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AGRICULTURE SECTOR ASSESSMENT FOR BOLIVIA

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Delivery Order Number 9

Prepared For:

AGRICULTURE AND RURAL DEVELOPMENT OFFICE
USAID/BOLIVIA MISSION

Prepared By:

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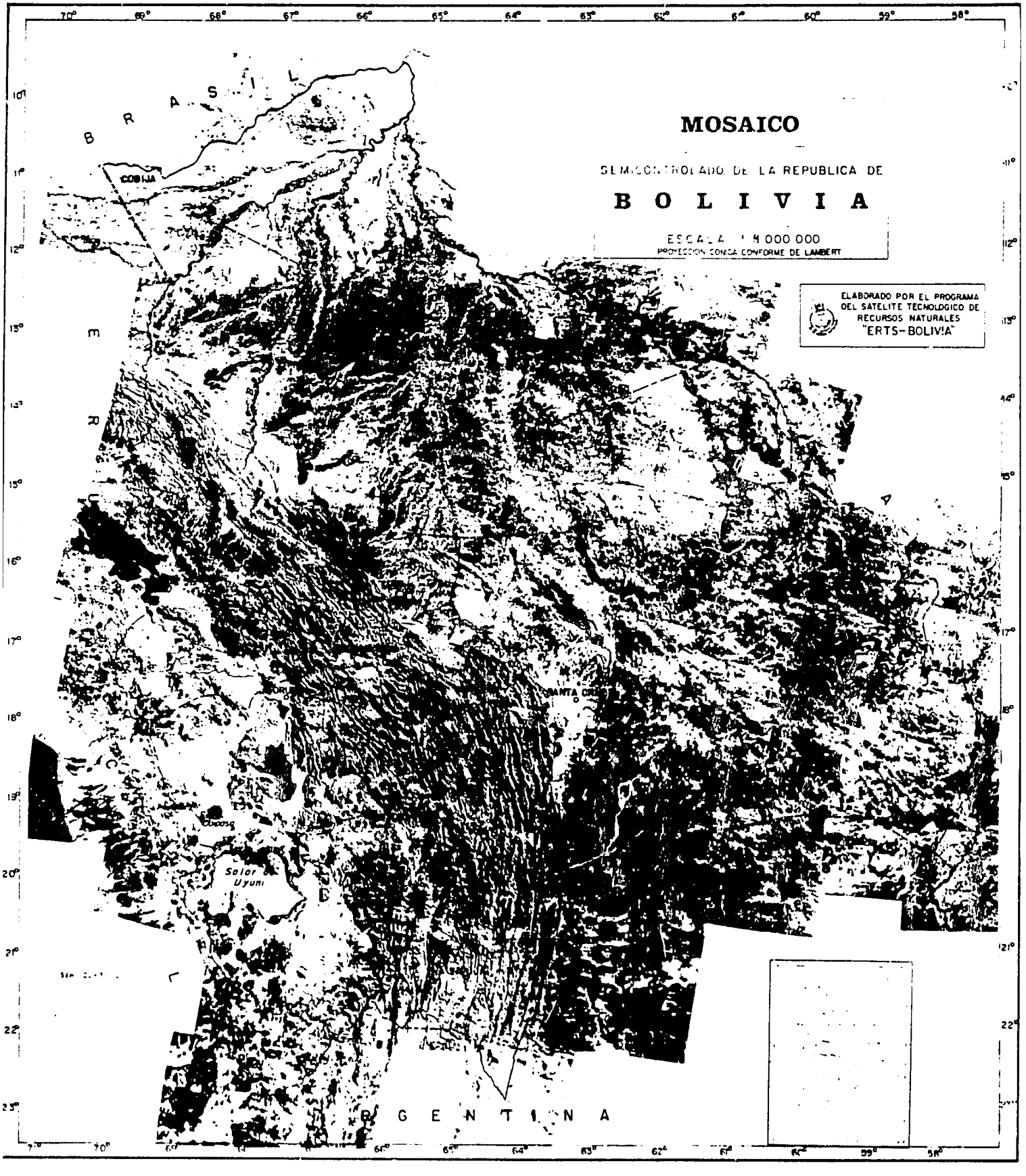
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EXECUTIVE SUMMARY

Agriculture provides employment for half the labor force in Bolivia, and half the population is rural, despite growing urbanization. The nation meets most of its nutritional needs domestically, with the exception of wheat and milk. Agriculture is the largest industry, and accounts for one fifth of the GDP. Still another fifth may be attributed to the distribution and processing of agricultural products. In a nation that has depended on exporting non-renewable natural resources since its colonial period, agriculture still provides more than one sixth of exports.

In opening chapters I and II, this report examines both the structure of this key sector in the Bolivian economy, and the impact national policies and attitudes have had in shaping its past and present. The natural resource base is also described--highlands, valleys, and the vast unsettled lowlands--as well as a variety of climatic conditions that provide the basis for a wide range of agricultural production.

Chapter III looks at the medium-term prospects for agriculture sector development, presented by commodity and by region. Potential opportunities for growth are identified, and broken down into (1) export commodities, (2) import displacement commodities, and (3) basic food products that are seldom either imported or exported.

In the first category, commodities for export, Bolivia in 1986 exported US$ 110 million in non-traditional goods, defined as all goods other than natural gas and minerals. The most important export group was wood products (US$ 23.2 million), followed by soybean products (US$ 19.6), cattle products (US$ 19.1 million) and coffee (US$ 13.2 million). Together these four constituted 68 percent of all Bolivian non-traditional exports.

Performance in 1986 was encouraging. It should be noted, however, that export levels are still recovering from an earlier slump. In 1980, Bolivian non-traditional exports had reached a value of nearly US$ 150 million. They then dropped precipitously to US$ 30 million in 1984 and US$ 35 million in 1985, before partial recovery to US$ 110 million in 1986. An additional cautionary note: non-traditional exports in the first semester of 1987 were only US$ 48.8 million, and without an active export policy, it is doubtful whether total 1987 exports will even be able to match 1986 levels.

With respect to import displacement opportunities, four commodities are identified: they are dairy products, wheat,

barley, and cotton, more or less in that order of importance. Bolivia definitely has a comparative advantage in milk production at the farm level. Wheat and barley, on the other hand, are marginal crops for small farmers. They enter into the rotation cycle in many of the highland and valley areas, but are limited in terms of the potential for increased yields or land area. Some increases in wheat production are expected in the lowlands in conjunction with expansion of soybean. Cotton production can be increased, although yields are not high. As more production shifts over to small farmers, labor problems become less critical.

With respect to the final area of opportunity--basic food products such as potato, rice, corn, yucca, broad bean, and vegetables, that are neither imported nor exported--increases in levels of output are worthwhile only if the farmer finds a market for his products. Generally, potential for producing these commodities is much greater than local demand, given a relatively small consumer population with limited buying power.

As a result, the opportunities for growth in this area are not oriented towards increasing production so much as towards increasing productivity. The intent is not to rapidly expand output, but to increase the efficiency of production, and in many cases, the best way to achieve this objective is through improvements in market channels.

Having identified these opportunities for growth, the conclusion of chapter III isolates the principal constraints to agricultural development, prioritizing them so they may be used as the basis for a rational agricultural sector assistance strategy.

As a first priority, it is apparent that efforts to develop the agricultural sector in Bolivia should focus on <u>gaining access</u> to export markets and also on improving efficiency <u>in domestic marketing</u>. Most of what is needed to promote non-traditional exports focuses on developing market channels; therefore many of the constraints to export promotion overlap with those to domestic marketing. Specifically, three fundamental elements need to be addressed, as follows.

- <u>Market information and intelligence</u>. There is presently no system for rapidly reporting prices and volumes in internal wholesale markets for the benefit of all participants in the marketing chain, including producers and intermediaries. Secondly, understanding of external markets is poor: where are the markets, who are the buyers, what form, time and place are products best delivered, what contractual arrangements are used for sale, who arranges for transport, who takes the risk, what recourse does the seller have when things go wrong?

- Infrastructure for export. Basic road and rail systems are grossly inadequate, creating diminished comparative advantage for most products. Specialized storage and transport facilities are nearly non-existent. Containerization and other cost-reducing methods of handling commodities need to be introduced. Agroindustrial capacity is particularly lacking for packing meat, using beef and pork by-products, manufacturing goods from leather, and manufacturing lumber products.

- Coordination of internal market channels. At present, production, collection, transport, storage, and distribution functions are not linked into an organized chain. Such linkage could be achieved through associations of wholesalers and retailers and other kinds of marketing organizations that reach back directly to the producer. Improvements in the system need to be made to reduce handling costs and losses, while improving the quality of products. Improvements in infrastructure, such as wholesale markets, should be made only as needed by the system. Infrastructure should not precede development of institutions and improvements in distribution channels.

After marketing, second priority should be given to specific efforts to strengthen institutions. Human resource development and policy analysis are also included in this category, as follows.

- Private agricultural organizations. Small farmers can gain access to markets, new technology, services, inputs, and credit only if they can work together through rural organizations. Most programs that try to deal with small farmers individually are frustrated by slow rates of adoption and high costs relative to impact. Continued support--such as that provided through the OAP project--is needed. In addition, support should be provided to form new organizations.

- Local public institutions in rural areas. Mechanisms do not exist whereby rural people can provide "public goods," even when they agree on the need and the financial potential is present. When central government agencies are stretched too thin to meet these needs, the DDCs--the only other institution with taxing authority--become involved to fill the gap. When these in turn are stretched too thin to meet the needs of each locality, no other option is available. Additional institutions at the local level, such as special service districts, need to be formed.

- Privatization. The intentions of the GOB to encourage privatization of agroindustries have not been carried out because producer associations and cooperatives lack the funds to buy out agroindustries directly. Alternatives such as employee and producer buy-outs via trust funds (ESOPs) need to be introduced.

- Policy analysis. Increased capability at the central public level of MACA is needed. Emphasis should be on a very small cadre of highly skilled experts in order to attain a degree of influence at the inter-ministerial and international levels. Also the private sector should develop the capability to undertake policy analysis and provide concrete, positive solutions to problems of national scale. Current lobbying efforts are weakened by the lack of clear analysis and objective information.

- Human resource development. Like institutional development, human resource development cuts across all other parts of the agricultural sector. Particular emphasis should be placed on developing human capabilities in technology transfer and agricultural credit programs. Practical training should come first and achievement of higher academic levels second.

The next set of priorities is related to rural infrastructure, such as farm-to-market roads, schools, irrigation and drainage. The construction and maintenance of this kind of infrastructure is vital to the efficiency of the agricultural community over the long run. A consistent effort is needed to find the resources to make improvements. Labor-intensive methods of construction and maintenance should be emphasized in areas where underemployment is high.

Before major strides can be made on a massive scale, however, institutional constraints to local initiative and economic resources must be removed. Meanwhile, access roads in the lowlands where pressures of migration are increasing should receive priority to give the disadvantaged population the means to improve their situation in the long run.

The fourth set of priorities is related to increasing productivity, efficiency and farm incomes, especially for small and medium-sized farmers. The first among these includes technology transfer.

- Technology transfer. Use of new technology should be promoted through transfer agents based in the private sector. Traditional public extension services have had little impact on farming practices. New approaches should be developed in which the farmer pays part or all of the cost, individually or through farm organizations. This approach implies linking the technology transfer system to credit services.

- Input supply/use. Primary emphasis should be placed on seed production, including improvement of seed quality. Seed has been particularly important in increasing the competitive position of Bolivia in international markets for crops such as soybeans for export and wheat for import displacement. Secondly, fertilizer supply needs attention.

- On-farm resource management. Steps need to be taken to improve the farmer's knowledge of how to better utilize the resources at hand, especially in dealing with soil and water management, crop rotation, and range management. These measures require little in the way of material inputs, but instead focus on the farmer's capabilities and systems of production, including crops, forages and livestock.

- Research or generation of technology. Much of the new technology applied in Bolivia is "imported" directly by farmers, through development programs, etc. and adapted over time to local conditions. The process is slow. However, problems occur more often at the level of application, adaptation, and transfer than in the generation of technology per se. Hence, research is given a lower priority. Efforts to improve the system should emphasize a client-driven system, which does not isolate itself from the farmer, and which must analyze and publish its results in order to prosper. Maximum participation of farmers through associations and chambers is necessary. It can be achieved only if research institutions are decentralized to the departmental level.

- Agricultural credit. The farm sector can be thought of as made up of large commercial farmers, followed by medium-sized commercial farmers, then farm organizations that include small farmers, and finally individual small farmers, including those who earn a part of their living off-farm. The private banking system reaches only a part of the first group. The BAB reaches some farm organizations and some individual small farmers. There is a large gap left to cover among commercial farms, especially those of medium scale, as well as farm organizations, which are also of medium scale. A private development bank established by the agricultural community should be considered of high priority. However, this institution needs the backing of a guarantee fund or crop insurance program to help it absorb some of the risk inherent in agriculture. It should also be allowed to accept land titles as guarantees. Most important, it should place very heavy emphasis on including technical assistance among its activities.

Finally, priority is given to constraints in the area of environmental protection and natural resource management, beginning with forest resources. Forests cover more than half the country, and lumber products are the largest non-traditional export. Yet alternatives to regenerate the more valuable species in the northern tropical forests or to better utilize existing resources are practically unknown. Expertise must be "imported" with the intention of designing initial, immediate actions in conjunction with the private and public sectors. More important, local human capabilities should be developed through the universities in the lowland areas.

Following the discussion of opportunities and constraints in chapter III, chapter IV looks at the development implications of official Bolivian and U.S. government objectives. These provide the broad conceptual framework for developing an agricultural sector assistance strategy. The remainder of chapter IV examines the guiding principles of that strategy as well as the specific interventions it implies.

Since assuming power democratically in August, 1985, the government of President Victor Paz Estenssoro has moved aggressively to restore public confidence and bring about economic stabilization and recovery. In contrast to previous governments, it has chosen to rely heavily on the power of market forces and looks to the restoration of dynamism in Bolivia's private sector. Moreover, with the collapse of international tin markets and the dramatic decline in hydrocarbon prices, it is banking on a burst in the production of new export products as the engine of the country's future growth.

For its part, USAID/Bolivia has warmly endorsed the policy changes instituted by the Paz government and has mobilized its resources in support of the government's new direction. As indicated in the mission's most recent Action Plan, AID agricultural support is aimed at achieving two broad objectives: first, rapid and sustained economic growth; and, second, a wider sharing of the benefits of growth through increased small farmer production, expanded employment opportunities and higher real incomes.

The combination of the GOB strategy of export-led growth and the USAID objective of growth-with-equity has a number of implications for the design of an agricultural assistance strategy. Export-led growth is expected to increase the incomes of producers and laborers involved in export production. In Bolivia, exporters and food producers often consist of different groups of participants in the economic system, a fact that leads to marked regional and equity implications. The hub of emerging non-traditional export production is in the lowlands, especially in Santa Cruz. In contrast, a higher proportion of the agricultural activity in the valley and highland regions goes to food production for domestic consumption. As a consequence, the lion's share of the benefits of export-led growth in Bolivia can be expected, in the first instance, to concentrate in the lowlands. Further, with lumber, soybeans and beef heading the list of export products, the immediate beneficiaries are likely to be large- and medium-sized enterprises.

Several counterbalancing factors also have implications for AID's role in these developmental processes. First, potential new exports will come from the valley and highland regions, in addition to current exports, such as coffee and alpaca.

Second, recent years have witnessed a surge in the migration of valley and highland residents to the lowlands. As growth in agricultural exports accelerates, this trend is expected to gain momentum. To its credit, the department of Santa Cruz has expressed a willingness to accommodate the flow of migrants and effectively spread the benefits of growth more broadly among the country's current population.

Third, the demand for local consumer products, including food products, is likely to increase. More than half of Bolivia's population is now classified as urban, and the proportion of urban to rural dwellers is growing. This means there are more urban consumers relative to the number of rural people producing agricultural commodities. Furthermore, Bolivia is in the throes of recovering from prolonged recession in which GDP per capita is estimated to have fallen by 26 percent over the past five years. Incomes of consumers can be expected to increase and in the short run, a disproportionately large share of those earnings will be spent on food.

Fourth, Bolivia's selection of an export-led growth strategy does not necessarily mean an unadulterated trickle-down approach to development. Even in an economy with a free market orientation, the distribution of growth and its benefits is subject to policy intervention.

In the context of these influences on agricultural development, the key elements of this agricultural sector strategy can be summarized as follows. USAID/Bolivia will use the development resources at its disposal to achieve the dual objectives of (1) agricultural growth and (2) equity in the distribution of benefits from growth. It will support the export-led growth strategy adopted by the Bolivian government, paying special attention to opportunities for participation by small and medium-sized enterprises in the production, processing and export of non-traditional export commodities. To a lesser exent, it will promote the production of food import substitutes.

In attacking key constraints to achieving these objectives, USAID/Bolivia will pay particular attention to two areas. First, it will lend catalytic support to opportunities for a more appropriate alignment of public and private sector roles in agricultural development. Second, it will promote the delivery of support services directly to program beneficiaries and encourage the active participation of those beneficiaries at the regional level, with reduced reliance on the central government as intermediary.

Chapter IV concludes with a description of specific interventions in this agricultural sector strategy. They follow

roughly the same order of priority as the list of constraints in chapter III.

Finally, chapter V is devoted to the presentation of concept papers for future AID projects. These provide greater detail for the specific interventions proposed in a broad way in chapter IV.

CHAPTER I

BACKGROUND

A. The Role of Agriculture in the Bolivian Economy

Agriculture provides employment for half the labor force of Bolivia. Half the population is rural, despite growing urbanization. The nation meets most of its nutritional needs domestically, with the exception of wheat and milk. Agriculture is the largest industry, and accounts for one-fifth of the GDP. Another fifth may be attributed to the distribution and processing of agricultural products. In a nation that has depended on exporting non-renewable natural resources since its colonial period, agriculture still provides more than one-sixth of exports.

1. Macroeconomic Trends

a. 1971-1978: Economic Growth

General Hugo Banzer Suarez attained power in August 1971 and remained in office until July 1978. This was an economically favorable economic period, the result of petroleum and agricultural expansion in the east, and rising world prices of tin, petroleum, and agricultural products.

Astute politics, combined with economic growth, enabled Banzer to create an atmosphere of certainty and confidence. This encouraged international borrowing, as well as domestic and international investment. Growth of public sector and state enterprises encouraged political stability by providing employment for an increasing middle class. Between 1970 and 1975, the public sector accounted for 75 percent of investment, as compared with 52 percent in the preceding five years. By 1977, 72 percent of the national budget was allocated to 89 decentralized agencies and 60 state enterprises, many of which were heavily subsidized. The public sector deficit expanded from b$296 million in 1971 to b$3,313 million in 1977.

By 1978, the economy was declining and Banzer's political support was eroding. It became apparent that he could not take the severe measures required to stabilize the economy in the face of a resurgent labor movement.

b. 1978-1982: Instability and Decline

The results of the 1978 elections were annulled because of fraud. This led to successive military coups, inconclusive elections, and interim presidents selected by congress. Although Hernan Siles Zuazo clearly led the popular

vote in the 1980 national election, another military coup occurred before congress could confirm the results.

The years 1978 to 1982 were marked by the interplay of political instability and a declining economy that reflected the unwise policies of the prior decade. The continued economic decline eventually led the military (after several changes in leadership) to accede to Siles' inauguration in October 1982.

c. 1982-1985: Continuing Crisis

The Siles Government could not resolve the enormous economic problems created by prior military governments. The severe economic recession of 1982 from which Bolivia has not yet recovered, caused great human and financial suffering, precluding sustained economic growth. Although the administration adopted six separate economic reform packages, it was unable to resist pressures of organized labor and the crisis deepened.

Fixed capital formation declined by 25 percent between 1983 and 1984. Debt service obligations climbed to 73 percent of exports. Mining and manufacturing declined by 13.9 and 15.2 percent, respectively, and most other sectors declined as well. The real GDP has declined each year since 1981, with a cumulative decline of 17.8 percent between 1982 and 1985. Real per capita GDP is estimated to have fallen by 26 percent during this period. The El Niño flood and drought disasters of 1983 and 1984 resulted in losses of more than US$ 600 million and unanticipated foreign exchange expenditures. Unable to control this economic crisis, the government called for elections a year early. This resulted in a peaceful exchange of power between opposing political parties for the first time in Bolivia's history. However, left behind was a twentyfold increase in the public sector deficit and a 20,000 percent inflation rate.

d. 1985-1987: Stabilization

Victor Paz Estenssoro took office on August 6, 1985, and issued Supreme Decree 21060 less than four weeks later. This decree introduced the New Economic Program designed to restrain hyperinflation and restore market forces. Specifically, this decree:

- o devalued the peso by 93.2 percent and allowed market determination of the exchange rate;
- o eliminated most price controls;
- o froze public sector salaries;
- o provided for free negotiation of private sector wages;

- o abolished bank interest-rate controls; and

- o decentralized Bolivia's major state enterprises.

The Paz government's stabilization program successfully weathered the resultant political storm. Inflation dropped from 20,000 percent in 1984, to 60 percent in 1986, to a 10 percent annual rate in the first half of 1987. The combination of monetary and fiscal policy slowed the rate of increase of the consumer price index from 11,700 percent in 1985 to 65 percent in 1986.

The fiscal deficit was brought under control by limiting the growth of public spending while increasing government revenues through tariff and tax reform. The consolidated public sector budget deficit declined from 28 percent of GDP in 1984, to 12.4 percent in 1985, to only 3.8 percent in 1986. Public sector income increased in the same period from 5 percent of GDP to 19 percent. The external debt service burden was reduced in 1986 by rescheduling, on favorable terms, US$ 400 million in bilateral debt.

The GOB also negotiated with the IMF the adoption of a Structural Adjustment Program for 1987-89. Its goals are a 3.5 percent average annual growth rate, average annual inflation rates below 10 percent, and attainment of global equilibrium in balance of payments with a declining deficit financed with concessional resources.

e. 1987-Onward: Reactivation

The success of the stabilization program should not be confused with improved growth. The GDP continued to decline in 1985 and 1986 (as it had in every year since 1982), and may not increase in 1987. However, with inflation wrung out of the economy, a market-determined exchange rate, and with both external debt service and the fiscal debt under control, the GOB was ready to reactivate the economy. Supreme Decree 21660, Resources for Economic Reactivation, was issued on July 10, 1987, to provide the following:

- o an inventory of resources available for economic reactivation over the 1987-89 period, including an Extraordinary Fund for Economic Reactivation;

- o a National Housing Fund and means to finance low-cost housing;

- o a proposal for settling the external public debt owed to public banks;

- regulations and supervised rehabilitation of the banking system;

- a strategy to promote non-traditional exports;

- a prescription of an interest rate ceiling on concessionary external funds or those provided by the Central Bank;

- lower energy and transport costs.

The impact of these policies is expected to be positive, but inadequate. Full reactivation will be gradual, depending on various other factors, some of which are beyond the immediate control of this government. They include negotiation of natural gas prices, political stability, donor assistance, and the ability of succeeding governments to follow policies consistent with economic liberalism and responsible fiscal-monetary management.

The accomplishments of the Paz administration are especially remarkable when viewed in light of the immediate crisis they resolved. In this environment, one becomes optimistic about Bolivia's economic future. However, one should exercise caution in projecting either stability of government or continuity of economic policy. Bolivia is virtually a synonym for political instability, having had 175 presidents since independence in 1825. Instability is measured not only by transition of power, but also by the incapacity of the government to address problems. In the preceding administration, President Siles unsuccessfully undertook nine major cabinet reorganizations and six proposed economic reform packages.

This instability has its roots in deep and persistent divisions--geographic, social, economic, racial, as well as political. In a real sense, Bolivia has been self-governing only since the 1952 revolution, and almost two decades of this period were under military rule. Although that revolution freed the nation from four centuries of frequently oppressive elitist rule and included a major land reform, it was waged primarily by the urban middle class. Government remains centralized, with virtually no independent means to initiate or sustain local development. Little has been done to relieve urban-rural economic disparity. Neither before nor since the revolution have Bolivians found persistent political means to peacefully and equitably resolve societal problems.

2. Macroeconomic Policy

a. Exchange Rate

A first move under the New Economic Program was a 93.2 percent devaluation of the Bolivian peso. The official and parallel exchange rates were unified, and the peso was permitted to float to a free market exchange rate. Following the initial devaluation, exchange rates stabilized at about $b 1,920,000 to the US$ 1.00. In early 1987, the Bolivian peso was converted to the Boliviano (Bs) at the rate of one million pesos equivalent to one Boliviano. Exchange rates gradually increased from Bs$ 1.92 to the current rate of Bs$ 2.15 = US$ 1.00. A single exchange rate (rather than the dual official-parallel rates) determined by market forces rationalizes investment choices and is generally favorable to agriculture. It raises the local cost of imported agricultural products and makes exports more competitive. However, the Bs may be overvalued by as much as 20 percent. Some observers believe that the current rate could not be maintained without a flow of cocaine-originated dollars. To the extent that the Bs is overvalued, the critical issue is whether Bolivian agricultural exports can be developed at this exchange rate, given the highly competitive nature of international agricultural markets.

b. Fiscal Policy

The New Economic Program has reduced the fiscal deficit from 28 percent of GDP in 1984 to less than four percent in 1986. Public sector salaries were frozen for six months before being allowed to rise under tight control. Public sector employment was reduced significantly, and tight expenditure control has been maintained on both centralized and decentralized public sector entities. Bolivia's main state enterprises (COMIBOL, mining; YPFB, petroleum; and CBF, the state conglomerate) were decentralized, restructured, and denied credit. The annual rate of increase of bank credit to the consolidated public sector declined from 17,000 percent in 1985 to 28 percent in 1986. Price controls and subsidies were virtually eliminated. Income was generated by increasing the rates of public sector services; by unifying tariffs at 20 percent ad valorem; passing a 10 percent personal income tax; a 10 percent value added tax; taxes on liquor and cigarettes, corporate income, rural real estate, and vehicles; and by transferring a high percent of the earnings of YPFB to the treasury. Not all of these measures have been fully implemented, but the tendency is clear.

c. Monetary Policy

The private sector economy has been virtually free of government controls on personnel and prices, including interest rates. However, it has kept tight control of the money

supply. The rate of increase of money supply (M2) declined from 7,300 percent in 1985 to 84 percent in 1986.

The BCB regulates terms and conditions for re-financing ICIs:

- o Interest rates on lines of credit refinanced by the BCB will be LIBOR, with a maximum spread of five percent to the final borrower.
- o The BCB is prohibited from reprogramming past due ICI loans, but they are charged to the ICI's current or legal deposit account.
- o BCB does not establish quotas by region or department, but will refinance on of a first come, first served basis.
- o The BCB will no longer approve loan applications. This responsibility, along with selection of clients, is at the discretion of the ICI.

d. Foreign Trade

Bolivia has always depended on mineral and petroleum exports as a major source of growth. The benefits of this trade have accrued to the few who control and exploit the resources, including not only mining and oil operators but also public-sector employees and other urbanists who support them. Bolivian government policy has strongly served the desires of these sectors, and has done little to develop either domestic substitutes for imports or additional exports. Since the Spanish Conquest, little has been done to improve agricultural production or the conditions that affect it, including the living conditions and earning power of rural families.

The New Economic Program focused on economic stabilization to encourage private-sector investment stimulated by open market incentives. Intended primarily as a revenue measure, the simplification of customs operations by imposing a uniform 20 percent levy on imports and elimination of most exemptions should facilitate production and trade. The Program also served notice of intent to reduce the central government bureaucracy and to decentralize some of the larger state companies. Implicit in this reorganization is possible reduced centralization of traditional government functions in La Paz. These tendencies encourage entrepreneurship and lay the basis for modernization of agriculture (the most private of sectors).

The Economic Reactivation strategy is designed to increase non-traditional exports by creating the National Institute of Export Promotion (INPEX); providing a Tariff Rebate Certificate of 10 percent on non-traditional exports, and reducing rail

freight rates for such goods. Since most non-traditional exports from Bolivia are agriculture-related products, this strategy should help agricultural development directly, while employment and income generation multipliers from trade encourage food consumption and production.

e. International Debt

Bolivia's public foreign debt in 1986 was US$ 3,496 million, roughly equivalent to the GDP. After negotiations with the Paris Club rescheduled US$ 400 million of current obligations, debt service was reduced to $173 million, or 34.3 percent of 1986 exports.

Merchandise exports are expected to decline from US$ 623 million in 1985 to US$ 468 million in 1988, which represents a 25 percent decrease over this three-year period. The deficit on current account increased from US$ 282 to US$ 555 million over the same period. The overall balance of payments deficit is projected to decline from US$ 312 to US$288 million, financed largely by rescheduling current interest and amortization and by a US$ 45 million decline in net international reserves.

f. The Cocaine Connection

Accurate analysis of the Bolivian economy is frustrated by the extraordinarily large informal sector, defined as legal and illegal activities not registered in national accounts. The ability to estimate the impact of the informal sector is further frustrated by the enormous coca/cocaine industry. One study estimates that the informal sector exceeded US$ 3.1 billion in 1985, slightly more than the formal sector (Table I.1), with cocaine accounting for about $2.5 billion. (This figure is higher than most estimates of US$ 1.0 to 1.8 billion.) Even reducing the cocaine figure to US$ 1.5 billion would result in a $2.2 billion informal sector, almost three-fourths the amount of the formal sector. This may account for the relative prosperity of a portion of Bolivia's population after five consecutive years of apparent recession.

Table I.1. Informal GDP by Sector (1985)

Product	US$ millions
Coca and Cocaine	2,447
Commerce and Services	400
Mining	100
Finance	50
Other	150
Total Informal GDP	3,147
Total Formal GDP	3,055

Source: S. D. Medina. La Economia Informal en Bolivia. EDOBOL. La Paz, Bolivia. August 1986.

The impact of the cocaine industry on monetary and exchange rate functions obviously has stabilized the economy. In the future, however, coca suppression efforts will be a source of economic variability, while economic distortions caused by the cocaine industry will influence private investment decisions. Exports of coca/cocaine are estimated at US$ 1.5 billion, three times the legal amount. Of this, probably $300 million re-enter the financial accounts directly as dollar payments in Bolivia to purveyors of goods and services to the industry. Another $250-300 million finance contraband imports. An ample supply of cocaine-originated dollars may make it easier to maintain a free market exchange rate, but the resulting overvaluation will act as a damper on Bolivian exports. The flood of contraband, undoubtedly understated in Table I.1, may help check inflation, but it also subjects Bolivian manufacturing and legitimate commerce to the effects of its neighbors' subsidies. Reduction in revenues to the state helps subsidize competing industries of other countries, again arresting Bolivia's economic growth.

3. GDP: Composition and Trends

The Bolivian economy experienced a period of steady growth during the early and mid-1970s. It began exhibiting weakness in 1978, topped out in 1980, and slid into decline in 1982. Since then, the GDP has declined each year through 1986, and is expected to register little if any growth in 1987. The proximate causes are the 50 percent decline of both tin and petroleum prices in late 1985 and early 1986 and the stringent economic stabilization program designed to reduce inflation.

Agriculture, with 19.8 percent, is the largest component of the GDP. (Table I.2a). Commerce (12.6 percent) and Public Services (12.5 percent) are next, followed by Manufacturing (10.0) and Housing Property (9.6). Mining, which accounted for 9.8 percent in 1981 and 9.7 percent as late as 1983, has declined

Table I.2a. Relative Composition of Gross Domestic Product by Economic Activity
(% of GDP at Consumer Prices)

Economic Activity	1981	1982	1983	1984(p)	1985(e)	1986(e)
A. Industries	85.6	85.5	84.2	84.0	84.4	83.6
Agriculture	18.1	19.9	15.6	18.7	19.6	19.8
Mining	9.8	8.9	9.7	7.7	6.3	4.2
Petroleum	5.8	6.4	6.4	6.3	6.3	6.3
Manufacturing	13.5	12.0	11.9	10.6	9.8	10.0
Construction	3.3	3.3	3.3	3.2	3.3	3.4
Electricity Gas & Water	0.7	0.8	0.8	0.8	0.9	0.9
Commerce	11.6	11.3	11.7	11.6	12.1	12.6
Transportation & Communications	6.6	6.5	7.1	7.2	7.4	7.7
Financial Institutions	5.1	5.3	5.8	5.9	6.1	6.5
Housing Property	8.2	8.5	9.1	9.2	9.3	9.6
Other Services	4.0	3.9	4.1	4.0	4.1	4.2
Imputed Bank Services	1.2	1.3	1.4	1.4	1.4	1.5
B. Private Services	0.6	0.6	0.6	0.6	0.6	0.6
C. Public Services	10.8	11.3	12.4	12.6	12.5	12.5
GDP At Cons. Prices	97.0	97.4	97.2	97.1	96.9	96.7
Plus Indirect Taxes	3.0	2.6	2.8	2.5	3.1	3.3
GDP At Cons. Prices	100.0	100.0	100.0	100.0	100.0	100.0

p = preliminary
e= estimate

to 4.2 percent. While the volume of agricultural output increased in the 1980s, the value of agricultural production did not. Gross Domestic Product from agriculture (converted from 1980 Bolivianos to $US at 25:1) was US$ 902 millions in 1980 and 840 millions in 1986. Production of the major crops is summarized below.

Table I.2b. Production of Major Crops

Crop	1980	1986
	metric tons	
Rice	95,225	136,760
Barley	48,555	78,070
Maiz	383,365	457,300
Sorgo	27,720	59,300
Wheat	60,140	81,200
Total	615,005	812,630

Crop	1980	1986
Potato	786,620	697,000
Yucca	219,065	420,000
Platano/banano	275,570	395,700
Total	1,281,255	1,512,700

Whereas production increased at about 4.5 percent between 1980 and 1986, the value of agricultural commodities decreased by US$ 62 million. Domestic production has been adequate to meet domestic needs. Much of the value disparity arose from the financial turbulence.

Agriculture usually comprises a dominant portion of the GDP in LDCs. While it continues to grow in absolute terms as the economy modernizes, other sectors increase more rapidly. Even with agricultural growth, the sector's relatively share of the GDP would be expected to decline as finance, manufacturing, and other sectors expand. Even during the past three years in Bolivia, the decline in the mining sector, rather than growth of agriculture, was responsible for agriculture's relative improved position.

4. Imports and Exports

Bolivia's exports are dominated by minerals (tin, zinc, antimony, silver, wolfram, copper and lead) and hydrocarbons (natural gas, petroleum and liquified natural gas) (Table I.3). A 50 percent decline in world prices for tin and natural gas in late 1985 and early 1986 decreased the proportional share of these exports (79.7 percent to 68.1.) and led to a major decline in total exports. Agricultural and forest products together accounted for only 3.2 percent of exports in 1984. By 1986, this share increased to 13.7 percent. One cause was the decline in minerals and petroleum. Even more significant was the absolute growth in "non-traditional" products, which now amount to US$ 110 million, and are dominated by agricultural exports. Major growth areas are forest products, soybean, and textiles made from raw agricultural materials.

In 1983, Bolivia imported US$ 658 million in merchandise, of which US$ 124 million (21.8 percent) was for raw or processed agricultural products (Table I.4). Bolivia's principal agricultural imports are cereals and flour (mostly wheat), fats and oils, and milk. Cereal and flour imports amounted to about US$ 85 million, fats and oils about US$ 14 million, and dairy products about US$ 9 million. These are the only rational opportunities for import substitution, since none of the processed foods, drinks and tobaccos were imported in values greater than US$ 2 million each. The potential levels of agricultural import substitution are only about US$ 36 million at one-third substitution, or US$ 54 at one-half. Import substitution becomes increasingly difficult and costly as replacement levels increase. Domestic production is economical only for those commodities that can be produced for less than the landed costs of imports.

Table I.3. Exports

Product	1984 Value US$ millions	1984 %	1986 Value US$ millions	1986 %
Minerals	364.0	46.5	196.8	31.0
Tin	247.7	31.7	104.1	16.4
Other	116.3	14.8	92.7	14.6
Hyrocarbons	388.9	49.7	329.2	51.7
Natural Gas	375.7	48.0	328.7	51.7
Other	13.2	1.7	0.5	
Non Traditionals	29.2	3.8	110.2	17.3
Forest Products	9.8	1.3	30.1	4.7
Wood Products	6.7		22.8	
Brazil Nuts	2.3		3.5	
Gums	0.8		3.8	
Soy & Byproducts	---	---	19.8	3.1
Coffee	6.6	0.8	13.3	2.1
Sugar	6.7	0.9	4.8	0.8
Livestock	2.3	0.3	19.1	3.0
Cattle	1.5		13.4	
Hides	0.8		5.7	
Other (included agric and mfg)	3.8	0.5	23.1	3.6
Total:	782.1	100.0	636.2	100.0

Source: Banco Central de Bolivia. Memoria Anual, Gestión 1984. División de Estudios Económicos. 1984.

DICOMEX. Estadisticas de Exportación, 1986. Ministerio de Industria, Comercio, y Turismo. 1987.

Table I.4. Imports (1983)

Product	Value US$ millions	% total	% agri-culture
Animals	10.2	1.8	8.2
Milk & Other Foods	9.3		7.5
Other	0.9		0.7
Plants	90.1	15.9	72.7
Cereals	60.0		48.4
Milled Products	24.2		19.5
Other	5.9		4.8
Fats & Oils	14.1	2.5	11.4
Manufactured Foods, Drinks & Tobacco	9.6	1.7	7.7
Meats & Fish	1.8		1.5
Other Foods	0.3		0.2
Drinks	3.5		2.8
Animal Feeds	1.6		1.3
Tobacco	2.0		1.6
Agricultural Subtotal	124.0	21.8	100.0
Non-Agricultural Subtotal	443.7	78.2	
Total Imports	567.7	100.0	

Source: Bolivia en Cifras 1985. Instituto Nacional de Estadistica. 1986.

B. Natural and Human Resource Base

1. Natural Resource Base

Perhaps the most encouraging prospect for Bolivian agricultural development is the country's impressive natural resource endowment. Bolivia possesses vast unsettled land resources, a wide variety of minerals, undetermined amounts of petroleum, and significant supplies of water resources for irrigation and hydroelectric development. Presently, only an estimated 1.0 percent of Bolivia's land area is in active crop production, most of it under natural rainfall conditions.

The country also is characterized by a variety of climatic conditions with significant levels of natural rainfall and temperature, providing an excellent foundation for a wide range of agricultural production.

