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THE MODERNIZATION OF AGRICULTURE: THE CHALLENGE FOR EFFECTIVE PARTICIPATION IN INTERNATIONAL MARKETS

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PROGRAM I: AGRICULTURAL POLICY ANALYSIS AND PLANNING

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IICA was founded as an institution for agricultural research and graduate training in tropical agriculture. In response to changing needs in the hemisphere, the Institute gradually evolved into an agency for technical cooperation and institutional strengthening in the field of agriculture. These changes were officially recognized through the ratification of a new Convention on December 8, 1980. The Institute's purposes under the new Convention are to encourage, facilitate and support cooperation among its 32 Member States, so as to better promote agricultural development and rural well-being.

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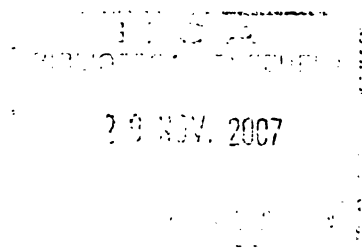
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IICA



THE MODERNIZATION OF AGRICULTURE: THE CHALLENGE FOR EFFECTIVE PARTICIPATION IN INTERNATIONAL MARKETS¹

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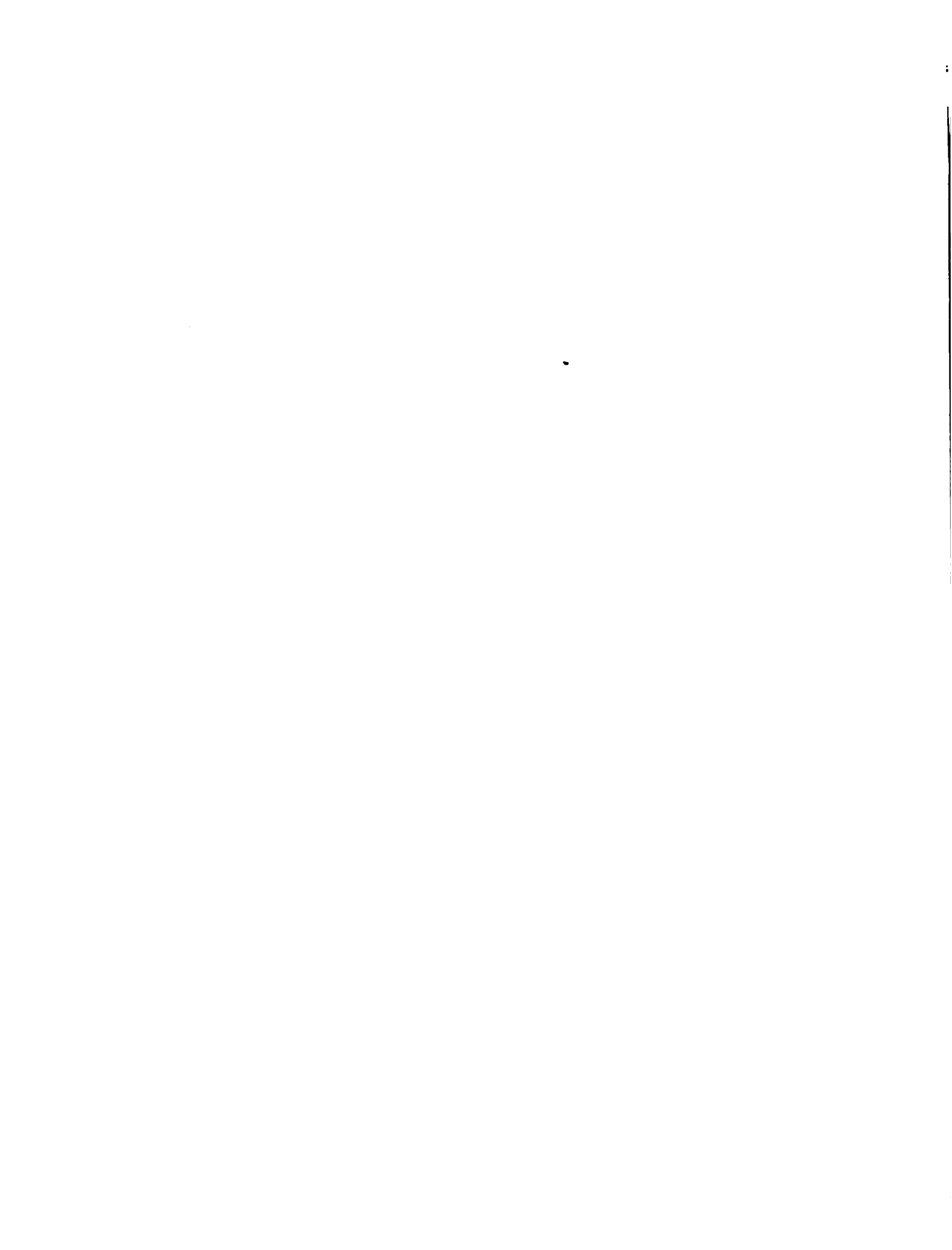
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1. INTRODUCTION

When the Plan of Joint Action for Agricultural Reactivation in Latin America and the Caribbean (PLANLAC) was adopted by the ministers of agriculture of the countries of the region, they took on the formidable task of trying to find a new style of development that would enable them to modernize agriculture and at the same time promote equity. More recent developments highlight the importance of effective participation in international markets as countries move towards trade liberalization.

Before addressing the central issues of modernization of agriculture and international food markets, there are two fundamental aspects that should be borne in mind in connection with any development strategy to be implemented over the next few years. The first, discussed in section 2, has to do with the political and economic environment in the region and in the world. The second, discussed in section 3, has to do with the very logical proposition that agriculture should no longer be seen as a primary sector, but rather viewed and managed as a broader system, i.e., as an agroindustrial-agricultural complex.

The view that the modernization of agriculture must be seen as a major component of any development model aimed at economic recovery is discussed in section 4. Given food needs and foreign market opportunities, modernization should be intensified in key agricultural sectors for which there is a potential and a need; thus, domestic and international food markets play a major role as discussed in section 5. In section 6, we refer to the factors that contribute to the modernization process, with special reference to technology, management and organization.

Equity must accompany modernization. In section 7, we discuss some of the more important aspects in the search for equity, such as issues pertaining to the generation of economic activity, labor and manpower training, nutrition and the improvement of product quality, and the transfer of know-how on ways of achieving modernization.

For agriculture to play an important role in a renewed development strategy, there are major challenges for public policy beyond the traditional realm of agricultural policies. These issues are discussed in section 8.

In the brief conclusion, we offer some reflections on the challenges which these ideas pose to professionals in the fields of agriculture and economics. We stress the urgency of beginning a highly participative process of improving human capital development in order to pave the way for achieving modernization with equity in a world of increasing turbulence and competition.

2. THE REGIONAL AND GLOBAL POLITICO-ECONOMIC ENVIRONMENT

The challenge of achieving modernization with equity is an enormous one, involving actions to be carried out within an increasingly complex national, regional and global environment. An understanding of this complexity is fundamental to the adoption of a style of agricultural development that will provide a way to overcome difficulties and take advantage of opportunities.

On the domestic scene, every country must carefully assess the State's capacity to direct a viable and sustainable development process. Most of the countries are engaged in such an exercise, taking the necessary steps to implement changes at the right pace and with the necessary thoroughness, bearing in mind the existing social, economic and political conditions. The general trend in the region is for the State to play a guiding role in development efforts, exercising less intervention than it has in the past and showing a greater ability to mobilize the civilian population. The task, however, is a monumental one, particularly considering that the aim is to have a strong, respected and capable State, but also to make public institutions smaller and more efficient. This requires the development of new forms of organization that will allow for the full participation of a civilian population truly committed to the achievement of social objectives.

