNITIES

INTRODUCTION

I am impressed with the scope and substantive content of IICA's plan of joint action for "agricultural reactivation" in the Latin American and Caribbean Region (9). Their diagnosis of the macro and global economic conditions that confront the region pose an unprecedented challenge to future growth and development (18). The severe downward adjustments in GNP per capita and related declines in employment and incomes during the 1980s have depressed living standards and seriously impacted the well-being of a large proportion of the population (4).

The IICA strategy emphasizes the potential contributions of modernizing agriculture as a means to achieve short-term economic recovery and longer-term goals for economic growth with equity. The proposed lines of action call for "a revision and reorientation of macroeconomic policies" in order to assure a coherent approach to the "reactivation of agriculture." It is also suggested that the old controversy between agriculture and industry be abandoned in favor of strategic actions which recognize the interdependent, synergistic relationship between these sectors (19). This approach broadens the scope of "agricultural development" to include activities from the manufacture and distribution of inputs, such as fertilizer, seeds, chemicals and machinery,

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to the delivery of products to consumers in both domestic and international markets. The action plan also explicitly recognizes that the modernization of agriculture takes place as part of a long-term industrialization process that is required to meet the changing demands for agriculturally based products through the utilization of increasingly more complex technologies and institutional arrangements to coordinate commodity systems.

I approached the preparation of my paper from the point of view that agroindustrial capabilities evolve within the long-term modernization of food systems, and that public policies which promote and support private sector initiatives are crucial for the exploitation of growth opportunities.

The paper has three interrelated parts. The first part is a conceptual framework for thinking about medium to long-term development of agroindustry. The second part sketches out some policy issues. The third and last part provides suggestions for operationalizing action programs. My main thesis is reflected in the title of my paper, that is, we should strategize and plan agroindustrial development to exploit both domestic and international market opportunities. My reasoning is that:

- (a) it makes good sense to plan and organize commodity systems to meet actual and/or potential market demands;
- (b) in many instances the potential for competing effectively in international markets can best be achieved by first building capabilities to serve growing domestic market demands;
- (c) there are often complementary production and marketing relationships between domestic and export markets that can reduce risk and enhance overall project success.

For the purpose of this paper I prefer to use a fairly broad definition of "agroindustry". It has as its core the transformation of raw agricultural commodities into products designed to meet the specific demands of consumers. This usually means a significant change in the raw commodity to reduce perishability and/or modify the form so as to make it more convenient for consumer use. The auxiliary agroindustrial activities include the manufacture of specialized farm inputs such as machinery, fertilizers, seeds, pesticides, animal feeds, as well as packaging materials and equipment needed by processors and product handlers. Although it has not been a common practice to include the production and marketing of "fresh" fruits, vegetables, milk and fish as part of agroindustry, we can now see the increasing application of sophisticated industrialized procedures for coordinating the production, sorting, packing and shipment of high-valued products to distant and discriminating markets. Hence, I would not exclude them in my working definition of agroindustry.

TOWARDS A CONCEPTUAL FRAMEWORK

There is an understandable urgency in dealing with the current crisis in several Latin American countries. While obviously very mindful of the current situation, the IICA's regional action plan is taking shape within a set of fundamental strategies that require more detailed analytical support to guide specific initiatives for the promotion of agricultural development, and especially for expanding markets.

In this context I think it would be useful to elaborate some of the food systems concepts that my Michigan State University colleagues and I have developed and used in several Latin American food marketing projects. Our conceptual approach is grounded in the belief that long-term economic

development occurs through a scientifically based industrialization process. The process involves the creation and adoption of new technologies and new institutional arrangements that lead to greater specialization of labor, increased labor productivity, shifting employment of labor from farm level food production to non-farm activities, often in small-scale agriculturally related processing and service functions. Over time there is substantial population migration to towns and cities, shifting patterns of food consumption and a rapid increase in the demand for marketing services, new more convenient to use products and a relative increase in the demands for livestock products, fruits and vegetables and decreasing demands for basic grains and starchy tubers. The patterns of change proceeds more rapidly when there are significant and sustained increases in per capita income, and this is not likely to occur unless there is a reasonable degree of political and economic stability.