High mountain streams, an extensive river system, and undetermined ground water supplies are substantial undeveloped water resources for agricultural and industrial use. Feasibility studies of ground water irrigation have been carried out in the highlands, and both surface and ground water are favorable in limited areas in the east; but additional analysis of these and other areas is needed. The resource endowment is marred by extensive erosion, which results in excessive water run-off and high silt levels in riverways.

a. Physiography and Land Area

Bolivia's total land area of 1,098,581 square kilometers is comprised of nine major ecological regions, as shown in Figure I.1. The complex and diverse physical and environmental conditions, which will continue to determine the scope of future economic and social development of the country, define the three major physiographic areas (see Figure I.2):

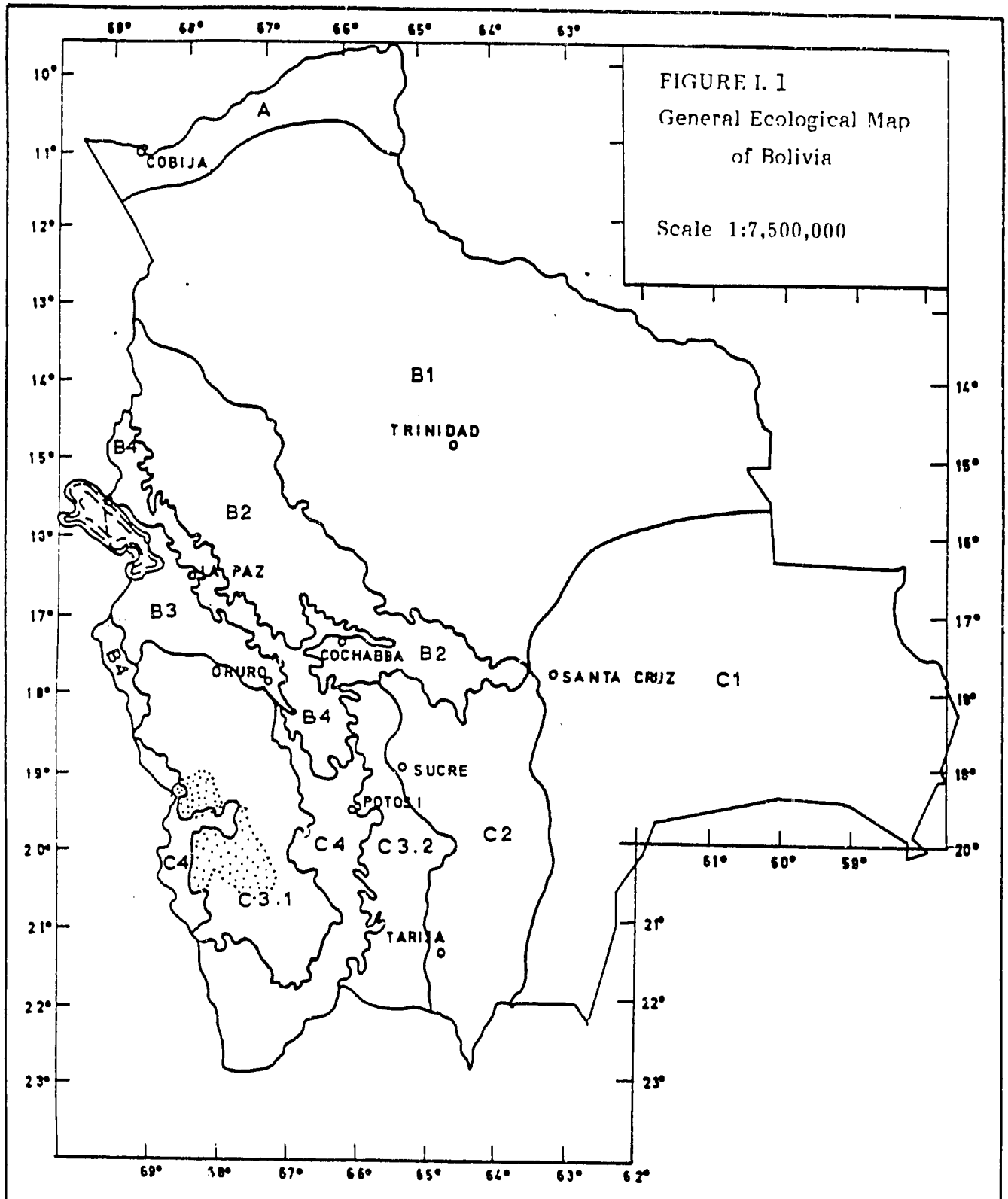
- Highlands: includes the departments of Potosi, Oruro, La Paz.
  Area: 305,791 Km2
  Population: 3,191,300

- Valleys: includes the departments of Chuquisaca, Cochabamba, and Tarija.
  Area: 144,778 Km2
  Population: 1,717,400

- Lowlands: includes the departments of Beni, Pando and Santa Cruz.
  Area: 648,012 Km2
  Population: 1,463,000

b. Soils

Bolivian soils are as varied as the geologic forces which created them and the climatic conditions under which they developed. One study classifies soils into a lands system (Cochrane, 1973). These lands are broken down into 10 provinces in which a total of 209 regions are classified. The lands are described by location, area in hectares, physical geography, altitude, geology, hydrology, climate, soils, vegetation, potential agriculture and animal production. Climate, topography and soil characteristics (depth, texture, composition, erodibility) all may limits land's suitability for agriculture. However, the fact that only about one percent Bolivia's land is

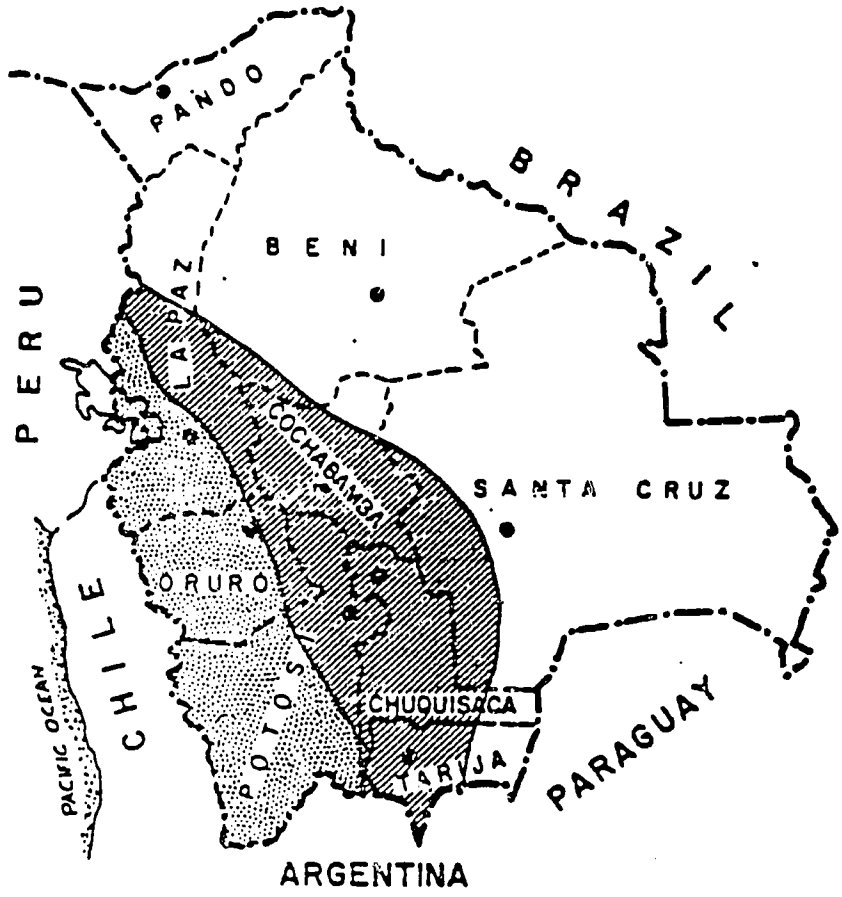


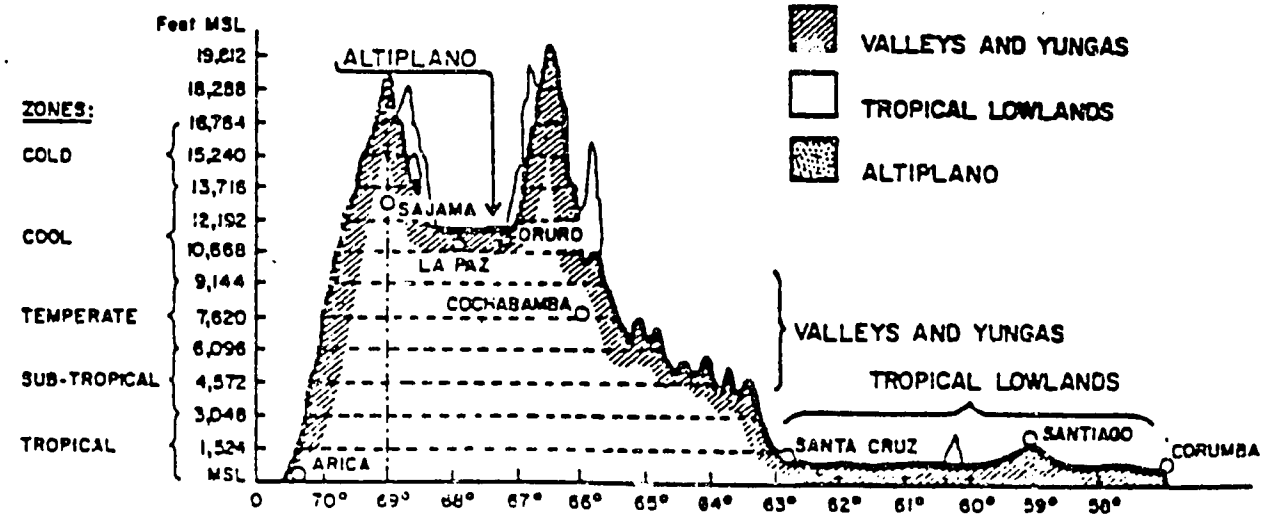
REFERENCES

A. -TROPICAL REGION
A. -Tropical Lowlands
B. -SUB TROPICAL REGION
B.1-Subtropical Lowlands
B.2-Subtropical Valleys
B.3-Subtropical Highlands
B.4-Subtropical Andean Region
C. -TEMPERATE REGION
C.1-Temperate Lowlands
C.2-Temperate Valleys
C.3-Temperate Highlands
C.4-Temperate Andean Region

Source: O. Unzueta. Memoria Explicativa de Bolivia, Ministerio de Asuntos Campesinos y Agropecuarios, La Paz, August 1985.

Figure I.2
Geographic Profile of Bolivia





Source: USAID Agricultural Development in Bolivia: A Sector Assesment. La Paz, August, 1974.

cultivated each year, and less then three percent is classified as areas commonly used for agriculture (including cultivated land and fallow lands) suggests that soil suitability per se is not a major constraint on a national basis. This can be verified by observation in the field.

c. Current Land Use

Over half the land area of Bolivia is forested. Most forests are in the underpopulated northern and eastern lowlands of the country, extending into the higher elevations on the eastern side of the Andean range (Figure I.3.) Range and scrublands are second in overall area, followed by barren lands. Currently, cultivated land is less than three percent of the land surface.

Table I.5. National Area of Land Cover and Current Land Use

Category	Area (Km2)	%
1) Range and/or scrublands	338,307	30.81
2) Forest lands	564,684	51.40
3) Crop lands	28,794	2.62
4) Wet and/or flooded lands	24,201	2.20
5) Bodies of water	14,197	1.29
6) Barren lands	126,101	11.47
7) Urban areas	2,148	0.20
8) Cultural patterns	149	0.01
	1,098,581	100.0

Source: Serie Sensores Remotos 2. GEOBOL, Memoria Explicativa, Programa del Satélite Tecnológico de Recursos Naturales ERTS/Bolivia, August 1978.

Much land suitable for agriculture goes unused. In the eastern department of Santa Cruz, for example, it is estimated that there are over one million hectares of land appropriate for farming (Soil Conservation Service classes I and II), most of which are in native forest. Meanwhile, in the western regions where the population is more dense, a significant portion of hillside lands in classes III and IV are used for agriculture and are eroding because of overuse and poor mismanagement. In these

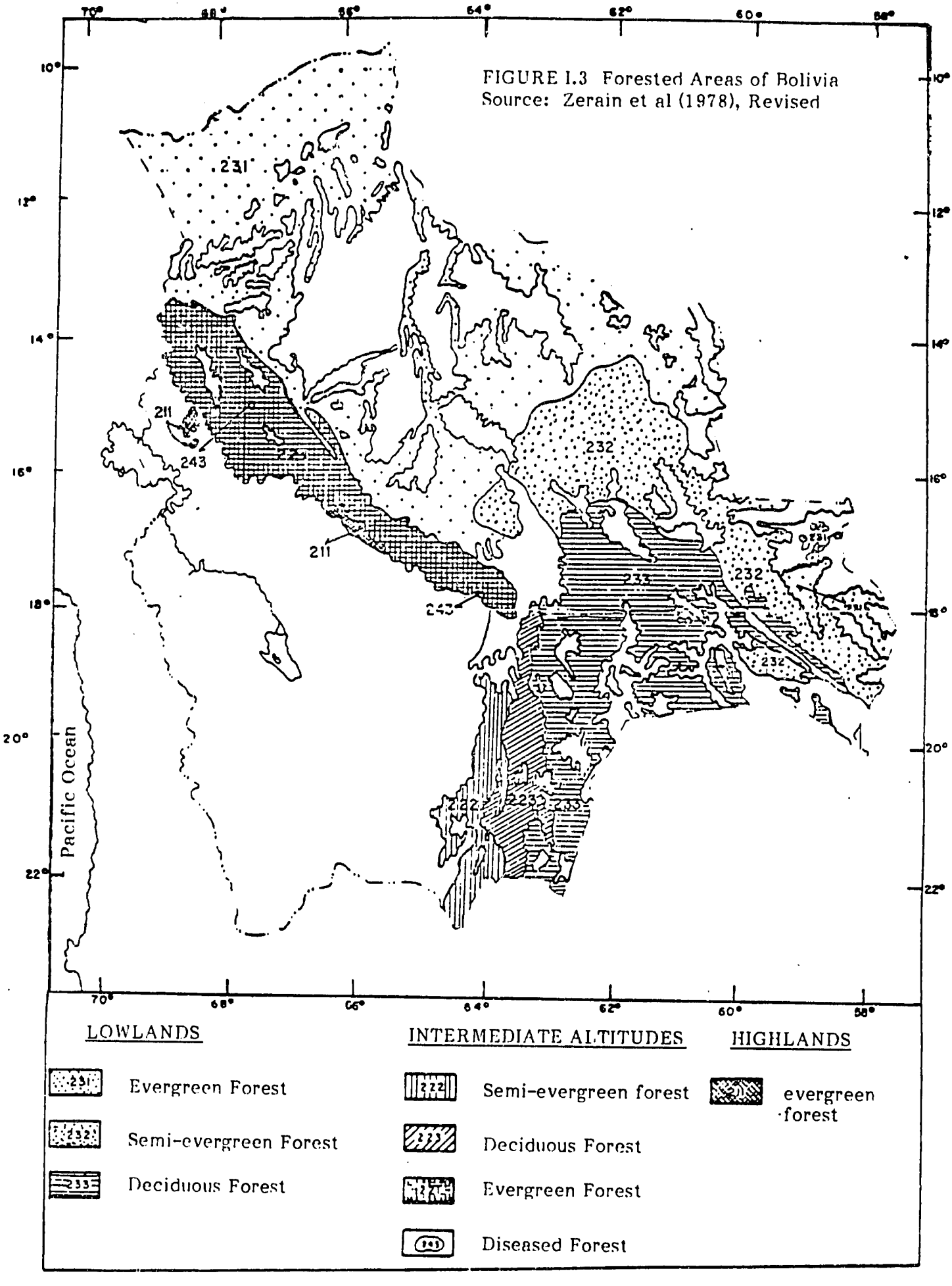


FIGURE I.3 Forested Areas of Bolivia
Source: Zerain et al (1978), Revised

areas, sustainable use of land for farming will require careful conservation measures. Otherwise, return to natural permanent cover would be more adviseable. The fact that Bolivia has an underutilized endowment of natural resources is no reason for misuse of that which is currently occupied.

2. Population and Employment Trends

a. Population Growth and Distribution

Since the 1976 census, the population of Bolivia is estimated to have grown by 47 percent, from about 4.6 million in 1976 to over 6.7 million in 1987. (See Table I.6.) Based on the 1976 census, a total population of 7.4 million is projected by 1990 and 9.8 million by the year 2000.

The 1976 distribution of the population by region was:

Region	Population (%)	Territory (%)	Area (Km2)	Density (per km2)
Highlands	38	16	305,791	8.4
Valleys	42	19	144,778	9.3
Lowlands	20	65	648,012	1.6
Country	100	100	1,098,581	4.5

As Table I.6 and Figures I.4 show, in 1900, the country was largely rural. In 1976, the distribution of the population was 58 percent rural and 42 percent urban. Almost 80 percent of the total population in 1976 was living in the highlands or valleys. This spatial distribution is a legacy of the pre-Colombian occupation and colonial and republican dependency on the mineral wealth of the highlands, which until recently focussed all development efforts in the highlands and valleys.

Beginning in the late 1940s, the government turned to the lowlands as the region that offered apparent solutions to the high density of the highlands and valleys. High density is a relative term that refers to the carrying capacity of the two regions. Most of the arable land in these two regions is found in small and widely dispersed habitable patches surrounded by mountains and non-arable land. Most of the population of these two regions is found in these "patches," which leads to high population density per hectare of arable land.

Table I.6. Bolivia:Urban/Rural Population Distribution (1900 - 1987)

Year	Population				
	Total	Urban	Rural	%Urban	%Rural
1900	1,555,818	203,000	1,352,818	13	87
1950	2,704,165	708,568	1,995,597	26	74
1976	4,613,486	1,925,840	2,687,646	42	58
1987 *	5,989,474	2,941.700	3,047,774	49	51
1987 **	6,797,300	3,334,400	3,462,900	49	51

* Projection based on intercensal (1950-1976) rate of growth for urban and rural

** INE projections to July 1987

Sources: Censo General de la Poblacion de la República de Bolivia; según el Empadronamiento del 1ro. de Septiembre de 1900. Tomos I, II.

Censo Demográfico 1950. Ministerio de Hacienda y Estadistica, Dirección General de Estadistica y Censos. pp 12-45.

Bolivia: Resultados del Censo Nacional de Población y Vivienda 1976, Vol 10. Instituto Nacional de Estadistica.

INE: Estimates to 1987. Published in Ultima Hora October 24, 1987.

Note: The definition of urban used for this table is 2,000 or more inhabitants.

In the 1950s the government began a series of programs to encourage resettlement in the lowlands. These programs consisted of roads to agricultural settlement programs, and considerable investment in agroindustry. By 1976, the efforts at population redistribution were showing some results, as can be seen from the differential growth rates in Table I.7 registered by the 1976 census.

Figure I.4 BOLIVIA: URBAN/RURAL POPULATION
1900, 1950, 1976, 1987

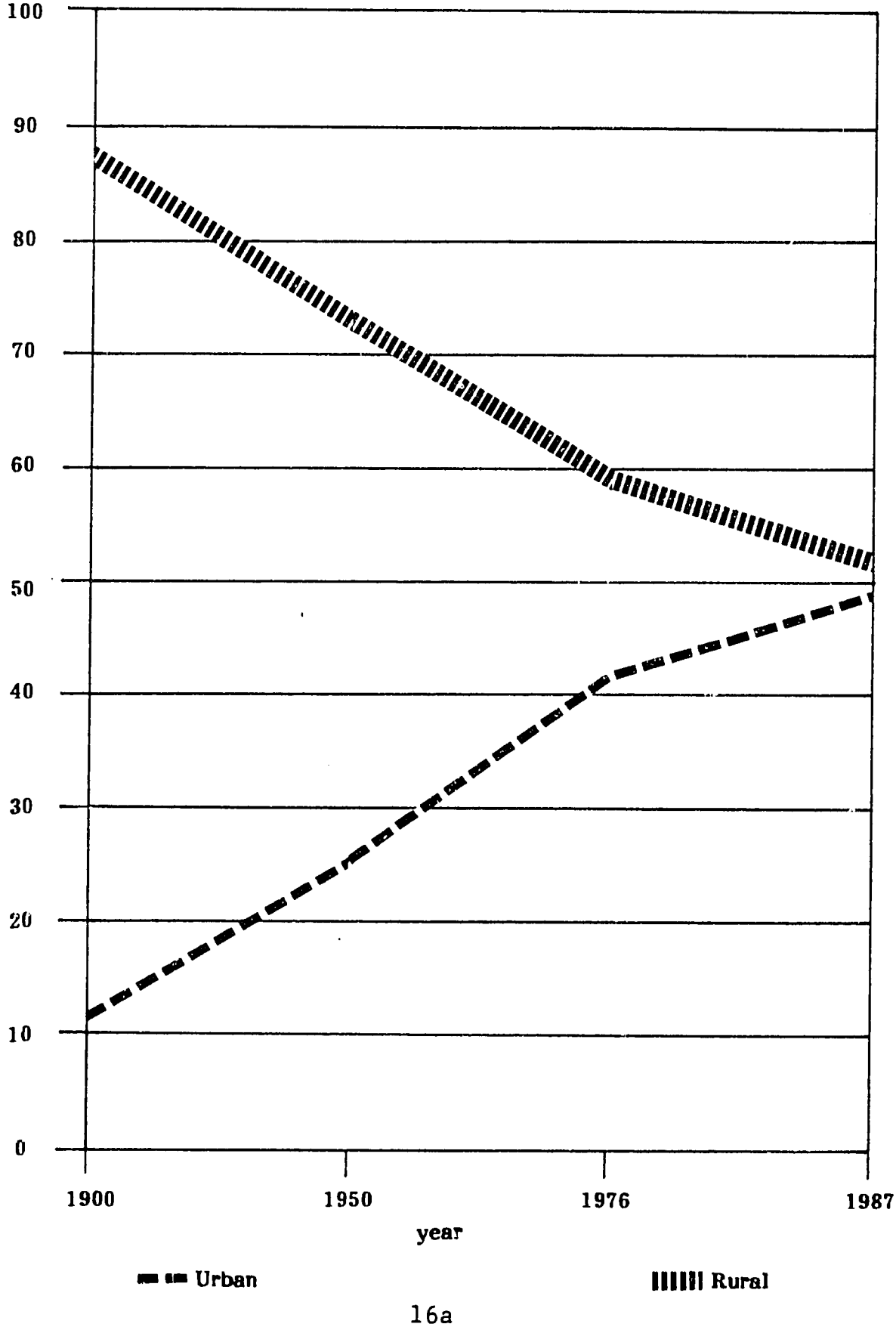


Table I.7. Growth Rates of the Population of Bolivia by Geographical Region and Rural/Urban Sectors

Sector	Average Annual Growth Rate by Region (%)			
	Whole Country	Highlands	Valleys	Lowlands
Rural	1.15	0.88	1.07	2.37
Urban	3.91	3.30	3.43	6.67
Main Cities*	4.12	3.39	3.95	7.23
Secondary Cities (20,000 or more)	2.48	2.66	1.96	na
Other urban (2000-20,000)	4.36	3.73	3.53	6.07
TOTAL	2.08	1.74	1.70	3.96

Note: * Presumably refers to departmental capitals. Source: Salto al Futuro. Proyecto de Politicas de Población. Ministerio de Planeamiento, 1984 p.65, Cuadro 11.

Although no reliable statistics exist for 1987, it is generally accepted that the cities, smaller urban centers, and lowlands have grown considerably, and the growth rates detected in 1976 have accelerated significantly.

b. Employment Trends and Rural Household Income

i. Employment

In 1950, the census counted 440,000 rural women in the agricultural labor force as opposed to 1976, when it counted only 88,971. It is generally recognized that problems of classification, and an urban bias toward considering rural women as housewives, and therefore economically inactive, invalidated the results. To avoid this distortion, only the economically active male population (EAP) is considered.

The male labor force of Bolivia increased at an annual average rate of .57 percent from 1900 and 1950, and at an average annual rate of 1.34 percent from 1950 to 1976 - that is, from 671,331 in 1900 to 1,263,780 in 1976. During these same periods, the total Bolivian population grew at average annual rates of 1.18 percent and 2.05 percent, respectively. According to estimates made by H. Maletta (1980), the EAP in the agricultural sector grew at a higher rate in the eastern and northern lowlands than in the highlands and valleys.

Male employment in the agricultural sector represented over 77.4 percent of the total labor force in 1900. This proportion of the male labor force in agriculture decreased to 72 percent in 1950. Between 1950 and 1976, it declined to 54 percent of the total. By 1987, the proportion of the labor force working in agriculture was probably below 50 percent of the total and, for the first time in Bolivia, no longer constituted the majority.

There are, however, considerable differences in the male labor force employed in agriculture by department, as Table I.8 shows.

Table I.8. Labor Force in Agriculture by Department
(as % of the total male labor force)

Department	1900	1950	1976
La Paz	83.67	64.49	44.28
Cochabamba	77.77	76.44	58.44
Santa Cruz	76.77	73.91	49.82
Oruro	69.06	59.83	40.51
Potosi	74.98	78.22	62.84
Chuquisaca	71.83	84.55	78.15
Tarija	75.67	70.96	58.06
Beni	72.60	73.54	59.26
Pando	72.71	86.88	71.22
Whole country total	77.47	72.83	53.86

Source: H. Maletta. La Fuerza de Trabajo en Bolivia 1900-1976. OIT- MTDL BOL/78/P03, 1980,p.18

The census count of people employed by sectors, while helpful, does not reflect the complexity of the dynamic economic activities in which many rural households are involved. The rural regions surrounding fast-growing cities like La Paz, Santa Cruz, and Cochabamba, as well as rapidly growing rural towns, such as Montero, Quillacollo, Yacuiba, San Borja, and Riberalta, have become highly integrated regions where the employment picture by sector is far more complex and rapidly changing than in areas still isolated and economically stagnant.

ii. Income Levels and Sources

The only available information on rural household and farm income is that of the National Socioeconomic Survey of the Agricultural Sector of 1978. This study concludes that:

- The average annual rural household net income was US$ 485.
- The average annual net farm income was US$ 418.
- Average rural household net income varied by farm size from US$ 108 to US$ 1,314.
- For all farm households, 31 percent of the net household income was derived from sources outside agriculture. The proportion was higher for small farms of two hectares or less.

Higher rural household farm income was related to size of the farm, the proportion of farm products sold, proximity to market, access to off-farm work, and use of inputs and access to technical assistance.

The amount of off-farm income earned by farm families varied considerably. (Table I.9) The percentages of net household income from off-farm sources measured by the survey are as follows:

Table I.9. Off-Farm Income of Farm Families by Department

Department	Off-Farm Income as a % of Total Household Income of Farm Families
Cochabamba	31%
Chuquisaca	14%
La Paz	28%
Oruro	56%
Potosi	49%
Santa Cruz	17%
Tarija	7%
Country	28%

Source: Análisis de la Encuesta Socioeconómica del Sector Agropecuario, 1978. Documento Analítico No. 2, 1983, Table 3.52.

The above figures suggest that the majority of the agricultural sector are rural residents who farm a small plot of land as a complementary activity. Proximity to other sources of work or long-established patterns of migration to other regions or countries account for the bulk of off-farm income.

C. National Policies and Agricultural Transformation

1. Historical Background

During the 1900 to 1950 period, the mining industry controlled the government, which in turn focussed its development efforts in the mining region. As far as the government was concerned, Bolivia consisted of 42,000 square kilometers around mines; the remaining 1,000,000 square kilometers were considered a cartographic mistake. (H. Klein 1987)

This was also the period of expansion and consolidation of the large haciendas that, in addition to transforming many peasants into virtual serfs, contributed to the displacement of peasants to marginal and isolated lands. Peasant communities and their micro-regional organizations, such as the Ayllus in the highlands and valleys and the Cabildos in the lowlands, were broken up into smaller, local communal organizations. This process has continued, and even accelerated since the 1950s.

The 1900 to 1950 period could be described as a ruralization of the population by increasing dispersion of peasant communities in the highlands and valleys. The dispersion of lowland communities (which had been centered in towns by religious missionaries), began during the late 1900s, and has continued as natural rubber and other lowland natural resources attracted migrants. Except for Oruro and La Paz, where the mining sector was concentrated, the agricultural labor force has remained constant or increased in absolute terms.

The period from 1952 to 1964 was one of great change in the agricultural sector and rural way of life. It produced the Agrarian Reform, extended agricultural lands by opening the eastern zones, and promoted agroindustry. These developments led Bolivia into an era of self-sufficiency in meat, sugar, and rice. Government administration at that time was characterized by stimulus to social development, agrarian reform, rural organization, and participation in national politics.

2. Changing Attitudes Toward the Farm Sector

Most urban-based Bolivians traditionally have thought of agriculture and food supply as a natural result of the way of life of the indigenous rural population rather than as a productive sector of the economy. National policies toward agriculture during most of the country's history focused on ensuring an ample food supply to the urban population and controling food prices. After the agrarian reform, it became necessary to appease the masses of rural peasants with community-level public works projects. Improving agricultural productivity and rural incomes, per se, had low priority, except for the growth of commercial agriculture in the eastern lowlands.

Here, agriculture was mechanized; many crops, such as sugar and cotton, were industrialized, and some offered opportunities for export. Policies toward agriculture in this region became oriented toward provision of credit and price stabilization.

As the New Economic Program unfolded and was understood better by the population, it became increasingly apparent that agriculture offered the best possibilities to increase production and generate employment and export earnings. (Morawetz 1987) For the first time in the country's history, the productive potential of agriculture has become fixed in the minds of most Bolivians.

It is expected that the next decade will bring a gradual, but unrelenting change in the structure of the Bolivian economy and society. The importance of the agricultural sector will continue to increase, and therefore basic policies toward this sector also will change. No longer will the sector be regarded as simply a means for providing low-cost goods to the urban marketplace, but will be increasingly considered an important generator of income and employment. However, the different focuses of commercial and traditional agriculture will continue to complicate the decision-making process at the national, as well as departmental and regional levels.

CHAPTER II

STRUCTURE OF THE AGRICULTURAL SECTOR

The first five sections of this chapter describe the agricultural sector in terms of the major production regions, crops, livestock enterprises, and agroindustries. It also touches on the management of two important natural resources, forests and rangelands. Some of the more lengthy statistical information with regard to crop and livestock production is included in annexes at the end of this document. (Annex H)

The last seven sections provide information on types of farm enterprises, private and public organizations, and infrastructure. Sections F, G, and H go into detail about the types of farm enterprises, characteristics of rural households, and, finally, trends and implications of migration patterns. Sections I and J deal with rural organizations, including local government, private associations, and central public agencies. Section K presents a glimpse of financial institutions and the agricultural credit system. More detail on credit institutions is included in annex E. In addition, an analysis of demand and supply of funds for agricultural credit is found in annex D. Finally, section L describes various aspects of transportation infrastructure which have a direct bearing on the agricultural sector.

A. Major Regions and Production Systems

Three general agroclimatic zones largely determine which crops may be grown and the type of livestock raised. The following pages explain the kinds of crops and farming practices in each major region. Tabulations of areas under cultivation and production levels are found in the annexes.

1. Highlands

The highlands stretch across parts of the departments of La Paz, Oruro, Potosi, Tarija, and Chuquisaca. They consist of a large, elevated plateau, between 3,500 and 4,200 meters (11,500 to 14,000 feet) above sea level, situated between the eastern and western range of the Andes mountains. The region is relatively cool with risk of frost some 200 days on the southern and 100 days on the northern end of the plateau. Precipitation ranges between 300 millimeters (12 inches) in the south and 500 millimeters (20 inches) near La Paz. Soils are riddled with stones in some areas, but are generally tillable. Most of the area is rainfed with a few small areas able to tap rivers or springs and irrigate. Because they have been farmed for centuries, soils are depleted of nitrogen, and crop yields reflect the nominal amount of nitrogen fixed by native legumes or

by lightning and carried to earth by rain. Temperature, length of growing season, and precipitation largely dictate which of the following crops can be grown:

- o Potatoes--home consumption and cash sale
- o Barley--cereal and forage for cattle and sheep
- o Quinua--cereal (12 percent protein and high lysine content)
- o Broad bean (habas)--home consumption
- o Oats--cereal, and forage for cattle and sheep
- o Vegetables--domestic consumption and local sale
- o Alfalfa--livestock grazing

Farming in the region is an integrated system of crops--including quinua, potato, broad bean, and barley--and livestock--llamas, sheep, cattle, pigs and chickens. Most crops produced are consumed on the farm, while most animal products are sold. Potatoes is the largest cash crop.

To accumulate nutrients (principally nitrogen) and moisture, one-fourth to one-half the land is left fallow each season. After three to six years of fallow, a typical rotation begins with potatoes (to gain the most from the accumulated nutrients), followed by quinua, broad beans, and barley; then the land returns to fallow once again.

Extensive areas of native grass support cattle, sheep, llamas, and alpaca. These include natural ranges that are not cultivated, fallow lands between cultivation cycles, and crop aftermath grazed after harvest. Livestock production on the highlands is adapted to agroclimatic conditions and size of land holdings. In the northern part, where small landholdings prevail, crops account for 70 percent and livestock 30 percent of farm production. In the southern part, crops and livestock each comprise about 50 percent of production. There are no fences, except for some stone fenced corrals, to contain livestock. Live animals and livestock products are sold either in the larger cities, such as La Paz and Oruro, or at local fairs.

2. Lowlands

The lowlands, located on the eastern side of the Andes, have a tropical climate, which permits crop production during both winter and summer. Both tropical and temperate zone vegetation can be found. Wheat, being more tolerant of lower temperatures, is a principal winter crop.

The eastern department of Santa Cruz has a well-developed agriculture with crops like soybeans, rice, maize, cotton, sugar cane, and wheat. Horticultural crops such as citrus, mango, banano, platano, pineapple, and vegetables are also grown.

The lowlands contrasts some very primitive slash-and-burn farming techniques with mechanized, commercial production. The small farmers using slash-and-burn methods produce primarily crops for home consumption. Once an area has been cleared and burned, the farmer plants crops like rice, maize, and yucca. The fields are studded with stumps and tree roots so the planting, cultivation, and harvesting has to be done by hand. A clearing is operated for about three years. During that time, weeds pose an increasingly serious problem since the roots and stumps preclude cultivation, even with animal-drawn machinery. When weeds compete with crops and involve too much hand labor, the field is abandoned and a new area cut down.

Larger commercial farmers produce industrial crops such as soybeans, wheat, and sugar cane. They also produce rice and maize using mechanized methods. In several sizeable Mennonite colonies east and south of Santa Cruz, farmers concentrate on soybean production. In the department of Santa Cruz, some yucca, grain sorghum, and maize are fed to poultry and swine and thus marketed as animal products. Also, a nominal amount of cattle are fattened.

The northern department of Beni consists primarily of extensive savannas, and sizeable areas are subject to flooding. The chief agricultural activity is cattle raising for beef production. The northern part of the department of La Paz, known as the Alto Beni, extends into these lowlands. A dirt road running through the Alto Beni connects to the city of La Paz by way of the Yungas. Some six large bridges, 72 small bridges, and graveling are needed to make the road usable year-round. Along the foothills and both sides of the road, there is much slash-and-burn farming. These dense slash-and-burn patterns extend into the valleys leading away from the lowland plain. Across the Beni River into Beni department, there is substantial slash-and-burn agriculture along the roads on the higher ground above the annual flood plain. Commercial crops in this area include cocoa, rice, and maize.

The southeastern area, comprised of parts of the departments of Tarija and Chuquisaca and the southern part of Santa Cruz, is known as the Chaco. It is an arid region, composed largely of pasture and forest.

3. Valleys

a. Humid Tropics: Yungas and Chapare

The Yungas is a tropical, mountainous area ranging from the lowlands up to 10,000 feet in elevation on the eastern side of the Andean range. It lies within the department of La Paz. Connections into the Yungas consist of one-lane, all-weather, gravel roads. However, feeder roads are few because of the extremely difficult terrain. The main crops are coca, tropical fruits, and coffee. Livestock production in the Yungas includes pork and poultry production. Bananas and yucca are used as the main feed. Production of crops and livestock is mostly on small family-operated farms.

The Chapare is a large valley in Cochabamba department with tropical temperatures, high rainfall, and relatively flat land. With the exception of coconut, most tropical crops such as yucca, citrus, banana, and avocado can be grown along with rice and maize. The major cash crop is coca, most of which is used for illegal narcotics trade. There is an ongoing program for substituting coca with other cash crops.

b. Temperate Valleys

The major temperate valleys of Bolivia are the Cochabamba and Tarija central valleys. However, smaller valleys run between mountains and high plateau areas throughout much of the departments of Chuquisaca, Potosí, La Paz, Oruro, and Santa Cruz.

The high valley in Cochabamba department has 45,000 hectares of arable land, 5,000 hectares under irrigation or planned for irrigation. The main crops are potato, vegetables, corn, and other cereals. Temperate-climate fruits are grown as well. Dairy and poultry production are relatively advanced, and include some larger producers.

Another major valley in the southern part of the country surrounds the city of Tarija. Its winter temperatures are sufficiently low enough to grow grapes and decidious fruits. The area has extensive over-grazed, badly eroded lands. One of the most important commercial crops is grapes, primarily the muscatel variety, used for making wine or distilled alcoholic beverages like singani or pisco.

B. Crop Production

Three annex tables (H.2, H.3 and H.4) present details on area planted and production of major crops in Bolivia. Of the 1.3 million hectares of land cultivated in the country in 1986, cereals represented 53 percent and root crops another 17 percent.

Corn alone occupied nearly 350,000 hectares, while wheat, rice, and barley were each around 100,000. Potato was planted on 163,000 hectares. Next in importance were industrial crops, with 12 percent of cultivated area. Sugar cane and soybean are the most extensive in this category. Industrial crops were followed by forages, fruits and vegetables, and finally beverage crops.

In most cases, market conditions, as opposed to the productive capability of the country, limit production. This is especially true for some basic food products such as potato, corn, and rice. These crops offer little opportunity for export. At the same time, local demand is limited compared to productive capacity. Crops whose production is likely to expand during the next five years are discussed here.

1. Soybeans

Santa Cruz department is the main source of soybeans for the nation. Area cultivated and production levels are shown in Table II.1.

Table II.1. Area Planted, Production, and Yields of Soybean in Santa Cruz, Bolivia

Agricultural Season	Cultivated (hectares)	Production (metric tons)	Yield (tons/hectare)
1974/75	8,300	10,790	1.30
1975/76	11,820	15,011	1.27
1976/77	7,200	10,800	1.50
1977/78	18,230	24,792	1.36
1978/79	26,250	38,062	1.45
1979/80	35,000	44,000	1.27
1980/81	25,000	36,690	1.59
1981/82	41,070	78,450	1.91
1982/83	41,200	59,463	1.44
1983/84	39,050	65,990	1.69
1984/85	63,000	98,910	1.57
1985/86	63,158	143,000	2.26
1986/87	66,878	107,600	1.61

Source: ANAPO

Increases in productivity between 1980/81 and 1985/86 are attributed primarily to the use of improved seed. Yields in Santa Cruz now average above those in neighboring countries in South America as well as the United States. Seed is produced in the winter in Santa Cruz and some in the summer season in the Gran Chaco, as shown in Table II.2. A USAID-financed project helped develop the seed program in Bolivia, which stands as one of the better examples of a private sector program working with

small- and medium-sized enterprises. The project provided support from 1980 to 1986 in Santa Cruz and from 1983 to 1986 in the Chaco and some valley regions of the country.

Table II.2. Soybean Seed Production in Bolivia

Department	Year						
	1980	1981	1982	1983	1984	1985	1986
	(metric tons)						
Santa Cruz	0	450	801	1017	1545	4507	4000
Gran Chaco	17	79	70	70	80	350	338

Source: National Seed Office of MACA

Local industrial capacity in Santa Cruz is estimated at about 90,000 metric tons of soybeans. This is sufficient to meet the national demand for oil. Most of the meal is exported. Only about 30 percent finds a market in Bolivia, mostly in poultry feed. Increased productivity led to overproduction and the export of some 30,000 metric tons of soybean in 1986. Table II.3 presents data associated with the production and use of the 1985/86 soybean crop of Santa Cruz. An estimated 80 percent of the cake is exported and 20 percent consumed domestically, while 95 percent of the oil is consumed domestically and 5 percent exported.

Table II.3. Soybean Production in Santa Cruz Department during the 1985/86 Season

Production and Uses	Summer	Winter	Total
Total metric tons produced	129,000	14,000	143,000 T
- Domestic industry			109,000 T
- ANAPO export			20,000 T
- Private Export			10,000 T
- Seed		4,000	4,000 T
Oil extraction			
Liters of oil per ton of soybean			180 L
Kilograms of cake per ton of soybean			750 kg
Estimated production of oil			
109,000 T x 180 L = liters			19,620,000 L
SAO export to Peru = liters			250,000 L
Estimated production of soybean cake			
109,000 T x 750 Kg = tons			81,750 T
FINO export cake to Peru and Chile			25,000 T
SAO export cake to Peru and Chile			4,770 T

Source: ANAPO

In 1986, exports of soybean grain, meal, and cake totaled US$ 19.6, and CORDECRUZ projects an increase of 100,000 hectares devoted to soybean in the next five years The prospects for stable world-market prices are good, especially if the U.S. implements its policy to cut production by reducing farming subsidies.

With the abundance of soils suitable for soybean and with export mechanisms being developed, local leaders have recognized that soybean production could become a significant source of foreign exchange. New production is foreseen on both sides of the railroad line east of the city of Santa Cruz, crossing the Rio Grande toward Brazil. This push has already led to the development of three bulk-handling terminal projects, and a railroad terminal at Port Quijarro on the Paraguay River. Dredging of the Paraguay River from the Brazil end is in progress. The dredged segment will be capable of handling 10,000 ton barge convoys. This will not only permit expeditious movement of bulk grain, but will substantially reduce the cost of Bolivian products reaching international markets. Therefore, expansion of soybean production by 100,000 hectares and 200,000 tons of commodity by 1992 is not only possible, but probable.

A strategy to increase the competitiveness of soybean exports has been to decrease railway freight rates. Supreme

Decree No. 21660 granted a 60 percent discount to exports, making the Santa Cruz-Corumbá shipment cost US$ 21.37 per ton for soybean meal and US$ 27.45 for soybean grain. (Paradoxically, these rates are about 30 percent higher than the rate exporters had negotiated previously with ENFE.) ENFE uses an unusual rate structure, under which the rates for soybean meal and grain are respectively 16 percent and 49 percent higher than for wheat and maize. An alternative shipping route via Puerto Quijarro and the Paraguay River could reduce shipping costs by US$ 10 to 20 per ton. Adequate infrastructure (soybean dryers and silos) and grain railroad wagons could reduce costs by another US$ 10 to 15 per ton.

A problem faced by soybean exporters is insufficient export credit. One exporter needed credit of US$ 2.5 million in 1986, but was able to obtain only US$ 300,000 at a monthly interest rate of three percent. Medium-term credit for silos, trucks, and railroad wagons is even scarcer.

While infrastructure and export credit are necessary to reach planned targets within the next five years, long-term goals of maintaining higher levels of soybean production for export will depend on reducing cultivation costs and increasing productivity. As noted above, a major factor in increasing productivity is provision of high-quality seed. Another cost factor is the size and nature of the agricultural enterprise involved in production.