The restoration of democratic systems is a fundamental step towards the definition and application of a new role for the State, a greater commitment to participation in society on the part of the civilian population, and the reorientation of public expenditure and private investment with social responsibility. It is essential to bring about a better balance between spending on defense and on social security; to reduce the generalized subsidies and protectionism which serve the interests of private elites; and to develop strategic public investment programs geared to the formation of human capital and the promotion of private investment. As the trend towards democratization grows, governments are faced with the need to act decisively, even at the risk of temporarily losing popularity, an inevitable consequence of beginning the profound transformations that are required. In this regard, several countries have already established some noteworthy internal alliances and social covenants.

In Latin America and the Caribbean, as in other parts of the world, efforts are being made to articulate a strategy of sustained development, with a view to avoiding short-term pressure to increase productivity for the sake of achieving competitiveness; instead, the idea is to lay the groundwork for a more robust and viable production structure over the short, medium and long terms. Clearly, in order to achieve sustained development, it is important to place greater emphasis on the future and, consequently, to give priority to human capital and to the rational use of natural resources (Pomareda 1990). Beyond the universal task of working to forge a common future (The Brundtland Report 1987), the LAC countries are faced with the serious challenge of striving for sustained development while at the same time overcoming the structural conditions that give rise to poverty. This, as noted by Sachs (1989), is closely linked to the deterioration of natural resources.

The achievement of sustained development requires, among other things, considerable financial resources. The countries have begun to develop these resources in a variety of ways: some progress has been made towards reducing the external debt, both through negotiations conducted by individual countries and through the collective pressure of LAC, and a different spirit may already be felt in these negotiations. Williamson (1990) acknowledges that the reforms that have been put underway in Latin America are much more far-reaching than is generally recognized. Some countries have begun to rationalize public expenditure, in line with the painful commitment that many of them have assumed in the context of their structural adjustment programs. The fact remains, however, that the burden of these adjustments has been borne by the poorest sectors of the population. Tax reforms have been initiated in order to build more equitable power structures that will rely less on

capital accumulation. In addition, the countries are more inclined to recognize the importance of participating in international trade by rationalizing the management of exchange rates. Justifiably, they are somewhat skeptical about the whole process, since the prerequisite for its operation is reciprocity between countries and hence the elimination of barriers on the part of the developed nations.

The challenge, in terms of the operation of the institutional and the informal systems in which financial transactions are conducted, is a formidable one. This system must be made to work, in order that private investments may be oriented towards production, that all social strata may have access to credit, and that the flight of capital, which poses such a serious problem for the region, may be halted (Williamson and Lessard 1987).

In economic and technological terms, it is obvious that none of the countries in the region is holding on to an isolationist development style. That is all in the past; nevertheless, there is the dilemma of how to create a balance between openness in regard to international trade and finance, and growth with equity. What is clearly needed is a development model that will provide for balance between those two pillars. Fortunately, progress is being made in the conception of a development style that can be adopted by any given country, with emphasis being placed on one or the other of these two foundations, as appropriate in light of each country's needs and potentialities. The countries have recognized the need for this balance as they have become aware of the risks they run if they refrain from taking part in the international processes of technology transfer, trade in products, inputs and services, and increasing capital flows. In addition, they have become concerned at the fact that international participation has usually benefited only a very limited segment of their populations.

In the years ahead, the LAC countries must be able to offer high-quality agricultural products on competitive terms. In order to make this possible, each country must take measures, as a matter of urgency, to improve the quality and reduce the cost of production of their products; the developed countries, in turn, must take an open-minded approach and assume the cost of eliminating protectionist measures. As regards participation on the international financial market, the countries must develop the capacity to appreciate and account for the total flow of funds into and out of the region. This will allow for more effective measures in the area of monetary and exchange-rate policies.

The LAC countries are showing an increased interest in participating in the international markets, although they still have some reservations. In particular, there is the concern that behind the seemingly good political intention of working for a more just international order there lie private interests and corporate needs that could press for political decisions that would have serious consequences for those emergin medium scale firms and organizations that are becoming more actively involved in international trade. Once again, the challenge is to adopt a strategy that is in harmony with modern times, i.e., a growth strategy for businesses of all sizes and countries that allows for flexibility, for the adaptation of technologies and for diversification and the spreading of risks in a fair, competitive environment.

The international scene is changing more and more frequently, and the events that bring about the changes are of an increasingly significant nature. One of the most interesting

processes has been the opening up of the economies of Eastern Europe and the expected consolidated European Market in 1992. This in itself has contributed to a redefinition of economic and political blocs with serious geopolitical implications. It is clear that this new international order presents both a challenge and an opportunity for LAC role.

Given this international scenario, the Initiative for the Americas, proposed in June 1990 by President Bush, represents a response whereby the bipolar scenario of the last few decades would be replaced by a pluripolar one, with Japan and the new Germany clearly intending to play key roles in establishing a new balance. The plan proposes the creation of a free trade zone throughout the hemisphere, with a view to increasing investments, providing a fresh flow of capital to the region, and alleviating the debt burden, while offering significant environmental benefits. The three elements of the proposal make it very attractive for LAC; however, in seeking to put it into effect, it is important to remember how it originated and what are the ultimate objectives being pursued on the broader international scene. It must be recalled that it is not a special program for exports of LAC countries to the USA, like the Caribbean Basin Initiative, but rather a program to stimulate investment and trade flows.

The recent changes in Eastern Europe, the plan for the unification of Europe in 1992, the Initiative for the Americas, and the war in the Persian Gulf are the most visible developments that are likely to change the international situation. Other, as yet unforeseeable events could also occur which could change the whole picture. Hence the significance of the recent changes: they appear as an additional reference point for the adjustments to be made in development styles and in efforts to achieve balance between domestic and international issues. Many other changes may also occur, on both the domestic and the international scenes; a development style must be devised that will enable us to make the necessary adjustments, but we must not expect to be able to change everything again each time new changes in extraregional initiatives are announced.

What we must be aware of, on the international scene, is the fact that, quite aside from the dimension of the marketplace (the first aspect that came to mind with the opening up of Eastern Europe to trade and the presentation of the Initiative for the Americas), we must assess and comprehend the strong interactions that exist in the fields of technology, economics and finance, within the framework of international business and political relations. We must realize that the changes that have taken place on the world scene have also led to a different perception of LAC on the part of the international community, and that, as far as competitiveness is concerned, we may find that, on the one hand, we are at a comparative disadvantage with the other regions in which some of the developed countries are interested for geopolitical reasons. The EEC countries, for example, look at LAC differently as compared to eastern Europe and Northern African countries. On the other hand, it is evident that we are seeing a search for political and economic allies in a new international balance.

Finally, it is worthwhile pointing out that as the developed countries seek to establish bilateral trade relations with each other or between major blocs, the challenge is greater for LAC countries to develop a common position. This is fundamental to be able to deal with emerging political and commercial alliances within blocks of developed countries looking for ways to supplement their own comparative advantages and to strengthen their positions at the international bargaining table. The LAC countries must therefore assess the situation and

take the necessary steps for group action, which will, in the long run, be more effective than individual actions. Regional and subregional integration processes in LAC have become even more timely and call for a redoubling of efforts on the part of the countries. Nevertheless, if we are to find effective forms of cooperation and integration, we must reflect seriously on those proposals that heretofore met with little success. What is needed is a true political commitment based on the conviction that technological, commercial and financial relations are the basis of the agreements reached by the private sector in the countries in order to make integration work. Consequently, the countries must create a vigorous and healthy legal and political framework for integration, review the role of the integration agencies, and make a concerted effort to harmonize their policies in order to encourage private sector ties.