The rapid growth of large urban centers and the general trend to urbanization has been a dominant force in the transformation of Latin American food systems. Large public and private sector investments continue to be made to expand transport, storage, processing, wholesaling and retailing facilities as several of the larger cities grow into huge population concentrations and as urban dwellers become two-thirds or more of the total population in several Latin American countries. This is not to say that this rapid growth of large cities is desirable, but it is the reality of what is happening.

The fundamental concepts of a food system provides a framework for describing the changing organization of the system, diagnosing problems, and identifying new opportunities for agroindustrial initiatives. It is also useful in the formulation of strategies for public and private actions to improve overall market performance.

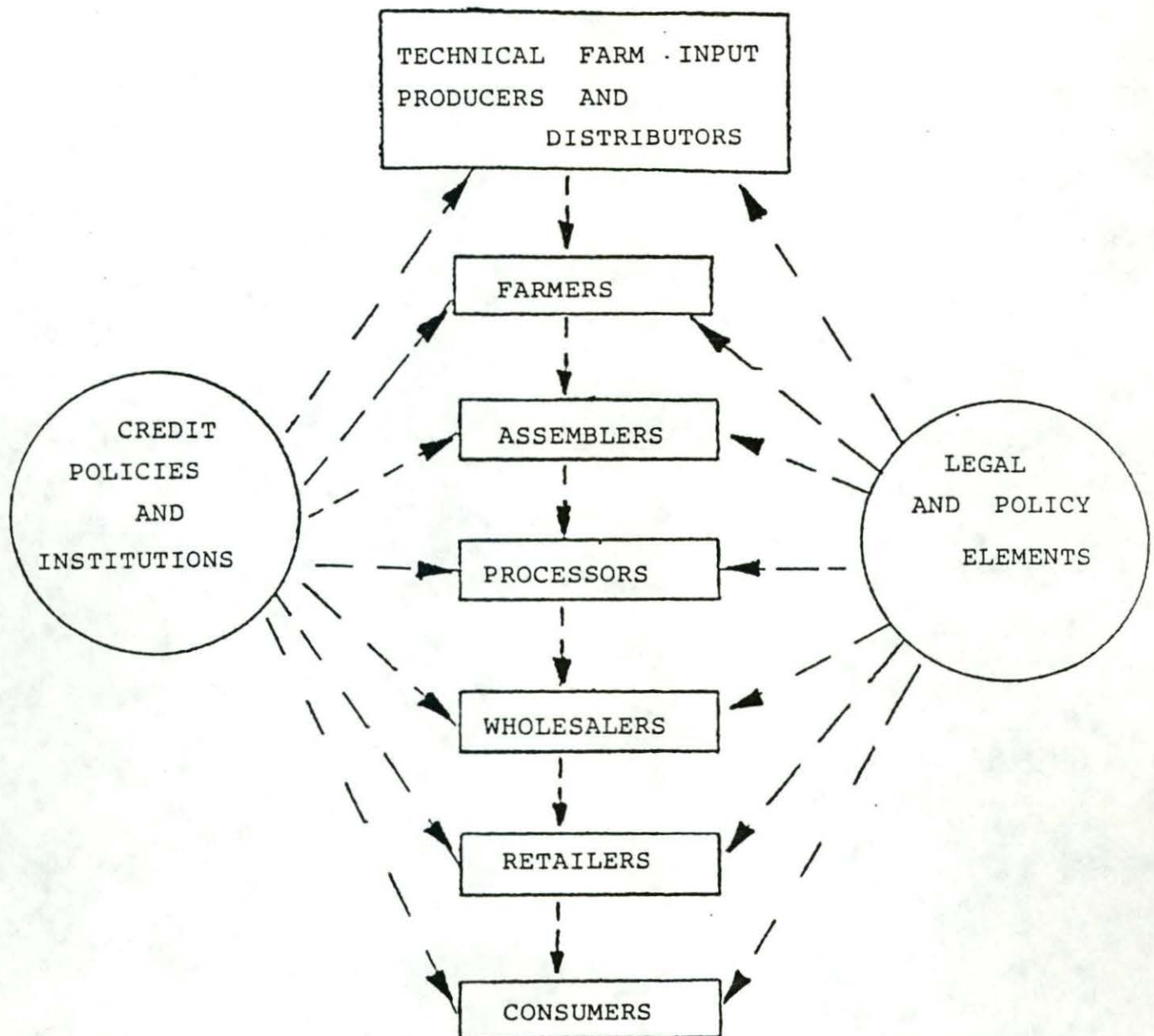
Over a period of years (actually almost three decades) a group of agricultural economics researchers from several universities and the U.S. Department of Agriculture developed a methodology and carried out a coordinated set of studies culminating in a series of publications and a summary book entitled The Organization and Performance of the U.S. Food System (Marion and the NC 117 Committee, 1986). More or less concurrently a group at Michigan State University were developing and adapting the same basic methodologies in a series of food marketing studies in Latin America including Northeast Brazil, Bolivia, Colombia and Costa Rica. These studies were carried out in collaboration with institutions and professionals in each country and resulted in a series of country specific publications and a summary report, "Improving Food Marketing Systems in Developing Countries: Experiences From Latin America" (7), (20), (21). (A Spanish version of the summary report was published by IICA.)