Large agricultural enterprises in Santa Cruz typically are locked into high fixed-cost cultivation systems. Land is cleared by contractors with heavy machinery. Large agricultural equipment is imported. Full-time, year-round salaried employees do most of the work, including driving tractors. Employees require housing and services in or near the property. The larger agricultural companies often depend on the availability of credit to finance both investments and year-to-year operations. This results in a rigid cost structure, made up mostly of direct out-of-pocket costs. If world prices were to fall, many of these large commercial growers would be squeezed out of the market. Some might default on their loans and halt operations altogether.

Smaller or medium-sized farmers, on the other hand, perform most of the work themselves, and use larger amounts of their own capital. They are able to minimize overhead expenses. During a period of decreased prices, they would likely reduce their area of production. Few default on loans and suspend their farming operations. This is the case of the Mennonite and Japanese settlers in Santa Cruz, who produce most of the soybean.

2. Wheat

The valley areas of Chuquisaca, Cochabamba, and Potosi cultivate wheat extensively by traditional methods. The lowland area of Santa Cruz, by contrast, produces wheat under commercial, mechanized cultivation. In total 100,242 hectares were grown in 1986 (see annex table H.2). In the valleys, wheat is grown during the summer months, while in Santa Cruz it is the winter crop that often follows soybean.

Most of the wheat produced is used for direct human consumption on the farm where it is grown (see Table II.4). It is used in a local beverage called chicha, and in rural grinding mills. The amount used by Bolivian flour mills has diminished over the years to less than 20 percent of local production. Simultaneously, imports and per capita consumption have increased steadily. Wheat imports now total about 300,000 tons per year.

Table II.4 Uses of Wheat Produced

Use	1979	1983 (percent)	1986
Flour mills	30.0	21.0	19.3
Small rural mills	31.0	10.0	12.8
Production of chicha drink	7.0	17.0	na
Consumption on farm	19.0	40.0	42.5
Seed	13.0	12.0	10.0
Other*	na	na	15.4

* Nonspecific and losses.

Flour consumption was subsidized heavily by the GOB for several years. Foreign in-kind donations were used to bear part of the financial burden, and subsidies were applied only to imported wheat. Consequently, producer prices for local wheat at flour mills were sometimes very low. Now, however, government policies are placing local and foreign commodities on a nearly equal basis. Therefore, Bolivia can increase the amount of wheat used to make flour.

Average yields in nearly every department are below one metric ton per hectare, averaging only 741 kilograms in 1986. Increased production can result by increasing the area planted and by increasing productivity. One source estimates the potential area used for planting wheat at more than four times the current amount. Table II.5 gives a breakdown by department.

Table II.5. Potential Production of Wheat by Department

Department	Traditional Area	Non Traditional Area (hectares)	Total
Chuquisaca	40,832		40,832
Cochabamba	58,844		58,844
Potosi	78,079		78,079
Tarija	19,000	22,000	41,000
Santa Cruz	4,000	170,000	174,000
La Paz	7,500		7,500
Oruro	1,500		1,500
Beni		20,000	20,000
Potential total	209,755	212,000	421,755

The amount of land used to plant wheat depends on what alternative uses the farmer has for the land and the relative productivity and price of different crops. Potato, for example, yields around six tons per hectare, while wheat currently yields less than a ton. While the prices per ton are similar, potato is more frost-resistant. Therefore, if soil nutrients permit, potato will be the lead rotation crop in most areas.

Access to two important inputs--good seed and fertilizer--can increase yields. However, increased productivity of 800 to 1000 kilograms per hectare are not greatly significant to farmers cultivating only two to three hectares. Therefore, only modest increases in import substitution can be expected.

Mechanized wheat production in rotation with soybean has been expanding in Santa Cruz. With the foreseen increase in soybean production, around 25,000 to 50,000 additional hectares of wheat may be produced in the department within the next five years. ANAPO believes the department of Santa Cruz will attain self-sufficiency in wheat production within about three years.

3. Barley

Barley is an important food crop for domestic consumption, and is grown by many small farmers in the highlands and high valleys. The main commercial outlets are breweries for malt production. The Bolivian National Brewery of La Paz (CBN) and Taquiña of Cochabamba purchase more than half the local barley produced. Both breweries contract with several thousand barley growers to distribute the desired varieties of seed. They also contract with a few growers to produce seed, which is neither certified nor inspected. It is simply cleaned before being distributed to the growers. The brewery does not fix a

price at the outset, but waits until harvest time, when prices are lowest, to begin purchasing.

Taquiña of Cochabamba purchases 2,000 to 3,000 metric tons annually. If they supplied all of their requirement from local purchase, they would need 8,000 tons. The National Brewery purchases around 8,000 tons in the departments of Potosi, Chuquisaca, and Tarija. Because local supplies are limited, both breweries import malt. This usually originates as raw barley in Australia, and is converted into malt in Chile by fermenting and toasting.

International prices of imported malt vary considerably from year to year. In general however, Bolivia's competitive position is similar to that for wheat. Barley occupies a marginal place in the rotation of crops at higher elevations. Some local production increases can be achieved, but these are limited.

4. Cotton

During the 1960s and 1970s, cotton was produced in Santa Cruz by a single firm, where it was ginned and sent to textile mills in La Paz for manufacturing into cloth. The cloth was then sold through agencies of this same firm, SAID, Ltda. In the 1970s, SAID began to purchase raw material from other producers, and other textile manufacturers were established in Bolivia. Production levels rose dramatically. Fourteen cotton gins were installed--13 in Santa Cruz and one in the Chaco--and cotton fiber became a substantial export item. In 1972-73, about 50,000 hectares of cotton were planted, with production of 26,910 metric tons of cotton fiber (538 kg/hectare).

However, in the late 1970s, complications in the export of Bolivian cotton caused a drastic reduction in the area planted. Annex table H.7 reflects the area planted, production, and yields of fiber during the past few years. In 1985-86, only 10,831 hectares were planted, with production of only 3,812 metric tons (352 kg/hectare). These yields are low compared with rainfed cotton yields in Brazil of 700 kg/hectare. The main problem has been rains during the harvest period, which cause high losses. This problem is reduced east of the Rio Grande, where it is estimated that several tens of thousands of hectares could be planted.

During the 1960s and 1970s, nearly all cotton was produced by large commercial growers. Labor at harvest time was one of the most serious problems. However, most of the resurgence in production from 1983 to 1986 has generated from relatively small producers (see Table II.6). Of the 10,831 hectares grown in 1986, 3,905 were grown by 345 small producers with 50 hectares or less. The proportion grown by small producers increases each year.

Table II.6. Cotton Production by Size of Farm

Area of Cotton Grown (Hectares)	Number of Growers	Total Areas (hectares)	Production (hundredweight)
0 - 5	199	725	7,944
6 - 10	40	350	2,350
11 - 15	31	429	2,390
16 - 20	19	349	1,955
21 - 25	8	195	1,927
26 - 30	12	360	3,260
31 - 35	6	208	2,077
36 - 40	17	671	4,589
41 - 45	6	270	1,332
46 - 50	7	348	2,475
Total:	345	3,905	30,300

Source: ADEPA

In 1986, the Santa Cruz Spinning Mill used about 85 percent of Bolivia's cotton and exported US$ 4.1 million in cotton yarn, practically all of its production. The mill presently operates at 62 percent of maximum capacity, and could export over US$ 10 million worth if the cotton area were expanded by 10,000-15,000 hectares. In 1986, the mill barely covered its variable costs, but not its depreciation; increased cotton production is necessary to make the plant viable.

Paradoxically, Bolivia exports almost all of its cotton products while importing almost all of its textiles. With the high exchange rate of the boliviano, the 20 percent customs duty on inputs, the 10 percent IVA, and other taxes, Bolivian textile manufacturers cannot compete with cheap imports.

Cotton prices fluctuate severely in the international market; e.g., from 0.35 US$/lb in August 1986 to 0.90 US$/lb in September 1987. (See annex table H.6.) IBRD projects a long-term price of 0.75 US$/pound. With this price, the break-even point is 370 kg/hectare. In view of the high risks involved, a net return of US$ 300 is needed to motivate the producers. This is obtainable with a yield of 550 kg/hectare.

The short-term prospect for cotton is to satisfy domestic demand at import parity. Cotton production for export can recuperate only if higher yields are obtained.

The Yungas region of La Paz dominates coffee production in Bolivia, as shown in the following figures for 1986:

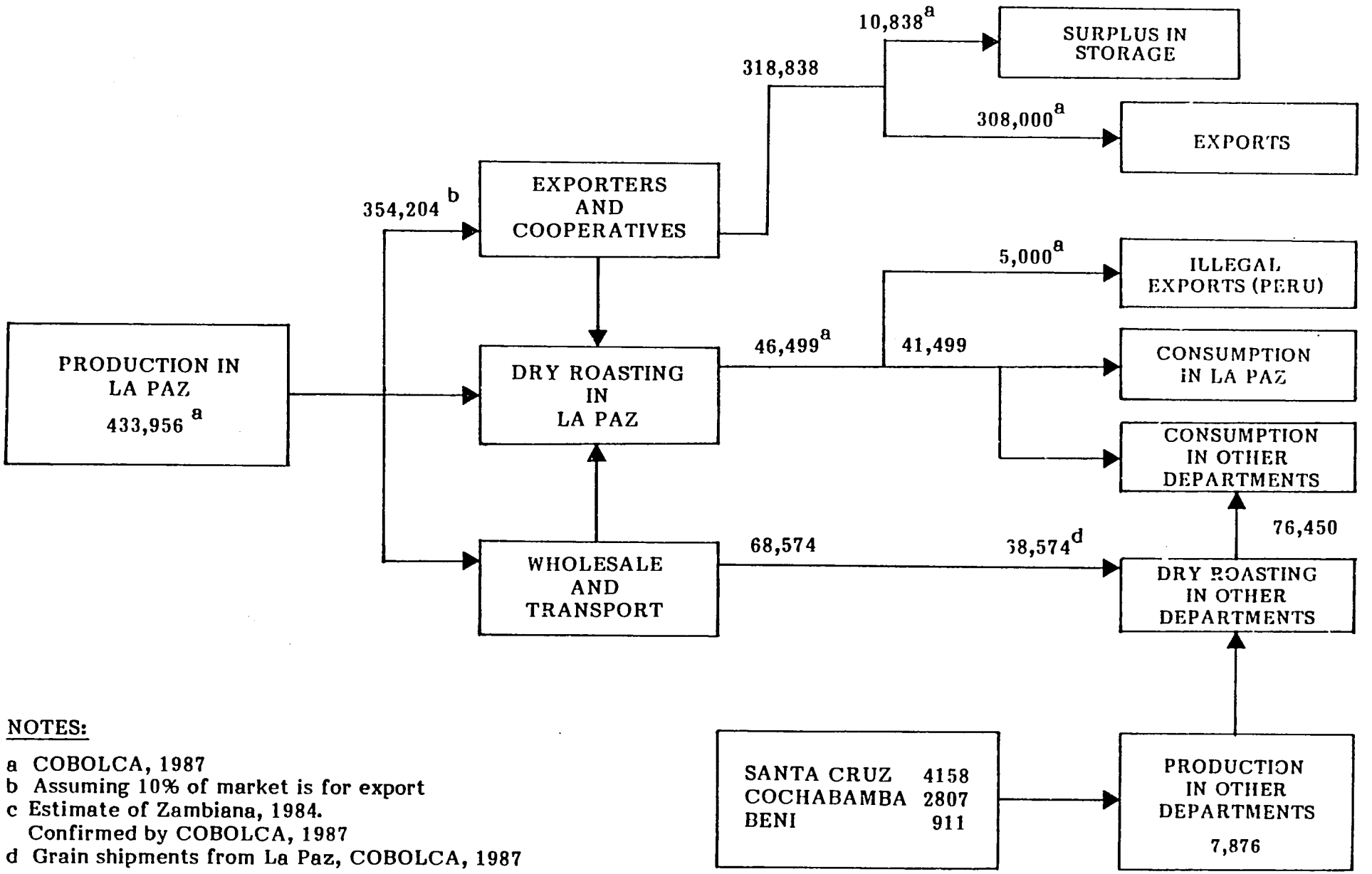
Yungas Valley	20,490 hectares	1,738 tons
National Total	22,550 hectares	2,054 tons

Most of the coffee is Arabica, with a minimal amount of Robusta. Yungas coffee is grown on steep slopes under native, leguminous shade trees. Old plantings have 1,500 to 1,600 trees per hectare, whereas newer plantings with new varieties have populations of 4,000 trees. Average yields in terms of fresh berries are only 370 to 460 kg/hectare, which is only one-half of the average Brazilian and Colombian yields. Yields of 550 kilograms per hectare of dry coffee or 452 kilograms of coffee oro are regarded as good. Production costs with the existing technology are estimated at US$ 1.60 per kg, which does not benefit the producer if investment costs are taken into account. Given the traditional technology and current prices, the producer profits only by harvesting the existing trees, but not by planting new ones.

The IBTA experiment station has introduced three higher-yielding varieties. Their experience with sun-grown coffee has been disappointing, but their description of the decline of the trees under full sun reveal a severe nitrogen nutrient deficiency.

Commercial channels of distribution are shown in Figure II.1. Table II.7 shows national distribution from 1982 through 1986. Most of the coffee in the Yungas is purchased for cash by middlemen who, in turn, sell to the processing plants. Coffee processing involves depulping, fermenting, washing, and drying. The processing plants are owned by exporters, who handle about 72 percent of local production. There are about 30,000 growers in the nation, and in the Yungas most holdings are less than one hectare.

Figure II.1 DISTRIBUTION CHANNELS OF BOLIVIAN COFFEE
ESTIMATES FOR 1987



NOTES:

a COBOLCA, 1987
b Assuming 10% of market is for export
c Estimate of Zambiana, 1984.
Confirmed by COBOLCA, 1987
d Grain shipments from La Paz, COBOLCA, 1987

Table II.7. Distribution of National Production of Coffee

	1982	1983	1984	1985	1986
Production	163,636	180,909	154,545	194,984	200,833
Internal Consumption	36,830	48,509	52,181	54,977	55,886
Export	115,144	126,036	102,450	138,818	140,000
Excess Supply	11,642	6,364	87	1,184	4,947

Source: COBOLCA

Bolivia produces only 0.2 percent of world coffee production, 201,000 bags (60 kilograms) of a total of 96,000,000 bags in 1986. Of the 201,000 bags produced, some 140,000 bags were exported, and 56,000 bags consumed domestically. Coffee exports in 1986 amounted to US$ 13.2 million.

There is adequate steep land to expand production; it is estimated that the area could be increased to 100,000 hectares. Constraints to increasing production include:

- o limited road access;
- o little or no credit available to the small producer;
- o inadequate technology transfer; and
- o inadequate price at the producer level.

Future prospects for coffee are not bright. The abundance of world supply provided by large, efficient producers keeps prices low. Yields in the Yungas are low, while marketing and transport costs in Bolivia are high. The growers' share of the ultimate wholesale value is low. Increasing coffee exports can occur only if yields are increased. In addition, steps must be taken to improve processing methods. Bolivian coffee receives a penalty of about US$ 0.26 for deficient washing.

6. Cocoa

The 1986 exports of cocoa and cocoa products totalled US$ 3.6 million. The major production regions are Beni, Pando, and Chapare. The region with highest potential for production

increase is the Alto Beni because of its infrastructure and familiarity of producers with the crop. With rehabilitation and renewal of existing plantations, entry into production of 5,000 hectares already planted, and an expansion of 1,250 hectares, cocoa exports are estimated to rise fivefold in the medium-term.

Low cocoa yields in Bolivia are caused by lack of the most elementary pest control. Of the 10,000 hectares presently cultivated, 2,000 hectares require rehabilitation, and a much larger area needs renovation. This could increase yields from the present 300 kg/hectare to 700 kg/hectare. Such programs will cost US$ 600 per hectare. With a yield of 700 kg/hectare, production will cost 0.35 US$/kg. This compares favorably with the FOB price of 1.80 US$/kg and the Alto Beni price of 1.20 US$/kg.

7. Flowers

The valleys of Cochabamba, Sucre, and Tarija are exceptionally favorable environments for producing brightly colored flowers that require high luminosity, such as roses of the Samantha and Royalty varieties. A few producers in Cochabamba have recently begun growing flowers for export, mostly roses and carnations with some gladiolus and chrysanthemum. There are two larger producers, one having 3.5 hectares under greenhouses, and the other even more, for a total of some 10 hectares. At present, the export value is about US$ 1.5 million.

Neither Colombia, the major Latin American flower producer, nor California, the major U.S. producer, can compete with Bolivia in certain varieties. Sunlight conditions and length of days give Bolivia's flowers brighter colors than those in Colombia. Higher labor wages in California for this labor-intensive crop present a 35 percent cost advantage in favor of Bolivia. (Daily agricultural wages in Cochabamba are US$ 3.50, which is less than hourly wages in California.) This more than offsets the higher transport costs.

Several small-farmer groups are being organized in Cochabamba to produce flowers in areas of 1,000 square meters, subject to the availability of credit. Currently, some six hectares are being developed. In the medium-term, some 60 hectares could be used for production, with an annual export value of US$ 15 million. The main production limitation encountered thus far is winter temperatures, which severely reduce yields and interrupt production. Some growers are installing heating systems. However, the economical feasibility of artificial heating has not been determined.

Several Cochabamba growers are associates of the import firm, Bolivian Flowers, which is located in Miami. Others export their flowers through brokers. The major constraint to expansion

of flower production is the lack of credit. It will be necessary to negotiate with Lloyd Aereo Boliviano a larger reserved space for flower shipments. Costs can also be reduced by local production of rose bushes and joint purchases of inputs.

8. Grapes

Grapes are grown primarily in the southern valleys along rivers where there is access to irrigation water. Some 700 hectares are under production in the department of Tarija. It is estimated that about 70,000 hectares are suitable for growing grapes in this area. The oldest vineyards are 25 years or more. A root insect pest, Phyloxera, has become increasingly troublesome, and will necessitate replanting over time with resistant root stock. Rows and irrigation furrows run up and down hillsides, instead of on the contour, making it difficult to irrigate uniformly. Other than this, vineyard management is considered adequate.

Most of the technology, as well as the planting material, has been "borrowed" from Mendoza Argentina. A research and development center is being developed with United Nations support. The surrounding farmers donated the land, and CODETAR is constructing the buildings and paying salaries of the Bolivian staff. The Chamber of Agriculture of Tarija and the Associaton of Grape Growers (ASOVIT) have not become involved in the development of this center.

Only some 10 to 15 percent of the fruit harvested is consumed fresh; most is processed into wine and then into singani. Competing wines from Argentina, produced efficiently on a large scale, sometimes undersell Bolivian wines. However, with the grape variety, muscatel, and favorable growing conditions, Bolivia is in a position to produce a high-quality wine suitable for singani (a type of alcoholic beverage).

Singani is consumed domestically, but the internal market is limited and the price is undercut by imported liquors. Hence, hopes are focussed on developing an export market to North America and western Europe. To develop these markets, Bolivia will need a bulk delivery system, with bottling and labelling. The knowledge and organization required to develop a singani marketing program probably surpasses capabilities.

9. Garlic

Tarija, Cochabamba, Chuquisaca, and regions of similar climate are suitable for garlic cultivation. Garlic is a labor-intensive, non-perishable, high-value crop, and thus appropriate for small farmers. In 1986, 400 hectares of garlic were planted in Tarija, and about 5,000 tons produced. Farmers appreciated the crops's ability to withstand a bad hail storm. Besides the

standard white, there is a deep red variety. The garlic was packed and sold in the export market to Brazil. The Chamber of Agriculture handled manufacture of boxes, grading, sale, and shipping. It is working diligently to convert the odd size garlic into salt, powder, flakes, granules, garlic, and pickled garlic.

With yields of 9 to 10 metric tons/hectare, Tarija producers anticipate production costs of US$ 450 per ton. Compared with the average FOB price of US$ 600 per ton, this implies a net revenue of some US$ 1,500 per hectare. Garlic can be grown only under irrigation, so it is logical to devote limited irrigated areas in southern Bolivia to high-value crops such as garlic.

It must be carefully evaluated whether the current price of garlic will hold in the medium-term. However, there are reasons for optimism regarding the competitiveness of Bolivian garlic:

- Much of the world production is located in countries such as Spain, France and the U.S., where agricultural wages are much higher than in Bolivia. Garlic production (except for land preparation) cannot be mechanized.

- The Bolivian harvest occurs during winter in the northern hemisphere, when garlic prices are higher.

- World demand is growing (U.S. per capita consumption has doubled between 1965 and 1978).

In the medium-term, 1,000 hectares can be planted with garlic, signifying a gross revenue of US$ 6 million. The principal constraint is marketing. To this end, it is necessary to carefully evaluate the perspectives of different markets and make contacts with various importers. At the same time, the competitiveness of Bolivian garlic could be substantially improved with a minimum of experimentation and technical assistance.

C. Livestock Enterprises

In terms of overall land area, Bolivia is primarily a forest country followed by cattle. Data on livestock production is given in annex table H.5 . In 1985, there were over 5.5 million head of cattle, raised mostly for beef production. Nearly 2.5 million of these were in the department of Beni in the northern lowlands; another 1.4 million were in the eastern lowlands department of Santa Cruz.

There were an estimated 7.8 million sheep in the country, mostly in La Paz, Oruro, Cochabamba, and Chuquisaca. Meat production from lambs was only 11,792 metric tons, compared to

125,042 tons from beef cattle. Hogs number 1.7 million head, with annual pork production at 42,162 tons. Hog production is widely distributed among all nine departments.

The annex tables show 1.5 million llamas with only 10 percent alpacas (173,900). Others estimate llama numbers as high as 2.2 million. Most of these animals are found in La Paz, Oruro, and Potosí, with fewer in Cochabamba.

Only those livestock enterprises that are likely to increase output are discussed here, and these only for the regions of most importance. Again, the limiting factor for most enterprises is access to markets. Only in a few cases, such as alpaca production, are the limitations greater on the supply side.

1. Dairy Production and Marketing

Only about 11 percent of the dairy products consumed in Bolivia are produced locally (Alvarez, 1987). At the same time, Bolivia is a cattle country, and should have a comparative advantage in milk production. This apparent contradiction involves two factors: subsidized imports and distances between Bolivian production and consumption areas. Both are related to the form of the product, i.e., high-quality powdered milk versus fluid milk.

The World Food Program of the United Nations donates milk products to Bolivia. This powdered skim milk and accompanying vegetable fat are reconstituted into fluid milk in Bolivian processing plants (PILs) in various departments. Bolivia pays only for the transport of the products, which usually come from the European Economic Community (EEC). Aside from these donations, surplus products, including milk, are received from the EEC in Chile at dumping prices. The products are shipped in bulk form and repackaged for sale in Chile. Some are "re-exported" to Bolivia. This milk is called "instant powdered milk" and is of higher quality than that produced in Bolivian plants.

The largest center of consumption is the city of La Paz. However, the dairy plant there (PIL/La Paz) processes mostly imported powdered milk. The possibilities for increasing production in the highland region around La Paz are limited. By contrast, the PIL plant in Santa Cruz indicates that it can easily double its reception of milk by installing additional centers of reception in production areas. This plant has already increased from about 25,000 liters per day to nearly 45,000. But it cannot increase further for lack of market, and transporting fluid milk to La Paz is not economically feasible. Instead, milk needs to be processed into products like powdered milk to reach internal markets and displace imports. (For more general data on milk, refer to annex tables H.13 and H.14.)

a. La Paz

In the area of Lake Titicaca, the average producer has one to five cows and sells 5.2 liters/day. Some of the production indicators are: calving rate, 50-65 percent; mortality rate, eight percent; and length of lactation, 240-300 days. Annual or biannual treatments are given to control gastrointestinal parasites. In a few places, irrigation is used to produce forage for dairy cows, but most milk is produced in holdings that do not have irrigation. Milking is done by hand once a day.

A few producers have larger herds (up to as many as 200 cows in production). They use irrigation and mechanized forage production. Their cows have been raised on the farm and are resistant to "high altitude disease." Cows lactate for 300 days, calving rate is 70 percent, calf mortality six to eight percent, and an annual production of 2,600-3,200 liters per cow. Heifers are pregnant at 22 months of age. Dairymen vaccinate for hoof and mouth disease. Milking is done by hand, but one producer is ready to install a mechanical milker. Cows are grazed on alfalfa, oats, barley, rye and fescue pastures. These producers convert their milk into cheese and sell it in La Paz at a wholesale price of Bs 6.2/kg, which nets about Bs 0.62 per liter of milk.

The PIL plant at El Alto belongs to CORDEPAZ and can process 55,000 liters in eight hours. The farmgate price is Bs 0.55/liter for milk with 3.5 percent butterfat and Bs 0.75/liter for 4.2 percent butterfat. Milk is transported daily by truck to the plant in aluminium cans. The plant sells fluid pasteurized milk at Bs 0.75/liter. At present, it is receiving 13,000 liters/day from 2,500 producers located within a radius of 120 kilometers of the plant. In this area, it is estimated that milk production is about 68,400 liters/day, of which the plant collects only 19 percent. The management plans to receive 40,000 liters by 1992. This would be accomplished by providing both technical assistance to the producer and credit for new breeding stock and modern inputs.

Most producers sell their milk directly to the consumer or convert it into cheese. Raw milk is sold door to door in La Paz, El Alto, Viacha and the surrounding area for Bs 1.0/liter. It takes about seven liters of milk to make one kg of cheese; with the price of cheese at Bs 7.00/kg the producer obtains about Bs 1.00/liter before his labor cost to make and sell the cheese. For the PIL plant to receive more milk, it will have to pay a more competitive price in comparison with the price of cheese and raw milk. Production costs differ among the highlands, valleys and lowlands; however, all three PIL plants pay Bs 0.55/liter.

Until refrigeration or sterilization of milk is available to the highland consumer, cheese and powdered milk will continue as the main forms of dairy products consumed.

b. Santa Cruz

Central milksheds have been established near the cities of Santa Cruz and San Javier. This has been encouraged by construction of the PIL plant in Santa Cruz and a cheese manufacturing plant at San Javier. Farms with access to roads are increasing their milk production by the purchase of dairy stock and specialization of their activity. There are 2,216 producers in the central milkshed producing 122,000 liters per day (55 liters per producer) and 76 producers in San Javier producing 14,900 liters per day (196 liters per producer) (CORDECRUZ).

Some of the producers are Mennonites with a long tradition of dairy production. They have served as an example to new producers of the area. They use improved pastures, pasture rotation, and, in the dry season, supplement cattle feeding with minerals, molasses, and concentrates or soybean meal. Because the soils of Santa Cruz are low in phosphorus, it has to be provided in a mineral mixture. Phosporus is necessary for the energy utilization of feeds and is a limiting factor in cow fertility. Table II.8 shows some of the indicators for the central milkshed and San Javier.

Table II.8. Number of Producers, Dairy Cattle Population, and Size of Plants in the Central Milkshed and San Javier (1986/1987 Census)

	Central Milkshed	San Javier
Number of Producers	2,216	76
Dairy Cattle Population	107,784	22,879
Milking Cows	27,422	4,886
Milk Production/liters per day	122,142	14,869
Area Used (ha.)	112,913	22,108
Average area (ha.)	51	291
Average size of farm	49	301
Average liters of milk/producers	55	196
Average liters of milk/cow per day	4.45	3.04

Source: CORDECRUZ, 1987.

Mennonite farmers produce about half the milk of the region, and process nearly all into cheese. The price of homemade cheese is only Bs 4.00 kg, while that of consumer raw milk is Bs 1.0/liter. The price of cheese is low because soybean flour is added to it. Some cheese from the lowlands is marketed in La

Paz. Producers of San Javier are now processing their own milk because the cheese plant closed in 1986. San Javier cheese had a reputation for high quality, but was often unavailable.

The PIL plant is receiving 45,000 liters/day and expects to receive 50,000 liters by the end of 1987. This could greatly increase by opening reception centers in areas where Mennonite dairy farmers work. PIL is paying Bs 0.55/liter and sells milk at Bs 0.75/liter. The powdered milk produced by PIL is not the instant kind, and sells for Bs 7.50/kg in comparison to Argentine and Chilean imported instant powdered milk, which is priced at Bs 6.60/kg.

Building the capacity to produce a competitive product could displace a substantial share of the powdered milk imports and would divert milk from cheese manufacture. Should that occur, additional milk would be produced for cheese.

The strategy should include incentives to producers who would receive a premium price for milk delivered during the dry season. During the rainy season, they would receive the premium price for the same volume of milk per day delivered in the dry season and a lower price for the excess. PIL can process 120,000 liters/day and convert 60,000 liters into powder milk.

c. Cochabamba Valley

The dairy industry began in the Cochabamba Valley, which is particularly suited for dairy production. Due to the small size of land holdings, production is dispersed. As in the highlands, the greatest volume of milk comes from producers with one to five milk cows, but they produce an average of nine liters per day (two milkings). Having an average lactation of 300 days, average production per cow was 2775 liters in 1985 (MACA 1985). Most cows are milked by hand, although some large operations use both mechanized crop production and milking. Production is favored by the availability of flood irrigation used to produce green alfalfa forage and hay; corn is also used for silage. Good supply of high-quality forage seed is available through "Semillas Forrajeras" (SEFO). Holstein is the predominant breed of dairy cows in the valleys.

Milk producers deliver their milk to the PIL plants or sell it directly to consumers in Cochabamba; a few convert it into cheese. The consumer pays Bs 1.00/liter for raw milk. The plant can process 120,000 liters in eight hours, but at present is only receiving 48,000 liters because of insufficient and poorly maintained feeder roads. If this constraint were overcome, the plant would probably be receiving 60,000 liters.

Although production per cow and per hectare is higher in the valleys than in other regions of the country, opportunities for

expansion of output are limited. Land is scarce and costly, having alternate uses for urbanization and fruit and vegetable production. The price currently paid by PIL (Bs .55/liter) is unattractive to producers. Some cut back their herds in recent years, and are not planning to expand again at the current price.

2. Sheep and Wool Production

Sheep raising in the highlands and valleys is adapted to the extensive areas of native grass. Although most flocks are individually owned, some are owned by cooperatives. In either case, sheep graze in fields during the day and are brought into corrals or shelters at night. Most are of the criollo type. Recently, Corridale rams from Argentina have been imported; Corridale is a dual-purpose breed, providing both meat and wool. Breeding of the flock is scheduled for May and June so that ewes give birth in October and November, the beginning of the rainy season.

Usually there is one ram for every 25 ewes. Weaning occurs at five to six months and lambs are sold at 10 to 12 months with 15 to 20 kg live weight. Some of the production indicators are: fertility rate, 50 percent (twinning is rare); female culling rate, 15 percent so the flock is renovated every 6.7 years; mortality rate, five percent in adults and 10 percent in young stock. Some cooperatives use artificial insemination.

Farmers do not shear their sheep every year. Rather than managed as a productive enterprise, animals are kept as fixed assets that increase over time. A few head are sold when the family needs liquid capital. Much of the wool gets to market on skins of slaughtered animals.

In the late 1960s, a Utah State University technical asssitance team imported hand shears. Working in cooperation with the extension service and Peace Corps, the team taught sheep shearing to a limited number of farmers and their wives. Moreover, buyers were available at the farmgate to purchase both the wool and the animals at the time of shearing. This activity, however, involved only a handful of individuals over a three-to-four-year period. At present, only a few producers shear their lambs. Causes include lack of shears and know-how. Another reason could be that shearing is done only in specific cases when producers need cash for emergencies.

In 1985, Bolivia's sheep population was 7.8 million; if every sheep had been shorn, the total production would have been at least 7,800 tons of wool (1.0 kg/per head), which at $US 1,000/ton represents $US 7.8 million. However, it was estimated that only 2.7 million tons of wool were produced that year. Considerable income can be obtained by producers who shear their flocks every year.

Genetic improvement using Corridale rams should continue. Where traditional production practices continue, half-bred males should be used to breed the flock; but for operations with improved management, purebred rams and hand mating should be used.

3. Camelids

Bolivia, in comparison to Peru, is not an alpaca country; on the contrary, it is a llama country. There were about 2.2 million llamas in Bolivia in 1985--most of them in the highlands--but only 350,000 alpacas. (Murillo 1987) In the highlands, extensive grasslands are well-suited to the production of llamas, and some for alpaca. This is because llamas can adapt to poor ranges with hard, rocky ground. On the other hand, alpacas require better pasture and wet, soft ground. In the highlands there is a microecological zone excellent for alpaca production. This zone is called the Bofedal, which has abundant pastures and moisture, soft ground, and is protected from the wind. Commercial alpaca production can be encouraged in areas of Bofedal while llama can be raised on less selective pastures.

Herds of llamas are taken to pasture during the day and gathered into corrals overnight to prevent losses to predators. The gestation period is 11 months. With good husbandry, offspring percentage could be 70 percent per year, mortality of young animals 9 percent, and adult mortality 3 percent. At one year, the offspring would achieve 70 kg of live weight. In addition, the yearling would produce 1.2 kg of llama wool, which would sell for about $US 1.2/ kg. The kemp or thick hairs of this wool are removed using a special machine. Good, young breeding stock would sell for Bs 100 per head. An adult llama produces 0.65 kg of fresh manure per day, which is widely used as fuel and fertilizer.

Reports estimate that about 100,000 llamas are slaughtered every year. The most valuable part of the animal, the hide, has to be given to the municipal slaughterhouse as payment for service. Therefore, most llamas are slaughtered at home and the meat is sold at half its normal price. Meanwhile, the retail price for llama meat in La Paz is nearly equal to that of beef, Bs 3.2/kg. The hides are then illegally exported to Peru with no benefit for the municipalities.

Alpaca herds grazing on Bofedal would have the same production of offspring as that described for llama. However breeding stock, males and females, sell for about US$ 70/head. In the highlands and parts of the valleys ADAM (Asociación de Artesanos y Modistas), a private nonprofit foundation, is promoting and seeking resources to finance establishment of production modules for both alpaca and llama, as well as the

repopulation of the vicuña. Each nucleus will have two parts: Part A will produce either alpacas or llamas, while Part B will produce vicuñas only. Vicuña wool is an expensive commodity, costing $US 1,500/kg in the Hong Kong market.

4. Fisheries

Bolivia is estimated to have the potential to produce 200,000 metric tons of fish per year. However, only about 3,871 tons were produced in 1986 (about 1.93 percent of total potential). (See Table II.9.) Transport is the most costly component of marketing fish in the highlands and Amazon Watershed. (Vergara, 1986)

Table II.9. Estimated National Production by Center (1986)

Production Centers	Amount (Tons)
Beni	1.100
Tarija	1.080
Cochabamba	250
La Paz	754
Oruro	687
Total:	3.871

Source: Plan de Desarrollo Pesquero 1987-1990, Centro de Desarrollo Pesquero,MACA, Diciembre 1986.

The Japanese International Cooperation Agency (JICA) is assisting the Centro de Desarrollo Pesquero (COP) in Lake Titicaca. The British mission has a research unit in Trinidad to improve the capture and marketing of refrigerated fish to Santa Cruz. FAO has prepared a technical cooperation project that includes the Amazon and the Plata watersheds.

a. Highlands

Fish resources are located in Lake Titicaca and Lake Poopo. These lakes are interconnected by the Desaguadero River. Rainbow trout and pejerrey are produced in Lake Titicaca and pejerrey in Lake Poopo.

Production in Lake Titicaca is in the hands of small fishermen, who sell their produce to intermediaries that take it to La Paz. The lake has a potential of 91,000 tons per year, but only 5,500 tons were caught in 1985 (750 tons to Bolivia and the difference to Peru). (CAF, IMARPE, and UMSA 1985) The relatively small percentage of fish caught is due to the fact that Bolivian and Peruvian fishermen only work near the coast and no deep fishing is done. About 800 commercial fishermen and

5,000 families are dedicated to subsistence fishing on the Bolivian side.

Fish production in Lake Poopo is 250 to 300 tons per year. There are about 650 commercial and subsistence fishermen that belong to 17 cooperatives. It is estimated that fishermen receive 43.5 percent of the consumer price of fish. In the highlands, losses are 30 percent because no ice is used during transportation and sale. (MACA 1987)

b. Lowlands

The Amazon watershed, which includes the rivers Mamore, Madre de Dios, Beni and Guapore, and the lagoons of Rogagua and Rogaguado, has a potential of 53,000 tons of fish per year. (Zamoras 1979) However, fish production in the area was only 990 tons in 1986. Table II.10 shows the potential captures and production.

Table II.10. Potential Captures of Fish Produced in the Amazon (1986)

Production Center	Potential Captures Sustainable metric tons/year	1986 metric tons	Production Use (percent)
Trinidad (Beni)	7,924	260	3.23
Guayaramerin (Beni)	13,452	350	2.60
Riberalta (Beni)	3,793	160	4.22
Cobija (Pando)	1,206	70	5.80
Puerto Villarroel (Cochabamba)	1,166	150	12.36

Source: P.R. Walter, R.G. Poulter, and R.R. Coutts. Desarrollo Pesquero en la Región Amazónica en Bolivia, 1982.

In November 1987, fresh fish sold for Bs 1.4/kg in Trinidad, and Bs 4.0/kg in La Paz. The fishermen obtained only 25 percent of the price paid by the consumer. The cost of transport accounts for most of the price increase. Fish are transported to Santa Cruz by truck and to La Paz by plane.

c. The Chaco: Pilcomayo River

This river, which belongs to the Plata Watershed, has the best-used fishing center in the country. The town of Villamontes in the department of Tarija has supplied fish to the rest of the country since the 1950s. The main capture is Sabalo (90 percent), and the rest includes Surubi and Dorado. (See Table II.11.) Up-river, fish are caught with traps and down-river by net. Fish production has not been uniform throughout the years, but varies according to a cyclic pattern.

Table II.11. Commercial Production of Sábalo on the Pilcomayo River

Year	Production in Tons
1974	642
1975	2.174
1976	943
1977	374
1978	1.135
1879	1.920
1980	1.191
1981	2.419
1985	554
1986	1.080

Source: P.Bailey. "Estudio sobre la migración del Prochilodus platensis," 1973; Nizar Vergara. Aspectos Principales de la Comercialización y Consumo de Pescado en Bolivia, FAO, 1980.

Fishing provides jobs for about 600 persons located along the river near Villamontes. Wholesalers have high tonnage trucks that can transport 3,000 units in crates with ice. They take the load to Santa Cruz, Cochabamba, and La Paz, travelling 1200 km in two to three days. By using ice, percentage of losses is low (9.4 percent).

5. Beef Cattle Production

Cattle and beef exports in 1986 amounted to US$ 13.4 million--the third most important type of non-traditional exports after wood and soybean products. At the present price of US$ 0.80 per kg, dressed beef from the Beni competes favorably with Argentine beef in the Peruvian market in spite of the high air freight cost in small planes. With the new Trinidad-Santa Cruz highway and a meat packing plant in Santa Cruz, beef could be shipped from Santa Cruz in large planes, lowering transport costs from US$ 0.70 to US$ 0.35 per kg.

The problem with Bolivian beef production is not cost but a series of constraints ranging from hygiene of the slaughterhouses; to organization of a guaranteed supply; to negotiations with governments of potential consumer countries to open their markets by facilitating import licenses, dollar allocations, or countertrade. The presence of hoof-and-mouth disease closes the door to many markets. Since the solution to this problem is long-term, export of processed meat should be promoted in the interim.

Medium-term export potential is considered to be about 40,000 metric tons/year (US$ 40-50 million). In the long-term, the export potential is 80,000 metric tons/year of dressed beef. This implies technical improvements in cattle raising and finishing in the Santa Cruz and Beni regions. The export potential would be even larger if better efficiency is achieved in poultry and pork production for the domestic market, partially replacing local beef consumption. There are good prospects for economic poultry and pork production in the Santa Cruz area, given the low-cost availability of soybean cake, yucca, maize, sorghum, and rice bran.

Cattle production is the main activity in much of the lowlands, including parts of the departments of Beni and Santa Cruz to the north and east, and parts of Chuquisaca and Tarija to the southeast. The principal areas where production can be increased in the medium-term are Beni and Santa Cruz.

a. Beni

In Beni, livestock is a traditional activity that uses the abundant natural resources of the area. Beni has about 10 million hectares of grassland that support about 45 percent of the cattle population of the country. (See Table II.12.)

Table II.12. Beni Support of Cattle Population

Cattle Population	1981	1985
Total National	4,487,850	5,515,100
Beni	1,800,000	2,454,500
Percent	40	44.5

Source: MACA, 1985

Average temperature in the Beni is 27 degrees C, and annual rainfall is 1,800 mm. There are two seasons: a dry season of five months and a wet season of seven months when 80 to 90 percent of the rains fall. The topography is flat and many rivers cross the land; for this reason, floods are common in Beni. Previously, flooding occurred every seven to nine years. At present, however, the frequency has increased to every three to four years, and cattle losses are considerable. In the flood of 1982, losses were estimated at 20 percent of the cattle population of Beni. (FAO 1984) Refuges are needed during the flooding season. They would be about 20 meters wide, 100 meters long, and two meters high, and would provide dry ground for cattle to spend the night. The Cattlemans' Association has submitted a study to the EEC to finance the construction of refuges.