3. AGRICULTURE AS AN EXPANDED SECTOR

Agriculture in LAC can no longer be seen as the primary sector associated with the production of crops and livestock; rather, it must be viewed as the agricultural-agroindustrial complex (Piñeiro 1987). In this complex, the increasing flow of products from the primary sector to the manufacturing sector, and the growing linkages within the rural areas show that agriculture has gone through an important transformation process. Structurally, the sector must also be seen as a conglomerate of enterprises --farms and agroindustries-- of different sizes and capacities, conducting transactions via the market or via vertical integration (Pomareda 1989).

Production on farms, in agroindustry and in the food industry involves the use and consumption of increasing amounts of industrial inputs, goods and services. The type of technology used is determined by the demand for these goods and services, including electric power, machinery and equipment, chemical inputs, plastics, packing materials and others. In turn, the levels of technology and types of management applied determine the demand for services such as information, consulting, accounting and others. Economic policies and the different tools used in implementing them are key elements in enhancing the aforementioned relations in order to build a sound structure for domestic production.

The primary agriculture of the past, which only required land, water, manpower and seed, has changed substantially in much of the region, although the gaps in technology have also widened. The necessity for industrializing agriculture becomes evident as technology, urbanization and international trade relations advance (Mellor 1987). Thus, for example, poultry raising, which over the last 20 years has become one of the most highly modernized and dynamic subsectors of agriculture, involves the use of advanced technologies that require know-how, feeds, machinery and inputs, thus it has given rise to the manufacture of balanced poultry feeds and of highly sophisticated practices in the area of marketing and promotion of consumption. In general terms, the industrialization of agriculture also extends to the production of crops such as cereals (which call for the use of inputs and machinery for production, drying, sorting, shelling, and packing); and coffee production, which calls for the use of large quantities of industrial inputs.

The process of technological change has promoted for the strengthening of relations between the agricultural, industrial and service sectors, especially in regions within countries,

or in countries where the greatest technological changes have occurred. This has given rise to industries and services for agriculture and agroindustry, as seen especially, for example, in the production of vegetables in northwestern Mexico, shrimp on the coast of Ecuador, fruits in central Chile, and milk and dairy products in the Central Valley of Costa Rica.

In some subregions, such as the Caribbean, there is a great potential for the development of strong ties between agriculture and domestic consumption in the tourist sector. Unfortunately, the strategies applied in the two sectors do not mesh, so that a large share of the foods and beverages consumed by tourists is imported, at the same time that the countries are being encouraged to export agriculture products. Also, in the particular case of the Caribbean countries there are evident reasons for an agriculture—tourism—environment strategy, especially if we consider the fragile nature of the lands and the large numbers of foreign visitors with spending money.

Clearly, agriculture and agroindustry must be considered a single sector. Nevertheless, the LAC countries are not really aware of this issue and of the magnitude of intrasectoral and intersectoral linkages, despite the fact that several research studies have already underscored same (Pomareda and Torres 1990; Mandler 1987). National accounts are still produced and aggregated in accordance with concepts that are inconsistent with these new perceptions, and hence the agricultural sector is thought to be diminishing in importance in the economies of the LAC countries.

Studies conducted in several developed countries, as well as in India, show the potential value of intersectoral relations as a mechanism for reactivating an economy (Williamson and Panchamuki 1989). In the case of LAC, input-output tables have not been updated or broken down so as to make it possible to determine trends in intersectoral relations; however, the little information that is available seems to show that there are already many intersectoral linkages and that they are on the increase. A study made by Mandler (1987) establishes that backward linkages, for example, come to light when total intermediate agricultural consumption ² is shown as a percentage of the gross value of agricultural production, compared with total intermediate consumption of domestic origin indicated as a percentage of GDP. These indicators show the pressures of the agricultural sector on the various sectors of production as a whole. The linkages are high in Argentina (34% vs. 44%), Chile (42% vs. 42%), Peru (52% vs. 42%) and Uruguay (38% vs. 36%), and relatively low in Bolivia (14% vs. 22%), Guatemala (10% vs. 27%), Haiti (6% vs. 20%) and Brazil (24% vs. 42%). As regards forward linkages, expressed in gross agricultural production with an intermediate destination, they are also comparable with total intermediate goods in terms of the overall economy. In this case, the linkages are very high in Brazil (69% vs. 42%), Chile (56% vs. 42%), Mexico (57% vs. 34%), Uruguay (53% vs. 36%) and Argentina (49% vs. 44%). In contrast, they are quite low in Costa Rica (7% vs. 29%) and Guatemala (17% vs. 27%).

Behind economic relations there lie structural conditions that are not stated in explicit terms, as regards the number of enterprises in the system or the connections between them.

² Refers to the primary agriculture sector, as shown in the input-output tables.

This omission makes it difficult to determine the direction that structural change *per se* is expected to take as economic policies are reoriented. Unless the necessary precautions are taken, this situation could contribute to the creation of monopolistic conglomerates. The adjustment process of the 1980s, and the further adjustments that must be pursued during the 1990s with the necessary reorientations, must pave the way for organizing production along lines that are consistent with the social needs of the region and not only with an overall market-economy vision, in which, given the imperfections and subtleties of markets, only a small percentage of the population will actually receive the full benefit of the system.

In order to modify the role of agriculture in economic growth, it is essential to understand the dimensions of the sector and of intersectoral relations. This implies reassessing agriculture's potential for contributing to rural and overall development. Once this information is available, the conceptualization, design and management of economic policy and of incentives aimed at encouraging private investment must be improved. In particular, as a country moves towards a market economy with less direct State intervention in prices, tax schemes and specific trade-policy tools must be reviewed. Former economic policies and protection measures, which made clear distinctions between sectors, should now recognize the need for intersectoral articulation (Pomareda *et al* 1989).

As far as domestic growth is concerned, a proper articulation between the sectors of production can contribute toward the establishment of an economic structure that will generate jobs and income and enable the countries to compete on the international market (ECLAC 1990). Agriculture has a fundamental role to play in promoting the articulation of the sectors of production as one of the pillars of the development model, although this is more often the case in some countries and in some regions within countries than in others (IICA 1989). The first step towards enhancing the role of agriculture will be to recognize that agriculture has already undergone substantial changes, which led to the strengthening of intersectoral relations. Moreover, major industries have been created --foodstuffs, beverages, leather, tobacco, lumber and agricultural inputs--which, while still using a component of imported inputs, can play a significant role in economic recovery, with the proviso that this should not simply be another program of industrial development providing protection for import substitution.

The recognition of intersectoral linkages should stimulate reanalysis of the strategic areas in which the State should act, how institutions should be modified and how public investment should be oriented. It will be particularly important to create institutional environments in which agroindustry will no longer be a "no man's land" and in which agroindustrial technology and organization maintain close harmony between the objectives and the means of agricultural development and most of the manufacturing industry and specific food nutritional requirements. The simplistic idea of seeking industrial conversion in very specific sectors in order to improve efficiency in production and trade should be seriously questioned. In the first place, consideration should be given to industries that can play a strategic role in restoring growth and solving social problems; second, conversion must not focus on isolated industries but rather on intersectoral relations and on the effect of backward and forward linkages in the generation of economic activity.