As shown in Figure 1 our conception of the food system includes all of the basic steps of productive activity required to deliver food to the ultimate consumer, in this case, domestic consumers. Also, included are the policy and regulatory elements and the supporting institutional elements providing credit, education, research and information. The coordination of all of these functional activities is achieved largely through market forces with governments intervening in a variety of ways.

The advantage of viewing market processes in a food system context is that we are better able to identify constraints and possible opportunities for improving system performance, taking into consideration the interdependencies among the sequential steps in the production-distribution process and the dynamic interactions that will occur in response to changes in policies, institutional arrangements and technology availability. A fundamental concern is the

FIGURE 1

Principal Components of a Food System



Source: LAMP Research Report No. 6, Latin American Studies Center, Michigan State University, 1974.

need to reform existing institutions or create new ones, and to revise public policies.

Agroindustrial enterprises must find their "opportunity niche" in the dynamic but progressively advancing food system. To find and to exploit opportunity niches requires an in-depth understanding of particular commodity subsectors. For policy purposes it is also important to develop and maintain a capability to analyze and monitor the development of commodity production-distribution systems. We have extended our food system framework to include methods for describing and analyzing these commodity subsectors with an emphasis on vertical coordination.

From a policy perspective the desired attributes of a commodity system can be described as follows:

- a. The matching of supply and demand at each stage in the production-distribution system.
- b. Efficiency in carrying out the physical transformation, handling and delivery of commodities as well as in arranging and carrying out transactions.
- c. Progressiveness in developing and adopting more productive technologies, management methods and institutional arrangements.
- d. Equity in returns to subsector participants in relation to value added to the final product, costs and risks incurred. Equity also includes access to markets, information and support services such as credit.

It should be apparent that there are potential conflicts among the performance attributes which must be taken into consideration in designing new policies and programs, e.g. equity goals may sometimes conflict with progressiveness and

efficiency goals.

The analysis of subsector performance must be supported by gathering and organizing data and information in three main categories.

Basic Conditions

- Commodity characteristics
- Calendar of production, processing and distribution
- Geographic location of production and consumption
- Consumption patterns
- Price relationships over time and space
- Geographic movement of products
- Physical infrastructure
- Trends, projections and forces of change

Subsector Organization

- Stages in the production-distribution process
- Institutional organization and types of participants
- Relative importance of market channels
- Changing structure of the subsector and the forces of change

Coordination Processes

- Planning and strategizing
- Transaction procedures
- Information flows
- Government programs, regulations and support services

Although there is a need for accurate descriptions of basic conditions, subsector organization and coordination processes, it should be guided by a purposeful diagnostic perspective. This can reflect the search for problems and opportunities linked to established performance goals. The actual conditions and perceived problems of market

participants, such as farmers, managers, and workers engaged in processing, wholesaling, retailing and government officials, are important inputs into a subsector study.