Some production indicators are: calving, 40-50 percent; mortality in calves, up to 20 percent; age to market steers, four years; and market weight, 360 kg/head. In general, there is a lack of improved management and husbandry practices which is reflected in the low production indicators. Producers with good technical assistance are obtaining calf crops of 60 percent, low mortality in calves of six percent, and 30 months to produce a 386 kg steer (200 kg carcass weight).

The traditional practice is to raise calves to full-grown steers on the same farm. There are not many suitable places to fatten steers in Beni because pastures are flooded parts of the year and high moisture content of grass does not allow animals to ingest enough dry matter to meet body needs. Therefore, it takes four years to produce an animal for market. For this reason yearling calves are now taken to Santa Cruz (by truck) and to Alto Beni (on trail drives), where there are good pastures and supplementary feeds. From Alto Beni, fat steers are transported to La Paz by truck. In Santa Cruz the steers are either slaughtered for the local market or taken by truck to Cochabamba for slaughter.

In Trinidad, there are four operating slaughter plants, three of which are privately owned and one belonging to the Cattlemens' Association. Only the latter has cooling facilities. In the past, this plant has been used to kill and export beef to Peru. Only a portion of the beef leaving Trinidad is cooled immediately after killing. All beef shipped out of Trinidad or Beni should be cooled to two to four degrees C to prevent natural enzymes from deteriorating and producting toxic residues.

In 1980, there were about 5,000 ranchers in Beni; 65 percent were classified as small (300 head or less); 20 percent were middle size (800 head or less); and 15 percent were large (more than 800 head). The Cattlemens' Association claims there are currently 10,000 cattle producers.

b. Santa Cruz

In 1985, Santa Cruz had about 1,358,000 cattle (24 percent of the national population). The percentage in relation to the national stock decreased from 26 percent in 1981 to 24.6 percent in 1985. This may be due to the increase of agricultural crops in recent years. There are one million hectares of natural pasture plus 430,000 hectares of improved pastures in the department.

There are 20,300 livestock producers in Santa Cruz; 17,000 are dedicated to beef production and employ 25,000 families. However, the Cattlemens' Association of Santa Cruz has only 5,000 members. About 97 percent of the total livestock producers are

classified as small (300 head or less), 2.7 percent are classified as middle size producers (301 to 800 head), and 0.3 percent as large producers. Most beef production occurs far away from urban centers. As crop production develops along roads and railroad tracks, beef production is pushed farther out.

Most of cattle are of criollo type, which has been crossed with Nellore, Gyr and Guserat imported mainly from Brazil. Production indicators are still low but are improving: 50 percent birth rate, 45 percent calf crop, 10 percent calf mortality, and 13 percent extraction rate. Using molasses and complementary feeding, a carcass of 210 kgs can be obtained in 30 months.

Most cattle fattened in the department of Santa Cruz are slaughtered in the city. The municipal abattoir was built to process 80 head per day, however it is processing 350 head. It does not have cooling facilities or equipment to process byproducts. Santa Cruz's 600,000 inhabitants consume more than 350 head daily. Per capita consumption of beef in the city is estimated at 40 kg, as compared to 15 kg for the whole country.

In November 1987, about 60 percent of cattle taken to slaughterhouses in Trinidad and Montero, Santa Cruz, were cows, 90 percent of which were pregnant. The cattle producers were selling cows to make up for the deficit cash flow, and there was no credit available to them. Losses due to flooding, combined with the killing of pregnant cows, reduces breeding stock each year. A 50 percent calf crop does not permit rapid regeneration, which is reflected in the growth rate of the national herd in past years (2.7-3.1 percent).

In the remote areas of Santa Cruz, as in Beni, there is a lack of feeder roads. Small producers usually sell their stock to larger ranchers or to intermediary cattlemen. According to CORDECRUZ, the producer received 43 percent of the price of beef paid by the consumer in 1986.

6. Pork Production

Pork production is a widespread family enterprise in all departments of Bolivia. Recently, commercial production has become more important in the Cochabamba, Chuquisaca, and Santa Cruz departments. The increasing availability of feed grains in Santa Cruz, however, implies that this region has the greatest potential to expand production. It is estimated that, during the 1986-1987 season, 42,000 hectares of corn and 4,000 hectares of sorghum were cultivated in the Santa Cruz department. Average yield for corn is about 2.5 tons per hectare, and a good yield 4.0 tons. Good yields for grain sorghum are 4.5 tons per hectare. Both grains are used predominately for poultry and swine feed.

The Departmental Association of Pork Producers (ADEPOR) in Santa Cruz is composed of 30 members responsible for 70 percent of the commercial production. Pork producers are young, dynamic entrepreneurs; most of them became producers to market excess grains, especially corn. However, the better producers are decreasing the cost of feed by replacing corn in concentrates with sorghum or yucca. Feed-mixing plants produce swine feed, but most producers mix their own.

Successful farmers in the Santa Cruz Department regularly have yields of 40 tons of yucca per hectare, and may obtain up to 80 tons. Yucca is normally used for domestic consumption but some swine producers grow it as feed. For yucca fed to swine, the conversion is as follows:

- o Yield per hectare of fresh yucca: 40,000 kilograms
- o Fresh to dry yucca: 40,000 = 13,300 kilograms
- o Dry yucca to live swine: 13,300 = 3,325 kilograms live hogs
- o Price of fresh pork: Bs 2.20 per kilogram live weight
- o Gross revenue per hectare: 3,325 live weight x Bs 2.20 Kg = Bs 7,315 or US$ 3,402.

Daily consumption of hogs in the city of Santa Cruz is 300 head, out of which only 100 are killed in the municipal slaughterhouse. The rest are slaughtered on the farm, primarily to avoid the municipal tax. When the local market is full, producers send their hogs to Cochabamba by truck. In Santa Cruz, the price is Bs 1.60/kg live, while in Cochabamba it is Bs 2.20/kg. It costs Bs 0.18/kg truck transportation from Santa Cruz to Cochabamba.

Packing plants are not available in Santa Cruz or Cochabamba to hold carcasses under refrigeration. This is the main constraint to domestic marketing. Gaining access to the export market also depends on sanitary slaughter conditions and a predictable, adequately dressed carcass supply.

7. Poultry Production

The departments of Cochabamba and Santa Cruz dominate the poultry industry. Santa Cruz produces 42 percent of the broilers in the country and 70 percent of the national production of eggs. Cochabamba produces 52 percent of broilers and 22 percent of the eggs.

Broiler production is controlled by large holding companies or cooperatives, which supply chickens, feed, and veterinary

products. When a chicken achieves market weight, it is delivered to the company that kills and sells it. The producer is then paid a previously established price. This arrangement makes competition difficult for independent operations. There is sufficient installed capacity to meet the national demand, but more broiler farms are being constructed. This is probably because credit is available to build new installations and to import feed. However, no credit is available as working capital for farmers who already have installations.

There are eight feed mixing plants with a capacity of 16,200 tons/month, working at 62 percent capacity. The nine incubation farms have a capacity of 3,090,000 eggs/month, and are working at 70 percent capacity. There are 171 broilers farms with a capacity of 720,000 broilers/month working at 89 percent capacity. Ten killing plants with a capacity to kill 970,000 broilers/month are working at 64 percent capacity. Only three killing plants are mechanized and meet accepted sanitary conditions.

Feed conversion to meat is 2:1. It takes eight weeks to produce a broiler of 1.80 kg live weight, which yields 1.5 kg of carcass weight. The cost of feed accounts for 60 to 62 percent of the total cost of production. National production of broilers was 35 percent higher in 1987 than in 1986.

Wholesale price per kg of chicken is Bs 3.50/kg in Santa Cruz, Bs 3.60 in Cochabamba, and Bs 3.80 in La Paz as compared to the price of beef and pork of Bs 3.10/kg in La Paz. Cochabamba is succeeding in shipping broilers to La Paz using flaked ice, but Santa Cruz has not been able to do so because the product arrived in bad condition. The transportation cost by refrigerated truck is too high for Santa Cruz. National per capita consumption is 3.0 kg of chicken meat per year; in La Paz it is 3.5 kg.

Layer farms number 120, having a capacity of 13,600,000 eggs/month and are working at 70 percent of their capacity. The egg production industry faces competition from Chile. Illegal imports keep the price low in La Paz. Cochabamba is able to compete with Santa Cruz for the La Paz egg market because it is closer--six hours by truck as opposed to 24. To supply efficiency and supply grain, poultry producers in Cochabamba are now planting grains (corn and sorghum) in Santa Cruz.

The Bolivian market prefers brown eggs, which are more expensive to produce. Brown layers are less efficient in converting feed into eggs. The egg is smaller, and brown hens lay fewer eggs per year in comparison to white layers. The current wholesale prices for eggs are Bs 0.15 (extra large), Bs 0.14 (large), and Bs 0.13 (medium size). The respective retail

prices are Bs 0.20, Bs 0.18, and Bs 0.15. National consumption per capita is 39 eggs per year.

D. Natural Resource Management

1. Forests

The Ministry of Rural Affairs and Agriculture (MACA) created a forestry department in 1954. Because of the inconsistent and vague legislation concerning the forest sector, the lack of forestry policy, and a vast amount of timber exploitation, the Center for Forestry Development (CDF) was created by means of the National Forest Law, Governmental Decree No. 22686, on August 13, 1974. According to Article 67 of the Law, CDF is a decentralized dependency of MACA with independent financing and autonomy over personnel and administration. Its objectives are to promote, regulate and financially manage the exploitation, commercialization, industrialization, restoration, protection, and conservation of the forest resources of Bolivia.

Potential manpower for forestry in Bolivia is being trained at the School of Forestry in Tarija, which graduates Forestry Engineers after five years. These graduates have, for the most part, been absorbed by CDF (10 persons per year). In Cochabamba, a middle-level forest ranger school offers a two-year course. This program and the Tarija program have been assisted by West Germany.

"Bolivia's State of the Environment and Natural Resources," July 1980, makes the following observations about Bolivia's forest industry. CDF is bureaucratically top-heavy and concerned mainly with timber harvesting. Approximately 75 percent of CDF personnel are involved in the financial management of timber. Most of the foresters in CDF are involved in administration. Those few CDF foresters actually working in the field are involved in reforestation projects.

The scientific base of CDF's technical program appears to be weak. For example, CDF personnel worked with GEOBOL on the preparation of a forest map based on Beard's classification of Trinidad. This system has a strong European bias against tropical forests. It depicts all forests along the northern Andean front ranges as one forest type, covering at least seven ecological life zones. In the southern lowlands and on the Beni Plain, the GEOBOL map differentiates numerous vegetation types. Thus, after five years of CDF work in preparing the forest map, it appears that it will have minimal use in defining of commercial forest reserves.

The development of sustained yield management systems for the forest reserves, such as Chore and Guarayos, should be high CDF priorities. However, CDF professional personnel expressed

little concern or interest in sustained yield or the protection of forest resources.

There is considerable discussion in the country about graft associated with the granting of consessions. During some of the previous military governments, hundreds of thousands of hectares of concessions in Chiquitania were reputedly granted to the Minister of Agriculture at the rate of $b 1/hectare ($b 1 equaled US$ 0.05).

In summary, the CDF is doing a poor job in carrying out the functions assigned by the Forestry Law and Regulations, particularly those related to conservation and use of the natural forest resources. The CDF is little more than the government's fiscal agent for the sale of timber.

2. Grasslands

Very little work has been performed on grassland or rangeland in Bolivia. The work that has been done in the highlands--principally measurements of productivity in caged enclosures--indicates that the highland region is potentially one of the richest, most productive grasslands in the world, rivaling or exceeding the best natural range in the western United States. However, this research has been overlooked due to lack of trained personnel in range management, and due to lack of applicability of research observations to the land-use patterns and community life of the Aymara and Quechua peoples in the highlands and valleys.

More than 100 forage species valuable for livestock feed have been identified. (Parker, 1974) Native rangeland pasture and watershed species, which are superior in terms of palatability and productivity to the ecological equivalents in the United States, are relatively easy to find. An example of this is "Big Bluegrass" (Poa ampla), one of the best native grasses in the 11 western U. S. states for yield and soil stabilization, growing to a height of 0.55 meters. An equivalent grass of the Bolivian highlands, Poa aff. pardoana, grows to nearly twice that height and is equally palatable to livestock.

During the Inca Empire, about 80 percent of the population of Bolivian highlands raised llama and alpaca in an extensive, seasonal, grazing system. The "secret" to this wealth was thought by the Europeans to be the hundreds of thousands of alpacas and llamas grazing on the highlands. This mistake of thinking animals, not grass, are the "secret" to wealth, was not made by the Incas. The rangelands in the Inca Empire were carefully protected; the penalty for cutting grass without permission was death. (Bolivia, State of the Environment and Natural Resources, July 1980)

After centuries of abuse and overuse, the potential of these grasslands is not apparent. Overgrazing has dramatically changed the quality of range species and drastically reduced forage production. Parker (1974) concluded that the ambient condition of the highlands would support quadrupled production of range vegetation. This figure was based on 55 caged enclosures in seven different extensive range sites. In some cages, two years of protection resulted in 10 times the production of uncaged areas. Production over eight metric tons (air dry) per hectare was recorded. In addition, composition within the cages changed from less palatable and less nutritious to more palatable, more nutritious species. In Tiwanaku, where a pre-Incan monument has been fenced for 15 years, the unpalatable Stipa ichu has been virtually eliminated while a more desirable species (for animal production, watershed protection, erosion control and soil development) has increased dramatically. The production at this site is 6,660 kilograms/hectare, exceeding any range in the United States.

Resiliency and adaptability of the native species have been shown in the other range site studies. (Cardozo, 1970) At Belen Research Station, native grasses yield heavily:

o Hardium Andriolu	2,330 kilograms/hectare
o Nasella pubifloru	4,820
o Bromus Catharticus	2,680
o Calamagrostis spp.	3,100

At the drier Patacamaya Research Statation, Alzerreca (1979) found that after four years rest, the production on severely sheet and wind-eroded land had increased slightly to 994 kilograms/hectare but the composition dramatically changed to a more favorable mix of desirable species.

Considering the long history of overgrazing by sheep and cameloids, the resiliency and productivity of the highland range is remarkable. Both climate and the high elevation are probably contributing factors. For example, plant growth at high altitude is more efficient due to the large amounts of intense sunlight and the conservative evapotranspiration of plants. This has the direct effect of producing plants with broader leaves, which, in turn, increase forage production. (Parker, 1974) Generally, non-native species do not reproduce on the highlands, and the problem of exotics achieving a dominant "weed" status does not occur in overgrazed areas. With protection and range management the original species mix will return. Therefore, weed eradication is not needed in overgrazed areas of the highlands. As elsewhere in the world's ranges, it tends to be expensive, time consuming, and frequently an unsuccessful battle.

Finally, the nutrient quality of the grasses of the highlands is good. Temperate grasses are higher in TDN (total

digestible nutrients) than tropical grasses because the cooler temperatures require the grasses to maintain a higher percentage of their nutrients, in the form of simple sugars. In contrast, tropical grasses convert more of their nutrients into hard-to-digest fibers. The nutrient quality of the highland grasses is high even in late winter. One native highland grass, Bromus uniloides, has 19 percent crude protein, as high as well-handled alfalfa. Also, this range feed is available year-round. These combined factors represent a high-range resource potential in the high plains and high valley regions.

E. Agroindustries

1. General Characteristics

During the period 1979-1983, there were almost 1,300 establishments processing agricultural products in Bolivia employing about 25,000 workers. Agroindustries constituted about 61 percent of all Bolivian industries in terms of both number of establishments and people employed.

Although the distinctions between agroindustries and other industries is not precise, agroindustry is defined broadly as food, beverages, tobacco, textiles, clothing, leather and wood industries. (See annex tables H.15, H.16 and H.17.) Agroindustries account for about 50 percent of the gross value added of the Bolivian industrial sector. Except for the petroleum industry, which accounts for about 15 percent of total industrial gross value added, the most important Bolivian industries are sugar refineries, slaughterhouses, bakeries, flour mills, and breweries.

In general, agroindustries fared better than other industries during the economic decline during 1978 to 1986. While average industrial output in 1986 had decreased to 60.3 percent of its 1978 level, the weighted average for agroindustries in 1986 was 76.85 percent of its 1978 level. Industry's share in the GDP diminished from 18.0 to 10.8 percent during this period, but some agroindustries actually increased their output (distilling, wine-making, abattoirs, animal feeds and edible oils). Some of the worst-hit agroindustries were sawmills, sugar refineries, cocoa products, and spinning/textiles. Respective 1986 production levels for these were 33.6 percent, 43.6 percent, 53.2 percent and 58.4 percent of the 1978 levels.

Annex table H.22 shows the use of inputs and value added for the main agroindustrial branches. Gross value added as a percentage of gross production is highest for the tobacco, followed by beverage, sugar, and wood industries. Gross benefits are highest for sugar, wood, beverage, and milling, while employment creation is highest for the dairy and beverage industries.

A recent survey of 54 Bolivian manufacturing plants Aurrecochea, 1987) indicates that, in general, the plants are fairly new (average age = 8.89 years) and use current technology, with limited automated processes. Entrepreneurs are reluctant to install them due to the lack of personnel specialized in their maintenance. Some spinning mills are of particularly advanced design. Plant efficiency was average. The mean investment was Bs 35,310 per employee. The annual product value was Bs 0.98 for every US$ 1.00 invested. Perhaps the most striking feature of Bolivian industry is the low use of installed capacity, which in the cited survey averaged 32 percent. Large plants, in particular, were working far below their capacity.

Below, only three of these industries will be discussed. They correspond to products where possibilities for expansion seem likely, especially for the export market.

2. Wood and Wood Products

The principal non-traditional exports of Bolivia are wood and wood products, which in 1986 reached a value of US$ 23.2 million. However, the forestry potential of Bolivia has barely been exploited. Only two species--mahogany and oak--are exploited intensively, and most exports consist of sawed lumber with little added value. It is estimated that Bolivia could export annually up to US$ 221 million of forest products, including US$ 64 million of planks, US$ 46 million of moldings, US$ 30 million of plywood, US$ 8 million of floor parquet, US$ 6 million of railroad ties and US$ 67 million of other wood products. The price perspectives for tropical hardwoods are favorable, since the stands in the main competing countries are being exhausted.

The main constraint is the high cost of transport. Internal and external transport costs amount to 69 percent of the CIF price for planks, 47 percent for railroad ties, and 39 percent for doors, but only 22 percent for modern-style furniture and 5 percent for decorative plywood. Thus, the solution to high transport costs is to increase the local processing of the wood. Another way to increase hardwood exports is to use discarded wood pieces for moldings or furniture parts. Finally, lesser-known species could be exported if converted into moldings or knocked-down furniture.

To increase wood exports, the following strategies should be followed:

- reduce internal transport costs through better road maintenance;

- reduce external transport costs by grouping larger shipments; and

- develop furniture and wood exports by increasing the quality of the finish.

These strategies must be combined with sustaining long-term forestry production.

3. Leather Products

The exports of non-traditional manufactured products have been modest, amounting to less than US$ 15 million in 1986. They consisted mostly of cotton yarn and semi-processed leather. Exports of skin and hide products amounted to US$ 6.7 million, consisting mostly of dried salted cattle hides (US$ 2.5 million) and chrome-tanned ("wet blue") cattle hides (US$ 3.2 million). Bolivian leather is of inferior quality but cheap. Given this situation, there are two lines of leather footwear that give Bolivia a comparative advantage:

(1) Military and police boots, where strength counts more than appearance. Leather accounts for 60 percent of the production cost, and it is 30 percent cheaper in Bolivia than in Brazil. Due to the existence of idle capacity in Bolivian shoe manufacturing plants (especially MANACO), production could be stepped up quickly. The constraint is lack of aggressive marketing abroad.

(2) Huarache casual footwear, in which the upper part is made of braided leather strings. This makes possible the use of leather with holes and other defects. Huaraches are the most important line of Brazilian footwear exports, which represent hundreds of millions of dollars annually. Bolivia has an advantage over Brazil with regard to cheaper leather.

Thus added value could be considerably increased by exporting footwear rather than leather. The strategy for increasing footwear exports would consist of:

- training, especially in huarache production; and

- sales promotion, through contacts with international marketing firms (in the case of huaraches) and participation in international competitive bids (in the case of military boots).

4. Handicrafts

In 1986, registered handicraft exports amounted to less than US$ 1 million. This does not include the large amounts sold to tourists within the country. In the best years (1980 and

1981), registered handicrafts export amounted to US$ 3 to 3.5 million. Some 80 percent of handicraft exports consist of knitwear. Although handicrafts are not likely to become a major export item, they can supply, with minimal investment, additional income to lowest-income inhabitants in the most densely populated regions.

The principal problem of handicraft producers of sweaters and other knitwear is the maintenance of traditional designs and poor finishing, for which there is no external market. Bolivia cannot compete with Asian countries in cheap clothing. It must aim at the middle and high sections of the market, which demand modern designs and colors as well as meticulous finishing. Neither can Bolivia compete with developed countries in mechanized ready-made clothing. Thus, the comparative advantage of Bolivia lies in hand production of knitwear using knitting machines, applying modern designs and good finish.

This is the strategy followed by ADAM, a Cochabamba-based not-for-profit organization that trains, supplies with raw materials and designs, and markets the products of about 4,000 craft producers, most of whom are women working in their homes. ADAM has received USAID technical assistance since 1985. It maintains a showroom in Boston and contacts with major U.S. and European wholesalers. Its sales volume in 1987 is projected at US$ 450,000, and it may double in 1988. Thus, ADAM seems to be on the right track and to merit continued USAID technical assistance, as well as FOCAS credits if necessary.

ADAM has plans for vertical integration: substitution of alpaca wool yarn imports from Peru through the establishment of alpaca production units and acquisition of the unused alpaca wool spinning equipment supplied with IBRD credits to the INFOL (Instituto Boliviano de Fomento Lanero) plant at Viacha. In view of the difficulties of the Bolivian textile industry, these plans should be examined critically.

F. Farm Enterprises

1. Number of Farms

Traditionally, the term "rural dweller" has been synonymous with agricultural producer. This equation is supported by the population censuses of 1950 and 1976, where 97 and 95 percent, respectively, of the rural economically active population (EAP) was classified as being employed in the agricultural sector. Rural, as pointed out before, is defined as the dispersed population in centers of 2,000 inhabitants or less. In 1976, only five percent of the EAP in agriculture was residing in urban centers.

2. Farm Size and Regional Distribution

The attempt to conduct the second national agricultural census, which could have settled the estimations on the number of farm households, farm size, and distribution, was not completed because of political difficulties. Thus, determination of the number of farms and farm households, as well as their size and distribution, will have to wait until a successful national survey or census is taken. The 1978 National Farm Survey is the only reliable source of information on characteristics.

In the highlands and valleys, small farms predominate. In the lowlands, average farm size is much larger. Cattle ranches in the eastern lowlands can run several thousand hectares. In a few exceptional cases in the area of Santa Cruz, farms may have over 500 hectares under cultivation. The 1978 survey did not include these lowland and isolated areas. What it included was the densely populated regions of the country that contain the majority of the farmers and working farms. (See Table II.13 and Figure II.2.)

Table II.13. Size Distribution of Farms (1978)

Size of Farm Units	Percent	Hectares
<1	28	108,866
1 - 2	19	71,753
2 - 5	29	110,928
5 - 10	11	42,345
10 - 20	9	33,448
20+	4	16,257

Source: Análisis de la Encuesta Nacional Socioecónomica del Sector Agropecuario Boliviano, 1978. Documento Analítico No.2, La Paz, 1983.

Forty-seven percent of all farms were under two hectares in size. The majority are subsistence plots for rural residents. An estimated 383,587 farm units were surveyed (See Table II.14.)

The amount of land under cultivation represented only a portion of the farms. (See Table II.15.) Small farms in the highlands and valleys included fallow land or land not apt for cultivation. In the lowlands, inadequate technology and family

Figure II.2 NATIONAL SOCIOECONOMIC SURVEY OF THE AGRICULTURAL SECTOR

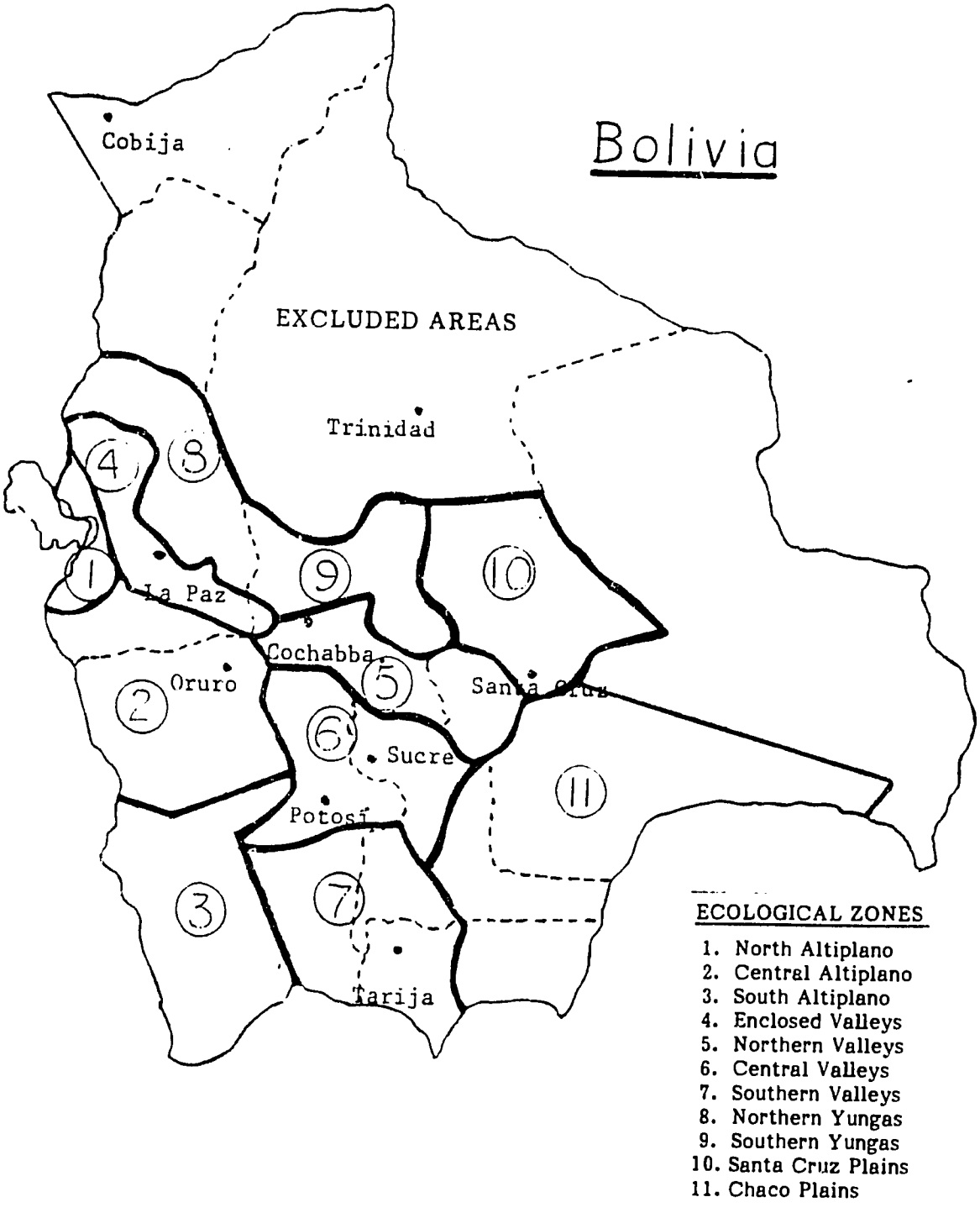


Table II.14. Distribution by Department

Department	Average Farm Unit Size (Hectares)	Number of Rural Farm Households	Total (Hectares)
La Paz*	4.0	141,105	568,970
Cochabamba	3.2	70,238	221,538
Chuquisaca	4.1	35,009	142,585
Oruro	10.8	28,314	370,170
Potosi	3.1	72,602	223,691
Tarija	11.8	14,430	170,724
Santa Cruz**	19.4	21,889	425,082
Total	5.4	383,587	2,122,760

* Excludes Province Iturralde in La Paz. 1976 population was over 5,000.
** Excludes provinces east of the Rio Grande.
Source: ibid

labor were related to amount of land left uncultivated.

Table II.15. Variations by Department of Cultivated Land on Farms

Department	Area under Cultivation (percent)	Average Farm Size (hectares)
Cochabamba	59	3.2
Chuquisaca	63	4.1
La Paz	40	4.0
Oruro	12	10.8
Potosi	45	3.1
Santa Cruz	19	19.4
Tarija	32	11.8
Total	35	5.4

Source: ibid

3. Land Tenure

According to the 1978 survey, 216,924 (or 56.5 percent) of farmers had definite title to the land. Legal titles were being processed for 140,939 (or 36.7 percent) of farmers by the Agrarian Reform Institute and the National Institute of Colonization. The remaining 6.7 percent (or 25,734 farm units) were being operated under other forms of land tenure (shareholding rental and such). The geographical distribution of farm units with definite title to their farms varied from a low

of 31 percent in Oruro to a high of 69 percent in Cochabamba.

The survey indicated a relationship between definite land title and higher incomes and use of modern inputs. There was no relationship between size of the farm and legal ownership of the land, nor were there indicators that credit was strongly related to definite land titles.

Outside the area surveyed, in colonized areas of the Beni and Provincia Iturralde of La Paz, tracts of up to 50,000 hectares have been given out. This action has led to legal/political battles between the often absentee land owners and settlers or "colonists." Numerous government decrees in the past few years have invalidated the titles to several of these farms, especially in the area surrounding San Buenaventura. Tenant farmers are using the agrarian reform principle, which states that the land belongs to the one who works it.

4. Household Characteristics by Farm Size

The average age for the head of the household was 44 years. Eight percent of all farm households surveyed were headed by a female. In farms of less than two hectares, female headed households reached 13 percent. The average size of the farm household was 4.5 members per household. Farm households in the lowlands have more members than households in the highlands and valleys.

About 74 percent of all farm households had one member (head of household, spouse, or oldest son) who could read and write. The proportion of households with a member who could read and write increased as the farm size increased, reaching 93 percent for the farm category of 20 hectares or more. The main language used in the household was distributed as follows: 41 percent Quechua, 35 percent Aymara, 23 percent Spanish, and 1 percent Guarani. Nearly three-fourths of all households used Spanish as a second language.

The main occupation of most heads of rural households was agriculture. Only seven percent indicated that their main occupation was not in agriculture. However, in farm households of less than one hectare, 13 percent had occupations outside agriculture. Fifteen percent of farm households had members who migrated in search of temporary labor; 6 percent had members who had migrated permanently.

Twenty-five percent of all farm households did not sell any of their products. The average farm size of the households with no sales was 2.4 hectares. Twenty-six percent sold their products on the farm. This category had an average farm size of 6.4 hectares.

5. Farm Income

A study of two rural communities was conducted in 1986. (See Table II.16.)

Table II.16. Rural Farm Household Incomes

Highland community of Chuquina (Oruro)*	
Number of families	Average Annual Net Farm Income for 1986(US$ dollar)
36	$ 393
18	$ 487
20	$ 789
18	$ 1,031
Valley community of Pocona (Cochabamba)**	
Number of families	Average Annual Net Farm Income for 1986 US$ dollar
106	$ 552
47	$ 697
33	$ 705
90	$ 2,173

* Average family size 4.2 members. Over 90 percent of net farm income derived from livestock. Agricultural production for family use.

** Average family size 5.2 members. Over 90 percent of the income derived from agricultural production, the rest from livestock.

Source: Tipologia de la Economia Campesina, MACA/JUNAC. Proyecto Andino de Desarrollo Tecnologico en el Area Rural, La Paz, 1987, pp.184 and 208.

The study of these communities led investigators to conclude that the two groups with the lowest incomes are barely subsisting. In fact, if the labor opportunity cost is taken into account, their income would be negative. This finding is not unlike the results of the 1978 survey on the majority of farms with less than two hectares.

The 1978 survey found that market proximity was an important ariable affecting income and well-being of rural households. Rural farm households less than one hour from markets had higher incomes in all farm sizes. The relationship of incomes to market proximity in cases outside this radius was not clear, suggesting

that the one-hour time limit was a key variable in rural farm household income and economic efficiency. For farms not in the immediate vicinity of urban centers, roads were the determining factor in reaching rural markets.

Twenty-five percent of all rural households in the area of the survey did not sell any farm products. Twenty-six percent sold only on the farms, and did not participate directly in regional markets. This leaves 49 percent of all rural farm households as participants in markets outside the farm. Table II.17 shows distribution of distance (in time) to markets.

Table II.17. Distribution of Distance in Time to Markets

Time to Market	Number of Rural Farm Households	Percentage
<1 hour	34,164	9
1-3 hours	57,955	15
3-6 hours	47,723	12
6 hours+	49,498	13
Sales on farm	100,236	26
No Sales	94,021	25

Source: ibid

Rural farm households with no sales had the lowest incomes, and as other indicators suggest; they can best be considered rural dwellers rather than farmers. Farming for those rural dwellers is either a subsistence activity or a complementary source of income, providing a base from which to search for opportunities to work off the farm.

An analysis of the 1978 survey recommended that rural farm households with the lowest incomes (which amounted to about 49 percent and included the majority of farms with less than two hectares) would best be served if off-farm opportunities were created for them.

The Tipologia Campesina study categorized farmers as below subsistence (farmers with lowest income with units of less than one hectare) and subsistence to profit-making farm families. On a national scale (based on the 1978 survey), the below-subsistence category may account for up to 28 percent of all rural households or, in 1978, approximately 108,866 families.

The study recommended relocation programs to new agricultural areas of the lowlands. For subsistence to profit-making farm families, it recommended a series of income strategies.

Whether the migration of large numbers of rural farm households is promoted or not, the household members have been "voting with their feet" in increasing numbers. The decline of employment in the agricultural sector will consequently continue its downward trend. However, rural residence and maintenance of resources in the local community will continue to provide a resource base and refuge, which can always be counted on in times of crisis or failure of efforts to diversify household economy by searching outside the local community.

G. Typology of Bolivian Farmers

Most typologies classify Bolivian farmers, farm organizations, and economic strategies into two types:

- The subsistence farmer. His productive strategy is oriented primarily to "reproduce the labor force of the household." This farmer is not integrated into the national economy, and may not be interested in or able to participate in it. This farmer makes little if any use of modern inputs, credit, and is bound by his cultural and socioeconomic traditions.

- The modern farmer. By contrast, he bases his productive strategy on market considerations, uses modern inputs, credit, etc. The modern farmer is fully integrated into the national economy, is not bound by traditional practices, and has great potential for development.

"Campesino" is used as a synonym for "subsistence" or "traditional" farmers of the highlands and valleys, while "capitalist" or "modern" are terms synonymous with the lowlands farmer.

Although there is some truth to this approach, the situation is far more complex. The "modern" or "capitalist" farmers of the lowlands live mostly around the city region of Santa Cruz. Within this region, they represent a small minority of farmers. In decreasing order of commercial significance, this minority is composed of Mennonite, Okinawan, immigrant settlers from the highlands and valleys, and a small minority of native lowland farmers. The so-called "capitalist" Mennonite and Okinawan farmers have highly developed cooperative systems of production and marketing.

Elsewhere in the lowlands, farmers and their farming strategies are probably among the most traditional in Bolivia. Farmers in the Beni and Pando to the north of Santa Cruz and the Chaco to the south are far more isolated than their counterparts in the highlands and valleys. They are basically itinerant slash-and-burn agriculturists or hunters and gatherers who

cultivate small plots for their subsistence. Employment in cattle ranches and in the collection of natural rubber and chestnuts are the only sources of employment outside subsistence agriculture for the majority of farmers north of the Santa Cruz region.

Furthermore, in the highlands and valleys close to the large urban centers, both "modern" and "subsistence" farmers are found. Modern farmers in these regions are not always as visible as in the Santa Cruz region, probably because the areas are smaller and modern farmers few. But they represent a significant and growing number of the farming population. The existence of both types of farmers throughout Bolivia tests the validity of associating one type with a geographical region.

Neither are ethnic and language distinctions as valid as they once were. The majority of the population is bilingual. Spanish is just as important in the highlands and valleys as Aymara and Quechua, though not as much in rural areas as in the formal urban sector or national administrative system. However, monolingual ability in a language other than Spanish (Quechua, Aymara, Guarani or other) is still a valid indicator of low socioeconomic position of farmers within the national structure.

Descriptions of the farming population using the traditional distinction by region (highlands, valleys, and lowlands) and/or productive strategy (subsistence/modern, campesino/capitalist) tend to obscure a highly dynamic and fluid situation. However, no consensus has been reached to replace the traditional approaches to the classification of the farming population. The old stereotypes have become useful political tools for appealing to the still large sector of rural dwellers. The subsistence/modern, campesino/capitalist farmer dichotomy is politically attractive because it reinforces distinctions between urban and rural or formal and informal sectors of the national society. They are convenient and appealing labels that contain enough truth to make them endure.

Increasingly, data shows that the driving strategy for most farmers is neither "subsistence" nor "modern" agriculture, but an economic diversification of farm household activities. Whether farmers use modern inputs, credit, technical assistance, or seek to maximize their yields, the major question does not so much involve their "way of life" or traditions, but their access to markets and provision of support services. It would be irrational for a farmer who lives in a isolated community to produce in excess of his customary subsistence needs if he cannot dispose of the surplus production. Similarly, it would be irrational for a rural dweller with a small parcel of land to depend exclusively on it for his survival if he can work off his farm.

While rural dwellers who depended on farming for their livelihood are diversifying out of agriculture into activities such as commerce, transport, and skilled and unskilled non-agricultural labor, urban residents who depended for their livelihood on non-agricultural sector occupations are diversifying their economic activities into farming and other agricultural sector occupations. Increasingly, urban professionals are turning to agriculture as a complementary source of income. The resource base of this group, including higher educational levels and access to the formal financial and technical institutions, has led them to recognize the opportunities available in selected, agricultural activities (poultry, dairy, and export crops such as flowers). Thus, while cities are undergoing a "peasantization" process and the rural areas are undergoing a "gentrification" process.

The census data on internal migrations and labor force, as well as the national rural farm household socioeconomic survey of 1978, were the first macro-indicators of the widespread nature of these changes. In-depth case studies of communities confirm the findings. The already cited study, "Tipologia de la Economia Campesina de Bolivia," is one example. A newly-published book, La Participación Indígena en los Mercados Surandinos, shows, in a series of articles by various experts, that "campesinos" (indígenas) had been willing and clever participants in the market economy since colonial times. (Harris 1987, Kraljevic 1983)

Agriculture as a two-way street between urban and rural worlds is one of the integrating forces of societal change. It contributes to the homogenization of the population and the strengthening of the farming sector. This is a positive development which, if recognized and supported, can contribute significantly not only to agricultural development, but equally to the development of the rural sector.

H. Migration

1. Population Dispersion

Bolivia was and still is a Latin American country with one of the largest and most widely dispersed rural populations. This population dispersion poses serious challenges to the development of agricultural production, as well as all aspects of rural life, including social infrastructure, roads, access to markets, etc. Table II.18 shows distribution by department.

Table II.18. Population Dispersion by Department (1976)

Department	Population (percent)	Territory (percent)	Area (Km2)	Density (per km2)
La Paz	31.8	12.2	133,985	11
Oruro	6.7	4.9	53,588	6
Potosi	14.3	10.8	118,218	6
Chuquisaca	7.8	4.7	51,524	7
Tarija	4.1	3.4	37,623	5
Cochabamba	15.6	5.1	55,613	13
Santa Cruz	15.4	33.7	370,621	2
Beni	3.6	19.4	213,564	0.8
Pando	0.7	5.8	63,827	0.5

Sources: Salto al Futuro, 1984 pp. 60-61, 84. Atlas Censal de Bolivia. INE, 1982.

Small communities of 40 to 120 families live in isolation, dispersed over vast expanses of territory with limited or difficult access by road to other communities and urban centers. In the valleys and highlands, rural community isolation is aggravated by the high cost of building roads, and, where roads exist, by the high cost of transport. While roads and modern transport are making progress in the lowlands, there are still vast, sparcely populated areas that continue to exist in almost complete isolation.