Finally, once these aspects, especially intersectoral relations, are understood, the countries' banking systems will have to adapt their orientation, organization and procedures to help mobilize financial resources for investment in production. Entrepreneurial and trade alliances between the different groups participating in the system must be encouraged. These alliances should seek to capitalize on complementarity of talents, technological know-how and entrepreneurial capability, in order to bring private investment in line with social responsibility. This means the creation of alliances between producers and agroindustries, as well as of new forms of social and entrepreneurial organization, with a view to articulating production systems under common objectives. As regards the mobilization of financial resources for investment in production and for trade, questions were already being raised some years ago about the usefulness of development banks specializing in specific sectors (Pomareda 1982). Recent proposals have called for the rapid creation of multisectoral development banks with the capacity, in particular, to finance technological innovations which, once achieved in a given sector, must be converted into inputs, equipment and materials for other sectors.

4. MODERNIZATION AS THE MEANS TO DEVELOPMENT

There are many ways of defining what is meant by modernization; it is important, however, to define what is meant not only by modernization *per se*, but also what constitutes modernization in agriculture. In this article, therefore, when we speak of agriculture, we will be referring to the expanded sector as described in the preceding section.

Human activity in modern times takes place within a complex and dynamic environment, almost as if it were an inflationary spiral. The dizzying pace of technological progress is reflected in know-how, processes, inputs, products and systems which have put on the market a large number of products designed to promote further progress. Many of these technological advances, however, have been monopolized or kept secret, and are used as a means for gaining power now or in the future.

The information with which society is constantly bombarded influences family and business activities and, in the final analysis, affects the performance of society. Moreover, the mass media have made it possible to transnationalize consumer habits which the developing countries cannot easily sustain, given their structures of production and levels of technology. This is particularly evident in the urban centers, with regard to dress, entertainment and eating habits. A large percentage of the population, having no access to economic resources through legitimate channels, becomes frustrated at not being able to purchase the products they see advertised and, in many cases, resorts to illegal means of appropriating money. It is quite clear that in LAC much recent delinquency was associated with a lack of economic resources, not only for the satisfaction of so-called basic needs, but also for the consumption of sumptuary goods and of drugs. Priority must be given to changing the focus of the mass media, so that the information they provide consumers will orient their consumption habits in a manner that is consistent with progress, but also with the country's production potential and the realities of its social structure.

The picture is not totally negative; there has been progress developing programs that make it possible to alleviate the problems and needs of the population. In fact, the mass

media can be one of the best means for improving education and developing human capital. Biotechnology can be an effective and rapid way to increase food production and thus help to solve the problems of hunger and malnutrition. The medical advances that have already made it possible to halt the spread of some of the worst diseases can be made available to the poorest sectors of the population. Synthetic fibers allow for the mass production of clothing and shelter for large numbers of people who are living in extreme poverty. **What causes concern is not scientific progress *per se*, but rather the need to ensure that this progress is reflected in products and services being made available to the most needy in society.**

If we ask why scientific progress has not brought greater social benefits, we find that the economists think that neither market-oriented nor centralized economies work properly, while sociologists and political scientists find the answer in the breakdown of social systems, the existence of pressure groups and the weakening of the State, despite the gigantic size of public institutions. With some optimism, we see countries redoubling their efforts to create new economic systems with a role for the State that is suited to the challenges of modern times. With less optimism, but with hope, we note that there is a trend towards the establishment of democratic structures in which government is shared. And, with concern, we note the rapid and sometimes surprising emergence of pressure groups whose tremendous capacity for accumulation is facilitated by their lack of ethical and moral principles.

In light of the above and bearing in mind the current and foreseeable economic and social environment, we consider that modernization in agriculture means increasing the capacity of farms and/or similar enterprises to achieve self-reliance, to increase production and income, and to grow in number, under circumstances of market risk, burgeoning technological innovations, and intense competition. It is important that this be achieved without depending on subsidies and protectionism. Still, State support is useful and justifiable, as little can be achieved without it, but this does not mean that subsidies should be perpetuated. We can not be so naive as to attempt development without carefully oriented support from the governments.

This concept of modernization of agriculture, of course, does not go as far as the broader concept of "modernization of the rural environment," which is beyond the scope of this article. The modernization of the rural environment should be seen as a final objective, and it will be easier to generate proposals for this goal once we have a clear idea of how to modernize agriculture (as a production activity) and how this is to be achieved within the rural environment. This rural space or geopolitical environment must be taken into account because it will make certain patterns of technology viable and will determine the form taken by entrepreneurial and farm organizations. The educational level of the rural population will influence the orientation of technology; agricultural and natural resource zones will be considered both individually and collectively in order to achieve a more rational management of resources; the formation of specialized commercial or family enterprises at various levels of diversification and vertical integration will be made viable by the prevailing organization. Moreover, it will be possible to develop, within the rural environment, crafts, industries and services that can offer alternatives for those who are not able or do not wish to engage in agriculture.

Considering that there is interest in and commitment to sustained development, modernization that stimulates improved competitiveness should be developed in order

to guarantee better performance in the future. Modernization must be sought on the farm and/or the enterprise, but in order for the process to be a lasting one, the requirements of equity must be borne in mind. Equity is a fundamental condition; without it, modernization at the level of farm and/or enterprise will not lead to economic and social development.

Although in this section we are stressing modernization *per se*, and equity will be discussed later, it is worthwhile at this point to briefly touch on the durability of the process, and the requirements for capital and selectivity. Every effort should be made to ensure that modernization is a lasting process that preserves and strengthens the bases of production, resources and organization. Also modernization should be sought within a context of austerity, given the serious financial limitations and the need to make resources accessible to a large share of the population. It is important to note that modernization of certain units of production does not lead to the displacement and absorption of small-scale, less educated and less aggressive producers. Nevertheless, this concern should not lead to mechanisms that protect obvious inefficiency or extremely conservative approaches.

The modernization of agriculture will begin at the unit level because it is the owner of a farm or the manager of an enterprise who has to make decisions, and that will depend on whether or not he wishes to attempt modernization. This decision is affected by many factors and is usually influenced by public policy and the expectations that it produces. There are two ways of perceiving this environment: as the market for one or more products or as the geopolitical space in which the enterprise is located and operates. In both cases, the strategy for modernization will call for different forms of action on the part of the State and its institutions and among agents in the private sector.

As regards the market, it should offer the necessary climate for risk-taking with a product or resource management. The market need not be large and well defined, but it must provide opportunities and give signals that competition is possible, that opportunities for product differentiation exist and that the marketing process is logical. The geopolitical environment should be carefully assessed, since farms or agroindustries depend on the resources available in the immediate geographical environment. In addition, their contribution to the development of this environment is key for its sustainability and for obtaining support from the general population and from the State.

5. THE RELATIONS BETWEEN DOMESTIC AND INTERNATIONAL FOOD MARKETS

Economic growth and development in the countries of LAC is a challenge that can no longer be avoided. Economic conditions have reached a level that is undermining the social structure and jeopardizing attempts at democratization. Poverty and hunger are at dangerous levels among large portions of the population, severely limiting the possibility of improving their economic and social situations. As this happens, other groups are reaping the benefits of economic opportunities. It must be clearly understood that these issues are at the heart of the problems of the societies of Latin America and the Caribbean.

In a renewed model, it is anticipated that modernization of agriculture can be one of the means to sustained economic recovery and development. For modernization to be

effective in contributing to growth, it must take place in sectors with market potential and it must foster intersectoral linkages. Also, to contribute to development, it must assume participation of increasing numbers of smaller producers and adequate and improving conditions for workers. To be sustainable, it must be based on technological patterns, organizations and management that specifically contribute to preserving and improving the quality of natural resources.

It should be made clear that, in light of instability in international markets for basic agricultural commodities, LAC countries should have a strategy for national food security. At the individual level, the food security issue means having enough income to satisfy basic needs. At the national level, production and import dependence on basic commodities has to do with global economic health as well as international financial image. In any event, a national food security strategy should recognize that the needs of the poor are growing and, unfortunately, markets usually do not work in favor of the most needy.