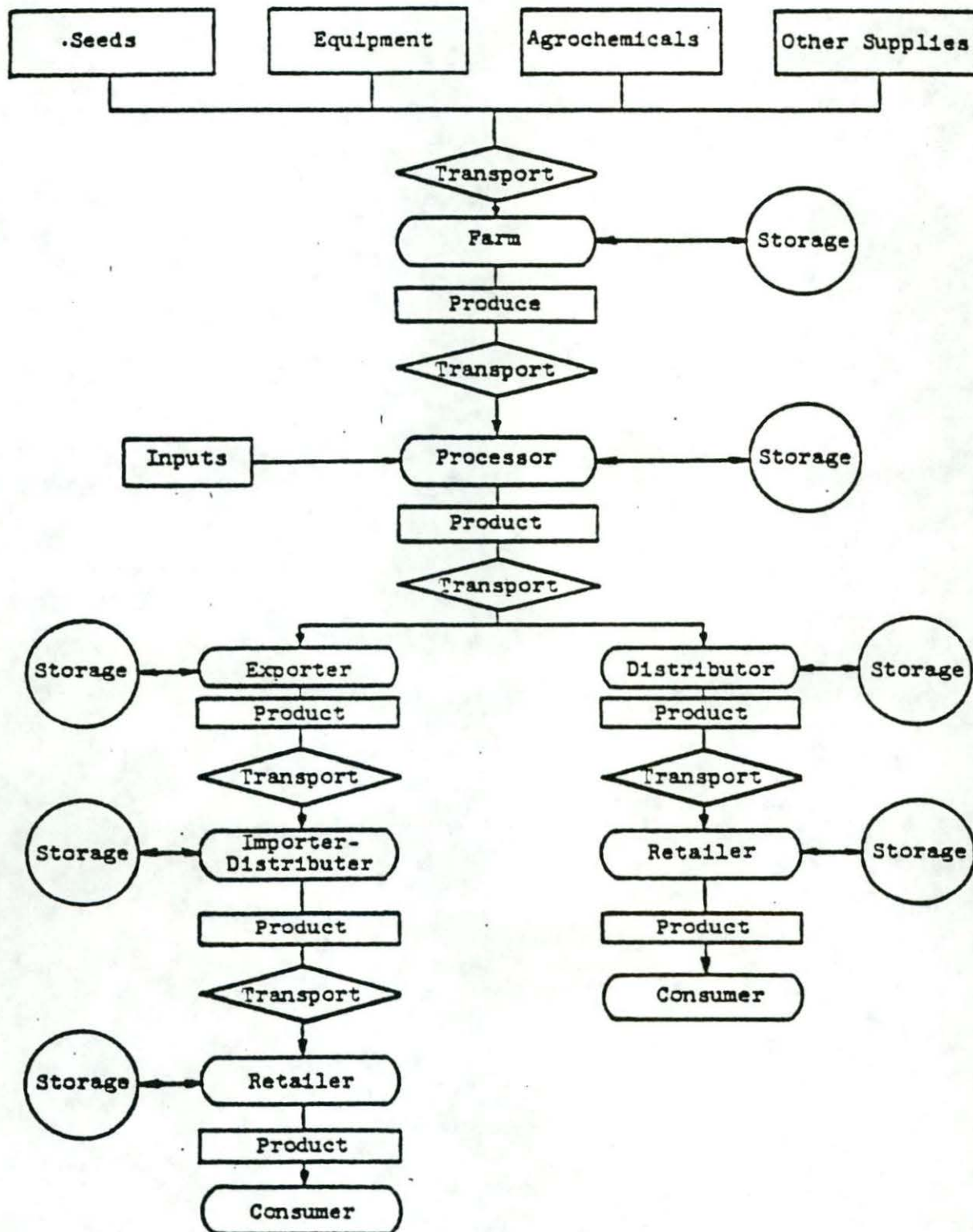
An agribusiness commodity system approach to problem solving and decision making for private and public managers has been developed and used by a group at Harvard University (see Figure 2). They have applied this approach in Central American studies of fruit and vegetable production systems oriented towards exporting to the U.S. (3), (6). Their basic approach has many similarities to our subsector study approach. Both approaches give priority emphasis to organizing production systems to meet actual and projected consumer demands. (This contrasts with the approach of many production oriented agriculturalists who see the marketing problem as one of finding markets for their products.) Both approaches recognize the biological-agronomic uniqueness of commodity systems, the need for an integrative, multidisciplinary approach to problem solving and planning and the importance of private sector-public sector cooperation in seeking food system improvements.