Each rural area responded differently to ruralization and destruction of rural communities, indigenous forms of local government, and local or micro-regional economic systems. The main strategy to prevent deterioration of the rural economy and forms of social organization has been diversification of economic activities by the rural household. This diversification implies the search for additional sources of employment in commerce, personal services, employment in agriculture outside the farm, and transport. Much diversification is accomplished through migration of household members to urban centers, mines, areas of "colonization," and areas where agricultural labor is in demand. The basis for accomplishing this diversification is the rural farm, which generates resources for undertaking new enterprises or at worst, serves as a refuge that ensures subsistence.

Rural-based household economic and social networks extend beyond the local community to cities, other agricultural areas with labor shortage, and neighboring countries. The downward trend for employment in the agricultural sector is likely to continue, if not increase. Yet, at the same time, agricultural employment has emerged as one of the few alternatives to non-agricultural, "formal" employment in cities.

2. Migration Trends

Population dispersion and isolation of rural communities has been gradually changing since 1900 when the rural population accounted for 87 percent of the population (based on current definition of urban = 2,000 inhabitants). By 1950, the rural population had been reduced to 74 percent.

Between 1950 and 1976 (the date of the last census), the trend towards urbanization began to accelerate, mostly as a result of the fundamental structural changes introduced by reforms following the 1952 revolution (Casanovas 1981). In 1976, the rural population had been reduced to 58 percent of the total. The redistribution of population through internal migration was beginning to reveal well-established trends:

- Migration to urban areas (from rural and other urban sources) accounted for 69 percent of the total migrants registered by the census (total migrants = 914,320).

- Migration to rural areas (from rural sources and some urban sources) accounted for over 31 percent of the total migrants. This migration was concentrated in the provinces of the lowlands where "colonization" has taken place (Alto Beni in La Paz, Chapare in Cochabamba, and area near the city of Santa Cruz).

- Generalized emigration throughout the country and concentrated immigration into a few selected areas. Of the 99 provinces that comprised the country in 1976, 75 had negative migratory rates, while 24 had positive migratory rates.

- Over 50 percent the immigrants settled in five of the 24 provinces. Five departmental capitals are located in these provinces.

Since 1976, the migratory flow to urban centers and rural lowlands has accelerated considerably. The most notable causes are:

- Continued expansion of traditional "colonization" areas in Alto Beni, Santa Cruz, and Chapare. CUMAT studied the Alto Beni colonists and found that over 40 percent of the settlers had arrived between 1980 and 1986. Total population in the colonization area was estimated at 28,000. (CUMAT/COTESU 1987)

- Gradual building of new roads in the lowlands opening up new areas for planned and spontaneous colonization: (La Paz, San Borja, Trinidad, Chimore, Yapacani, Tarija, Pampa Redonda). The National Institute of Colonization has

registered 5,300 claims per year between 1980-1986 from families already settled or in the process of settling in colonization areas. (Lic John Vargas 1987)

- The growth of new towns in the "colonization" areas and migration of highlanders (mostly working in small-scale commerce) to lowland towns. (Following the construction of the road connecting it to La Paz, San Borja grew from approximately 6,000 to over 14,000 people in 8 years.)

- Drought in the highlands and valleys in 1983, which "forced" many people out of these rural areas.

- Severe economic crisis, and consequent social and political upheaval since 1982.

- The "pull" factor in areas of immigration created by the establishment in these urban centers and rural area of large groups of rural migrants who provide easier access to new migrants from the same communities. For example, by 1982, one out of every four permanent residents of La Paz was born in the rural provinces of the department. The temporary residents constituted an additional category, which was difficult to estimate. (Albo, et al., 1987)

- The "push" factors cited at the beginning of this section have not changed considerably, despite continuing efforts to develop rural Bolivia. The rural sector is still at the bottom of the socioeconomic, political, and cultural hierarchy.

3. Impact of Migration

a. Political

From 1952 (when universal suffrage was instituted) until the last general election in 1985, the rural population sector was politically important, being the majority population. When an election took place, the rural vote was the deciding factor. Recognizing the political clout of the rural sector, even de facto governments spent considerable time and resources "buying" their political support. The most notable example of this was the Pacto Campesino-Militar (Peasant-Armed Forces Alliance) initiated by General Barrientos in 1964, which became a powerful political block that endured throughout several governmental changes until the late 1970s. Rural political support provided certain advantages to the rural sector, but, in general, was simply manipulated through a rural sector organizational structure that was easily controlled by the centralized state system.

This loss of political clout can have both positive and negative repercussions in rural areas. On the positive side, it relieves the high land density, and may eventually lead to the reorganization of farm units into more economically viable ones. This is contingent on rural development programs that mobilize local resources and selectively use external agents and resources to build local institutions that can sustain and eventually initiate development. If all resources and initiatives for rural areas are externally generated and controlled by the State, it is less likely to invest in rural areas. The urban vote, where the majority of the population is concentrated, would demand and obtain most of the state's attention.

b. Economic

Growing urban centers have become important and powerful markets for agricultural goods produced in rural areas. These growing internal markets, as well as the gradual expansion of the road network, has "incorporated" isolated rural areas into the commercial system of each urban area. Except for some extremely isolated areas in the lowlands, most rural dwellers are no longer self-contained and self-sufficient. Part of their production or annual labor is used to generate cash to cover the costs of non-farm produced goods (salt, fuel, school supplies, cash to pay the state bureaucracy for legal documents, i.e., land titles, personal I.D. documents, and any other "public service" a citizen may eventually need). As mentioned earlier, the cities are important markets for produce and essential sources of alternative employment for at least one member for per rural household.

c. Cultural

Urbanization for most rural dwellers represents great cultural change and adaptation. Although most adjustment must be done by the rural newcomers, their numbers and strength of their culture have given way to a process that is a new national culture. This new Bolivian culture is emerging from the interchange of various cultural groups and is leading to a homogenized, more integrated national state. The current dual nature of the society and culture of La Paz, with its large Aymara influence, is an example of this, as is the changing nature of the regional culture of the lowlands as a result of the massive migration of highlanders.

Migration and the diversification of rural household employment into non-agricultural areas contribute to the tearing down of the urban/rural distinctions. Through this process, the highly heterogeneous population is forging an interdependence among all sectors. This will lead to the emergence of a homogeneous culture and society.

Despite the cultural, social, and economic changes, fundamental problems remain. One of the most basic is the lack of legitimately recognized forms of local rural government that can initiate and sustain development and represent local interests before the state.

I. Rural Organization

1. Rural Institutions Since Colonial Times

One of the main characteristics of Bolivian society is its stratification of political, economic, social, and cultural life along urban and rural lines. The urban centers, dwellers, and institutions are at the top of the hierarchy. The rural community, dwellers, and institutions are at the bottom and constitute what may be called the "informal" sector of the "legitimate" society. This hierarchy influences social services and infrastructure. It has proved remarkably stable since colonial times.

Colonists imposed a judicial, administrative, and political system of government based on "urban" centers, designed to submit and control the indigenous population. The indigenous population was found mostly in rural areas, with varying degrees of local government and institutions. This system of government, with some modifications, has continued since the formation of the centralized Republic of Bolivia in 1826 until now.

The urban world is where the "formal" state institutions are found. These institutions are central government agencies representing the state at the regional and local level. The rural world, with its diverse forms of social organizations and institutions is separate from the State system. It is the "informal" world of society. Its institutions are not a legitimate part of the state system. Its decisions are not legally binding, and its institutions lack the legal means to initiate or sustain local development efforts.

Up to 1950, the rural/urban distinction was strictly enforced. Small towns of 200 inhabitants enjoyed considerable benefits if defined as "urban." They included a Spanish-speaking population, and their "national" (meaning urban) political/administrative institutions were recognized by the state (alcaldias, subprefecturas, etc). Only a small minority of property owners and urban residents had the right to vote or hold office. Most rural dwellers had few rights, but a series of obligations to the state, landowners, and urban dwellers.

Outside the urban centers with their institutions, state agents (corregidores and agentes municipales) were placed within the rural population to control and exploit natural and human resources. Local rural institutions and government were not

destroyed, but were robbed of their autonomy and power and placed under the control of the national political/administrative system. Local governments were maintained to assist the local agents of the state, (the administrative/political state system), to keep peace and help rulers control a large and dispersed rural population.

Local governments were systematically deprived of autonomy and resources, and the power and legitimacy of self-determination and self-development. In colonial times, this was done deliberately. In early republican times, the purpose was economic exploitation. Since 1952, it has mostly been the unintentional result of a sometimes paternalistic approach to rural development and, at other times, political manipulation of the majority of voters in the country. Local governments throughout the country and within the rural areas were not eliminated. They were simply maintained as informal and convenient institutions to facilitate state intervention. Local governments became governments that regulated internal, social, cultural, and political affairs of the community.

Although most rural areas were composed of ethnically and linguistically distinct peoples, there were and are rural areas where Spanish replaced the native languages (lowlands, Tarija, Valle Grande in Santa Cruz), which were equally submitted to the rule of the central state through its urban centers and institutions.

2. Change Since the 1952 Revolution

The revolution of 1952 initiated a series of changes that have transformed rural areas and Bolivian society in general. These changes, however, have not improved the status, power, or legitimacy of the local governments and institutions. They were designed to reach the rural population directly through nationally-instituted reforms in land tenure and education, with projects and programs to "integrate" the rural dweller into the formal state system of urban government. The strategy seemed to be based on the idea of an all-powerful central government that created wholesale national and vertically integrated institutions to integrate and develop the rural sector.

The agrarian, educational, and electoral (universal suffrage) reforms provided a foundation for change. These and other reforms were designed to integrate the rural sector into the State (urban world). No changes, however, were made to reform the political/administrative system to incorporate the large,informal rural sector and its institutions into a more coherent system of government. Thus, the rural sector remains at the bottom of the hierarchy. It is still institutionally an informal sector, totally dependent on external (urban or foreign) initiatives and resources to take meaningful action. Other

institutions have been imposed onto its own local government institutions to function as parallel institutions. None, however, is a formal, legitimate local government institution, accountable and responsive to the needs of the local inhabitants.

The limitations that this history places on the rural and agricultural sectors are more severe than they seem. Without being able to establish formal units of government at the local level, agricultural and rural sectors cannot take actions to build and maintain farm-to-market roads or construct conservation or drainage infrastructure. The rural population cannot legally tax itself to provide this kind of infrastructure or rural services. It cannot infringe on private land for access or drainage ways. The local community cannot open a bank account, hire staff, or enter into any kind of contract. Thus, it is limited in two kinds of actions: negotiating with the central government and organizing on an informal basis, using social pressures on its members.

3. Private Collective Action by Farmers

Up to this time, farmer social organizations, as political/local governments were vested in communal institutions, i.e., peasant unions, agricultural cooperatives, ayllus, cabildos, colonies, or simply "communities." After the agrarian reform, local communities were integrated into the economic spheres of regions, whose centers were usually an urban center with a weekly market. The homogeneous rural community (where everyone's needs were the same) could no longer be taken for granted. Thus, more specialized organizations emerged that could serve the economic interests of its increasingly heterogenous and widely-dispersed members.

The creation of the Corporacion Agropecuaria Campesina (CORACA) is an indication of changing attitudes among campesinos. Despite the apparent effort to create a depoliticized, technical campesino organization, the increasingly independent political postures of peasant unions and parent organizations makes the future of CORACA uncertain. CORACA and the Campesino Unions demand government resources but autonomy to manage them is unlikely to be granted. Without mobilization and generation of their own resources, any institution is unlikely to succeed as an independent and autonomous entity.

Some producer associations, such as ARADO, are run by small farmers with the assistance of NGOs. These often coexist with unions and other communal institutions, but are maintained strictly as technical and economic (as opposed to political) institutions. Farmer cooperatives have been promoted over many years by NGOs and international donors. Severely limited scope and coverage of cooperatives were the result, as well as a new effort to find means for self-sustaining development.

J. Public Institutions in the Agricultural Sector

1. Ministry of Rural Affairs and Agriculture (MACA)

The organizational structure of MACA is divided into three areas:

- o Rural Affairs and Agricultural Affairs
- o Central MACA and Affiliated Institutions
- o National Offices in La Paz and Regional Offices

Over the years, MACA has become increasingly a political tool, focussed on rural or "campesino" affairs. Because of its orientation, MACA has been at the center of a political struggle between campesino unions, political parties, and military governments. Agricultural programs implemented through the MACA were involved continuously in this struggle, falling under the control of one or another of these groups. With every shift in the balance of power, politically-appointed personnel would also shift, along with policy priorities.

Consequently, national leaders who tried to carry out agricultural programs aimed at the productive sector have done so through parallel institutions outside MACA. Affiliated institutions established since the agrarian reform place special emphasis on different kinds of services. Often they were set up in conjunction with development projects funded by international donors. The affiliated institutions are:

- o Banco Agricola de Bolivia (BAB)-1943, Bolivian Agricultural Bank

- o Consejo Nacional de Reforma Agraria (CNRA)-1953, National Council on Agrarian Reform

- o Instituto Nacional de Colonización (INC)-1965, National Colonization Institute

- o Servicio Nacional de Desarrollo de la Comunidad (SNDC)-1967, National Community Development Service

- o Instituto Boliviano de Tecnologia Agropecuaria (IBTA) and Centro de Investigacion Agricola Tropical (CIAT)-1975, Bolivian Institute of Agricultural Technology

- o Centro de Desarrollo Forestal (CDF)-1976, Center of Forestry Develoment

- o Servicio Nacional de Control de la Fiebre Aftosa, Rabia y Brucelosis (SENARB)-1976, National Service for Control of Hoof-and-Mouth Disease, Rabies and Brucelosis

- Instituto Nacional de Fomento Lanero (INFOL)-1977, National Institute for Promotion of Wool Production

- Instituto de Desarrollo Rural del Altiplano (IDRA)-1979, Integrated Rural Development Institute of the Highlands

- Centro de Desarrolo Pesquero (CDP)-1984, Center for Fisheries Development

The directors of these institutions are appointed by the minister. However, they obtain their budgets directly from the Ministry of Finance or outside sources. Many operate autonomously and do not hold themselves administratively responsible to MACA Central. International donor organizations deal directly with the decentralized institutions for funding projects in the agricultural sector and basically ignore central MACA. The affiliated institutions have achieved their independence and operational capability as a response to the weakening of MACA Central. Some, such as IBTA and BAB, have larger budgets and number of personnel than the Central Ministry.

Although these institutions are termed "decentralized," most of them have structures similar to those of MACA, with head offices in La Paz and centralized, vertical systems of management and administration.

Besides the offices of the minister and vice ministers, the remaining offices in the MACA Central are planning and statistics; soils, seeds, and engineering; watershed management; and administration. All are understaffed, have limited operating funds, and are virtually out of touch with the sector at large. Because MACA has virtually neglected the technical-agricultural and technical-administrative aspects inherent in its function, it is not capable of formulating policy for the sector. Its authority is undermined by its own political nature.

The operational and decision-making independence at the institutional level has led to uneven distributions of funds, equipment, and experts. The agricultural sector has become filled with duplication, overlapping, and a lack of coordination. The number of projects as of March 1987 was 131 with a total financing of US$ 486.9 million. (MACA 1987)

Mixed feelings surround the proliferation of private organizations operating in the country. Feelings of alarm are expressed in the following statement of a restructing planner: "Among other things, part of the present problem is the endless numbers of NGOs, mostly foreign, private organizations, which operate in unknown ways, are unorganized, and are certainly dangerous for the social peace of the country". (MACA/MICRO 1987)

The dangers to social peace probably refer to some of the independent and more "radical" ideologies that operate in the regions, which are bent more on prosyletizing than on development per se. The above quotation voices the convictions and concerns of the planners that, to achieve a rational utilization of agricultural sector resources, an effective, central planning entity is needed.

2. Proposed Restructuring of MACA

The present government has chosen the agricultural sector as the most viable development area for offsetting the disasterous slumps in the mining and oil industries. It has pushed MACA/SPAR to restructure and reform themselves to provide the technical and institutional support needed to carry out the government's goals for agricultural self-sufficiency and export capacity.

A proposed supreme decree for approving the Organizational Statute of the MACA and a bill proposing the Organizational Law for the SPAR (Public Agricultural Sector) have been presented. If these bills are passed, MACA/SPAR will be restructered to conform to with state political and economic goals.

Basically, the planners seek an operationally decentralized SPAR and a central, normative MACA endowed with overall policy and procedural authority. The present situation has convinced both planners and authorities that the decentralized organizations in MACA must not become autonomous, yet they should continue to have operational authority. The planners stress that restructuring must begin at the center and include:

- decentralized groups with operational independence;
- project management, training, information systems, and user participation;
- norms and manuals for restructuring;
- a parallel administrative unit to carry out the restructuring and utilize consulting and training services to ensure adherence to basic concepts; and
- a Central Planning Sub-Secretary and Agricultural Development Councils (Consejos de Desarrollo Agropecuario) to plan functions of both central and regional entities.

The Agricultural Development Councils are an important concept for incorporating bottom-up inputs for planning. The purpose of the councils is to achieve an integrated decentralization and overcome the existing parceled out authority

in the agricultural sector. Above all, they aim to alter the polarized decision-making practices in MACA/SPAR. While on the one hand there is a closed circle of upper-level central decision-making, on the other there is a decentralized series of independant decision-making which escapes any unifying scheme. Both approaches operate in a relative vacuum of information and communication. The councils, as a means of coordination, are designed to help overcome the wide "margin of doubt" in which the MACA now operates.

3. Agricultural Planning and Policy Analysis

As one might expect, agricultural planning and analysis in Bolivia are influenced heavily by the overall institutional context in which things take place. National development planning was initiated following the 1952 Revolution and has been conducted, at least nominally, ever since. The stabilization of government under President Hugo Banzer in the early 1970s marked a turning point in the evolution of national development planning. During the Banzer regime, formal planning institutions were established that continue today. The president of the republic and the National Economic Planning Council (CONEPLAN) are jointly responsible for defining overall development objectives and national development policy. In carrying out this responsibility, CONEPLAN relies heavily on the Ministry of Planning and Coordination (MPC) to coordinate technical planning at the sectoral and regional levels. Housing of the Economic Policy Analysis Unit (UDAPE) within MPC and created under the mission-supported Policy Reform Project is consonant with this broad assignment of responsibilities.

Within this national planning context, MACA is responsible for agricultural planning and policy making. Traditionally, its scope of influence has been rather limited. MACA has rarely had a significant voice in implementing macroeconomic policy, i.e., exchange rate, import and export, and tax policies. Furthermore, even when the state has intervened in the pricing of agricultural commodities, the responsibility has lodged with the Ministry of Industry, Commerce and Tourism, not with MACA. To a large extent, the isolation of MACA from the mainstream of government policy-making has reflected the conventional view that agriculture is not an important productive sector. MACA has been content to confine itself narrowly to agriculture and has rarely been viewed as the focal point for charting a course for the sector at large.

At the working level within MACA, the Agricultural Sector Planning Office is charged with the responsibility for sector planning and policy analysis. It provides upper ministry management with briefing information and packages MACA's annual operating plan. The office's analytical capability and stature are low. Despite its written mandate to the contrary, it

contributes virtually nothing to sector development or strategy and only marginally to development, monitoring, and evaluation of sector programs and projects.

The regional planning responsibilities of the Departmental Development Corporations (DDCs) mirror those of the sectoral ministries for sectoral planning, across sectors, within their regions. Within the guidelines established by the MPC, the DDCs are charged by law to identify regional problems that demand attention; establish regional development strategies; translate these responses into potential development responses; and recommend policies, programs, and projects for implementation. DDC recommendations are reviewed for technical adequacy by MPC and, if central government financing is required, are sent to the Ministry of Finance for final approval.

In practice, DDC coordination of the planning of sectoral institutions within their departments is not easy. In the case of the agricultural sector, MACA has regional offices in each department, which report directly to its headquarters in La Paz. In addition, seven decentralized, public agricultural-sector institutions have independent planning units over which the DDCs have no formal control. Thus, while the DDCs are responsible for coordinating departmental planning, they have little authority to do so. In practice, coordination is a function of the goodwill of parties involved. In some departments, various sectors take pains to ensure that their collective proposals of programs and projects form an integrated whole. In other departments, annual operating plans are proposed in isolation from each other.

In summary, regional development corporations have become decentralized planning entities. They have assumed the former role of MACA in both rural and agricultural development. Nonetheless, independent regional activities continue to abound without a clear sense of regional or national direction.

K. Agricultural Credit

1. Use of Credit and Technical Assistance by the Farmer

The 1978 National Farm Survey sample found that only 7,780 farm families in the areas covered by the survey used credit in 1978. Only two percent of farm households used credit. This implies that it was used primarily to purchase inputs and labor. While the formal agricultural credit system expanded quite rapidly during the 1970s and early 1980s, only an estimated six percent of farm families received credit from formal market sources. (Ladman 1986)

A large percentage of Bolivia's farmers still use informal sources of credit. (Table II.19) In the small-farm sector, the middlemen (rescatadores) provide credit to campesinos in the form

of small loans. Such loans are advanced on the condition that the crop is sold to the lender. (Ladman and Tinnermeier 1983) The high amounts charged to farmers for such loans, or the lower price received for their products, are somewhat offset by the timely receipt of the funds and/or inputs. Because of the informality of these transactions, their extent and magnitude are not adequately documented.

Table II.19. Sources of Credit for Farmers (1978)

Source	Number of Farms Using Credit	Percent
Agricultural Bank	3,211	41
State Bank	295	4
Cooperative/Association	1,740	22
Money Lenders/Traders	316	4
Friends/Family	2,218	29
Total	7,780	100

Source: National Farm Survey, 1978

Agricultural credit is fundamental to increasing production and efficiency of the sector. It acts as a lubricant in the transfer of technology and in the marketing process. Banks and other institutions in the nation's credit delivery system must become aware of the need to provide adequate credit services to the agricultural sector at opportune times. They also need to ensure their institutional viability and that of their clients in the process.

Five percent of all farm households had received technical assistance during the agricultural year covered by the 1978 survey. Farm units larger than five hectares received more technical assistance than smaller units. Three percent and five percent of all the farms with less than one and two hectares, respectively, had received technical assistance. Eleven percent, 15 percent, and 12 percent respectively, of all farms in sizes 5-10, 10-20, and 20+ hectares, had received technical assistance.

2. The Formal Credit System

For its size, Bolivia has a significant number of financial institutions. As of July 1987, there were 12 domestic five foreign, one specialized, and one government-owned commercial banks. Two of the foreign banks have ceased operations and one is in the process of closing down. The remainder have scaled down their domestic operations. There is

one government-owned agricultural credit bank, four integral cooperatives and a host of other institutions that have entered the agricultural credit system of the country.

USAID was a major catalyst in developing smaller, specific projects; in promoting and helping establish new credit institutions, such as the BCB Development Department, CROFOC, and PCPA; in providing loan capital; and in working with the GOB to establish guidelines for directing more financial resources into the agricultural sector to assist the small farmer. Some of these programs were operational successes, like the PCPA, until the BAB integrated it into its total program to rescue its operations from losses incurred due to high-rates of delinquency in its non-PCPA portfolio.

The flow of credit to the agricultural private sector through the Bolivian banking system for the period 1975 to 1985 is shown in table II.20, and is based on the value of the 1980 Bolivian Peso. It should be noted that, while the volume of credit flows in current pesos increased markedly, most of the increase was caused by hyperinflation during this period. Table II.20 indicates that real value of the total credit flow to agriculture fluctuated in a fairly narrow range until 1984 and 1985 when it surged to more than double the average of the prior decade.

Table II.20. Real Value of Annual Credit Flows to Private-Sector Agriculture in Bolivian Banking System (1975-1985)

		Agricultural Credit* (millions of 1980 Bolivian pesos)		
Total	Total Credit in Banking System	Total	Bolivian Agricultural Bank	State & Private Commerical Banks
1975	8,301	1,342	770	573
1976	10,921	1,096	830	266
1977	14,295	1,289	638	651
1978	14,346	1,482	724	758
1979	10,486	1,011	667	344
1980	11,252	1,067	658	409
1981	12,213	960	634	326
1982	10,704	722	322	400
1983	8,787	1,148	590	558
1984	5,768	2,772	1,506	1,266
1985	4,875	2,772	843	1,929

*Note: Conversion to 1980 Bolivian pesos based on consumer price index for La Paz as computed by the Instituto Nacional de Estadisticas (INE). The Bolivian peso was valued at about $b 25

per US$ 1.00 in 1980.

The year 1983 was a disaster for Bolivian agriculture because of floods in the east and droughts in the mountain valleys and highlands. In reaction, the years 1984 and 1985 saw massive inflows of foreign assistance much of which went into aricultural credit.

Table II.21 indicates the percentage of agricultural credit in proportion to the total credit flows in the banking system. It gives a breakdown of the amount of agricultural credit handled by the BAB versus the state bank (Banco del Estado) and private commercial banks. Finally, it shows proportional the amounts of the portfolios of the state and private commercial banks, which are targeted to agricultural credit.

As the economy entered the hyperinflation phase, the percentage of agricultural credit to the total credit in the banking system was accelerated more by the reduced value of the total credit pool than from an increase in agricultural credit. However, the surge in agricultural credit from foreign sources in 1984 and 1985 accentuated this trend and agricultural credit reached a high of 40 percent in 1985. For the nine years before 1984, the average annual flow of credit to the agricultural sector as a percentage of the total credit in the banking system amounted to less than five percent.

Table II.21. Percentage of Credit Flows to Agricultural Private Sector by the Bolivian Banking System, (1975-1985)

	Agricultural Credit as a Percent of Total Credit in Banking System	Handling of Agricultural Credit Percent		Percentage of State Bank and Private Commercial Bank Credit for Agriculture Sector
		Bolivian Agricultural Bank	State & Private Commerical Banks	
1975	16.2	57.4	42.7	6.9
1976	10.0	75.7	24.3	2.4
1977	9.0	49.5	50.5	4.6
1978	10.3	48.8	51.1	5.3
1979	9.6	66.0	34.0	3.3
1980	9.5	61.7	38.3	3.6
1981	7.9	66.0	34.0	2.7
1982	6.7	44.6	55.4	3.7
1983	13.1	51.4	48.6	6.4
1984	48.1	54.3	45.7	21.9
1985	56.9	30.4	69.6	39.6

Source: Ibid.

Of the total agricultural credit dispensed from 1975 to 1985, the BAB handled an average of 55.1 percent while the state and private commercial banks handled an average of 44.9 percent. Proportionally, BAB activity peaked in 1979 to 1981 and has declined as private commercial bank operations increased due to their ability to obtain a larger share of the BCB'S refinancing lines and greater use of their own funds for agricultural lending. However, the proportion of the state and private commercial banks' portfolios in the agriculture sector rose only to about 10 percent during this period. During 1984 and 1985, the proportion shifted back again toward the BAB.

The foregoing analysis of the cash flow to the agricultural sector indicates that growth took place without necessarily satisfying demand. If the credit flows as shown in Table II.20 met the credit demands of six percent of the farmers and the agroindustrial sector of the decade under review, then what will be required to meet the credit demands for 12 or 18 percent of the farmers and a growing agroindustrial base for the ensuing five to ten years? (This topic is analized in detail in Annex D.)

3. Delinquency and Savings Mobilization

A chronic problem of the agricultural credit system is loan delinquency. Various factors affect loan repayments, including the honesty of the borrower. Heavy delinquencies were experienced by all lending agencies in the cotton projects of the 1970s, particularly by BAB, which had delinquency portfolios from other institutions. (Ladman and Tinnermeier, 1983) Many individual farmers considered the loans granted by BAB as a kind of government grant, and simply opted not to pay, using political pressures to gain their ends. The cost of agricultural credit will continue to be high and difficult to obtain due to the delinquency factor.

Up to the present, the agricultural credit delivery system in Bolivia has relied heavily, if not entirely, on external sources and Central Bank refinancing. The past decade has marked a period of increased demand for agricultural credit, and a few innovative approaches were introduced, such as incorporating more institutions as ICIs and broadening the delivery base. The irony of the situation is that Bolivian agricultural credit is almost totally dependent on refinancing from the BCB or the PL 480 program. If these two sources were not available, agricultural credit, particularly for small farmers, would be practically non-existent.

Apart from the commercial banks, credit unions, and the integral cooperatives, there is no emphasis on the mobilization of domestic savings. The remaining institutions are exclusively

credit-oriented and rely on external financial resources for capitalizing their operations. Even commercial banks, credit unions, and integral cooperatives are not aggressively mobilizing rural savings due to inexpensive sources of funds available from the BCB and PL-480. This dependence on outside sources of funds is not conclusive to the development of financially viable institutions.

L. Transportation Infrastructure

The history of Bolivia's economic development is closely related to the provision of transport infrastructure. Most of the present Andean railroad lines were constructed about 60 years ago during the growth of the mining industry. More recently, in the 1950s, roads and railroad lines were built to connect the hydrocarbon industry in Santa Cruz with the rest of the country.

1. Road System

a. Existing Road Network

Although roads have been improved considerably in the past two decades, the system of modern highways is still rudimentary. The National Road Service (Servicio Nacional de Caminos) gives the following breakdown of the national road network for primary, secondary, and rural roads according to their condition. (Table II.22)

Table II.22. National Road Network

	Primary	Secondary	Rural	Total
		(kilometers)		
Paved	1,242.6	38.6	114.3	1,395.4
Gravel	2,988.1	1,660.0	3,338.9	7,987.0
Dirt	1,461.7	3,222.9	25,757.3	30,441.9
Total	5,692.4	4,921.5	29,210.5	39,824.3

At the present time, only four percent of the national road network is paved. Of the primary network, only 22 percent is paved. If paved and gravel roads are considered "all weather," then 24 percent of roads in Bolivia are in this category.

Without doubt, the main axis of the country is the La Paz-Cochabamba-Santa Cruz highway, with its connections to Chile

(from Patacamaya to the border at Tambo Quemado) on the west side, and in the future, the connection to Brazil (Santa Cruz-Corumba) on the east side. (See Figure II.3.) The paved roads in this axis are La Paz-Cochabamba (except a 50 Km section), Chimore-Yapacani (to be completed by 1988), and Santa Cruz-Cotoca. Cochabamba-Chimore and Yapacani-Santa Cruz roads were once paved, but need to be rehabilitated. The rest is either gravel or dirt, with the exception of San Jose de Chiquitos-Corumba (about 370 km), which is not yet built.

Another important axis runs from La Paz to the south, passing through Oruro, Potosi, Tarija, and Bermejo. Two major roads branch off from this axis to connect with Argentina at Villazon and Yacuiba. Other international road connections exist at Fortin Villazon and Desaguadero. From these roads, only the La Paz-Oruro-Machacamarca road and the Tomatas-Tarija-Padcaya road are paved The remainder of the network consists of either gravel or dirt roads.

b. Planned Projects for the Primary and Secondary Systems

Several road projects are being planned and some are being executed currently. Notable among them are the roads connecting La Paz with Beni (Trinidad), Santa Cruz with Cochabamba via the Chapare (Yapacani-Chimore), and Santa Cruz with Trinidad.

The La Paz-Beni route is being accomplished in stages; it also connects the city of La Paz to the Alto Beni areas in the northern part of the department of La Paz. The main feature lacking is a series of bridges on the road San Borja-Trinidad. The first study mentioned only eight bridges, but a new Japanese study, which will be completed by the end of this year, has added seven additional bridges. (See Table II.23.)

Figure II.3 EXISTING NETWORK OF PRIMARY AND SECONDARY ROADS

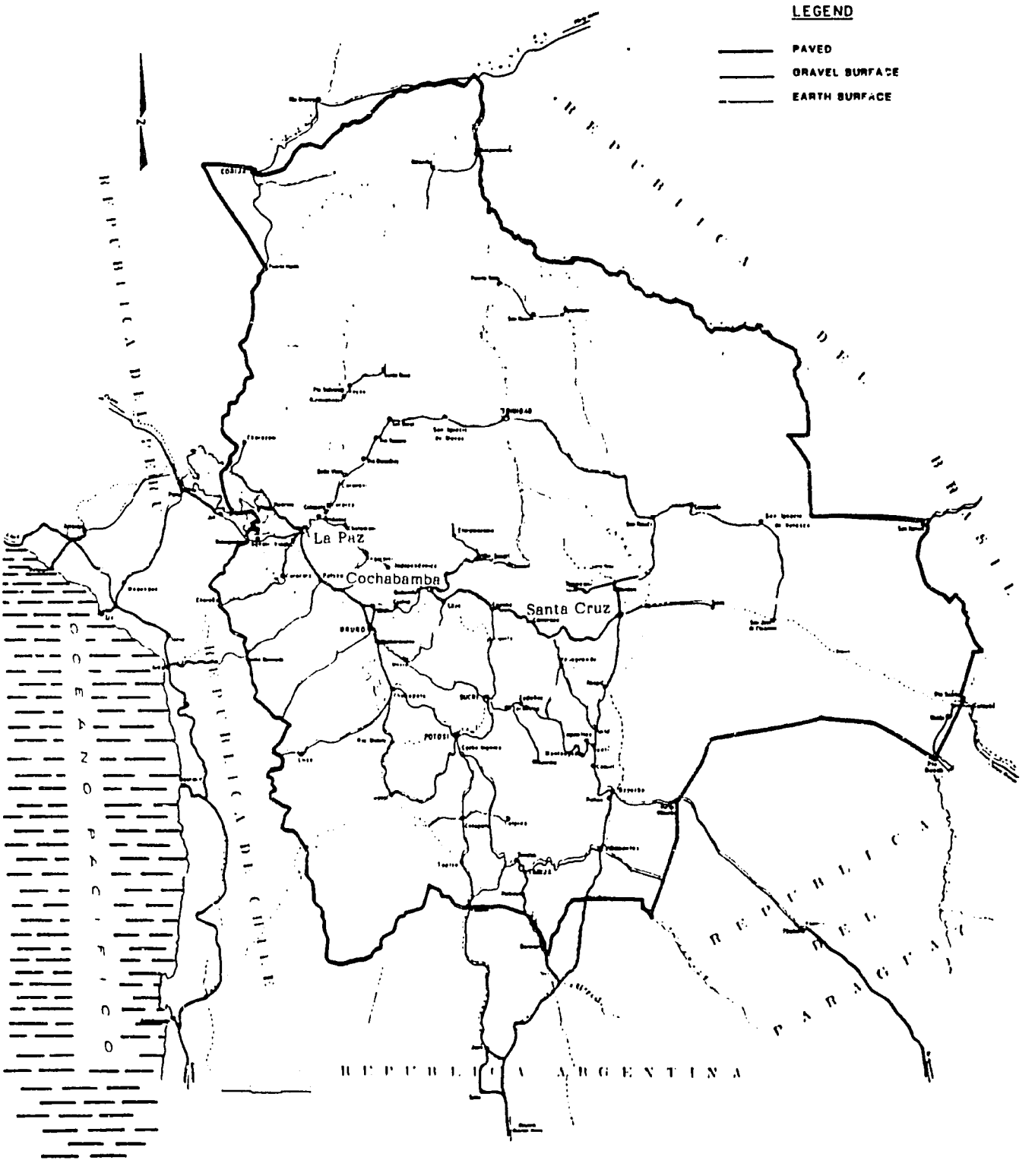


Table II.23. Bridge Projects for Bolivia

No. bridges on river	Financing Agency	Length (m)	Approx. Cost at US$ 7000/ meter (millions US$)	Observations
4 bridges	BID			In bidding for construction
Maniqui R.	USAID	154.0	1.1	Built
Apere R.	USAID	91.5	0.6	Bidding for construction shortly
Cuberene R.	USAID	91.5	0.6	
Tijamuchi		136.0	1.0	Unsure of financing
7 bridges	-	183.5	1.3	First study not yet completed

Sources: SNC

Furthermore, a series of improvements are planned for roads along this route and extending out into the northern areas of the department of La Paz. (See Figure II.4.)

La Paz-Cotapata - asphalting will be completed next year

Cotapata-Sta.Barbara - redoing the study and opening a new path (US$ 5 million) for a paved road

Bella Vista-Rio Quiquibey - dirt road is being completed (drainage, etc.)

Rio Quiquibey-Rio Yucumo - in process of contracting to complete the road

Rio Yucumo-Rurrenabaque - in construction; will be completed by 1988. Off course, without 15 to 17 bridges of a total of (approx.) 850 m of length.

San Buenaventura-Ixiamas - road was built by CORDEPAZ, but lacks a drainage system

San Buenaventura-Chive - after finishing Yucumo-Rurrenabaque in 1988, the SNC equipment will be used for the construction of this road

San Buenaventura-Cobija - financing for study is available from BID/CAF.

This system is already having a major impact in terms of rate of migration to this tropical lowland area. Furthermore, some of the beef that was formerly transported to market by air from the Beni is now being brought to La Paz by truck.

The road connecting Chimore-Yapacani is estimated for completion in 1988. It is being financed by BID with US$ 134 million of the required US$ 166 million. It will substantially reduce transportation costs from Santa Cruz to Cochabamba and La Paz. It is expected that this road will have an impact in terms of food prices in the areas of consumption for products from the eastern lowlands.

Financing for paving the road from Trinidad to Santa Cruz is already available, half being from FONPLATA and the other half from the Tesoro General de la Nacion (TGN) and CORDECRUZ. The road is 544 kilometers long and will be asfalted at a rate of 150 kilometers/year starting by 1988 and completed by 1991. The construction and gravelling of this road over the last few years have begun to have an impact in terms of movement of cattle. Young animals are being trucked to Santa Cruz to graze and receive supplemental feed before being sent to market.

Another project worth mentioning is the Patacamaya-Tambo Quemado road (La Paz-Arica). This is a 199 kilometer road that needs to be constructed. The cost is approximately US$ 110 million. The transit volume is about 50 heavy vehicles per day. This project is the last one of four for which SNC is seeking financing. For the moment, four bridges need to be constructed. In the future, the bridge on the Desaguadero River will need to be enlarged into a two-lane bridge. Table II.24 shows five bridges for which final studies are completed, but financing for construction unavailable.

Table II.24. Bridges for which Studies are Completed

Bridge	Length (m)	Approx.Cost (thousand US$)
Sajama	90	450
Sulloma	240	1250
Tomarapi	90	420
Kheto	120	590
Desaguadero	210	1100

Roads in the Department of Tarija include:

Padcaya-Bermejo-La Mamora: The study is completed; the road is 45 Km long and it will cost US$ 31.8 million to pave.

Palmar Grande-Yacuiba: The study is completed; the road is 60 Km long and will cost US$ 21 million. SNC is trying to finance through FONPLATA.

Tarija-Villamontes: CODETAR is completing the study.

Tomatitas-San Lorenzo: This is a 9 Km road that will be asphalted with Argentine financing.

c. Rural Roads

The emphasis on rural roads has been more limited. Rural feeder roads have been constructed and maintained principally through the initiative of communities, working through organized labor unions to obtain government assistance. The SNC of the Ministry of Transportation helped supervise workers, and distributed passes for truck transport to and from central towns or cities. The roads constructed in this way do not adhere to any particular engineering standards. Since no machinery is used, they are often narrow, and are seldom gravelled for all-weather use.

The Department of Rural Roads was created by SNC in 1976, primarily to implement Phase I of the USAID Rural Roads Project in the departments of La Paz, Chuquisaca, Cochabamba, and Santa Cruz. The project was designed to construct 1200 kilometers of gravelled feeder roads, for a total cost of $15,570,000. The project was frozen in 1980; however, the SNC continued construction using GOB funds. It reports that 1,086 kilometers have been completed as of July 1987. The total cost of the project was reduced by about three million.

The Rural Roads II Project was designed to build upon phase I, but moved very slowly. In late 1982, it was reprogrammed to focus on the Chapare region of Cochabamba, with a target of 200 kilometers. In May 1986, the project was suspended, and later shifted focus from the Chapare region to the Cochabamba valley.

The Department of Rural Roads now has several other projects that include other donors, totalling 2,252 kilometers of improved, all-weather roads, as shown in Table II.25. Of the total, less than 1,400 have been completed to date. Once completed, the roads and equipment will be administered under the Department of Maintenance.