Since domestic markets are limited by severe poverty, international markets play a major role in reactivating the economies. Thus, in this section, the focus is on those issues related to market behavior, with special reference to the performance of and relations between domestic and international markets.

Even though we recognize that economic policies for eliminating distortions must be improved, this by itself will be only one element of the strategy. Given the nature of the problems and the sociopolitical structures in LAC, better conditions cannot be achieved by merely dismantling public institutions and freeing up the market. The problem is too complex for such simple solutions, and special consideration must be given to imperfect national and international markets.

Economic growth and development in the LAC countries must be stimulated, with consideration being given to people's wants and needs, as reflected in market structure and prices of goods and services. This requires the reorientation of the organization of production, to generate from the private sector a growing number of commodities and services needed by society, and also implies a role for the State in fostering these functions in the private sector, orienting, stimulating and complementing their functions in production and trade.

Society's wants and needs are typically determined by culture, education and income, among other factors. Consumer behavior, particularly the demand for food and food-related products, is influenced by information and propaganda; thus, the evolution of patterns of food consumption are evolving internationally in response to the flow of information specifically designed to transnationalize consumer preferences. This has an effect in spite of differences in levels of income and education; it is enough to have access to TV and radio. International information systems have become the best means of generalizing consumption habits, whether for good or bad, among millions of people.

In the countries of LAC, food marketing, preparation and consumption (as well as consumption of other goods) have changed primarily in response to urbanization, the reduced amount of time available to prepare meals, the pressure on women to enter the labor force, and the international flow of information. This pattern has favored the development of a food

industry primarily based on imports of primary inputs such as wheat and powdered milk, spices and flavorings, among others. Their use limits the potential of commodities produced locally, which are often more desirable from a nutritional standpoint.

LAC countries are also being stimulated to export more agricultural commodities to international markets, on the grounds that there is a comparative advantage for such commodities. This is questionable when, to achieve such exports, government intervention takes the form of substantial subsidies, and government concessions are needed to maintain unacceptable taxation systems and plantation production in some countries. It is a matter of concern that countries tend to export food to foreign markets, while foreign tourists in the country consume primarily imported foods rather than high quality domestic produce. The issue is not that imported goods taste better, but rather that high-quality and "safe" products are preferred. Such products can be produced domestically with adequate efforts.

Regarding foreign markets and their potential for LAC countries, two issues are closely related. The first refers to the orientation given to agriculture in LAC countries, taking into consideration demand for food and other elements. The second issue is market protection. The orientation that developed nations are giving to their agricultural sectors is attributable to two principal factors. First is their strategy for development in the rural and periurban areas, with special and specific consideration being given to conservation of natural resources. The second is the satisfaction of consumer needs, with increasing concern for the quality of foods. Both production and consumption considerations give rise to specific economic policies that hinder the proposed model and commercial policies that, with the flexibility in multilateral negotiations, conditions the flow of agricultural commodities.

Even though most developed nations seem to share aspects of this agricultural agenda, there are important differences, at least between Europe and the USA. The EEC-12 have chosen to promote the family farm through increased integration of producers into the marketing process. It is said that this model enhances a coherent social structure and sustainable management of farm resources, particularly the natural resource base. The development of this model is favored by several European Economic Community programs, which include guaranteed and subsidized producer prices and so-called structural programs. Structural programs in the EEC are oriented toward minimizing social costs, thus favoring less-developed members and backward regions in each country, usually steep hillsides. Their goal is to assist producers in these regions to integrate themselves into the common market. The combined resources of these programs provide a total fund of US\$70 billion for 1989-1993, with an important multiplier effect because governments and farmers provide counterpart funds; total investment for the referred period is about US\$200 billion.

Agriculture in the USA has emphasized large-scale, mechanized, corporate-managed operations, which means that only 3% of the population is involved directly in primary agriculture. The food industry, in turn, is also made up of in large marketing corporations. Given this structure, the US approach to natural resource management and improvement focuses on farm technologies less dependent on chemical inputs and land programs. Issues regarding a proposal for a new model of farm organization in the rural USA have little weight as regards the current Farm Bill.

Agricultural policy is also oriented, in developed nations, toward specific goals for the quality of foods. Health and safety considerations and increasing income levels are shaping consumer preferences, with a concomitant demand for foods of higher quality and, therefore, higher value. Although the proportion of income spent on food declines as income increases, the absolute value of expenditures on food increases because the quality of the food basket is higher.

There are important changes in the US food basket toward fewer red meats and milk and more fresh vegetables, white meats, fish and non-sugar sweeteners. In Europe, the preference for red meats has not declined, but there are important positive tendencies towards more fruits and vegetables and high-quality products. Observation and analysis of consumer preferences in developed countries will determine what LAC countries should try to produce for export. It is anticipated that the consumers in developed nations will demand changes in government policy, to allow for imports of desired commodities, regardless of their origin.

Production and consumption trends in the developed nations are an important point of reference for the orientation LAC countries must give to agriculture and agricultural trade. There are opportunities, but there are also major challenges. International concessions do not seem to be in the cards in the years ahead. Governing factors are competition, global trade negotiations, and a big dose of geopolitics.

6. KEY FACTORS IN MODERNIZATION AND PROGRESS

In order to achieve modernization in specific sectors of agriculture, capacity must be improved at the unit level. This can be achieved by building and constantly improving the quality of basic capital stock, which is made up of human resources, physical resources, biogenetic (animal and plant) materials, tools, machinery and equipment and infrastructure. This capital stock is the very foundation of modernization.

It has been recognized that technology, management capability and group organization are fundamental elements of the modernization process (Pomareda 1989). The technology required to modernize agriculture may contain significant inputs acquired on the market; but in order to achieve self-sustaining development, it is essential to improve the quality of physical resources, of tools and of genetic materials at the unit level, and to adopt agroindustrial processes that are consistent with technological progress and with the social realities of the countries. Thus, it is important to realize that modernization is not synonymous with the use of large amounts of inputs and capital goods, although some of these may indeed be essential.

In many modernization processes, chemical technology is a determining factor, but self-sustaining development is better achieved in those cases in which there is an adequate balance between the use of inputs that allow for temporary increases in yield (fertilizers and agrochemicals) and those which allow for productivity increases over time (genetic development, irrigation and drainage, crop rotation, production of humus, reforestation, erosion control and others) by improving the quality of resources. It is also clear that as far as the technological components of crops are concerned, for example, new concepts must be

developed so as to achieve a comprehensive technology for crop production and stock raising at the unit level.

It is worthwhile pointing out that over the past five decades, emphasis has been placed, at different times, on mechanization, agrochemicals, the development of hybrid varieties, drip and microsprinkling irrigation methods, artificial insemination, and, more recently, on embryo transplants and biotechnology. From now on, no one of these aspects should be considered in isolation; rather, they should all be part of a renewed and comprehensive approach designed to take advantage of the best technologies.

There is serious concern about the effect that technologies currently in use have on the cost structure of crop production. For example, despite the significant progress that has been made in genetics in connection with products such as cotton, coffee and grains, agrochemicals represent an increasing share of the costs. This illustrates the orientation of much agricultural research due to the influence of the marketing strategies transnational corporations that produce and market agrochemicals.

The challenge of ensuring that technology contributes to sustainable modernization and reduces dependency on the international chemical industry can only be met by developing entirely new national science and technology programs for agriculture that are aimed at raising the ceilings of productivity while at the same time developing and improving natural resources. One of the essential functions of such programs will be to monitor technology and keep track of the international-domestic transfer process, in line with the responsibility for defining and promoting a policy on technology. With the meagre resources available for agricultural research in LAC, great care must be exercised in deciding what the public institutions should do, and new patterns for concerted action with private enterprise must be defined.