The Harvard agribusiness approach emphasizes management as a means to achieve a more viable food system and as a major determinant of economic growth. Hence, a great deal of importance is given to the training of managers. They are noted for their use of case studies in their business school curriculum, a teaching method which has been transferred to other institutions, including INCAE, now located in Costa Rica.

Although there is a great interest and need for Latin American countries to develop agroindustrial capabilities to enter the export market, it obviously requires a great deal of attention to the sequence of interdependent production and marketing activities if the enterprise is to be successful.

Due to the high risks associated with export market development it is important that we think carefully about the

Figure 2
Agro-Industry Flow Chart



Note: Financing inputs occur at each stage.

SOURCE: James Austin, *Agroindustrial Project Analysis*, Johns Hopkins University Press, 1981, p. 16.

possible linkages between domestic and export market exploitation. Some of the important linkage-type considerations are as follows:

Technology Development and Adaptation

Export markets require dependable supplies of uniformly high quality products. However, indigenous crop varieties and cultural practices are typically unable to meet these more stringent market requirements. Also, imported seeds and plant materials may not be well adapted to the new environment. Hence, it requires time to develop the basic seed stocks and related cultural practices that are required. In the case of fruit trees it may take several years. During this developmental process the domestic product markets can benefit from and support this process.

Another consideration is that plant facility design, equipment and operating procedures that may be cost efficient in more developed countries with relatively high labor costs should be adapted to fit the factor cost relationships in the developing country. This also, takes some time and can be worked out while exploiting domestic market opportunities.

Product Development

The growing market share of supermarkets and better coordinated wholesale-retail systems provide increased market opportunities for processed foods in all Latin American countries. The current economic crisis is having an adverse impact on the demand for higher-priced processed food, but the growth trend will resume with economic recovery. Even now there must be opportunities for additional processing and packaging of basic foods for distribution to low-income households. In any event the experience gained in developing products for expanding and sharply differentiated domestic markets can later be used in exploiting export market

opportunities.

Market Segmentation and Economies of Size

It has been empirically demonstrated that there are significant economies of size in food processing but one must be careful to recognize that size economies vary considerably depending upon the geographic dispersion of raw commodity supplies, the characteristics of the processing operation and the relative costs of labor and capital items. Nevertheless, there are likely to be opportunities to use plant production capacity to serve both domestic and export markets and in this way to achieve a larger total throughput and lower average total costs. There is also the possibility of producing similar but slightly differentiated products for the two markets. A higher quality, higher-priced product might be channeled to the export market and a narrow segment of the domestic market. A lower-priced, slightly lower quality line of products could go to a broader segment of the domestic market.

The general practice of market segmentation and price discrimination is already widely used in many food processing industries, e.g. coffee in Brazil and Colombia. But for new ventures into fruit and vegetable processing it could be part of their market strategy.

Human Resource Development

One of the important constraints to the modernization of food systems and the actual development of successful agroindustrial enterprises has been the lack of qualified technicians and managers. I will address this problem again later, but I would stress at this point the importance of a basic domestic educational plan to overcome this constraint while taking advantage of external technical assistance including the benefits of having foreign investors in

agroindustry.

Diversification and Risk Management

The exploitation of new export market opportunities by agroindustrial firms carries high risks for reasons that have been discussed by previous speakers. Hence, combining the exploitation of export markets with an established position in the domestic market is usually a way to reduce overall risk exposure.