Figure II.4 CANDIDATE PENETRATION ROADS IN NORTHERN LA PAZ

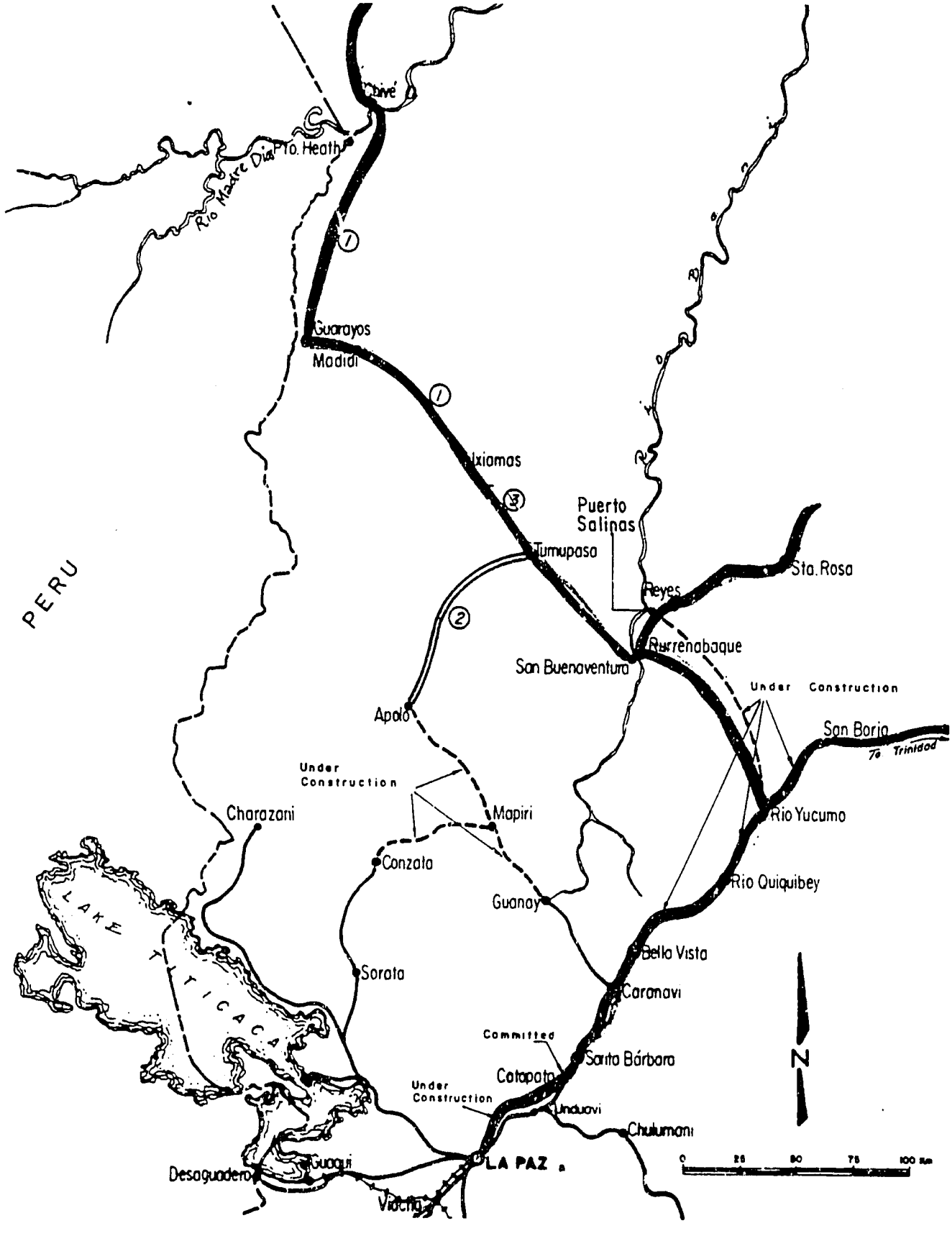


Table II.25. Projects of the Department of Rural Roads

Project	Kilometers of Road to be Constructed or Improved	Year Initiated	Percent Completed as of July 1987
Rural Roads I, La Paz, Chuquisaca, Cochabamba and Santa Cruz	1200	1976	91
Rural Roads II, Cochabamba (as reprogrammed)	200	1983	22
Yungas, La Paz	190	1985	77
North Chuquisaca	72	1983	41
Santa Cruz	500	1985	17
Potosi	90	1988	0

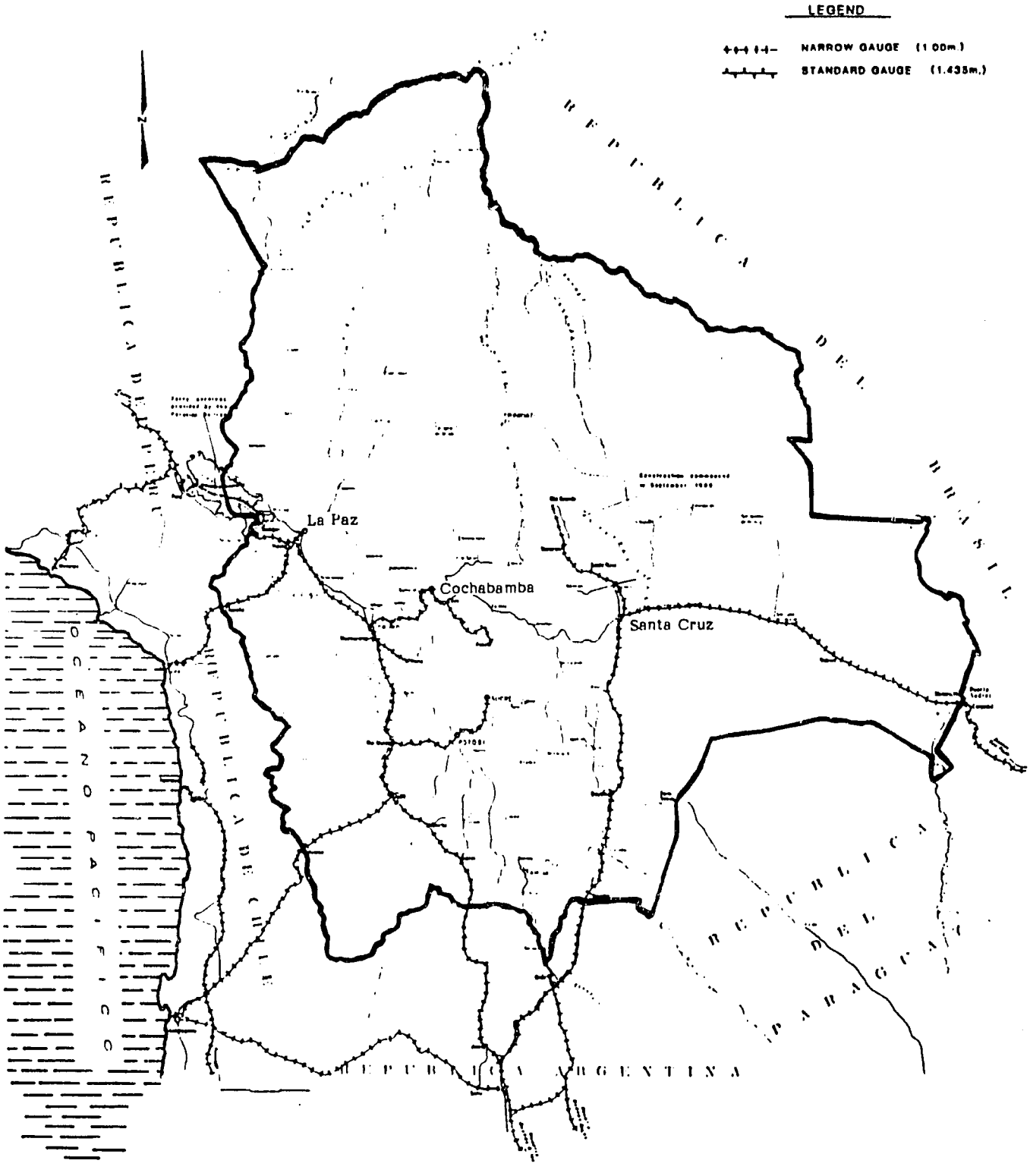
2. The Bolivian Railroad System

The Bolivian rail network is comparatively extensive, being 2.5 times as long as all paved highways. (See Figure II.5.) Because of its age and inadequate maintainance, it is not an efficient means for transportation. Trains cannot run safely at speeds higher than 30 kilometers/hour due to the poor condition of the lines. Locomotives and wagons are few and not always the kinds needed for agricultural products.

According to a new plan, the GOB has obtained financing for the National Railroad Company's (ENFE) rehabilitation program. During the present year, ENFE purchased 100 grain wagons and repaired 60 locomotive engines. Next year, more rail equipment will be bought. In addition, ENFE has a 10-year program to rehabilitate the entire Bolivian railroad system (3,800 kilometers).

The Government of Peru recently agreed with the GOB to rehabilitate the Viacha-Guaqui line in 1988, and to construct a larger port in Guaqui betweem 1988 and 1990. By doing so, Peru would have complied with its commitment on the Tratado de Vinculación Ferroviaria between Bolivia and Peru, signed in 1973. Bolivia had already complied by purchasing the railroad from a Peruvian Company. Peru also promised to build a switching yard in Puno (the Peruvian port on Lake Titicaca) to change wheels on rail cars from the 1.00 meter Bolivian gauge to the 1.40 meter Peruvian gauge. With the completion of the project, both Bolivia and Argentina will have a better access to Peru.

Figure II.5 EXISTING RAILROAD NETWORK



The completion of the Santa Cruz-Norte (Mamorecillo Port) railroad would connect the La Plata and Amazónica valleys. At resent, the railroad is at different stages of development:

- o Sta.Cruz-Yapacani R., 205 km; built, but one section must be rehabilitated
- o Yapacani R.-Rio Grande, 120 km; is under construction and will be finished by 1988
- o R.Grande-Mamorecillo Port, 26 km; no study yet

The Comisión Mixta Ferroviaria Argentina-Boliviana is in charge of administering and supervising the project. Financing for its completion is dependent on negotiations between the Bolivian and Argentine governments.

The project to connect the Andean and eastern systems is in the final stage of design. Financing for its construction is not yet available. The project entails the railroad from Aiquile to Santa Cruz, with a branch from Mataral to Valle Grande (approximately 390 kms).

The Santa Cruz-Puerto Suarez railroad is an existing railroad, which needs improvement. At the moment, the most critical section, Ipias-Robore, is being rehabilitated and will be finished by March 1988.

Unfortunately, a segment of the Oruro-Cochabamba railroad in the watershed of the Auque river is subject to heavy erosion. As a result, a radical variation of 120 to 150 kilometers must be constructed. The final study for this project will be completed by 1989. Financing for its construction has not yet been obtained.

The ground infrastructure for the Tarabuco-Zudañez-Checollo railroad was constructed 27 years ago but the line is still without rails. Financing for this project depends on negotiations between the Bolivian and Argentine Governments. The completion of the railroad will have impact on agriculture in the departments of Chuquisaca and Potosí.

The Tarabuco-Valle Grande railroad, together with the Valle Grande-Santa Cruz railroad, will connect the ports of Santos (Brazil) and Antofagasta (Chile). According to a recent study, the construction of this line is economically feasible. The final study has not been elaborated, and financing for construction is not yet available.

CHAPTER III

OPPORTUNITIES AND CONSTRAINTS TO AGRICULTURAL DEVELOPMENT IN BOLIVIA

A. Expansion of Agricultural Output

Based on the analysis of chapter II, this chapter summarizes the medium-term prospects for development of the sector, which are presented by commodity and by region. Once the potential opportunities are identified, the principal constraints to reaching these goals are addressed. These focus on market limitations, followed by constraints on production, institutional weaknesses, and, finally, constraints on planning and policy-making. Opportunities for expansion of output are broken down by commodities for export, import displacement, and improvements of production and marketing systems for local products.

1. Commodity Export Opportunities

In 1986, Bolivia exported US$ 110 million of non-traditional goods (goods other than natural gas and mineral products). Table III.1 lists the The main agricultural and agroindustrial exports.

Table III.1. Agricultural and Agroindustrial Exports (1986)

	US$ Millions
Beef cattle	13.4
Coffee grain	13.2
Soybean grains	4.0
Soybean meal	3.3
Soybean cake	12.3
Brazil nuts	3.5
Sugar (crude and refined)	4.9
Cocoa butter and other cocoa products	3.6
Ethyl alchohol	1.0
Rubber and rubber products	3.8
Cattle hides (salted)	2.5
Cattle hides (chrome tanned)	3.2
Wood planks	15.0
Railroad ties	4.2
Plywood	2.5
Particle board, doors, windows, other wood products	0.9
Wood furniture	0.5
Cotton yarn	4.1
Llama and alpaca skin and wool products	0.5

Source: DICOMEX (Dirección General de Comercio Exterior)

The most important export group is wood products (US$ 23.2 million), followed by soybean products (US$ 19.6), cattle products (US$ 19.1 million), and coffee (US$ 13.2 million). These four product groups constituted 68 percent of all Bolivian non-traditional exports.

In 1980, Bolivian non-traditional exports reached a value of nearly US$ 150 million, dropping to US$ 30 million in 1984 and US$ 35 million in 1985 before recovering to US$ 110 million in 1986. However, because non-traditional exports in the first semester of 1987 were only US$ 48.8 million, 1987 exports may not match the 1986 level. An active export policy is needed to preserve the momentum in order to at least recuperate the former level of US$ 150 million.

In 1987, The BID/JUNAC Foreign Trade Development Program completed a series of 15 subsector studies of Bolivian agricultural export commodities. These studies are synthesized in the report Perspectivas Sectoriales: Ventajas y Problemas que Afectan a la Competitividad de las Exportaciones no Tradicionales de Bolivia. (Cebrecos and Espejo, 1987). This report estimates that, in the medium-term, Bolivia can potentially increase its annual agricultural exports by US$ 400 million, forest products by US$ 200 million, and livestock products by US$ 100 million. The condition for achieving this potential is competitiveness. Bolivia must increase productivity substantially to overcome its high production and transport costs.

Of the above commodities, the two with the greatest potential for short-term expansion are soybean and beef, including by-products. Reaching planned targets for expansion of soybean production will depend on improving infrastructure and reducing production costs. Increasing productivity through technology generation and transfer can, according to the subsector study, increase returns by about US$ 120 per hectare. This includes continued emphasis on improving seed quality. In the case of beef, where there is already a substantial supply, the priority is active market development. Ranchers will not be interested in competitive productivity increases and herd expansion until export prices are obtained through exports. Manufacturing leather products offers possibilities for exporting higher-valued products with greater econonmic benefits retained in the country.

The areas with greatest potential for expanding production and exports of soybean and beef commodities are the eastern and northern lowlands, principally the departments of Santa Cruz and Beni. Producers consist mostly of medium-size farmers and some larger enterprises.

The next group of commodities with growth potential is lumber and related wood products. Production is located primarily in the northern lowlands, with much emphasis in the departments of Beni, Santa Cruz, and Pando, and the bulk of the manufacturing in the department of Santa Cruz. In the medium-term, emphasis should be placed on manufacturing lumber products, including furniture. A greater range of the available species should be used. In the long-term, Bolivia must turn to forest management and sustainable production.

The next two commodities likely to increase in volume of exports are coffee and cocoa. Unlike the above-mentioned commodities, many limitations to expansion are related to farm-level production rather than market access. Farmers benefiting from these crops are primarily those in the northern area of the department of La Paz--the tropical Yungas and Alto Beni; most are small-scale growers.

Although the next group of commodities has lower production and export levels, recent experience has raised expectations. Alpaca, wool products, handicrafts, and cut flowers are primary. Quinoa and garlic could be added. With alpaca and cut flowers, limitations are in local production. For quinoa and garlic, the principal limitation is related to markets. Alpaca wool, handicrafts, and quinoa are all produced by small farmers and firms in the highlands and valleys. Garlic is produced by small farmers in the southern valleys.

Sugar and its by-products, as well as cotton, are also important export crops; however, little long-term potential is anticipated. Bolivia can satisfy its local market, but does not have a competitive edge in international markets.

Table III.2 presents various prospective agricultural products, many of which have not been exported previously.

2. Import Displacement Opportunities

Four commodities fall into this category; by relative importance, they are dairy products, wheat, barley, and cotton. Bolivia definitely has a comparative advantage in milk production at the farm level. The problems are related to the spatial distribution of production centers and widely dispersed production regions. Policies are needed to place imports on an equal basis with local products. Short-term opportunities for expanding dairy output are concentrated in the Santa Cruz Department. However, medium-term potential exists in many areas, including the Beni and valleys.

Wheat and barley are marginal crops for small farmers. They are used as rotation crops in many of the highlands and valleys, but are limited in terms of increasing yields or land area. Some

Table III.2. Prospective Agricultural Commodities

Product	Medium-Term Export Potential (US$ millions)	Remarks
Pine nuts	2.70	Good market in Argentina and Brazil at end of year when prices are high.
Peaches	1.28	Excellent fruit obtained in the high valley of Cohabamba due to temperature and light conditions; used for nectar.
Grapes	1.90	Possible to produce table grapes in the valleys during November-January when U.S. prices are high.
Apples	2.94	Excellent results obtained at experimental level in Tarija.
Custard apples	.39	Expanding market in developed countries; requires experimentation.
Strawberries	1.36	Good conditions in Cochabamba, Tarija; New varieties are needed for export
Asparagus	.46	Excellent conditions in Cochabamba; needs experimentation, facilities.
Pepper	.35	Can be produced in the tropical zones; gross revenue over US$ 4500 per hectare.
Paprika	.18	The Gran Chaco can produce intensely-colored paprika, which commands high prices.
Cochinilla	1.46	Natural coloring (carmine) in high demand; good for valleys; labor-intensive.
Achiote	2.30	Natural coloring (bixine); appropriate for Chapare, Bermejo; high demand.
Beans	6.40	Can be grown in rotation with cotton; needs a strong marketing effort.
Peanuts	1.80	Excellent quality for direct consumption; needs market development.
Quinua	3.20	Excellent quality; tradition of production; export through Quinua Corp.
Rabbit furs	2.40	High quality due to ecological conditions; needs financing, technical assistance.
Total:	29.12	

increased, although yields are not high. As more production shifts over to small farmers, labor problems are not as critical. The main limitation is Bolivia's inability to compete with imported cloth and garments.

3. Expanding Consumption and National Food Supply

Many of the basic food products, including potato, rice, corn, yucca, broad bean, and other vegetables, are seldom imported or exported. Increases in levels of output are significant only if the farmer finds a local market. Generally, potential for producing these commodities is much greater than local demand. Yields of potato, for example, average only 3.5 metric tons per hectare in much of the highlands. Yet, with improved seed, small amounts of fertilizer, and minimal pest control, average yields can easily be increased to more than 12 tons, reaching as high as 30 tons per hectare. If a serious effort were made to increase productivity, supply would greatly outstrip demand, pushing prices to low levels. Even after the 1983 drought, which apparently reduced available food supplies to almost nothing, production sprang back within months to fill local markets with a wide variety of products. Smaller markets and isolated centers of consumption, such as the city of Tarija, soon were inundated with potatoes from irrigated winter crops.

Hence, opportunities are not so much related to increasing production, but to increasing productivity. The intent is not to expand output rapidly but, rather, to increase production efficiency and producer income, reducing consumer prices. In many cases, the most important strides can be made through improving marketing channels.

Poultry can be added to this list, although broilers and eggs flow in and out of the country more freely depending on price ratios and exchange rates, especially in Peru and Chile. Pork and fish, on the other hand, are exceptional in that the local market potential has not yet been realized. Local production can expand further, with greater emphasis on marketing and infrastructure for packing, storage, and transport. Many temperate fruit crops also fall into this category.

Most commodities mentioned are produced by small farmers. In fact, the main staple crops for home consumption and sale by small farmers in the highlands, valleys, and lowlands are included in this category. Potato, broad bean, corn, and most other vegetables are grown by small farmers in the highlands and valleys. Rice, yucca, and corn are grown by small farmers in the lowlands. (Rice and corn are also grown by medium and large farmers.) Pork and poultry are produced by small and large producers in various regions. Potential for increased

production is greater in the lowlands because of the availability of feed. Fishing is likely to increase in the highlands around Lake Titicaca. Fruit production is centered in the valley areas, principally Cochabamba and Tarija.

B. Limitations to Internal Markets

The internal Bolivian market is limited by the relatively small population (estimated at 6.7 million in 1987), which is largely at subsistence level with limited buying power. (Real per capita income diminished between 1980 and 1987.) Restricted demand often prevents installation of cost-efficient plants that can compete with imported goods. Most installed agroindustrial plants are operating at a fraction of their capacity. The small internal market and its limited growth potential are major constraints to increasing agricultural production.

1. Transportation Infrastructure

Bolivia's transportation system, both intradepartmental and interdepartmental, is extremely limited. The main trunk route between La Paz, Cochabamba, and Santa Cruz is not yet paved completely. All-weather travel by road is not possible between most departmental capitals. Transportation is a major expense in any agricultural marketing system, but is prohibitive in many regions of Bolivia.

The extent and condition of rural roads are inadequate. Even with the few existing projects to improve and extend rural roads, farm-to-market roads will continue as a major bottleneck. Market access is essential to improve rural household income, from both on- and off-farm sources. It is also key to creating incentives to increase production and decrease consumer prices. Lack of access roads in the tropical lowlands restricts opportunities for colonization by people with limited resources from the valleys and highlands.

Serious delays in implementing rural roads projects are caused by lack of operating funds of the national treasury. Some of the projects, such as those in Chuquisaca and Santa Cruz, have been designed to include the Regional Development Corporations to provide operating funds for fuel and salaries. However, CORDECRUZ lacks operational funds for completion of the BID/CAF project in Santa Cruz.

2. The Marketing Chain

The traditional market structure is typified by a multiplicity of intermediaries. This reduces producer prices and increases consumer prices. The complete marketing process includes no less than seven parties:

1. Producer: characterized by small marketable volume, little holding capacity, lack of organization, dependence on intermediary

2. Assembler: a local trader who is usually involved with producers by selling consumption articles on credit and acquiring the crop before harvest and by social ties (acopiador)

3. Transporter: often truckers who also act as assemblers rescatistas

4. Wholesaler: (mayorista)

5. Distributor: one who buys from wholesalers and distributes (usually on credit) to his/her chain of retailers

6. Retailer (minorista)

7. Consumer

Some markets exhibit all seven stages, e.g., the Cochabamba tomato market. Others involve certain shortcuts. For example, in the La Paz potato market, the transporter is also a wholesaler. He transports the potatoes to a storage space usually located in his house, from which his wife sells directly to retailers. However, in all cases, markups and losses are high, and the producers' share of the final price minimal. In the La Paz potato market, for example, 35 percent of the sales price goes to the producer, 35 percent to the transporter/wholesaler, 24 percent to the retailer, and six percent constitute losses. (Alvarez, 1987) The producers, who are usually not organized in groups for marketing, face monopsony or oligopsony, in which they have little bargaining power vis-a-vis the transporter.

Notwithstanding the high margins, most retailers manage only to eke out an existence because of their low sales volume, and transporters and wholesalers are not wealthy compared to the standards of developed countries. Thus, one cannot subscribe to the still-popular view that the intermediary is a parasite whom the government should try to eliminate. Rather, one can regard the internal marketing sector as being considerably inefficient. Both wholesaling and retailing have developed empirically, without the benefit of organization, government support,

services, or technical assistance, and with a series of crippling features. Consequently, there exist in the wholesale and retail sectors considerable opportunities to decrease losses and margins, thus benefiting both producers (through higher farmgate prices) and consumers (through lower retail prices), as well as intermediaries (through increased sales volume and lower risks).

Wholesalers, in general, are specialized by product. It is rare to find a potato wholesaler who also deals in tomatoes or vice versa. On the other hand, they do not specialize in wholesaling. Usually, they also transport, retail, and have contract growers. The wholesalers are typically persons with little or no formal training in management and finance, but with a sharp business sense and initiative. They operate their own networks of transporters, have their own market information sources, and provide considerable amounts of credit, inputs, and merchandise to "their" suppliers and retailers without formal documentation. Their growth capacity is generally limited by their financial resources and area of market intelligence. A certain amount of price collusion undoubtedly exists at this level, which forms a natural oligopoly. Entry into the wholesale market is difficult, since offering a marginally better price is not enough--a newcomer must create his/her own network of suppliers and retailers.

Retailers are typically dispersed, with little financial capacity or bargaining power vis-a-vis the distributors and wholesalers. Retailers operate in public markets, neighborhood stores, and streets.

Public-market retailers are confined to one stall (usually 2x3 meters) and one line of merchandise, which depends on the section of the market in which they are located. Thus, they cannot develop economies of scale by increasing their quantity and product mix. They pay daily rents and have no security of tenure, and therefore little incentive to invest in improvements. Often they are subject to underhanded payments. Even with high markups, their earnings are usually modest.

Neighborhood stores are far too numerous to become large enough to have satisfactory facilities and offer good prices. Typically, they are "hole-in-the-wall" structures without adequate infrastructure, such as open-window freezers, shelves accessible to the consumers, etc. They have a limited product volume and assortment, with no perishables. Their owners have no credit, technical assistance, or training. They are not organized to procure jointly or obtain quantity discounts. Not surprisingly, their failure rate is high.

Street vendors operate with almost no overhead. They usually specialize in a single product line. They usually depend on a single distributor, who undercuts his own neighborhood-store

retailers by providing goods on credit to street vendors. Because of their minimal sales volume, their income is meager in spite of their high markups. As the population in the cities has grown, so has the "informal sector economy." For example, in 1978, there was one sales point for every 3.6 families in the city of Cochabamba. (CERES, 1982)

The efforts of former governments to eliminate the intermediaries invariably have failed. Where the intermediaries were replaced by government marketing agencies, e.g., Empresa Nacional de Arroz), they were even less efficient, bringing about large product losses, lower prices to farmers, and deficits to the public treasury. The government also constructed 15 "farmers' markets" in which the farmers were expected to sell their produce directly to consumers. Of these, the one in Sucre functions as an ordinary retail market in which most sellers are intermediaries, and the others are not used. The farmers' markets have failed because of costs related to: transporting produce to market, food and lodging while traveling, and time, especially at harvest season when there is much work to be done on the farm. These factors more than offset the increased sales price of the small volume of produce.

It is futile to try to eliminate or circumvent intermediaries in marketing channels because their functions are necessary. Any marketing reform must set itself the objective of making the intermediaries and their functions more efficient. Past marketing interventions have not built on the successful marketing experiences in other Latin American countries. These experiences should be studied attentively in the design of new marketing projects.

A noteworthy aspect of the Bolivian marketing system for perishable products is that over 75 percent of the marketing agents, at both the retail and wholesale level, are women. Even though men drive the trucks, the owners, in all of the cases observed, were women. Thus, interventions to improve the efficiency of market intermediaries necessarily will help improve women's status.

3. Market Infrastructure

There exist no wholesale markets as the term is understood in developed and many developing countries--establishments with water, electricity, refrigeration, communication and other facilities, in which trucks unload their products in spaces belonging to different wholesalers, who then distribute them to their own chain of retailers, and where independent retailers shop for the best value. What passes for wholesale markets in the major urban centers are simply unloading points, where transporters sell their products directly from the trucks to retailers and consumers. There are no specialized

modern storage structures for particular products (such as grain or potato) in the so-called wholesale markets. The near-total lack of refrigerated storage for perishable products (such as meat, fruits or vegetables) and of refrigerated transport is articularly noticeable.

The retail markets are planned, constructed, and administered by the municipalities, which lack the necessary technical expertise; hence, the proliferation of misplaced and underutilized markets. The markets are poorly designed for vehicle access, pedestrian circulation, illumination, and ventilation. The municipalities administer the markets with social (employment creation) rather than efficiency objectives; this cripples the ability of retailers to function and develop effectively.

Because of the deficiencies in the marketing infrastructure, losses are high. Inadequate containers are blamed for a 16 percent loss in bulk transport of citrus from the Yungas to La Paz and a 25 percent loss in tomato transport. This, of course, increases the price to consumers. The lack of storage infrastructure contibutes to seasonal price fluctuations. The effects are low prices to the producer at harvest time and high prices to the consumer in the off-season, with corresponding disproportionate gains to intermediaries.

4. Market Information

Marketing information is usually the first topic in marketing improvements and is almost totally lacking in Bolivia. Product prices are routinely collected by municipal or MACA officials in the major markets and published biweekly with limited circulation. This is appropriate for MACA statistical purposes, but useless for the producer and consumer. Transporters rely on their own information networks (telephone calls to persons in their confidence) to determine to which markets they should travel to purchase or sell. This lack of market transparency is particularly harmful to the small producers, who sell to transporters at the roadside. They have little bargaining power without current market price information. Although RADIO ACLO of Sucre had a radio price information service from about 1980 to 1985, its usefulness diminished during the period of galloping inflation to the point where its operation was terminated.

5. Macro Economic Factors

Undoubtedly, the two principal factors affecting local industry in terms of import displacement are exchange rate policies and operation of customs services. The overvalued Boliviano in relation to the currencies of other countries is having a negative impact on Bolivian industry in terms of

competing with imported goods in local markets, as well as for exporting. Undoubtedly the inflow of foreign currency from illegal drug trafficing provides the means by which the value of the peso can be maintained at its present rate. However, as neighboring countries reduce the value of their currencies, Bolivia's competitive situation becomes steadily worse. While the country's borders are so permeable to trade with little control to bring about compliance with its tariff laws, it would make sense for Bolivia to follow a similar montetary policy as its neighbors, causing the least distortion possible in terms of its competitive position with its neighbors.

C. Constraints to Exports

Although a large extent of the lowlands are ideally suited (in terms of soils and climate) to producing a variety of semi-tropical products, the low level of technology, coupled with high transport costs, make Bolivia a high-cost producer. Thus, it is estimated by ANAPO that an eight-percent reduction in the world soybean price would be sufficient to make soybean cultivation non-economical for the large producers, who have high fixed costs. The low yields of rice and the high production costs and low sugar contents of sugarcane exclude the possibility of exporting these products. High production costs can be relieved in the medium-term by using adequate technological packages, based on effective research and technology transfer, coupled with sufficient credit and adequate transport facilities.

1. Deficient Export Services

Among export services, the most important is information. Bolivian exporters of non-traditional products need up-to-the-moment connections to international trade information networks that inform them of current prices, market demand, potential buyers, and export requirements in different markets. Such constant flow of marketing information is seriously lacking. Some exporters claim they have lost sales opportunities simply because of the inadequate telex service.

Financial export services are also inadequate. Bolivian bankers are unfamiliar with international letters of credit, countertrade provisions, and other techniques of modern international trading. Training is needed to improve the responsiveness of the banking system.

2. Deficient Export Infrastructure

Bolivia is one of the world's highest cost exporters. A shipment from the Beni to La Paz, for example, is more expensive than from Arica, Chile to European ports. Most non-traditional exports originate from the lowlands, the region most deficient in road infrastructure. Because of unsatisfactory road

connections through Bolivia, most exports from the Beni and Pando (cattle, Brazil nuts) are exported illegally to Brazil. There are no paved roads from Santa Cruz, the main development region, to either the Brazilian or the Argentinian borders.

Railway service is slow and unreliable (return of railroad cars from Paranaguá, Brazil to Santa Cruz takes at least 45 days.) As a result, Bolivian producers often have to keep six months' supplies of production inputs on hand, with all the costs this implies, and have problems meeting their delivery obligations due to the uncertainty of the railroad service. Grain rail cars would reduce the cost of soybean transport considerably.

Aside from roads, other equally deficient export infrastructure include sufficient grain silo capacity (especially if the expected expansion of soybean cultivation materializes), meat packing plants, and refrigerated trucks to transport meat.

3. Insufficient Working Capital

A constraint for increasing export operations is insufficient working capital. Bankers' collateral requirements are extremely high (up to three times the value of the loan), and they usually accept only urban real estate as security--not the fixed productive assets or the goods in processing, and sometimes not even the purchaser's letter of credit. As a result, it is extremely difficult for exporters to obtain sufficient pre-export and post-export credit.

4. Government Policies and Regulations

Frequent changes in the rules of the game have undermined the confidence among exporters in the intentions of the GOB to promote exports. From 1976 to 1981 the RIFENT was in force. This was a complete and clear code of export incentives, and included the following features:

- o restitution of import duties on capital goods and raw materials used in producing export products;
- o the CERTEX, a certificate that could be used for paying any taxes and was equal to the amount of all taxes (11 percent royalties on agricultural products to the departments, five percent customs duties, three percent to the university, etc.);
- o a reduction of two percent for two years on new products and products from depressed areas; and

- a fund of US$ 10 million to provide pre-export credits of up to 100 percent of the value of the exported goods, and post-export credits of up to 80 percent.

The RIFENT was abolished in 1981. Decree No. 18829 of February 3, 1982, eliminated all tariffs and royalties on exports, as well as duties on the importation of export inputs, and established a compensation for all taxes involved in the production of export goods. Decree No. 19270 , however, imposed an eight-percent export tax on non-traditional products. This was abolished and the RIFENT was restored in August 1985. It was replaced in August 1986 by the uniform duty of 20 percent on all imported products. The export credit fund was eliminated in 1985.

The Economic Reactivation Decree no. 21660 of July 10, 1987, established the Customs Reimbursement Certificate (CRA) as reimbursement for the customs duties paid by exporters on their imported inputs. The CRA, which has not yet been implemented, amounts to five percent of the FOB value for traditional exports and 10 percent on non-traditional exports. It is not redeemable in cash, but can be used to pay any type of tax. In theory, the CRA is equivalent to customs protection of 5.2 percent on soybean and 8.0 to 9.9 percent on most other agricultural exports, depending on their contents of imported inputs. The amount of CRA protection diminishes as the percentage of imported inputs in the product increases. This discourages exporting products in a more processed form.

The 11 percent royalties to the Departmental Development Corporations on agricultural products remain in force, as well as the one-percent transactions tax, and a three-to-five percent shipment fee to the customs warehouse service. In addition, the Value Added Tax (IVA) of 10 percent on all purchased inputs was instituted in April 1987. It is supposed to be reimbursable for export products against receipts, but subject to a monthly external audit.

In sum, in spite of the CRA and the IVA reimbursement measures, the present fiscal structure still discourages exports. In the present situation, with the CERTEX removed and the CRA not yet in effect, exporters find themselves subject to a 15 to 20 percent tax burden. While the larger ones have continued exporting so as not to lose their markets, the smaller ones are being squeezed out. This tax treatment may be a major factor in the current loss of momentum of non-traditional exports, which after soaring from US$ 35 million in 1985 to US$ 110 million in 1986, have stalled in the first semester of 1987.

There is insufficient participation the private export sector in formulating export policy. There is scarcely any institutional integration of agricultural production and

increases in wheat production are expected in the lowlands in conjunction with soybean expansion. Cotton production can be exporting. This may change if the INPEX, a mixed public-private institution created by the Economic Reactivation Decree of July 1987, becomes effective.

Finally, Bolivian exporters are faced with an impressive amount of paperwork. Besides the usual bill of lading and SGS certification, every shipment must have a shipment list; commercial receipt; export policy, permit, and guarantee; certificates of origin, operation, quality, and customs reimbursement; sanitary or phytosanitary certificate; consular fees (in the case of export to Brazil and Argentina); and such. In all, some 15 documents are necessary to export any product, and some require more than 20. One of these documents contains 80 questions and requires 12 copies, while another with 19 questions requires 24 copies. Altogether, 278 questions and over 115 copies are involved, and the forms must be approved by many officials in different offices. (Thompson, 1986) The above list does not include the numerous documents and applications necessary to become an authorized exporter. Thus, overwhelming amounts of paper work effectively bars smaller producers from attempting exports and adds significantly to the cost of exporting.

D. Analysis of Specific Constraints to Production

1. Natural Resource Constraints

Bolivia is endowed with a great deal of friable soils, adequate precipitation, and suitable temperatures, which make it possible to produce a wide variety of crops. The northern highlands are suitable for a limited series of crops that withstand cooler temperatures. On the southern end of the highlands, low precipitation and frequent frosts render the area more suitable for livestock. The southern departments of Tarija and Chuquisaca have relatively dry valleys, which are well-suited for irrigated crops. Temperate climate fruits and vegetables are grown in these southern valleys and also in Cochabamba. The eastern department, Santa Cruz, has a warm, tropical climate with a fairly rainy summer suitable to many tropical crops and a cooler winter with adequate precipitation, in some areas, permiting a second crop.

Forests cover more than 50 percent of the surface of the country, mostly in the departments of Santa Cruz, Beni, Pando, and the northern region of La Paz, referred to as the Alto Beni. In the northern regions and in the Chaco to the southeast, natural grasslands, covering 30 percent of the country, encourage the raising of cattle in an extensive, open-grazing pattern with minimal investment. Natural fisheries are found in lakes and rivers in the highlands and lowlands, including Lake Titicaca,

the Pilcomayo River in the south, and various rivers in the northern Amazon system.

With the abundance of friable soils suitable for root penetration, the type of agriculture and the range of crops that can be grown are largely determined by temperature and amount of precipitation in each agro-ecological zone.

a. Highlands

The region has relatively low levels of rainfall (important to both crop and forage production). The large amount of rainfall that runs off the soils in the highlands is a serious problem. In other countries with similar conditions, seedbed preparation, using soil conservation practices, has resulted in substantial increases in production for at least 42 different crops.

Frost occurrence has been recorded every day of the year in the highlands. The length of growing season is severely restricted, and only specific varieties of certain crops have a reasonable chance of producing a harvest. This condition limits the diversity of crops that can be produced and increases the risk of crop failure.

Natural soil fertility, especially nitrogen and phosphorus, has been depleted as a result of centuries of farming. Little or no plant nutrients are replaced. Almost all vegetation is taken from the land; aftermath of crops is used for winter grazing. Even animal manure is not always returned to the soil; it is used for fuel. For this reason, farmers leave about half their lands to fallow every growing season.

Erosion occurs because of insufficient vegetative cover and water runoff. Loss of soil caused by the lack of rainfall contributes to loss of fertility. Some soils are too shallow to allow proper root-zone development. Retention of sufficient moisture and nutrient storage capacities to sustain good crop production are also reduced.

b. Valleys

Limited moisture conditions are similar to the problem described for the highlands, at least in the upper valleys. Loss of soil fertility in upper valleys is another constraint, as in the highlands.

Steep slopes in high rainfall valleys, such as Yungas and Chapare, present a constraint to managing the soil and to mechanization. Severe runoff is a problem when measures are not taken to improve infiltration. Slippage and sluffing are problems, especially where man has disturbed the base of the

slope (e.g., road construction). Mud flows occur when rainfall runoff concentrates in a gully and supersaturates the bare sides to the point that the mud begins to flow down the valley. Erosion occurs when the rainfall runoff causes the washing of particles downhill.

Drainage in some of the upper valleys is a constraint, especially in areas where irrigation systems are being operated, such as the Cochabamba valley.

c. Lowlands

Rainfall distribution is perhaps the most limiting factor in much of the lowlands, particularly the north and south. The southern (Chaco) region has low levels of rainfall, while the northern areas have high levels, concentrated in the summer season. Flooding occurs in the northern areas of the Beni because of concentrated runoff from the uplands and lack of adequate outlets. The recurrence of floods every three to four years has killed up to 20 percent of the cattle population in the Beni.

For small farmer/colonists using the slash-and-burn system, weed control is the major constraint to maintaining economical agricultural production. Invasion of weeds into cleared parcels of land lowers yields and forces the farmer to abandon one parcel and move on to the next.

In general, the soils cleared of tropical forest for agricultural purposes are reasonably fertile and have good structure-texture for farming purposes. But they can be depleted over time if farming practices do not include legumes, green manure, or chemical fertilizer applications. Fertility in general and the lack of or high concentrations of minor elements limit sustained production, such as on the sandy soils surrounding the city of Santa Cruz. After a few decades of abusive, exploitive farming with almost no nutrient replacement, these soils are depleted of nutrients, especially nitrogen, and have high concentrations of aluminum.

d. Forest Management

In the vast lowland areas where the bulk of natural forests are located, the current management system consists of simply giving concessions to lumber companies to harvest virgin forests. The concessions give them rights to cut trees, with no obligations to replant, protect, or allow for natural regeneration. Logging companies take all the trees of the higher-valued species. The population of the more valuable species of tropical forests have diminished to the point that, in some areas, the resource will be completely exausted in a few years. For instance, CORDECRUZ indicates that all the mahogony

consessions for the department have already been issued and that, within three years, the department will no longer have commercial quantities of this species. Unfortunately, natural regeneration does not occur once the population has been depleted. Other silvicultural treatments are necessary to facilitate a sustained yield of timber. To replant the original species will require large investments.

Harvesting is not monitored in the lowlands. Many of the products leave the country through Brazil, with little value added for the country and no payment of taxes. This limits the interest and economic capability of local institutions to manage forest resources. Access to the northern tropical areas is not available due to lack of roads, railways, and/or waterways.

In other areas, especially the valleys, native woody species are not permitted to reseed naturally. This prevents their management for firewood, honey production, forage, and watershed protection.

e. Grasslands Management

Overgrazing prevents natural reseeding in the highlands and valleys. While the seeds of desired species are in the soil, the small plants produced are immediately grazed off by livestock and not allowed to produce effective forage or to reseed. Instead, they are maintained at an "eternal extinction" status. The removal of this constraint will increase stand density and the quality of forage in the highlands and valleys.

Grazing flocks on communal land leads to overgrazing. The more animals a farmer stocks on the land, the more he harvests. Low levels of animal nutrition reduce production in the highlands and valleys. This is reflected in low production coefficients and low income both per animal and per unit area.

Root-zone depth is reduced by overgrazing for even a few years; therefore, the grasses cannot withstand drought. Top grazing in rotation would prevent overgrazing and allow harvesting of the most palatable and nutritious portion of the forage for best production of meat, wool, and other animal products. There are too few livestock watering facilities in areas such as the Chaco and northern lowlands to uniformly distribute the grazing pattern.