In any effort to modernize agriculture, managerial ability must go hand in hand with technology. A farmer may be very skilled and use the best technologies in crop production or stock raising, but still not be very successful over the long run. Managerial ability is reflected, for example, in the way a small farmer engaged in primary production applies strategies for managing risks, accumulating capital through livestock, diversifying the family income, and scheduling the planting, storage or dessication of certain products, for example. Farmers with a better education and access to information and financing will be most successful when, although adopting more sophisticated management systems, they still follow these same fundamental principles. This more complex level is called management.

In the approaches followed so far in efforts to achieve the required changes in agriculture and rural development, management has usually been neglected or treated very lightly. In looking back at what has been done, we find that the main idea has been to seek technological innovation directly. This approach does not really motivate the farmer, nor does it help him improve his management skills. When a farmer is encouraged and becomes interested in a different style of management, and when he sees what others have achieved, he will want to adopt the necessary technology, or will at least be more motivated and better able to do so. From this standpoint, it is evident that in the most notable cases of modernization, ministry of agriculture extension workers have done very little to

improve the farmers' management capacity and skills, inasmuch as they have been trained for the transfer of technology *per se*.

Another point concerning management skills and modernization is the fact that, in many cases, these skills come from the urban sector and the entrepreneurs who possess them have little or no knowledge of agriculture. They are people with an enterprising spirit who are trying to make a profit. Without denying the benefits that have been achieved with this type of participation, the fact that they are merely seeking profit does remain a matter of concern. This could lead to a management style in which there is no concern for equity on the conservation of resources; hence, when resources become exhausted over the period of time it takes to recover the investment, the activity would simply be abandoned, without any commitment having been made to resource conservation or sustained development.

Some of the most successful management styles have been those in which planning for the enterprise began with a clear definition of each project and the specific market to be targeted. Skill in the organization of processes and the handling of labor relations are also important; however, the most important aspect is skill in financial management. Many producers who have been relatively successful in the aspect of production *per se* and in applying good marketing strategies have failed because of financial problems, mainly resulting from inflationary processes and changes in macroeconomic policies. Likewise, many of those who have been successful have not sought financing from development banks, thus raising the question as to whether subsidizing the interest rate is so important after all.

In general terms, agricultural units, producer associations, trade associations and others spend very little on marketing, advertising and on learning how to participate in unstable markets. More research is needed on this subject, but in general there are very few cases in which aggressive strategies have been developed to activate the market. One example of this is the case of poultry producers in Peru, who formed the Peruvian Poultry Raisers Association (*Asociación Peruana de Avicultores*), and in 1986-1987 launched a very successful television program entitled "*Coma Pollo*" ("Eat Chicken"). This system has also been used often in the United States to promote fresh milk, ice cream and other products.

The challenge of developing management skills in agriculture is daunting. Short-term training might begin with extension agents and organized producer groups. On a larger scale, major changes are required in the curricula of schools of agronomy and of agricultural economics, as well as in the agricultural training schools. The school at El Zamorano, Honduras, has taken some interesting steps in the area of management. In order for the Latin American schools to produce better results in this area, they will need to be provided with appropriate educational materials (textbooks, video presentations, etc.), starting with the Spanish and English textbooks that are already available.

It has become clear that in order for certain individual objectives to be achieved, a number of group or associative objectives must also be attained. Group action can provide benefits such as economies of scale in marketing and processing; collective purchasing of inputs; technical assistance and financing; management of irrigation and drainage systems; and the capacity to exercise political pressure in order to obtain selective protection or public services. After many years of experience, it has been found

that the key to building strong and lasting producer organizations is for members to realize that individual objectives must be subordinated to the objectives of the group as a whole. Thus, for example, if members value private ownership as an objective or a principle, programs based on collective use of the land cannot be expected to succeed; however, the principle of private ownership would not be violated by the establishment of cooperatives for the purpose of obtaining services or processing products.

A willingness to work together and to give up certain individual rights is fundamental to the success of cooperative or associative group action; it is also important to have a clear idea of the order of priority of the problems to be dealt with, and the best ways for the group to organize in order to solve them. The pyramid type of organization set up by vegetable producers in Mexico provides a good illustration of this. At the valley level, the producers' association deals with problems such as irrigation water management and planting schedules, working in close contact with the pertinent authorities in the Secretariat of Agriculture and Water Resources (*Secretaría de Agricultura y Recursos Hidráulicos - SARH*). At the state level, the representatives of the producer associations in each valley have set up a confederation of producer associations empowered to solve problems pertaining to state policies or to agree on the planting schedule. At the national level, the producer associations are represented in the National Union of Vegetable Producers (*Unión Nacional de Productores de Hortalizas - UNPH*), a well-established agency that has the technical capability and the necessary political clout to negotiate with the Mexican authorities matters pertaining to economic and trade policy. UNPH is also the organization responsible for providing the information needed for bilateral negotiations between Mexico and the United States (IICA 1990).

The three factors mentioned above, technology, management, and group organization, are fundamental to modernization. They determine the sector's ability to obtain benefits within the environment created by current policies, to gain access to domestic and international markets, and to obtain financial resources. Thus, it can be said that the great challenge to be met in order to achieve the modernization of agriculture lies in the formation of human capital. This task must be addressed not only by those involved in agriculture, but also by those responsible for educational policy and for economic and tax policies, so as to encourage a response from those who know and have the most, in order to build a more capable society for the future.

7. EQUITY AS A PREREQUISITE TO MODERNIZATION

The LAC countries are experiencing unbearable poverty and social turmoil; the disparities in income levels are enormous, and a large percentage of the population finds it impossible to build a better future for themselves. Unless these conditions are improved, modernization at the farm/enterprise level in the various sectors of production especially agriculture, will not bring about sustained development. Social tensions will increase and, despite any progress that may have been made in the production apparatus, society will self-destruct.

The great challenge, therefore, is to ensure that the modernization process does not aggravate already unacceptable social conditions, but rather that it help improve

them within a context of equity. The search for equity brings to mind at least five issues. First, it is important to create economic activity within the countries, in order to strengthen the structure of production and generate jobs and foreign exchange. Second, economic benefits must be well distributed within the sectors that have achieved modernization, and their social situation and their potential for future performance must be improved. Third, natural resources must be managed responsibly for the explicit purpose of achieving sustainable development in agriculture; this implies a commitment to equity for future generations. Fourth, every effort must be made to increase the variety, quality and volume of production in order to ensure that products are accessible to those who need them most. And finally, the lessons learned from modernization programs must be shared with other sectors of producers, regardless of where they work or the scale of their operations.

Modernization in a given sector can have a widespread multiplier effect provided there is a clear understanding of the intersectoral linkages involved and of how economic policies can contribute to the strengthening of such linkages. Several studies on modernization clearly show that, in many cases, a golden opportunity to contribute to the growth of the domestic economy is lost because the exchange policy is geared towards promoting imports of inputs and products that could have been produced locally, in an effort to build the aforementioned social and production alliances.

In some cases, modernization has had a direct and positive effect in that it has led to the creation of jobs and has brought in foreign exchange, without the necessity of creating related economic activities. In such cases, of course, these benefits must be weighed against the benefits of creating economic activity, since it is not always possible to meet both objectives.

With regard to the lack of equity in labor conditions, in generic terms, there is reason to be concerned about labor-intensive export production. In the case of some agroexports, although the average income received by harvest and packing workers is higher than the average rural wage, this seasonal employment calls for concentrated hard work and creates manual specialization. This type of experience does not really help workers develop flexible skills; and it must be viewed as a temporary job for the sole purpose of generating income, with little potential for upward mobility. In addition, it has been pointed out that agroexports are highly profitable largely to the fact that wages are low compared with the value of the marginal product of labor; this demonstrates the current inconsistencies in labor policies.