SOME POLICY ISSUES

The crucial importance of macroeconomic policies to the reactivation and future growth of agriculture in Latin American countries has already been given a great deal of attention in this seminar, and appropriately so. Without significant relief from external debt burdens and adjustments in exchange rates and fiscal-monetary policies to reverse past discriminatory policies against agriculture, relatively little real economic growth can likely be achieved (4). Recognizing this condition, I will proceed to other more specific policy considerations that I believe to be fundamentally important for the medium- to longer-term build up of agroindustrial capabilities to access and exploit market opportunities.

The selection of policy issues and my observations about these issues reflect a view that public policy and government programs should promote and support private sector development not only in farm level crop and livestock production but also in the increasingly important areas of processing and distribution.

I will, first of all, call attention to six basic areas where public policies are of central importance in creating an environment that would stimulate medium- to long-term development of agroindustry and a more productive, industrialized food system. Although the policy issues are

not sharply drawn, the implications for the direction of policy adjustments should be clear.

Infrastructure

Agroindustry in particular, and the food system more generally, is highly dependent on a transportation network that provides low-cost, dependable access to expanding urban markets and for businesses engaged in exporting, port facilities and air transport must be available. Access roads for moving raw materials from farms to processing plants is a frequent constraint, especially for relatively perishable commodities. Electrical power and water supplies are also critical inputs that are usually provided by public enterprises. Hence, a critical factor in promoting agroindustrial development will be the additional public investment for expanding or improving the availability and dependability of basic infrastructure.

Credit Availability

The central banks and closely linked development banks are often mandated to give preferential credit support to agricultural production and certain types of manufacturing enterprises. Relatively limited credit lines are available to support the processing, marketing and distribution of food commodities. Furthermore, credit terms for loans tend not to be adapted to the seasonable variations in credit needs and the timing of repayments to align with the uneven cash flows that are common in agriculturally based enterprises. Hence, in many countries the formal credit system typically rations loans away from private sector marketing functions to other more traditional channels. Thus, a significant policy issue concerns the actual availability of credit for marketing and agroindustrial development.

Information Systems

I think a strong argument can be made for publicly supported systems of collecting and disseminating basic statistics on agricultural production, storage stocks, imports and exports. Crop and weather condition reports, crop forecasts, price information and commodity situation reports are also valuable assists to private sector enterprise managers and public sector policy analysts. Important policy issues concern the resources required to organize and operate a cost effective information system. It is also essential to promote and develop collaborative relationships with private sector interests that are both essential sources of basic data and important users of information derived from the data. In the absence of creditable public sector information there is likely to be greater uncertainty and resulting errors in judgment that tend to increase costs and discourage investments.

Import Restrictions on Critical Inputs

The extreme scarcity of foreign exchange has led to very strong measures to reduce imports in many countries represented at this conference. The resulting restrictions and the cumbersome procedures for handling import permits creates significant risks and increased costs for agroindustrial firms depending on foreign sources for specialized equipment, repair parts, packaging materials and even some essential raw materials. Unless there are expedited procedures for relaxing these import constraints there will be a declining interest in new agroindustrial investments.

Price Controls

The existence of government enforced price controls on processed foods at the retail and/or wholesale levels while farm-level raw commodity prices are permitted to fluctuate can make it very risky and unprofitable for food processors. When price relationships get out of line, the processors may curtail operations and withhold existing stocks from the market in anticipation of upward adjustments in the control price. This creates a chaotic condition in retail markets as supplies temporarily disappear from the grocers' shelves. But, the longer-term consequence is that this discourages investments in food processing and adds to the per unit operating costs of the existing system.

Research and Training

Publicly supported agricultural research has been focused on farm level production technology. In most countries, relatively little public effort has been directed to research on food processing and handling technologies. This is an area that needs collaborative participation between private sector and public sector interests. This will be especially important for the development of the food processing industry. Special efforts are needed to link applied research with extension and training activities.