In some instances, controlled burning can be used to rejuvenate growth, nutrition levels, and stand density. Contoured soil and water management practices are not used. They are necessary only when runoff is occuring and rainfall is not uniformily infiltrating the grassland where it falls.

In summary, the main natural resource constraints of the highlands are moisture retention and soil nutrients, not land area. In the valleys, limitations are similar, but land area on valley floors where agriculture is practiced more intensively is also scarce. In the lowlands, natural constraints are not as great in terms of the natural resources base. Instead, the constraints are more related to physical access and the capability of managing the resources.

2. Technology Generation and Transfer

The agricultural research system of Bolivia falls primarily under the Bolivian Institute of Agricultural Technology (IBTA). As the primary research and extension arm of the Ministry, IBTA deserves specific attention because the services it should provide are sorely needed. While IBTA has several experiment stations around the country, there are several major limitations to conducting research and distributing meaningful results. Extension or technology transfer, on the other hand, is nearly non-existent. IBTA has a small, inoperable extension service. Numerous other institutions--public, private, NGOs--have small numbers of personnel assigned to provide technical assistance to farmers.

a. Financial and Human Resources in IBTA

Because of low salaries, the more competent, imaginative, and aggressive staff members find other employment opportunities, leaving the stations to be run by the weaker members. The top salary range in IBTA is approximately $250 per month. This fact alone accounts for its poor professional breadth and depth. Table III.3 gives a quick view of the human resources available.

Table III.3. IBTA-Professional Staff (1976 and 1986)

Category	Employees 1976	1986
PhD	1	0
MS	9	11
Agronomist degree	35	69
Agronomy graduates	59	84
Agronomy technician	41	70
Other technical personnel	3	17
Total:	148	251

Source: "Diagnóstico Institucional: IBTA, INFOL, SNDC, SENARB;" MACA, May 1987.

In addition to having insufficient numbers of highly-qualified professionals, 25 percent of IBTA "technical" staff are located in La Paz. (See Table III.4.) With the creation of La Paz as a bona fide agricultural department, the distribution of the IBTA extensionists could be further dispersed to cover the new department.

The National Treasury finances up to 80 percent of IBTA's budget. IBTA suffers the same delays in financing as the rest of the sector, which relies on the Treasury. Operating budgets are very limited, so lack of supplies, travel, and labor handicap research and needed experiments. This situation has become so acute that IBTA has decided to concentrate more on commercial farming of research-station lands to generate additional income. However, the emphasis on commercial farming detracts even more from the research efforts of the stations.

Table III.4. Geographical Distribution of IBTA Professional Staff (1986)

Department	MS	Agron Degree	Agron Grad	Agron Tech	Other Tech	Total
La Paz	4	17	18	15	12	66
Cochabamba	14	42	25	21	4	106
Beni	1	3	7	1	0	12
Oruro	0	1	2	9	0	12
Potosí	0	3	13	4	0	20
Chuquisaca	0	1	5	9	0	15
Tarija	1	2	14	11	1	29

Source: Ibid.

b. Agricultural Research

IBTA is weak in publishing and distributing research findings because of the isolation of research from extension work. This problem has never been overcome since the times of the SAI. When research data are interpreted and prepared for publication, the dissemination of the research report/data is determined by the number of legible carbon copies that can be produced at a single typing. Even these copies of research results generally remain within the institution, and are not widely distributed outside.

IBTA knows little about obtaining feedback from farmers, which puts the researcher at a serious disadvantage in terms of understanding the problems farmers face and the kinds of innovations that might be adopted. Research focuses on increasing yields of single crops, without considering the overall management and marketing strategy of the farm household.

Almost no research is conducted on extension methods or farmer adoption of technology.

c. Extension

Technology transfer mechanisms are almost non-existent. Estimates of the total number of change agents are about 120. This implies nearly 3,000 farm households per change agent. However, the actual number of technicians providing some form of technology transfer services is probably much larger if one considers all of the technical assistance efforts distributed through the Departmental Development Corporations, IBTA, other public institutions, NGOs, and grower organizations.

Many of these services are single purpose (e.g., administering a barley production program for a brewery, vaccinating cattle for hoof-and-mouth disease, advising the farmer on control of cotton pests, etc). The PIL plant in La Paz has a small cadre of livestock professionals who visit only those producers that sell milk to the plant. However, few visits per year are made to the same farmer because the technical team is small and the number of farmers large (2,500). Others, such as IBTA, face limitations of vehicle transport and communications, which render them almost useless.

In summary, research and extension are weak. Some technology is "borrowed" from neighboring Argentina and Brazil by growers. Some is brought in through international projects and eventually adapted to local conditions. The farmer learns very little through the research/extension system. The entire technology transfer apparatus, as it exists, is so weak that it merits little attention for overhaul. Instead, new resources and institutional mechanisms are needed.

3. Input Supply

Input distribution systems are in the early stages of development. Input supply houses are typically import companies that focus on obtaining credit and arranging to have materials delivered on time for the crop season. Often the kinds and volumes of materials are preprogrammed with the farmers through their chamber of agriculture or producer associations. Therefore, distribution is nearly automatic. Input supply houses rarely set up sales offices in smaller towns and rural centers. They are not active in rural "fairs" where farmers sell their production and barter for consumer goods each week. Only a few input supply houses have sales representatives who visit farmers and demonstrate the proper handling and application of the products.

While fertilizer is imported and is available from BAB, there is no network of wholesalers and retailers actively

promoting its use. The flow of information from the research organizations does not generally focus on fertilizer use. Instead, research programs concentrate on testing crop varieties that will produce better under the prevailing low-nitrogen conditions. Therefore, fertilizers are in the country, and include both straight nitrogen (urea) and N-P-K (as 23-23-0 or 15-15-15), but are not readily available for farmers to purchase. Also, fertilizers are relativly expensive, reflecting the low volume and long freight hauls.

Very little insecticide is used. While these products are available in the nation, they are not widely distributed or actively promoted. The commercial apparatus to supply inputs such as fertilizer and plant protection materials exists, but is not very active.

Another input deserving attention is seed. A USAID seed project led to the creation of numerous seed producers; several seed processors; and marketers for seed of crops, such as soybean, wheat, maize, and rice. Another project supported by the Swiss Mission has led to the production of forage seed. Unfortunately, the local seed companies have adopted the same marketing style used by other input suppliers. Warehouses and points of sale are nearly always located in the central city. The farmer who lacks access to transportation or who cannot easily travel to the city uses less seed.

The production of virus-free potato seed is carried out by only one company, located in Cochabamba. While it is well-organized, this single company was capable of providing only 500 tons of high-quality, virus-free potato seed last year, an insignificant share of national demand. The production and sale of good seed of improved varieties of wheat, barley, and most other crops have proceeded slowly. For these crops, farmers depend on their own traditional materials for planting as seed.

Mineral salts are imported ready-to-use; however, only limited amounts are fed to beef cattle because producers are still not aware of the nutritional requirements for economic production. Poultry and swine producers, on the other hand, use mineral mixtures and other ingredients needed for rapid animal growth. These are more knowledgeable entrepreneurs who understand the importance of adequate feeding in the cost of production. Dairy producers also use minerals and other ingredients like soybean, oil meal, and cotton seed meal to supplement protein needs.

Veterinary products and vaccines also are imported from neighboring countries. A laboratory once operated by MACA and located at Ovejuyo used to produce foot-and-mouth disease vaccine. This laboratory does not produce vaccines any more. Under a contract with the Panamerican Health Organization, an

oily solution is bought from the Panamerican Center for Foot and Mouth Disease in Rio de Janeiro. This vaccine is effective for one year. Another vaccine imported illegally from Peru (aqueous solution which produces immunity for only four months). Other vaccines on the market control the most common infectious diseases, but they are not used consistently. Only the better producers vaccinate regularly.

Handling of vaccines may in many instances lower or destroy the immunogenic strength of the vaccine; this is particularly true in the case of live virus vaccines. Producers complain of the high cost of vaccines, veterinary products, and mineralized salt.

4. Agroindustrial Capacity and Constraints

Agroindustries are divided into three categories: those with adequate capacity; those with inadequate capacity; and those with no capacity that have potential for development. Hard data showing both demand and capacity were not always available. In most cases, the conclusions are based on the judgements of people knowledgeable in the industry.

a. Enterprises with Adequate Capacity

Flour Mills: Nearly all flour consumed in Bolivia is milled in the country from imported wheat. With the suspension of subsidies on imported wheat, it is likely that per capita consumption of flour will taper off, or at least no longer grow as it has in the past. Therefore, milling capacity is considered adequate in most regions of the country.

Fruit and Vegetable Canning: There are two private fruit and vegetable canning plants, one in Santa Cruz and one in Cochabamba. They seem to be able to contract for all the fruit and vegetables they need for processing, and they appear to meet national demand for these products.

Coffee Processing Plants and Roasters: There appears to be more than adequate capacity. Some of the processing plants are reported to be for sale.

Tea Processing: There appears to be adequate capacity for processing the tea produced.

Fresh Milk Processing and Distribution: The PIL plants are underutilized in all areas at present because of the relatively low volumes of milk produced locally and sold as fluid milk through processing plants. Much milk is converted into cheese on the farm or at small plants. The only large plant specializing in cheese manufacture, a CORDECRUZ plant in San Javier, closed in

1987. There appears to be adequate capacity for cheese-making scattered among the many small plants.

Oil Extraction: Three sizeable oil extraction plants in Santa Cruz supply most of the national demand. Another large plant at Villamontes in the Chaco has much unused capacity and a shortage of raw materials to process.

Thread-Yarn Spinning: There is idle capacity among many of the plants around the country.

Cloth Manufacture: Many plants have cut back on production levels because of increasing competition of imported cloth and garments. There is a great deal of idle capacity at present.

Cotton Gins: There are 16 gins in the Santa Cruz area and one in Villamontes/Tarija. Only three or four of these operate because of the low volumes now produced. There is a great deal of idle capacity. However, most of the plants in Santa Cruz are located in the central region north of the city, while cotton production has shifted to the east, across the Rio Grande.

Sugar Refineries: There are six major plants in the country, two in Tarija and four in Santa Cruz. With the reduction in sugar volumes, present capacity is more than sufficient for producing refined sugar and other products, such as ethyl alcohol, anhydrous for use as motor fuel.

b. Enterprises with Inadequate Capacity

Grain Silos: Grain storage capacity is generally limited in Bolivia. The Ministry of Industry and Commerce has several facilities in the wheat-growing areas. All together, the capacity of these batteries is only about 5,000 tons, well less than 10 percent of the country's production. They have not been used because of lack of operating funds to purchase locally-produced wheat. Rice storage facilities in Santa Cruz owned by ENA were scarcely used until recently, when the rice growers associations (with the support of the Chamber of Agriculture) began to operate them. The total capacity is a fraction of the volume produced. The breweries also have some underused capacity for barley. Storage for other crops, including corn and sorghum, are limited.

Capacity is most seriously lacking at collection points for soybean export. Eleven grain silos have an aggregate capacity of 10,000 tons in Santa Cruz. Three new ventures are scheduled east of Santa Cruz, along the railroad to Quijarro: Pailón; Tres Cruces; and San José. ANAPO is helping obtain financing for these projects.

Seed Cleaning and Storage Plants: About 18 small plants exist in the country, with at least one in most regions, except the highlands around La Paz. All of these began operating within the last six or seven years. More are being built, keeping ahead of seed supply, which has increased from a few hundred tons to more than 7,000 tons within this period. Because further growth in the seed supply sustem is expected, additional small plants will need to be constructed. Storage capacity is inadequate for the tropical conditions of the lowland areas.

Malting: The largest brewery in the country, CBN, has a plant in La Paz to meet its requirements for malting locally-produced barley. The brewery in Cochabamba is planning to build a malt plant that would require 35 tons of barley a day, and the output would exceed their own needs. They would sell some to other breweries or export.

Meat Processing: Municipal slaughterhouses in La Paz, Santa Cruz, Beni, and Cochabamba do not meet standards for hygiene. La Paz, being the main market in the country, does not have a packing plant to kill and store beef and pork. Santa Cruz only has a municipal abattoir, with no cooling facilities. It was designed to kill 80 head per day, but at present, up to 350 head per day are slaughtered; in addition, the abattoir does not meet standard sanitary requirements. Lack of adequate facilities in the Beni limits Bolivia's competitive edge in the export market.

In Cochabamba, there are three pork packing plants to process hogs produced in the area. They also receive hogs from Santa Cruz and Monteagudo, Chuquisaca. Opportunities exist to establish pork-processing facilities in these two areas. Pork production is increasing rapidly in Santa Cruz.

Cochabamba produces 52 percent of broilers. Only three slaughterhouses meet standard sanitary requirements; others should be mechanized and improved to meet these requirements.

Refrigerated Storage and Transport: There is a nominal amount at various large cities, but the inadequacy of such facilities is often cited as a constraint to the production of perishable commodities. For example, lack of infrastructure to process and transport fish under refrigeration is the main constraint to fish production.

Leather Tanning: There is some leather tanning but the quality is low. Also, a great deal of unprocessed hides are exported and some leather imported. There is need/opportunity for quality leather tanning.

Saw Mills: Although there are numerous small saw mills, increased forest production will require more of them.

Plywood Manufacture: Increased emphasis on forest product exports will require greater plywood manufacturing capacity.

c. Enterprises Without Capacity

Paper Mills: With the abundant forest reserves, Bolivia may consider establishing a paper mill.

Fertilizer Manufacture: There is no fertilizer manufacture within Bolivia. The nominal demand is met by expensive imports.

Yeast Production: This can be done using molasses from sugar mills.

d. Constraints to the Full Utilization of Installed Capacity

Aurrecochea (1987) found that the most important factor responsible for the low (32 percent) utilization of industrial capacity is the limited market (29 of 54 cases). Other limiting factors were: competition by smuggled goods (15 cases), financial constraints (10 cases), lack of export channels (10 cases), raw materials quantity (9 cases), raw material quality (9 cases), internal competition (9 cases), and other factors (13 cases). (Multiple answers were allowed.)

Since competition by local and smuggled goods, as well as export limitations, fall into the category of marketing constraints, the survey clearly indicates that marketing--rather than the availability of finance or raw materials--is the chief factor limiting the growth of agroindustries and other Bolivian industries. Firms that produce for the internal market are faced with lost purchasing power and unfair competition with neighboring countries, who enjoy various export subsidies, and import goods illegally without customs duties. On the other hand, high production and transport costs, IVA, and other taxes inhibit the exports of Bolivian manufacturers, in spite of the large idle capacity and generally satisfactory technological level.

Insufficient supplies of raw materials occur when the cost structure motivates agricultural producers to export raw materials rather than sell them to local processing industries (e.g., soybean, hides). Deficient quality results, especially in the case of meat (hog diseases) and wheat (humidity and insect infestation during transshipment in Chilean ports). Irregular supplies of raw materials are generally caused by the undependable transport on import routes. Other input constraints are power outages and shortage of natural gas.

Lack of specialized technicians, not labor shortage, is the limiting factor. In some cases, firms must train personnel on

the job due to the inadequacy of professional technical training institutions.

Twenty-two of the 27 industrial branches surveyed have improved their competitiveness in the internal market by: increasing quality, reducing profit margins, building their own warehouse and retail-distribution networks, expanding to other cities, increasing advertisement, and diversifying their product lines where possible. However, only four have initiated efforts to increase their exports.

5. Constraints to Agricultural Credit

The general complaint from both the Intermediary Credit Institutions (ICIs) and the farmers is the inadequacy and untimeliness of refinancing funds. There are long delays in loan approval and documentation. The BCB claims that any application from an ICI for refinancing funds is processed within a period of seven days if all the documents are in order. PL-480 operates on the basis of "fideicomiso" (advancing funds in trust); thus, funds for the ICIs are more readily accessible.

Collateral requirements of the ICIs are stringent, making many small farmers ineligible. The ICIs are tightly controlled by the BCB for their repayment obligations of the refinanced funds, and past due payments are immediately charged to their current account in the BCB or to their legal reserve. This, in turn, forces the ICIs to become more cautious. The work involved and the spreads allowed do not permit an ICI to take excessive loan risks. Stricter management of financial resources will help develop a more respected and disciplined lending system.

Although the collateral requirements imposed by a cautious commercial banking system appears as a constraint, it could produce beneficial results over the long haul. Farmers of all capacities will begin to understand that they too have a responsibility to become good credit risks. They must organize themselves into cooperatives or other kinds of formal groups and provide the banks with group collateral, co-signatures, and chattel liens to ensure repayment of loans and avoid a breakdown in the credit system, caused by non-payment of loans.

Lack of funds for extending agricultural credit is not as serious a constraint as it first appears. Naturally, there is a strong demand for low-cost credit when compared to credit obtainable in the open market. Any eligible farmer able to borrow from this source, even if he had his own capital, would be foolish not to for the simple reason that such funds could be deposited with the commercial banks at a substantial gain. GOB policy established low interest rates with the intent of helping the small farmers. It is the larger farmers with urban collateral that can and do access these funds with more ease.

(Annex D presents a detailed analysis of credit requirements for the period 1988-1992.)

Although the volume of funds may be adequate to cover most production credit needs over the next few years, funds are lacking for a number of other activities. Particularly, funds should be made available for marketing non-traditional exports. Secondly, medium-term loans for infrastructure are needed, similar to those offered through the Market Town Capital Formation Project.

There are other specific needs; for instance, the absence of credit to prevent the killing of pregnant cows and to construct cattle refuges is a major constraint to cattle production, particularly for small ranchers. This is caused by a negative cash flow in the operations of small ranchers. As a comparison, dairy farms obtain cash every day or weekly because milk or cheese is produced and sold daily; beef farms, on the other hand, sell their production (calves, steers, and culled cows) once a year. Since no credit is available to ranchers, they sell cows to level their cash flow.

Agricultural credit institutions will find it increasingly difficult to mobilize their own capital, savings, and deposits if they cannot pay competitive interest rates. With the current rate structure, such institutions and credit programs cannot hope to survive without subsidies and external low-cost funds for operating capital.

Another constraint is the ICIs' fear of not be able to collect money lent to small farmers. Credit is an extremely important tool in assisting technology transfer and increasing production; therefore, it is imperative that the small farmer be included in the commercial credit system. In order to bring this about, the credit package must include technical assistance. The North American axiom applies here: "One can make an agronomist a good loan manager, but one cannot make a loan manager a good agronomist."

The lack of knowledge about managerial concepts and skills at all levels within the credit system is another chief constraint. The agricultural credit program in Bolivia is 45 years old. During this period, the monetization of traditional agriculture has been in process with little recognizable change in the lending system. Management at the middle and front-line levels of the system is weak or non-existent in terms of funds management. The farmer is also unsophisticated in the management of his time, labor, and other resources. A generation and a half of Bolivian farmers have been exposed to farm credit with no significant improvement in their traditional farm management techniques.

The agricultural credit system represented by the BAB is in shambles, and requires restructuring and new injections of capital. Management of an institution responsible only for spending the budget is relatively straight forward. It takes a skillful manager to first earn the budget and then administer its expenditure wisely.

The Bolivian agricultural credit system has relied heavily, if not totally, on external funding, soft-term loans, and outright grants for lending capital, purchasing vehicles, and paying operating expenses, including salaries. Over the years, no attempt has been made to use external funds for generating domestic capital or for building reserves so that the system could become self-sufficient. A few cooperatives have demonstrated that this can be done. Upon analysis, one most often finds it is the result of good management.

The financial institutions are not promoting the mobilization of savings. Some cooperatives are mobilizing savings either through shared capital purchase, retained dividends, or savings passbooks. However, their effort is not well-planned or aggressively pursued. There are savings in the rural areas to be garnered, but perhaps the easiest way to get capital for business operations is to seek external funds. They come in a lump sum, and usually at a lower cost.

E. Institutional Constraints to Agricultural Development

1. Social and Organizational Limitations in Rural Areas

The rural sector still remains institutionally informal, totally dependent on external (urban or foreign) initiatives and resources. Other institutions have been imposed onto or function as parallel institutions with their own local organizations. None, however is a formal, legitimate local-government institution, accountable and responsive to the needs of the local inhabitants. Rural dwellers, including farmers still need an organization that deals with the common public good: schools, roads, health, potable water, and other public services.

a. Public Administration and Rural Areas

Bolivia's public administration structure extends to the local community as a colonial power would govern its subjects. The canton is the smallest formal administrative unit of the state. Its boundaries do not necessarily correspond to those of local communities. The corregidor is the lowest state representative at the canton level. He does not represent local citizens or community organizations; he represents the executive branch of the government. Yet, the corregidor has authority over local organizations and structures just as in colonial times.

This persistent colonial structure of government oscillates between benevolent paternalism and outright dictatorship, depending on the changes at the head of the government.

Virtually all ministries and public institutions providing technical assistance and rural development services have been structured along the same hierarchical and centralized lines. These highly centralized agencies nominate representatives or delegates to work with the rural masses. Centralization is so extreme that a teacher working in a rural community is expected to request authority and funds from higher-up to buy something as simple as blackboard chalk. In another case, field laborers in an agricultural experimental station are expected to keep the same office hours as workers in the Ministry of Agriculture in La Paz.

As the public sector's influence in rural areas has lagged in recent years, NGOs have substituted for them, benefiting from the shifts in donor preference from the public to the private sector. They have become, in fact, one of the growth industries of the country. NGOs are closer to their clients, emphasize local participation, and have dedicated staffs. In cases where they operate as technical assistance and service organizations, NGOs have successfully helped form solid and autonomous agricultural producer organizations. In many cases they have been successful in building schools and sanitary posts, and even roads. However, they cannot create local government institutions capable of sustaining and expanding public services.

The lack of autonomy and capacity to generate revenues to cover the cost of public goods and services and to make public investments is perhaps one of the major constraints to sustained rural development. This constraint affects all aspects of rural life, including farm production and marketing.

b. Inadequacy of Informal Organization

The communal organization (comunidad, sindicato, cabildo, cooperative, Ayllu, etc.) functions on the basis of consensus. This is obtained after long and arduous negotiations if there is an interested leadership. Usually, a communal organization does not exceed 80 to 100 families in a geographically-defined location (with the exception of Ayllus and Cabildos which may still have jurisdiction over many people and large territory). The need for consensus, the low levels of literacy, and the lack of formal government procedures are some of the reasons for the limited size of the basic rural community.

Historically, local-level governments were larger and more formally organized. Today, however, the effective local-level rural organization is the small communal unit. The viability and potential of the communal organization is limited by its size and

the low levels of resource generation, which in most cases is limited to labor and/or local materials. While an informal communal organization may be institutionally appropriate for isolated groups of families who practice subsistence agriculture, it cannot meet the needs of rural dwellers integrated into the economy of their regions and a national state. More capable, legally-formed institutions are needed to develop and maintain the types of public services most rural dwellers expect and need to function in the society.

c. Poor Sustainability of Development Projects

Public, international donor, and NGO development agencies must implement projects within the limitations of existing local institutions. Institutions that sponsor projects carve out territorial units where they concentrate their activities. Communities are asked to participate in and contribute to projects designed and controlled externally. Project quarters are based in the cities, the capital of the country, or offices of the international donor agency.

Where Departmental Development Corporations finance projects in rural areas, the surrounding population refers to them as "fantasy islands," comparing the projects to the American television series where all wishes come true. The term could be applied to the development strategy of most institutions (public and private) sponsoring projects in given areas. This approach could be one of the reasons for the often observed lack of sustainability of projects once external funding ends. Communities contribute the maximum of their limited potential in terms of labor, local materials, and occasionally cash, which, if quantified in monetary terms, might equal the taxes paid by other groups of citizens.

Over time, a succession of communal projects, externally initiated, assisted, and controlled, leaves the communities not only exhausted, but increasingly dependent on external aid. Although they work with the community, most if not all of these projects fail to develop viable local institutions capable of generating resources that would enable them to sustain and develop the projects or services installed.

d. Need for Formal Local Government Institutions

Lack of formal and legally-recognized local government organizations (for functional and viable territorial units) is a constraint to providing sustainable public services, which could attract and retain a rural prosperous population. Without the legal means to generate resources, the community is limited to two ways: negotiating with the central government to take action and organizing on an informal basis, using social pressures on its members.

Lack of local government is a constraint to agricultural projects that require collective action to build or maintain infrastructure (roads, irrigation systems, conservation projects, and such). The lack of infrastructure constrains marketing of farm products and rural income generation.

In summary, the rural sector has been defined as the informal sector of the country's public administration and political system. The lack of functional, legally-constituted, and autonomous local government aggravates the constraints already imposed because of its small size and limited capacity to generate resources.

2. Private Enterprise and Organization

a. Agroindustrial Enterprises

Generally speaking, Bolivian industrial establishments can be divided into two categories:

- Small, informal workshops that produce articles of lower cost and quality. These generally do not pay taxes, invest little, do not have access to formal credit, and are poorly placed to compete with imported goods.

- Medium and large plants, often state-owned, typically over-sized, and sometimes technologically obsolete. Having been designed for a protected internal market, in many cases they do not comply with the norms and requirements of international markets.

There are 105 state-owned enterprises, 23 of which are agro-industries. Naturally there are privately-owned agroindustries of medium and even large scale. Notable among these are two of the five sugar refineries, three of the four edible oil plants, and several of the textile plants. However, the private investment in agroindustry is certainly less than the public investment.

Supreme Decree No. 21060 of August 29, 1985, ordained the dissolution of the Corporación Boliviana de Fomento (CBF) and the transfer of all of its industrial assets (except for its shares in the National Electricity Company) to the Departmental Development Corporations (DDCs). This meant the decentralization to the DDCs of all the State-owned agroindustries in Bolivia. In addition, the DDCs own and operate numerous agroindustries established by themselves.

Article 40 of the Regional Development Corporations Law states that the general policy of DDC enterprises will be to seek the participation of, and ultimately the tranfer to, the

community. The official role of the DDCs is is to support and facilitate regional development, not to administer it. To this end, CORDECRUZ has already composed draft guidelines for the transfer of its enterprises to private or mixed ownership (June 9, 1987). The salient features of these guidelines are:

- The community referred to above is understood to consist of the producers of raw materials for an agroindustry, the consumers of its products, its employees, and entrepreneurs who would guarantee the continuity of its production.

- If the community does not make an offer within 30 days of the date on which CORDECRUZ makes official the initiation of transfer of a given agroindustry, national entrepreneurs not belonging to the community would be invited to bid.

- If these fail to bid within 30 days, foreign investors would be allowed to bid.

- The sale could be total or partial, for cash or with a 25 percent down payment and a bank guarantee for the remainder.

Thus, the movement toward privatizing the DDC enterprises has been initiated. At the national level, a commission named COMTRAINDU (Comisión de Transición Industrial) is being formed under the aegis of the Ministry of Planning and Coordination to oversee and facilitate the tranfer process.

The transfer of State-Owned Enterprises (SOE) to private ownership is expected to increase the efficiency of these enterprises, provide better services to producers and consumers, and diminish the drain of the SOEs on the public treasury. However, if the transfer is accomplished by conventional financing techniques (sale for cash or bank credit), it is certain that only individuals or groups already economically established will be able to participate. Few, if any, new owners will be created by the privatization, and capital ownership will become further skewed, with all the social problems that such capital concentration signifies.

b. Private Agricultural Enterprises and Organizations

The rural and farm sector consists of:

- a few large farming and ranching enterprises, usually operated by urban-based professionals;

- medium-size commercial farms, often resembling the traditional family farm of North America or Europe;

- o farmer organizations that have access to inputs, credit, and markets through collective action;
- o individual small farmers, whose primary income is from farming; and
- o rural householders who earn most of their income from off-farm sources, but maintain their rights to the land as a security base.

Most of Bolivia's productive capability in agriculture is generated by small farmers and rural residents, generally referred to as subsistence farmers or the politically-loaded term, campesino. However, the differences between small farmers and rural residents will continue to grow as the population becomes increasingly diversified and urbanized. Also, the number of large and medium-size commercial farmers will increase as the agricultural sector draws more resources--capital and human talent--relative to others, and as export channels are developed. However, many of the large enterprises are locked into rigid cost structures that make them less efficient producers and create a weak base from which to compete in international markets.

The dilemma is how to reach the medium- and small-size farmers with the same kinds of services, developing similar managerial capabilities and offering the market opportunities enjoyed by larger firms. Providing technical assistance, mobilizing capital, distributing inputs, providing local infrastructure, and coordinating marketing channels are all facilitated through farmer organizations. Where cooperatives, associations, chambers of agriculture, and other organizations are formed and operate, the horizons for reaching the small and medium-size farmers increase greatly. The lack of these institutions is a major constraint to the development of the sector.

The primary difficulty faced in creating more Private Agricultural Organizations (PAOs) is obtaining the managerial talent needed to carry out complicated functions, such as financial management, accounting, market intelligence and information activities, personnel management, agroindustrial operations, and such. Funds to hire qualified managers are seldom available at the outset when an organization is just formed. Managers also must have credibility with local leaders to expand the activities and membership of the institution effectively .

3. Institutional Constraints of MACA

The problem areas, or constraints, have been broken down into the following categories: organizational, human

resources, financial resources, and uncontrollables. Because these areas often overlap, there is some repetition of constraints. Where it seems appropriate, the description of the constraints also includes a description of some of the measures prescribed by the MICRO in their proposal for a restructured MACA/SPAR.

a. Organizational Constraints

i. Political Realities

The fact that the government has directed MACA to reorganize implies that there are organizational limitations within the SPAR (Agricultural and Rural Public Sector). One of the principal causes of the sector's inability to respond institutionally and technically is related to certain political factors.

Because its emphasis is on peasant/rural justice, the ministry could not avoid becoming politically-oriented. Due to the enormity of the tasks in these areas, the technical agricultural questions lost priority. In addition, with so much emphasis on peasant affairs, the minister has to be a political appointee with vote-getting abilities. This certainly distorts the configuration of a Ministry of Agriculture for increasing agricultural production.

The 1974 Supreme Decree never established a legal parameter defining the organizational structure of MACA, its areas of competence, or the norms and policies under which the agricultural and rural affairs sectors would operate. It displaced the legal matters of peasant affairs from the Ministry to lessen its burden and to "depoliticize" it. Nonetheless, this never took hold. What did happen was formalizing the role of MACA in peasant affairs/rural justice. The Council of Ministers has just approved Article Three of the bill of law for restructuring the MACA/SPAR. This approved Article states: "The responsibility of the National Council of Agrarian Reform is granted to the Ministerio de Asuntos Campesinos y Agropecuarios."

Further, it stipulates that all the functional offices dealing with peasant affairs are "to be joined in a single unit, technically and legally capable of distributing justice and responsible for the registration, distribution, control, return of land holdings under agrarian use...." Clearly, MACA will continue to have responsibilities in these areas, now with clear, established, legal charter.

At the regional levels, MACA appointments are still politically oriented. Personal relationships carry weight. Often, the persons who become directors of regional offices have little credibility with the farm sector and rural community, but

are effective in carrying out the wishes of authorities at the central government level.

The restructuring proposal carries specific recommendations for addressing this problem. Development councils are planned at departmental levels. It is orally agreed that the councils would nominate three candidates for the position of departmental director to be approved by the minister and his advisory council. It is hoped that the approved departmental directors would be chosen by and acceptable to the local people, thus avoiding the resentment caused by having directors directly imposed by La Paz.

ii. Centralism

The public agricultural sector is far too centralized in terms of its over-concentration of personnel at the central administrative level of MACA and over-emphasis on La Paz. The following data illustrate the problem:

- 34 percent of the MACA employees are located in La Paz.
- 15 percent of the SPAR employees are spread throughout the Beni, Pando, and Tarija departments.
- Eight of the 11 MACA institutions have their main offices in La Paz.
- Of the 260 IBTA "técnicos," 66 (25 percent) are located in La Paz.
- Regional offices have no say over their yearly operating budgets; these matters are decided at the central level in La Paz.
- Regional offices have no decision-making authority in ordinary operating/administrative matters. A MACA departmental director cannot release personnel. Those kinds of decisions must be made in MACA-La Paz.
- Taxes are collected and "redistributed" from La Paz.

In the organizational presentation of the restructured MACA/SPAR, there is a provision for creating councils and committees, whose general functions are to provide bottom-up input to the MACA/SPAR. The National Rural Development Council would be the highest-level advisory office in the ministry. Its function would be to coordinate the formulation of sector policy and set sector goals. The two other councils envisioned are:

- The Departmental Agricultural and Rural Development Councils (Consejos Departamentales de Desarrollo Agropecuario y Rural). These councils are to be comprised

of the MACA departmental director, who would serve as "president," representatives of the decentralized institutions, sectoral and multi-sectoral entities involved in agriculture, and legally-founded social and producer organizations. Decisions and recommendations formulated by these councils would be made known to the National Rural Development Council for assessment. (See annex G for details on the configuration of the National Council.)

- The Sectoral Councils for Executive Departmental Coordination (Consejos Sectoriales de Coordinación Ejecutiva Departamental). They would be departamental-level, technical/administrative advisory units, presided over by the MACA Departmental Director. They would be composed of his respective directors, the regional directors of the decentralized institutions, and the advisors of MACA. Their function would be to provide guidance on general sector policies and procedures.

iii. Attitudes

The way that people think is a more difficult constraint to define. Nonetheless, attitudes affect how an institution is run. We have already seen how politics and decision-making procedures can constrain efficient, user-oriented institutions. Certain ways of thinking have led to those kinds of problems.

People tend to feel that the state will or should provide. Viewing the state as a main source of employment and resources is evident, even in the approach to the restructuring of SPAR. For example, CIAT is programmed to lose a certain amount of funding from the CORDECRUZ in 1988. The recommendation has been made to supplement this loss from funds obtained from the National Treasury.

In another recent example, a proposal was submitted for the new Subsecretary of Planning in MACA. The design proposed a staff of 116 persons, of which 11 were to be drivers and 22 designated as administrative support staff. This configuration of 28.4 percent support staff, while falling short of the 50 percent present in the SPAR today, still lacks the thinking necessary for a dynamic restructuring of the MACA/SPAR. In the same proposal, the design suggested a Subsecretary of Planning, which would have a staff of 53 persons in La Paz, or 45.6 percent of the sector planning function.

b. Human Resource Constraints

This is perhaps one of the most apparent constraints facing the MACA/SPAP today. Not only are there too

many employees in the sector, but they are the wrong kinds, in the wrong places, with the wrong types of background for their particular functions. As should be clear, this human resource problem has not developed in isolation. The primary problems are low salaries and appointments by favoritism. Favoritism (also an attitudinal problem) has helped inflate the personnel rosters throughout the sector. While poor salaries have driven away many of the sector employees, they have encouraged the best to leave. Thus, the sector is left with a human resource pool inadequate for supporting the government's new policies.

It is commonly thought that technical and administrative talent is present in Bolivia. No hard figures are available to support this. However, many people state optimistically that the talent present in Bolivia is sufficient in numbers, as well as ability. Competitive salaries are all that is required to obtain their active participation in the agricultural sector.

Top public administration talent is perhaps scarcer overall than technical agricultural talent. An interesting dichotomy exists in many countries where the State is a primary employer, but no public administration careers are offered in the educational institutions of such countries, especially in Latin America.

The planners of the reconstruction of MACA/SPAR are acutely aware of this constraint. A fairly thorough, in-house plan shows encouraging signs that the MACA is serious about readjusting its personnel and salary levels. Some illustrations of figures follow:

- Of the actual 663 MACA employees, approximately 300 would be "riffed" in order to hire 200 new employees. This would create a reduction of 100 employees.

- Of the some 563 employees, there would be a split of 55/45 between the interior and La Paz.

- The regions would have strictly trimmed-down staffs. For example, the departments of La Paz, Santa Cruz, and Cochabamba would each have 36 employees.

- The existing 108 employees in the personnel department would be limited to 42 persons.

These numbers serve to demonstrate that the restructuring plans take into consideration the serious need to reduce and redistribute personnel.

c. Financial Constraints

i. Financial Resources

Operational budgets within MACA/SPAR are insufficient. Of the US$ 72.4 million scheduled for public investment in the agricultural sector in 1987, central MACA and the decentralized institutions account for US$30.6 million. Of this, nearly 60 percent, or US$ 18.3 million, is furnished from external sources (Table III.5).

Table III.5. Public Investment in the Agricultural Sector (1987)

	Local Funds		External Funds		Total	
Institution	Amount	%	Amount	%	Amount	%
Central Government						
MACA	2,618	7.7	1,819	4.7	4,438	6.1
Decentralized Institutions	9,670	28.4	16,466	43.0	26,136	36.1
Regional Development Corporations	20,204	59.3	17,211	44.8	37,415	51.7
Others	1,557	4.6	2,891	7.5	4,448	6.1
Total:	34,049	100.0	38,387	100.0	72,437	100.0

Source: H. Zeballos, August 1987.

Of the local funds furnished to MACA, nearly 47 percent is for operations, the bulk of that for salaries. In addition to low salaries, the approximate 50/50 split between administrative support personnel and technical/managerial staff results in an inordinately unhealthy amount of salary monies going to an over-inflated part of the administrative staff. In total, the amount left for travel, office supplies, and other expenses is so limited that the central MACA becomes practically inoperative.

Further, the size and use of the budget is not controlled directly by MACA. It is programmed in large measure by the Ministry of Finance, leaving little flexibility to adapt to new conditions. The budget is determined with little or no participation from the farm community, and therefore scarcely corresponds to the needs of the sector. To make matters worse, what money is budgeted to MACA is disbursed too little, too late, or not at all by the National Treasury.

ii. Salary Levels

The lack of adequate salaries in the MACA/SPAR is perhaps the most mentioned constraint since so many other problems arise from it. Low salaries attract high-quality professionals. They discourage career development. Those who have reasonably good chances of being employed elsewhere are the first ones to leave. Poor salaries have been the single most important factor in decapitalizing the public agricultural sector's human resources.

The reconstruction project has forseen the salary issue. As mentioned above, the basic approach would be to reduce personnel and increase average salary levels for those remaining. If the reduction were carried out as conceived in its incipient stages, the possible average salaries would be: directors-US$ 280; technical levels-US$ 200; minimum level-US$ 50. This would be a great improvement over present levels.

d. Management Information Systems

MACA is underdeveloped in manual and mechanized data systems. Personnel records are often incomplete and inaccurate. There are no computerized personnel records. The financial balances are done manually; the most recent available figures are at least two to three years old. There is no information gathering system within the administration that can assist in management decision-making.

This area will constrain the restructuring of the MACA/SPAR significantly. MACA does not have a quick, firm grasp on who and where its employees are, their salaries, their backgrounds, positions held, etc. Lack of ready access to this information will forestall readjustment of the human resources in SPAR. In general, of course, lack of such systems constrains any administrative, institutional system.

In the plan for a restructured MACA/SPAR, there will be a new Subsecretariat of Planning. The importance of integrated information systems in this area speaks for itself. The thrust on building regional capabilities will require a support program to ensure that the regions become computer literate.

e. Uncontrollable Constraints

In every assessment of problems and constraints, one is faced with priority problems caused by conditions outside one's sphere of influence. Such factors within the MACA/SPAR are termed uncontrollables.

The budgeting process in MACA/SPAR transcends MACA authority at this time. An entire inter-institutional set of rules and

procedures dictate how budgets and expenses are operated. Even though the insolvency of the National Treasury and the causes for slow processing of expenditures are identifiable problems, their solution cannot be directly influenced by programs for institutional improvement within MACA/SPAR. Only by creating workable, bottom-up systems for problem analysis, problem solution, budgeting, planning and program execution, which are supported by the central institution, can one influence the way budgets flow from the top.

Another uncontrollable factor is the Bolivian public sector, which is centralist and verticalist. This is a reality within which our programs will have to work. Fortunately, there are subtleties that can be introduced into institutional development programs to help deal with this problem or, at least, buffer our programs so they are less affected by it.

F. Constraints to Effective Planning and Policy Analysis

1. Difficulties of Achieving a General Policy Framework

The purpose of this section is to analyse the possibilities for achieving a positive, overall policy framework for the agricultural and rural sectors. The discussion focuses not only on decisions and policy mandates of the national government, but also on the positions of some of the major interest groups.

a. Goals of Commercial and Subsistence Sectors

One of the difficulties facing agricultural policy and decision-making is the different concerns of the commercial agricultural sector, the smaller-farmer sector, and rural residents who are marginally involved in agriculture. An oversimplification would say the first group is concerned with credit, production inputs, and marketing systems. The second is more concerned with land tenure, market access, improved production systems, and improved rural services. The third is concerned with access to off-farm productive activities and rural services. There is considerable overlap, even in this simplified description. However, there are cases where the interests do not coincide, making it difficult to reach agreement in crucial areas.