In order to temporarily obtain a higher income, the worker must make sacrifices, in terms of family relations, which have a long-term negative effect; some women must leave their homes, sometimes for days at a time, because they have to stay at the work center. As a result, children are more likely to have accidents and, behavior problems due to lack of daily parental guidance. It has been suggested that employers have the obligation to provide child care and educational facilities for minors whose parents have very long work shifts; only a few organizations have actually done this. Explicit requirements have also been established regarding protection against permanent contact with agrochemicals and other pollutants.

As regards environmental conservation, responsible management of natural resources and long-term sustainability of agricultural production, it is obvious that the prevailing production pattern can only be maintained at the risk of totally destroying large areas of natural resources—forests, soils, animals and plants, water, air—thus jeopardizing the very existence of future generations. This makes it imperative to develop production strategies and agricultural modernization processes that meet present needs without compromising the capacity of future generations to meet theirs.

In several significant experiments in modernization (Pomareda and Torres 1990), it has been shown that resource conservation has not been an explicit concern of private enterprise nor has it been fostered by public policy. It should be a matter of concern that the great successes in increasing grain production in Argentina are depleting the soils (Obschatko 1989); that the dramatic growth of shrimp production in Ecuador has left 100,000 hectares of mangrove patches useless for any other purpose (Ríos Pintado 1989), and that in Chile and Mexico, the use of chemical products has greatly increased as a result of sanitary measures in fruit (Silva and Bruna 1989) and vegetable growing (Vidali 1989).

In discussing the need for sustained development and for modernizing agriculture as a means of attaining it, with consideration being given explicitly to a commitment to equity for future generations, we must not fail to mention the role which the market plays in the allocation of resources. The most notable modernization exercises have been oriented by the search for competitiveness on the market and, hence, have given priority to efficiency and cost reduction; in some cases, however, there is already evidence of the difficulty of keeping costs down because of the deterioration of the natural biological balance.

In discussing market behavior and the management of economic policy tools that affect agriculture, one finds that neoclassical theory has inconsistencies and limitations when it comes down to reality and dealing with the challenge of improving environmental conditions. For example, the whole theory of externalities has become increasingly popular; however, it is still treated almost as an appendix to neoclassical economic theory. Another extremely important issue is the management of the discount rate (and its relationship with the interest rate) in evaluating projects in which priority is given to short-term returns. Fortunately, the limitations of the economic theory that has prevailed until now are finally being pointed out (Goodland and Ledec 1987), and some contributions are being made to the drawing up a conceptual framework that will incorporate market theory into the theory of sustained development (Redclift 1988). It must be remembered that modernization is sought to increase production for export to generate foreign exchange, as well as to solve the serious domestic problems of food and nutrition.

In one of the most successful cases of modernization, that of poultry production in Peru (Palomino 1989), the multiplier effect on economic activity was low; however, per capita consumption increased substantially as poultry prices fell in comparison with beef at a time when per capita income was at a standstill and income distribution was deteriorating. Thus per capita annual consumption of chicken rose from 3.2 kg in 1969 to 9.8 kg in 1987. In other cases, such as those of Chile and Mexico, the increase in export production and the raising of quality standards for exportable products have made it possible to offer on the domestic market good quality, attractively packaged products which, even though not fully meeting export standards, are better than the products produced in areas that are not

influenced by production technology of export marketing. In the cases mentioned above, per capita domestic consumption of fruits and vegetables has tripled in 15 years, with the positive implications this has for nutrition and health. It must be remembered, however, that these products require high levels of agrochemicals; so far, no study has been made to show whether chemical residues are greater or lesser than in cases where less advanced technology is used along with agrochemicals.

The positive or negative effect of the increase in production as regards availability for domestic consumption is not always clearly shown in aggregated data. In Costa Rica, for example, Camacho (1989) reports that per capita milk production has systematically increased over the last 20 years. What this study does not show is that a growing proportion of such production is used to make by-products such as cheese, ice cream, yogurt and others which are not subject to price controls and which have a greater income elasticity. As a result, per capita consumption of milk has fallen, and this may have a greater effect on children and on the lower-income strata of the population. Moreover, since milk is pooled in rural and semirural collection centers and processed mainly in urban areas, it is also possible that per capita consumption in the rural areas may have fallen.

It is also important to point out how the modernization of a subsector or of a product brings about changes in the consumption of substitute products, thus affecting producers who for agroecological or technological reasons are not able to participate in the modernization process. In Brazil, for example, there is a strong tendency to replace peanut and cotton oil with soybean oil. Between 1969 and 1985, the production of soybean oil rose from 100 to 1,411 tons per year, while the production of peanuts and cotton fell from 170 to 4 and from 179 to 89 thousand tons per year respectively.

In other cases, there is a marked segmentation in production for the domestic and external markets, as noted in the case of shrimp. In Ecuador, per capita annual domestic consumption of shrimp has been minimal, ranging between 90 and 480 grams from 1975 to 1986, with an average of 200 grams per capita per year. It was not until 1987 and 1988, when production and exports increased considerably (although with problems in adequate exportable quality), that per capita domestic consumption rose to 1,300 grams.

The task to be carried out over the next few years will be to extrapolate the knowledge gained from modernization experiences. What is known so far regarding the interaction of technology, management and organization in creating improved capacity must be disseminated, in the context of a renewed strategy for agricultural development. It is important to stress that what is learned about a given product in one country can be extrapolated to the same product in other countries and to other products in the same or other countries. One cannot claim that modernization is being achieved within a context of equity if the knowledge and skills gained are not shared with other farmers.

The point that must be stressed here is the importance of a commitment to sharing knowledge on how to improve a producer's ability to cope in modern times, not necessarily how to produce a given product for export. If this not understood, there will be natural reactions of jealousy and fear about sharing knowledge, which would jeopardize social reciprocity within individual countries, as well as cooperation between countries.

Within the framework of the PLANLAC, in which countries have committed themselves to carrying out joint actions, there is ample opportunity to contribute to modernization with equity. There are high expectations that the knowledge that is being generated by modernization experiences will help make international cooperation more effective, and contribute to the development of new forms of horizontal cooperation between the private and public sectors of the countries of the region.

8. CHALLENGES FOR PUBLIC SECTOR POLICIES

In this day and age, in order for small-scale farmers and larger-scale enterprises to invest in agriculture and follow it as a way of life, they must be convinced that it can be a lucrative and sustainable undertaking. Agriculture has been shown to be a viable activity, especially if technology, management and group action are used. The profitability and sustainability of the undertaking will depend on how the government acts in several respects: for example, it must prove to be credible and trustworthy; it must set economic policies that do not penalize the sector; it must be able to rely on legislation and public institutions that operate with a spirit of service; it must foster an effective and fair financial system; it must make strategic public investments and it must provide guidelines for food consumption.

If agriculture is to be modernized while ensuring maximum equity, the role of the State must be reoriented. This would allow for changes to be made in policy management, in reforms and modernization of institutions, and in the orientation of investments. It is evident that the modernization of institutions will be the central focus of efforts to achieve policies that fit the model proposed, to orient private investment and to set priorities and manage public investment.

Several recent papers have discussed the need to revise and reorient macroeconomic policies with a view to ensuring that they are consistent with the proposed reactivation of agriculture (Pomareda *et al.* 1989). This calls for an on-going strategy of seeking agreement between those responsible for macroeconomic policy and those responsible for agricultural and industrial policies, which will provide better consistency between macroeconomic policy and sectoral policies, and strengthen the linkages between different sectors of the economy.