The other priority area concerns a public sector commitment to build the indigenous professional leadership and management capabilities to guide and direct the modernization of food systems. Without this indigenous human resource capability policy formation, programs and projects tend to flounder and private sectors often suffer from ill-conceived regulations and government interventions. Some Latin American countries

have made impressive progress in developing university degree programs to better meet the staffing requirements in the private and public sectors of their food systems, e.g., Brazil. However, much remains to be done if the proposed "reactivation" of agriculture is to be realized. Curriculums in food technology, agribusiness management and agricultural economics should be reviewed and strengthened whenever possible.

There are two other areas where public policies may have particular importance in agroindustrial development, one is joint ventures with foreign companies, and the other is contract farming.

For a number of years there were strong negative attitudes in most Latin American countries regarding joint ventures involving multinational enterprises. This gave rise to very restrictive policies which seem to have given way to a more open but carefully negotiated approach so as to protect national interests while permitting incentives for foreign investors. Those favoring a more open stance on joint ventures argue that agroindustrial development can be accelerated by access to the foreign company's capital, technology, management skills and established contacts in major export markets. Given the current economic problems in the Latin American Region the policies regarding joint ventures might be given some reconsideration, but in some countries it will be very difficult to attract much foreign investment until there is a more favorable investment climate. ,

Contracting has become an increasingly used mechanism for coordinating farm-level production of commodities with processors' requirements for a dependable supply of uniform quality raw materials (13). This is particularly important for the more perishable commodities such as fruits and

vegetables, poultry and milk, but is sometimes used for other commodities as well (e.g., tobacco, tea and rubber). The terms of the production contracts range from rather simple buy-sell agreements covering quantity, quality and price to the provision of basic inputs, credit and technical assistance to production-management contracts where the farmer essentially receives payment for his labor and use of his fixed facilities. If the contracts operate effectively they can achieve substantial risk reductions for both the processors and the farmers. This makes possible significant cost efficiencies in the use of fixed facilities and equipment. It also creates viable opportunities for small farmers to share the potential benefits from a large-scale vertically coordinated enterprise (1, 11, 13, 14). But, there can be problems which lead to disputes over contract fulfillment. This is an area where the public sector can provide assistance in several ways. One is to provide extension assistance to both contracting parties in designing workable contracts. Secondly, they can help establish mechanisms for resolving conflicts when they arise. There is considerable international experience with contract farming systems that can be drawn upon for guidance in adapting to specific situations. I will have some further comments later on interesting applications in Thailand.

OPERATIONALIZING ACTION PROGRAMS

The seriousness of the current economic crisis in Latin America requires special efforts to accelerate export oriented agroindustrial development. An important activity that is already well underway in several countries is the intensified search for export market opportunities. Special export promotion agencies and task groups involving both public and private sector interest are at work. There is much to be done in assessing local capabilities in relation

to market opportunities. Donor agency assistance is being used in Ecuador to promote and support the expansion of non-traditional exports. But, it seems that many countries, both developed and less developed, are aggressively seeking to expand non-traditional exports. The competition is intense. The high cost of market penetration along with high risks makes it doubly important that well prepared feasibility assessments undergird major investment decisions.

In his recent book, Agricultural Processing for Development, John Abbott calls our attention to high rates of failure for agricultural processing plants conceived in government development plans or promoted by bilateral aid (1). He reports on 70 unsuccessful plants that failed, not so much because of engineering design of the plants, but due to mistakes in planning--either market demand for the product or raw material supplies had been overestimated. This plus poor management resulted in excessive operating costs and an inability to compete with other enterprises supplying the same markets. On the more positive side, Abbott presents brief case study profiles for a number of more successful agricultural processing enterprises along with some useful information and pragmatic advice on the planning and management of agricultural processing enterprises. Many of his suggestions closely parallel those in an excellent handbook on Agroindustrial Project Analysis, authored by James Austin and published for the Economic Development Institute of the World Bank (2). I call attention to these two books because I want to stress the importance of carefully, prepared feasibility studies as a basis for investment decisions by both public and private sector interests. The four main components of the analytical framework for a feasibility assessment are as follows:

- a. The Product Market
 - Consumer Analysis
 - Competitive Environment
 - The Market Plan
 - Forecast of Sales
- b. Raw Product Procurement
 - Source and Potential Volume
 - Quality Control
 - Timing
 - Costs of Production
 - Organization of Procurement
- c. Processing Operations
 - Selection of Technology
 - Plant Location(s) and Design
 - Operational Plan
- d. Financial and Economic Analysis

Although, carefully prepared feasibility studies and project analyses are of supreme importance in any well planned program for promoting agroindustrial development, there are several other actions that are vital to the development of an effective working relationship between the private sector and government and among different agencies in government.