In order to achieve this harmonization, it will be necessary, on the one hand, to develop mechanisms for coordinating decision making in the area of economics and, on the other, to have sufficient information on intersectoral linkages, in order to allow for an assessment to be made of the impact of changes in economic policy. In addition, new ways of organizing public sector institutions must be found, in order to ensure adequate participation of the agricultural authorities in the formulation of policies which affect the sector.

It is difficult to ensure consistency in policies designed to offer incentives for production because such policies are often implemented by different agencies throughout the public sector of agriculture. In many countries, different agencies (ministries of agriculture, state corporations, autonomous agencies), often operating with a high degree of

independence, handle farm credit, the marketing of inputs and products, public investment in agriculture and the levying of taxes. The existence of a decentralized institutional system for the administration of incentive-policy tools and related programs must be balanced against the need for an adequate system of overall coordination of such policies so as to ensure their internal consistency and set the guidelines for decentralized action.

It is worthwhile noting that in most of the LAC countries, the State not only directs policy but is one of the main economic agents of agricultural production. The public sector provides services, administers goods, operates on the market and carries out a number of other activities pertaining to the economy and to rural development. The public sector has traditionally assumed responsibility for socially necessary activities not undertaken by the private sector. Thus, over the last few decades, State enterprises have often been created to distribute credit, market products, generate and transfer technology, and provide inputs. This role as an initiator of activities has been a common pattern followed both in the LAC countries and in other developing countries; unfortunately the State has often not fulfilled its role properly, and has been rejected by society because of the lack of credibility of many public institutions.

Questions have been raised as to whether the public sector should play such a leading role in the development process, including its direct participation in economic activity. In their structural and sectoral adjustment programs, the international financial agencies are now seeking to reduce State participation in economic activity. This idea, however, needs clarification, since what is needed is a stronger State that is more able to play a guiding role and that will be highly respected, as well as a public apparatus which, although possibly smaller in size, will be more efficient and service-oriented, and will enjoy the trust of society.

As regards direct participation in economic activities, there are areas in which the State's initial action has allowed for the subsequent development of private enterprises and cooperatives that provide equivalent services, thus making public sector presence unnecessary. This would also release resources for other activities in which the State's participation is essential. It is also important to assess the potential for joint public- and private-sector activities, this being an alternative not been properly appreciated in the past but which has now become imperative. In order to open the way for such ventures, it will be necessary to revise the legal regulations which often hinder them, and to seek more flexible mechanisms for establishing the linkage.

Another important aspect to be considered in modernizing agriculture is the need for modernization of the public sector itself, essential if efficiency is to be improved. Efforts to modernize agriculture and make it more dynamic are directly related to activities of the public sector, as much as there is no point in improving efficiency in production if public-sector activities which affect agricultural costs are not competitive. This modernization must cover a variety of aspects, and must include changes in the organization of institutions and the application of management techniques in their administration.

In view of the importance of the financial markets as a means for mobilizing resources for investment in agriculture, the institutional system responsible for mobilizing resources faces a tremendous challenge. This system is made up, in principle, of the central

banks, the commercial banks, the development banks and other organizations such as savings and loan funds and cooperatives. This institutional system calls for a comprehensive and concerted effort to be made in the channeling of resources. The 1989 World Development Report includes a thorough analysis of the institutional problems encountered in the area of financing. If there is a trend towards the establishment of uniform interest rates in a country, with the gradual elimination of the prevailing subsidies, the concern arises as to what will be the role of the development banks. It has been suggested (World Bank 1989) that the national development banks might be merged with the commercial banks; this is tantamount to denying any specific purpose or goal for the development banks as we face the challenges of development over the next few years.

The roles of the development banks, the institutional systems that provide financing, and each individual institution must be assessed with a view to determining what changes may be needed. If development and modernization require more qualified human resources, more and better information, and improved technology and management skills, the national development banks might consider reorienting their operations, with a view to supplementing the work of the rest of the institutional system. Thus, they might direct their efforts more toward investing in the formation of capital (human, physical, technological) and less toward financing farm credit and expenses. An area that deserves attention is that of special financing for the commercial production of technological innovations.

Over the next few years, great efforts will be needed to design and manage public investment, in keeping with the policies adopted, in such a way as to enable the State to fulfill its role in the development of agriculture. An exhaustive analysis of the management of public investment for the reactivation of agriculture in the countries of the region must cover many aspects, including the criteria to be applied in establishing priorities for State investment and the close relationship between public and private investment.

These are not the only aspects that must be stressed; there is also a need for serious discussion of the amount of public investment that should be made in agriculture as compared with public investment in other sectors (whether related to agriculture or not) which indirectly contribute to the development of the sector by promoting and facilitating investment in agricultural products. A full understanding of the role which agriculture plays in the national economy will lead to the allocation of more resources to this sector and to certain components of other sectors, such as investment in rural infrastructure, rural education, and training in nutrition. In any event, rather than proposing drastic reductions in public expenditure, it is essential to identify investments and expenditures that the State must make in order to fulfill its role more efficiently.

9. SUMMARY AND FINAL REMARKS

The political and economic environment at the national, regional and world levels is in a state of constant flux, as evidenced in the instabilities of the system and the opportunities and challenges being faced by those of who are involved in agriculture. This means that we must devise a development style based on a growing capacity to participate efficiently in this scenario, without assuming that frequent and abrupt changes of direction are possible.

Agriculture is already being perceived as an expanded sector that includes the agricultural-agroindustrial complex and it is increasingly interrelated with other production and service sectors. It is worthwhile to examine the entrepreneurial and social structures which determine its operation, how the effects of economic policy measures are transmitted, and what is the actual potential of each country and of specific regions in each country to generate economic activity by way of intersectoral relations.

It is suggested that modernizing agriculture is the way to improve the capacity of producers at the farm and/or enterprise level for self-reliance, in these times of economic disruption, rapid technological change, intense competition and difficult living conditions. It is also explicitly suggested that we should try to modernize agriculture as a means of contributing to rural development. Studies on the experiences of a number of countries must be further developed in order to show the close involvement of the private sector in modernization processes.

Modernization entails the formation and improvement of the capital stock, in human, physical and natural terms, as means for achieving greater capacity at the unit level. To this end, technology, management capacity and group organizations or trade associations are the most important factors that must be developed. Thus, it is essential to do away with the traditional approaches of microeconomics, which are based on an analysis of the production function, and move on to improve the principles of enterprise theory. In particular, the still unexplained residue of econometric analyses must be studied in depth in order to develop the investment in human capital formation, which translates into technological know-how and management capacity.

From the standpoint of public policy, it is important to develop an economic policy that will set aside the concept of competition between sectors and instead seek to develop complementarity between them. In addition, there is an extremely urgent need to imbue public institutions with a spirit and mystique of service. In this regard, the major challenge is to devise forms of State participation as progress is made towards the adoption of market economies. It is especially important that the move towards a market economy be made with a commitment to social responsibility, with benefits shared equitably within producers and consumers.

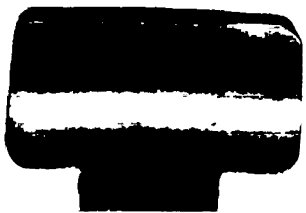
The issues we have discussed are not dealt with in prevailing economic theories or in academic training curricula, although these are the normal spheres of action of our profession. The challenge is for all of us who are involved in academics, research, advisory services, management of public enterprises, private enterprise and political leadership. A concerted effort of inter-American cooperation will greatly facilitate the growth of knowledge and experience, and each one of us must be committed to a well-defined collective cause.

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