There are many examples of initiatives being taken by governments represented at this seminar as they attempt to stimulate exports. But, rather than to take a Latin American example I will go outside the region and describe briefly what appears to be a very successful export oriented agroindustrial development program in Thailand. The country has long been a traditional exporter of rice and rubber, but has rapidly expanded exports of fishery products, cassava pellets for poultry feed in the EEC, frozen boneless poultry meat to Japan and a variety of fresh and processed fruits and

vegetables. Policy makers have recognized the need to restructure agricultural production and marketing to compete in a rapidly changing world economy.

Agricultural production is being reoriented to respond to identified market opportunities. Emphasis is being given to agroindustries that have a high export potential or add high values to agricultural products. Private entrepreneurs play a major role in planning and carrying out relatively sophisticated enterprises with carefully coordinated organizational arrangement for procurement, processing and product marketing. Extensive use is being made of farm-level production contracting as a means of reducing risks and the lowering of both production and processing costs (11, 17). One of their success stories is the C.P. Group (Charoen Phokphand Group) that has been the leading firm in the rapid development of a modern, vertically coordinated poultry industry that has exploited both domestic and export market opportunities.

The C.P. Group successfully introduced the concept of contract farming in Thailand's rural community and demonstrated the use of modern management techniques that have spread to other commodity lines. The C.P. Group, which started as a small local enterprise, has now evolved into a multinational, multiproduct enterprise with joint ventures in eleven other countries, including the Peoples Republic of China.

A great deal of credit for the Thai successes in agroindustrial development goes to the government's supportive and facilitative roles in working jointly with the private sector. Some explicit expressions of the government's policy stance towards the private sector were defined in the Fifth National Economic Development Plan (1981-86). A high level Joint Public-Private Consultative Committee was established in 1981. In 1986, a Four-Party

Coordination Committee for Agriculture and Agro-Industry Development was created and a Center for Public-Private Coordination for Agricultural Development was established in the Office of Agricultural Economics, Ministry of Agriculture and Cooperatives. The Four Party Committee and the Center in the Ministry are taking an active role in coordinating the participation of government, private enterprises, financial institutions and farmers. So far, ten projects involving integrated contract farming components have been approved and fifteen proposals are under consideration (17).

The Thai approach and their experience can be useful as we contemplate what can be done to promote agroindustrial development in Latin America. The historical, political-social backgrounds differ but the principles for moving towards a more industrialized agriculture that can serve domestic consumers and compete in international markets are much the same.

SUMMARY

The challenges being faced under existing conditions in Latin America make the task of promoting agroindustrial development very difficult, but not insurmountable. The IICA regional joint action plan is a positive step towards economic recovery with emphasis on the potential contributions of a more "industrialized" agricultural sector.

The main points in my paper were as follows:

- A. Strategies for promoting agroindustrial development should be formulated within the context of the medium- to long-term patterns of change in domestic food systems.
- B. In many instances the potential for access and effective exploitation of export markets can be achieved by first building capabilities to better serve growing domestic market demands. Furthermore,

there are often complementary production and marketing relationships between domestic and export markets that can reduce risks and enhance project success.

- C. I have commented on six basic areas where public policies can have substantial impacts on food system and agroindustrial development. These areas included infrastructure, credit availability, information systems, import restrictions on critical inputs, price controls, research and training. I also suggested that policies regarding joint ventures and contract production systems need careful reassessment.
- D. Finally, I have recommended that agroindustry and export market development be undergirded by carefully prepared feasibility studies and that private sector initiatives be supported by well-conceived public-private sector institutional arrangements.

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