A dilemma facing policymakers in Bolivia is that the emphasis needs to shift to increasing agricultural output in the short-term. However, these measures generally have greater impact in the commercial farming community. Credit, technical assistance, and modern inputs usually reach the larger farmers before they are extended to smaller ones. Rural services benefit a large portion of the population, but do not always generate the production and income needed to sustain themselves.

Two areas of overlapping interests among the groups mentioned are rural roads and marketing. Rural roads generate employment in their construction and maintenance, increase access to markets for all farmers, increase access to off-farm sources of employment, and decrease marketing logistics costs to the benefit of consumers. Improved marketing systems stabilize prices, improve market access through competition, differentiate prices by quality of products, and lower transactions costs for buyers and sellers.

Another closely related area where the interests of various groups coincide is in accomodating the migration of rural colonists from the crowded valley and highland regions of the country into the tropical lowlands. The principal constraint to opening new lands for colonization is physical access, which calls for the continued expansion of the road system.

The commercial- and small-farm sectors have much in common in terms of interests and needs. However, the systems of production, marketing, and organization applicable to each group will vary. The rural resident population, which is only peripherally involved in agriculture, will become increasingly oriented to off-farm employment and productive activities. The interests of this group are not agricultural production, but rural social services.

b. Participation in Planning and Decision Making

Most of the institutions that serve the agricultural sector have been created by the central government to carry out the wishes and policies of the executive branch. Funding depends on the National Treasury. Rural people pay few direct taxes, and have had little to say about the magnitude or the nature of the services provided. Rational and beneficial opportunities to support agricultural production and marketing systems are continually identified in rural areas, but are not acted on.

Participation from the rural and agricultural sector has two weaknesses at the national level. First, the farm community is not organized in a uniform, formal manner across national territory. There is no official form of representation and delegation of authority with defined limits. Second, participation implies considerable travel costs and investment of time. This has been a severe constraint to organizing producer associations and chambers at the national level.

In each region, however, the representation of the farm community has been accommodated in a few committees and boards where the public and private sectors cooperate. The types of organizations that represent farmers vary in each region--

cooperatives, associations, chambers, community groups, sindicatos, colonist groups, and others. As farmers become more organized, these varied forms of representation are becoming more meaningful and positive. This is, however, a gradual process, which is still in its early stages of development.

The importance of developing ways for farmers to participate in planning and decision-making cannot be overemphasized. Public and private resources will not be used to the best advantage until the population affected becomes responsible for co-managing agricultural programs and services.

2. Weaknesses in Policy Analysis Capabilities

Constraints to effective planning and policy analysis are, if not legion, at least many and pervasive. At the central sectoral level, for example, MACA's ability to conduct planning and policy analysis is beset by the same constraints that affect the Ministry as a whole: instability, political overtones, isolation from both ministries and farmer concerns, low salaries, employees with inadequate educational background, meager logistical support, and such. Policy analysis and planning require experienced staff who cannot only evaluate the potential impacts of different policy alternatives on the macro economy, but who also can help leaders in the farm and rural sectors identify common goals and define the means to take action. To be effective, planners must have credibility with both the national government and farm community.

In Bolivia, the concept of planning does not have the same breadth of meaning as it does in other countries. To a large extent, planning in Bolivia is an outgrowth of approaches promoted since the 1950s by the Economic Commission for Latin America of the United Nations. In practice, applications of this school of thought tend, first, to be rather formal. Second, they confine themselves primarily to programs and projects. Broader questions of strategy and the applicability of policy instruments other than programs and projects tend to receive relatively short shrift. As a practical matter, the major role of agricultural sector planning becomes one of "programming" the sector. It is not that planners view analysis of the relative merits of broad policy options as antithetical to what they do; it is simply that such responsibilities are not viewed as falling within their purview. Indeed, the recent proposal for reorganizing the public agricultural and rural sector is interesting. It proposes to create a new planning secretariat with responsibility predominantly for programs and projects; second, it makes no explicit mention whatsoever of the function of policy analysis.

Perhaps more fundamental, though, is a series of perceptions and attitudes that have their roots in years, indeed decades, of past experience and thus will not be all that

amenable to change. Not only are inherited perceptions and attitudes obstacles to effective policy analysis, they also are inimical to the style of operation called for in MACA today. Traditionally, programming of the agricultural sector has been a top-down, La Paz-based exercise. With the government's professed shift to heavier reliance on free-market signals and private-sector initiative, this mindset must change. Moreover, a client orientation must be developed. The clientele in question, Bolivian farmers, must be furnished opportunities to have their concerns heard, to have a say in setting funding priorities, and to contribute as partners in the overall process of agricultural policy formulation. To a certain extent, MACA is well aware of the implications of its changing role and now describes it as "guidance," "orientation," and "collaboration." When faced with specific policy problems, however, solutions proposed by ministry officials are still largely interventionist.

A further constraint to effective agricultural sector planning and policy analysis is the absence of information on the sector. Basic sectoral statistics on areas planted and harvested, production, and prices are not only shaky, but generally are compiled too late to inform policy decisions. The source of most sector information is at the regional level, in farmer associations, and DDCs. Therefore, the planners and analysts at this level tend to lead the design of and proposals for new policy initiatives. Here, too, a client orientation must be developed to deliver more reliable and timely information, not only to public sector decision makers, but also to farmers and the public at large.

Interestingly, the major constraint to effective planning at the regional level has been found in relationships between DDCs and the national government. As a rule, there is an inverse relation between the degree of a DDC's dependence on La Paz for technical approval or funding and the ease with which a project passes from design to execution. Although decentralized planning of agricultural projects has not been trouble-free, it clearly has been more dynamic than national sectoral planning. The one lingering problem is lack of a clear definition of DDC coordination of sectoral projects. In many departments, this is a touchy issue and bears heavily on the likelihood of possible future support to MACA in this area.

Efforts to strengthen national policy and planning within MACA have not led to positive action because these have been largely divorced from the farm community. For instance, few surveys or studies have been carried out through mutual cooperation between MACA and farmer organizations. The most useful role for MACA would be to assist network development among the regions, supporting their efforts to collect information and to participate with the corporations and farmer organizations in analyzing the data. MACA could help coordinate the regions to

propose unified policy initiatives and decide how to implement them. To do this, however, MACA would have to develop an attitude of service and support to the farm community, rather than act as an official agency that carries out independently defined policies.

In summary, policy and planning constraints are not insurmountable in the long-run. However, a considerable effort over several years will be required to achieve a more workable framework in which:

- the farm community has stronger, less fragmented institutions, with a system for delegating authority and representing itself at the national level, and
- the public sector becomes more operative at the regional level with a support/service orientation, gaining credibility and increasing technical capacity in the process.

With the market oriented, laissez-faire philosophy adopted by the current government, the possibilities for concrete action in the short- or medium-term are limited.

G. Prioritization of Constraints to be Addressed in the Agricultural Sector Strategy

Based on the above analysis of constraints and opportunities, it is apparent that efforts to develop Bolivia's agricultural sector should focus on gaining access to export markets and also on improving efficiency in domestic marketing. Most of what is needed to promote non-traditional exports focuses on developing market channels; therefore, many constraints to export promotion overlap with those to domestic marketing. Special emphasis is needed in the areas of institutional development, in both the public and private sectors, and rural infrastructure, mostly related to transportation.

Constraints that limit farm productivity are next in importance, partly because they also diminish Bolivia's ability compete in international markets. Naturally, several important institutional constraints, especially related to technology transfer and credit, overlap between marketing and production. The final category is use and conservation of natural resources, primarily grasslands and forests. Specific constraints will be prioritized below, following roughly along the lines of the general categories mentioned above.

Three fundamental elements need to be addressed in relation to export and domestic marketing. In order of priority they are:

- Market information and intelligence. Bolivia needs a rapid system of reporting prices and volumes in internal wholesale markets for the benefit of all participants in the marketing chain. Improved understanding of external markets is needed to answer the following questions: where are the markets; who are the buyers; what form, time and place are products best delivered; what contractual arrangements are used for sale; who arranges for transport; who takes the risk; what recourse does the seller have when things go wrong?

- Infrastructure for export. Basic road and rail systems are grossly inadequate, creating an environment of diminished comparative advantage for most products. Specialized storage and transport facilities are nearly non-existent. Cost-reducing methods of handling commodities need to be introduced. Agroindustrial capacity is particularly lacking for meat packing, using beef and pork by-products, manufacturing goods from leather, and manufacturing lumber products.

- Coordination of internal market channels. Production, collection, transport, storage, and distribution functions should be linked into an organized chain. This can be achieved through wholesale and retail associations and other kinds of marketing organizations that connect directly to the producer level. Improvements in the system should be made to reduce handling costs and losses, while improving the quality of products. Improvements in infrastructure, such as wholesale markets, should be made only as needed. Infrastructure should not preceed development of institutions and improvements in the distribution channels.

After marketing, efforts should focus on specific aspects needed to strengthen institutions. Human resource development and policy analysis are also included in this group of priorities.

- Private agricultural organizations. Small farmers can gain access to markets, new technology, services, inputs, and credit to increase efficiency and remain competitive only if they can work together through rural organizations. Most programs that try to deal directly with small farmers are frustrated by the slow rates of adoption and high costs relative to the impact. Continued support, such as that provided through the OAP project, is needed. In addition, support should be provided to form new organizations.

- Local Public Institutions in Rural Areas. Bolivia lacks means by which the rural population can provide "public goods," even when the population agrees on the need and the financial potential. When central government agencies are stretched too thinly to meet the needs, the only other institutions with taxing authority--the DDCs--fill the gap. When these are stretched beyond their capacity to meet the needs of each locality, no other option is available. Additional options at the local level, such as special service districts, need to be formed.

- Privatization. The intentions of the GOB to encourage privatization of agroindustries have remained latent because producer associations and cooperatives lack funds to buy out agroindustries directly. Alternatives, such as employee and producer buy-outs through trust funds (ESOPs), need to be introduced.

- Policy Analysis. Increased capability at the central public level of MACA is needed. Emphasis should be on a small cadre of highly skilled experts to attain a degree of influence at the inter-ministerial and international levels. Also, the private sector should develop the capability to undertake policy analysis and provide more concrete, positive solutions to national problems. Current lobbying efforts are weakened by the lack of clear analysis and objectives.

- Human resource development. Like institutional development, human resources cut across all other aspects of the sector. Particular emphasis should be placed on developing human capabilities related to technology transfer and agricultural credit programs. Primary emphasis needs to be on practical training, followed by achieving higher academic levels.

In next order of importance is rural infrastructure. This includes farm-to-market roads, schools, and irrigation and drainage. The construction and maintenance of this kind of infrastructure is vital to the long-term efficiency of the agricultural community. A constant effort is needed to identify the resources to make improvements. Labor-intensive methods of construction and maintenance should be emphasized in areas where underemployment is high. However, before major strides can be made on a massive scale, institutional constraints must be removed and local initiative, leadership, and economic resourses used. Development of access roads in the lowlands, where pressures of migration are increasing, should be given priority. This would help the disadvantaged population improve their long-term situation.

The next set of priorities relate to increasing productivity, efficiency and farm incomes, especially for small- and medium-sized farmers:

- Technology transfer. Use of new technology should be promoted through transfer agents based in the private sector. Traditional public extension services have had little impact on farming practices. New approaches should be developed in which the farmer pays part or all of the cost, individually or through farm organizations. This implies linking the technology transfer system with a system to provide credit services.

- Input supply/use. Primary emphasis should be placed on seed production, including improvement of seed qualtiy. Seed has been particularly important in increasing the competitive position of Bolivia in international markets for crops such as soybean for export and wheat for import displacement. Secondly, fertilizer supply needs attention.

- On-farm resource management. Steps need to be taken to improve the farmer's knowledge of how to better use his current resources, with special regard for soil and water management, crop rotation, and range management. These measures require few materials and focus on the farmers' capabilities and production systems, including crops, forages, and livestock.

- Research or generation of technology. Much of the new technology applied in Bolivia is "imported" directly by farmers, through development programs and adapted over time to local conditions. The process is slow. However, the problems concern application, adaptation, and transfer, rather than technology generation per se. Hence, research has lower priority. Efforts at improvement should emphasize a client-driven system, which does not isolate itself from the farmer, and which must analyse and publish the results of its experiments to prosper. Maximum participation of farmers through associations and chambers is needed to drive the system. This can be achieved only if the reserch institutions are decentralized to the departmental level.

- Agricultural credit. The farm sector can be thought of as being made up of large commercial farmers; followed by medium-sized commercial farmers; then farm organizations, which include small farmers; and, finally, individual small farmers, including those who earn a part of their living off the farm. The private banking system reaches only a part of the first group. The BAB reaches some of the farm organizations and some individual small farmers.

There is a large remaining gap to cover medium-sized commercial farms and farm organizations. Establishment of a private development bank by the agricultural community should be considered a high priority. Most importantly, it should heavily emphasize technical assistance.

Finally, efforts need to be initiated in environmental protection and natural resource management, beginning with forest resources. Forests cover more than half the country, and lumber products are the largest non-traditional export. However, alternatives to regenerate the more valuable species in the northern tropical forests, or to better use existing resources, are practically unknown. Expertise must be "imported" to design initial, immediate actions in conjunction with the private and public sectors. More importantly, local human capabilities should be developed through the universities in the lowland areas.

CHAPTER IV

AGRICULTURAL SECTOR ASSISTANCE STRATEGY

This chapter presents the USAID sector assistance strategy consisting of four sections. First, the objectives of both the Bolivian Government and the U.S. Government are stated. Resources available through the USAID Mission to Bolivia and the current priorities for their use are described. A brief glimpse of the portfolios of the USAID Mission, the PL-480 program and other donors is included. For more detail, see annexes A and B.

Section B traces a number of agricultural development implications of the objectives stated above. In so doing, an overall conceptual approach for development of the sector assistance strategy is offered. The the points of entry for USAID support of the sector are identified. Based on this analysis, three guiding principles for making the strategy operational are layed out in succinct form. Section C follows with the specific interventions appropriate for USAID support.

Finally, section D goes a step further and presents areas where policy dialogue is appropriate between the USAID Mission and Bolivian institutions in the public and private sectors. Areas where policy changes or refinements are needed fall mostly into the areas of export promotion, import displacement, institutional development, and the financial system.

A. Summary of Rationale and Strategy of U.S. Assistance

1. Objectives of the GOB

Since assuming power democratically in August 1985, the government of President Victor Paz Estenssoro has moved aggressively to restore public confidence and, thus, to bring about economic stabilization and recovery. In contrast to previous governments, it has chosen to rely heavily on the power of market forces and looks to the restoration of dynamism in Bolivia's private sector. Moreover, with the collapse of international tin markets and the dramatic decline in hydrocarbon prices, it is banking on a burst in the production of new export products as the engine of the country's future growth.

The GOB's economic goals, as cited in the Structural Adjustment Program for 1987-1989, include:

(1) attaining a 3.5 percent average annual growth in the GDP;

(2) maintaining an average annual growth in prices below 10 percent; and

(3) achieving a global equilibrium in the balance of payments, with the current account's declining deficit to be met by concessional resources.

2. Objectives of the USG and the USAID Program

The U.S. Government's goals in Bolivia are to support democratic and constitutional government, to help the country resolve its economic crisis and promote self-sustaining economic growth, and, thirdly, to reduce the production and flow of cocaine to the United States. The USAID program seeks to support attainment of the USG objectives, in part by helping the GOB attain its economic objectives.

> "The USAID development strategy is based on the interrelationship of these goals. The maintenance of democracy in Bolivia is key to the establishment of the kind of environment required for long-term socioeconomic development and elimination of drug traffic. Concomitantly, it is unlikely that democracy can survive in a country without a renewal of economic growth based on an effective stabilization program. Without political stability it would be impossible to implement either an effective narcotics control effort or the austerity measures that a coherent and successful economic recovery program requires. Within this context, the USAID program places particular emphasis on the second (USG) goal, that of helping the country resolve its economic crisis and promoting self-sustaining economic growth with equity." (USAID/Bolivia. FY 1988/1989 Action Plan.)

For its part, USAID/Bolivia has warmly endorsed the policy changes instituted by the Paz government and has mobilized the resources at its disposal in support of the government's new policy direction. As indicated in the mission's most recent Action Plan, its support in agriculture is aimed at achieving two broad objectives: first, rapid and sustained economic growth; and, second, a wider sharing of the benefits of growth through increased small farmer production, expanded employment opportunities, and higher real incomes. The immediate balance of payments support from USAID's total program (Table IV.1) supports the efforts of the Paz government to shift from a highly subsidized to a free market economy. Long-term objectives are to promote economic stabilization through more rational macroeconomic policies, to allow the private sector to play a larger and more dynamic role in the economy, and to complement coca erradication and control activities with suitable development programs and narcotic education activities.

3. USAID/Bolivia Resources

USAID/Bolivia manages a set of resources consisting of Development Assistance (DA), Economic Support Funds (ESF), and PL-480 food assistance. Table IV.1 summarizes the current and planned availability of these three types of resources, omitting PL-480 Title II and Section 416. Total U.S. assistance is programmed to rise by 39 percent from the FY-86 level of US$ 52.2 million to $72.6 million in FY-88. Most of this increase is in ESF, with DA registering a small decline and PL-480 remaining steady after a one-time rise above the norm in FY-87.

Table IV.1. USAID/Bolivia's Long-Range Plan
(US$millions)

	FY-86 actual	FY-87 est	FY-88 est	FY-89 AAPL	FY-90 plan	FY-91 plan
DA	25.0	20.5	22.6	22.6	22.6	22.6
ARDN	(13.7)	(12.2)	(11.5)	(12.3)	(11.1)	(11.1)
ESF	7.2	15.0	30.0	30.0	30.0	30.0
PL480/III	20.0	25.0	20.0	20.0	20.0	20.0
Total	52.2	60.5	72.6	72.6	72.6	72.6

Source: USAID. Bolivia ABS: FY-89. June 1987.

The ARDN (Agriculture, Rural Development, and Nutrition) account provides the primary source of US dollar financing of the agricultural program. ESF and PL-480 Title III, together projected at US$ 50 million/year, play a major role in helping Bolivia meet its balance of payments deficit and in the policy dialogue on macroeconomic measures essential for stabilization and growth. Both of these programs generate local currencies that are used as counterpart for DA-funded USAID projects. Currency generated by PL-480 is also a major source of local funding for other agricultural development activities.

4. ARDN Program

a. Current Portfolio

The Agriculture, Rural Development and Nutrition account currently funds nine projects, including PD&S. Four of these (0466/Rural Access Roads II; 0472/Agribusiness and Artisanry; 0511/Departmental Development Corporations; and 0591/Emergency Agricultural Credit) are scheduled to terminate near the end of CY 1987 with no further funding planned. Two new activities (0577/Industrial Transition and 0585/Agricultural

Marketing) will be funded from this account in FY-87 and FY-88. When these changes are complete (Table IV.2), the ARDN LOP portfolio will amount to US$ 52.6 million ($25.1 million grant, and $27.5 million loan), compared with a current LOP portfolio of US$ 122.2 million ($34.6 million grant and $87.5 million loan).

Required funding for these projects through FY-89 is estimated at nearly US$ 12 million per year, part of which is required to cover the FY-87 year-end mortgage of US$ 16.5 million. At that time, these projects will have been funded and the mortgage shall have been fully paid, unless the monies are used to fund additional activities in FY-89. Beyond then, planning levels are projected at US$ 11.1 million per year. This would not be nearly enough to restore the portfolio to levels existing before the demise of projects terminating this year.

Table IV.2. USAID/Bolivia ARDN Program
(US$thousands)

Project No.	Name	G/L	INIT	PACD	TOTAL	FY-87	Obligations In: MORT	FY-88	FY-89
-0-	PD&S	G	74	C		500	0	500	500
0543	Chapare	G	83	88	4400	0	0	0	0
	Reg Dev	L	83	88	12500	0	0	0	0
0573	Mkt Town	G	86	91	3500	3157	343	343	0
	Cap Form	L	86	91	15000	6303	8697	0	8002
0577	Indust Trans	G	87	91	6000	1000	5000	5000	0
0585	Agric Market	G	88	91	7000	0	0	3222	3778
0589	Priv Ag Orgs	G	86	91	4200	1815	2385	2385	0
	Total				52600	12775	16425	11450	12278
	Grant				25100	6472	7728	11450	4276
	Loan				27500	6303	8697	0	8002

Source: USAID. Bolivia ABS: FY-89. June 1987.

b. Current Priorities

The ARDN program is currently in transition. Three programs initiated in the late 1970s are terminating, as is a brief but large emergency program. Part of the ARDN portfolio was transferred to the newly-created Private Sector Office. One project (0577/Industrial Transformation) received initial funding in FY-87, and another (0585/Agricultural Marketing) should begin in FY-88. This agricultural sector assessment is being

undertaken to prepare a long-term development strategy suggesting areas of emphasis and priorities for new projects. Mission management has suggested working within a new annual funding level of US$ 15 million above the current ARDN planning level but within the DA planning level.

In the meantime, the mission has proposed development of a new US$ 25 million project (0586/Agricultural Planning and Institutional Development) that, if authorized in FY-89 as proposed, would require extraordinary financing or would mortgage the indicated ARDN allotment for two years.

c. ARDN Program Emphasis

The following table (Table IV.3) summarizes USAID/Bolivia's ARDO portfolio described in annex A and includes a distribution of project resources among the principal activities typically funded with ARDN resources. It should be noted that this analysis is intended to establish gross trends in

Table IV.3. USAID/Bolivia ARDN Portfolio Analysis

Development Activity	% of USAID/B ARDN Resources	% of LAC ARDN Resources
Improved technologies	3	15
- agricultural research	(2)	(8)
- technology transfer	(1)	(7)
Sector management	8	15
- planning/policies	(6)	(7)
- education/training	(2)	(8)
Access to resources	34	45
- land tenure	(0)	(7)
- farmer organizations	(0)	(2)
- credit	(14)	(26)
- infrastructure	(20)	(10)
Agribusiness	33	13
- agroindustry	(22)	(13)
- input supply	(8)	(0)
- other	(4)	(1)
Natural resources	4	13
- resource management	(0)	(5)
- irrigation	(4)	(8)
Other	17	(0)
TOTALS	100	100

program direction. It is often difficult to divide project resources among joint program objectives, so the subjective judgement of the USAID project officers has been the basis for the classification. The amount of funding budgeted for a category is not necessarily an indication of priority, as some activities cannot absorb more than a limited amount of funding, yet that level of effort may be of the highest priority. Despite these reservations, the analysis is informative. The following is a summary breakdown of the portfolio compared with the ARDN portfolio for the LAC region as a whole. This does not imply that regional averages should be considered a norm, but using them as a basis for comparison does serve to highlight the nature of a mission's program.

5. PL-480 Agricultural Program

"Since 1978 the PL-480 Title I and Title III deliveries of wheat to Bolivia have been an important and crucial aspect of the United States development assistance program. The PL-480 program has been the mission's single most important policy leverage instrument. It has been used successfully to achieve a number of policy objectives that have ranged from macroeconomic policies such as lifting of consumer food subsidies and price controls and rationalization of bank interest rates to reorganization of the Ministry of Agriculture. The conversion of PL-480 wheat imports to local currency has relieved pressure on Bolivia's scarce foreign exchange, helped to maintain food supplies, and provided local currency to fund the Food for Development (FFD) program.

"At present, the PL-480 program, administered by an autonomous Bolivian public sector agency, the Executive Secretariat, receives the equivalent of approximately $20 million annually. Guidance and coordinating activities are provided by

USAID/B. Grants and credits are used to finance in whole or in part numerous and highly diverse development projects, most of them small and widely distributed throughout the country. Many projects, within the guiding context of rural development, originated as a response to urgent needs at the community level. Recently there has been a shift towards larger projects in rural credit, using intermediary credit institutions for operations at the local levels. PL-480 program funds are also used to support institutions essential to economic reform and to private enterprise development." (Tropical Research and Development, Inc., 1987)

At the time of this evaluation, the PL-480 Executive Secretariat was managing 263 projects performing various activities under separate funding lines. The following lists

enumerate the credit lines under Title III and Title I, providing an indication of the comprehensive nature of the program:

Title III	Title I
1. Agroindustrial Credit to Small- and Medium-Sized Enterprises	1. Productive Credit Trust Funds
2. Strengthening of Producers Associations	2. Credit for Housing and Family-Related Needs
3. Small Farmer Agricultural and Livestock Production and Credit	3. Chapare Regional Development Activities
4. Wheat Production and Marketing	4. Economic Policy Analysis Unit Support
5. Support to Research and Extension Systems	5. Land Use Capability Survey
6. Private Health and Nutritional Projects	6. Program Administration
7. Pre-Investment Studies	7. Oral Rehydration and Child Growth Monitoring
8. Training	8. Rural Infrastructure
9. Policy Analysis Unit	9. PVO Natural Resource Management and Protection
10. Productive Infrastructure	10. Integrated Pest Management Research
11. Control of Communicable Diseases	11. Support for Private Educational Institutions
12. Rural Development Projects	12. Regional Development
13. Renewable Natural Resource	
14. Program Administration	

6. Other Donor Activities

Nine multilateral and six bilateral donors (in addition to the U.S.) provide assistance to Bolivian agriculture (Table IV.4 and annex B). In addition, the Organization of American States (OAS) recently completed its last Bolivian agricultural project and financing for IFAD's two projects have been suspended. The multilateral donors administer fifty projects, with a total portfolio value of US$ 177.5 million, of which US$ 110.5 million are undisbursed. Not included in this reckoning is the US$ 145 million second tranche of the Interamerican

Development Bank's (IDB) agricultural credit program that was signed in March 1987. The bilateral donors administer 34 other projects, with a total portfolio value of US$ 94.4 millions, of which US$ 38.6 million are undisbursed. The total amount of undisbursed funds of the other donors is US$ 149.1 million. In terms of number of projects, the UN/FAO (23 projects) and the Government of Switzerland (18 projects) are the most active. The European Economic Community (EEC) has the largest pipeline, followed closely by the IDB, the UN/FAO, and Switzerland.

The three UN agencies, the IICA, and the bilateral donors are considered to be primarily technical assistance agencies, although the bilateral donors back up their technical assistance with considerable funding and/or equipment. The World Bank, the IDB, and the EEC are primarily financial donors, and the World Food Program supplies the equivalent of cash in donated food.

Table IV.4. Summary of Other Donor Assistance

	Projects Number	Authorized US$000	Remaining US$000
Multilateral			
EEC	4	64420	24512
IDB	1	24513	24513
IICA	2	198	198
JUNAC	7	2146	1170
UNDP	9	13068	11891
UN/FAO	23	26171	23233
UNFADAC	1	12750	2750
World Bank	1	18000	10000
World Food Program	2	16275	12206
Subtotal	50	177541	110473
Bilateral			
Canada	3	851	185
France	1	348	23
Germany	3	20044	10120
Great Britain	4	4383	983
Japan	5	32037	9800
Swiss	18	36781	17538
Subtotal	34	94444	38649
TOTAL	84	271985	149122

7. Donor Coordination

USAID is a major donor to Bolivian development, with an annual combined program (DA, ESF, PL480) projection of more than $70 million. Of this, about $11 million in DA funds directly support agricultural activities. ESF and PL-480 not only provide general balance of payments support, but enable the GOB to develop a policy framework conducive to development of the agricultural sector. A large allotment of PL-480-generated local currency provides counterpart support for many rural and agricultural activities. However, other donors fund an authorized agricultural portfolio of $450 million in 134 projects, excluding the recently authorized IDB agricultural credit tranche of $177 million.

A mechanism for exchange of information among donors and with the GOB is obviously desirable, both from programmatic and policy perspectives. The GOB does not exercise this function, although MACA/MICRO has initiated a donor program data base from which the above data on agricultural programs was extracted. Coordination among donors is sporadic, although several have expressed concern and a willingness to cooperate. As a major donor, it behooves USAID to assume a leading role in fostering information sharing.

In our experience, donor coordination (meaning the sharing and discussion of information on the levels, nature, progress and problems of external assistance and related national programs and policies) is best performed by the host country at a sectoral level. The host country needs to have full information on sectoral donor programs and concerns, should have the most reliable information on national resources and policy intentions, and might provide greater continuity than the donor community. Through MACA/MICRO, the GOB has started collecting basic current information, but probably lacks the resources to fully develop and maintain a donor coordination capability. External funding of this effort, perhaps through a pro rata assessment on donor contributions, would be a most worthwhile service, given the importance and utility to donors of full exchange of this information.

B. Conceptual Approach for the Development of USAID/Bolivia's Agricultural Sector Assistance Strategy

1. Implications of an Export-Led Development Strategy

The combination of the GOB's strategy of export-led growth and USAID's objective of growth-with-equity has a number of ramifications for the design of a development assistance strategy. Export-led growth is expected to increase the incomes of producers and of laborers involved in export production. In Bolivia, exporters and food producers often consist of different

groups of participants in the economic system, a fact that leads to marked regional and equity implications. The hub of emerging non-traditional export production is in the lowlands, especially in Santa Cruz. In contrast, a higher proportion of the agricultural effort in the valley and highland regions goes to food production for domestic consumption. As a consequence, the lion's share of the benefits of export-led growth in Bolivia can be expected, in the first instance, to concentrate in the lowlands. Further, with lumber, soybean, and beef heading the list of export products, the immediate beneficiaries are likely to be large- and medium-sized enterprises.

Several counterbalancing factors have implications for USAID's role in these developmental processes. First, potential new exports will come from the valley and highland regions, in addition to current exports, such as coffee and alpaca. Second, recent years have witnessed a surge in the migration of valley and highland residents to the lowlands. As growth in agricultural exports accelerates, this trend is expected to gain momentum. To its credit, the department of Santa Cruz has expressed a willingness to accomodate the flow of migrants and effectively spread the benefits of growth more broadly among the country's current population. Third, the demand for local consumer products, including food products, is likely to increase. More than half of Bolivia's population is now classified as urban, and the proportion of urban to rural dwellers is growing. This means there are more urban consumers relative to the number of rural people producing agricultural commodities. Furthermore, Bolivia is in the throes of recovering from prolonged recession in which GDP per capita is estimated to have fallen by 26 percent over the past five years. Incomes of consumers can be expected to increase and, in the short run, a disproportionately large share of those earnings will be spent on food. Finally, Bolivia's selection of an export-led growth strategy does not necessarily condemn it to an unadulterated trickle-down approach to development. Even in an economy with a free market orientation, the distribution of growth and its benefits is subject to policy intervention.

2. General Points of Entry for a Development Strategy

In general, USAID's future support to agriculture can be expected to affect 1) Bolivia's supply of agricultural export products, 2) its supply of domestic food products, and 3) its demand for domestic food products. (In the case of the bulk of Bolivia's current and potential exports, the laws of international supply and demand hold true, i.e., Bolivia cannot control the external demand for its export products.) The relative merits of these different points of entry follow:

a. Supply of Agricultural Export Products

With the recent steep drop of international prices for tin and hydrocarbon products, aggressive production of agricultural exports is no longer a luxury but rather, is a necessity, and is recognized as such by the Paz administration. USAID's assistance to increase agricultural production for export would fit precisely with the GOB's ennunciated policy.

Given its overriding concern to restore growth, the Bolivian government will naturally be inclined to tilt its scarce investment resources toward the commodities with the greatest potential for short-run gains. This implies an emphasis on several commodities in the lowlands that are produced, processed, and exported by larger commercial enterprises. For its part, USAID should be prepared to support this thrust. However, to the extent that its support could have a direct impact on small- and medium-sized producers and on laborers, USAID would come closer to accomplishing its objective of equitable economic growth. Therefore, opportunities to promote export products produced by small- and medium-sized firms should receive attention. Products in which Bolivia has a comparative advantage (such as coffee, flowers, and alpaca) should continue to receive support in the valleys and highlands, even though the short-term growth rate is lower than that of soybean, lumber, and beef. Another way to attain the goal of equitable growth is to facilitate the entry of small- and medium-sized firms into commercial export activities. Migration of the highland populations to the tropical areas where agricultural expansion is taking place is a necessary, although insufficient, step in this direction.

To put the promise of agricultural export growth into perspective, non-traditional exports approximated US$ 110 million in 1986, and are expected to be about the same in 1987. From 1987 to 1992, the expectation is that export production might double, reaching at least $220 million, which translates into an annual export growth rate of about 15 percent.

b. Supply of Domestic Food Products

Some growth is expected in internal demand for domestic food products, and there is latitude for expansion in the production of import substitutes. To the extent that Bolivia can competitively produce such products, an important contribution can be made to reducing the country's foreign exchange requirements.

Interventions to increase food production are likely to have a positive impact on the income of what today are relatively disadvantaged groups: small farmers and urban consumers. USAID's support would appear to be clearly in order. On the other hand, the scope of benefits accruing to a single farm

household may be rather limited. In many valley areas, for example, the size and quality of a household's resource base limits the degree to which it can benefit from agricultural interventions. Indeed, a key factor in differentiating relatively prosperous from relatively disadvantaged farm households is not farm productivity but, rather, the extent to which non-farm income makes up a sizeable proportion of total household income. This, in turn is closely associated with a household's access to market towns. This suggests that improvements in the well-being of the rural population are not solely dependent on agricultural production, but also on off-farm income earning opportunities and on the provision of rural services.

c. Demand for Domestic Food Products

In contrast to external demand, internal demand is amenable to various kinds of governmental intervention. Improving market channels is the most important contribution that can be made to help consumers, especially the medium- to low-income groups. The Bolivian consumer is paying high costs for very poor services because of inefficient transportation, poor market logistics, and weak institutions. With an organized approach to private sector collective action, and with the appropriate kinds of governmental support, substantial private investment can be generated. Experience in other Latin American countries has shown that the benefits accrue mostly to consumers. Services are improved and prices are reduced, leading to increased demand. Secondly, employment opportunities often become more meaningful, reducing some of the underemployment that currently exists in the informal sector, especially among women. This is an important area for concentration of USAID resources.

In most societies, income transfers constitute an important element of governmental social policy. Not only do the transfers raise incomes but, as a corollary, they increase demand for food and other products. In Bolivia, USAID's PL-480 program has directed resources to various target groups, sometimes in the form of direct transfers, sometimes in the form of payments, in cash or in kind, as part of employment generation programs. In instances in which such employment leads to the creation or maintenance of productive assets for agriculture--feeder roads and irrigation systems, for example--the impact of the intervention is twofold: it (a) raises demand for food and other goods and services, and (b) enhances agricultural productivity. Because of its two-edged effect, programs of capital that generate employment are seen as a high priority.

It is projected that agricultural production for domestic consumption will grow from approximately US$ 700 million in 1987 to US$ 830 million in 1992, or at slightly less than 3.5 percent per year. Even with the severe constraints, the absolute growth

projected of US$ 130 million is greater than the US$ 110 million projected increase in agricultural exports. The rate of growth in production for domestic consumption, however, is much lower than that seen for exports.

A growth rate of 3.5 percent on production for domestic consumption, together with a growth rate of 15 percent on production for export, implies a growth rate of approximately 5.5 percent for agriculture as a whole. At first glance this may appear to be unreasonably optimistic for an economy that is just stabilizing after a period of severe downward spiraling. It is important to note, however, that much of the presumed stagnation in Bolivian agriculture in the early 1980s has been a phenomenon of price rather than one of volume. If one looks at changes in tonnage of basic food products from 1980 through 1986, one finds growth rates in the order of four to five percent per year. With macroeconomic policies now restoring more realistic relative prices internally and international prices presumably stabilizing, it is now reasonable to expect volume and value growth rates to move in tandem.

3. Guiding Principles of the Proposed Strategy

a. Production of Commodities Versus Increasing Productivity and Incomes

When refering to the bulk of food products, such as potato, broad beans, corn, rice, oca, and vegetables, the emphasis is not so much on increasing production than it is on increasing productivity. The intent is not to rapidly expand output but, rather, to increase the efficiency of production, increase producer income, and reduce consumer prices. In many cases, the most important strides that can be made in this regard are not through improvements in farm production, but instead through improvements in marketing channels. However, an integrated farm practice approach for the highlands and valleys can increase productivity in general.

This is to be contrasted to the approach taken for promotion of non-traditional exports. (Non-traditional exports in Bolivia are synonomous with agricultural exports, including forest products.) Here, the emphasis is on expanding output and improving the infrastructure for each particular commodity, be it lumber, beef, soybeans, coffee, textiles, and the like. The investment focus is much more narrow, and often the types of enterprises involved, and their needs, are distinct.

b. Division of Responsibilities Between the Public and Private Sectors

The hallmark investment of a free-market oriented government is what economists call a public good, that is, a good

in which individual entrepreneurs will not invest because they have no way to capture for themselves a sufficiently large share of its benefits. Classic examples of public goods include access roads and market information systems. However, in recent decades GOB investments have encroached on areas where the private sector could recapture its investment. Moreover, the Bolivian experience in this period offers ample testimony to the public sector's mismanagement of productive enterprises and of its poor delivery of services to clients.

In light of the professed predisposition of the Paz administration, the time is ripe to realign the division of responsibilities between the private and public sectors in accordance with the comparative advantages of each. This will include several different categories of institutions:

- o Public central--such as ministries and their agencies
- o Public local--such as DDCs
- o Private collective--associations, cooperatives, etc.
- o Private corporate--refering to large firms
- o Private individual--including farmers
- o Mixed autonomous--unique institutions of diverse forms which include public and private representation, such as seed boards

Even these categories are too restrictive to reflect all of the alternatives; for example, foreign donor and NGO projects are sometimes implemented using a combination of the above.

To the extent that the private enterprises can recover costs, the built-in client orientation of activity in the private sector suggests the desirability of its taking on the role of delivering what have often been seen as public services. Since the legal mechanisms are often lacking in Bolivia for either private collective or mixed autonomous organizations, USAID support can be very useful to help initiate activities. Although there may be agreement in principle on movement in this direction, it is bound to encounter resistance at the moment of translating ideas into action. Steadfast support by USAID can therefore be expected to have a high payoff in this area.

The government's decision to place more reliance on market forces and the role of the private sector also has implications where the intent is to <u>leverage private sector involvement in productive activity</u>. This approach is germane to an environment in which the private sector either lacks the confidence or is unsure of the ability of the government to sustain a favorable

investment climate. In such a case, the government often bears costs that the private sector might be willing to assume under more propitious circumstances. Examples of this kind of investment include training of entrepreneurs in project design and management and, conceivably, joint ventures in which public and private parties assume equity positions with the understanding that the public sector share will decline over time. A timely concept enhancing this approach is that of privatization through employee and producer joint ownership of agroindustries.

c. Regional Focus

A further implication of the government's choice of a free market approach is the need to abandon pretensions of programming the activities of the sector from La Paz. The greater the degree of local decision-making, involvement, and participation, the greater the likelihood that the latent and effective demands of farmers for services and inputs will in fact be satisfied. In a free market economy, the central government can set policy directions and priorities and can even furnish what it considers to be suitable incentives for investment in a given productive activity in a region. Ultimately, though, the decision to invest is not made by the central government. Further to the extent that La Paz seeks to maintain control over public investment resources, the less dynamic can its proposed investment push be expected to be.

The need to "deliver the goods" to clients--in the case of agriculture, to farmers--runs like a thread through the analysis of constraints to the the strategy for development of agriculture in Bolivia. For regionalization to be effective, it must be genuine, that is resources--and the liberty to allocate them--must devolve outward. (Alternatively, and preferably, a higher proportion of local tax revenue might never flow inward.) It is an essential change of direction to pursue, and one worthy of high priority USAID support. Again, this is a policy area where endorsement in principle is commonly accompanied by resistance in practice. For this reason, consistency of signals is imperative with respect to the priority that USAID attaches to this element of its sector assistance strategy.

These actions do not imply simply transfering authority or autonomy from the state to public and private organizations at the local and departmental levels without providing support and orientation. The weaknesses in the national systems would probably be passed on to entities which, in some cases, are not prepared to handle increased responsibilities. Considerable effort to support both public and private institutions at the departmental and local levels will be needed to create capable, operational institutional structures.

4. Summary

The key elements of the agricultural development strategy for USAID/Bolivia can be summarized as follows:

> USAID/Bolivia will use the development resources at its disposal to achieve the dual objectives of agricultural growth and equity in the distribution of benefits from growth. It will support the export-led growth strategy chosen by the Bolivian government, paying special attention to opportunities for participation by small and medium sized enterprises in the production, processing and export of non-traditional export commodities. To a lesser exent, it will promote the production of food import substitutes. In attacking key constraints to the achievement of these objectives, the Mission will pay particular heed in two areas. First, it will be attuned to and lend catalytic support to opportunities for a more appropriate alignment of the developmental roles of Bolivia's public and private sectors. Second, it will empahsize participation and the delivery of support services directly to program beneficiaries at the regional level, with reduced reliance on the central government as an intermediary.

C. Specific Interventions Implied by the Sector Strategy

The interventions mentioned below are presented approximately in the same order of priority outlined in the previous chapter with reference to constraints to agricultural development in Bolivia. For more detail regarding each of the proposed interventions, refer to the concept papers for future AID projects in the following chapter.

1. Non-traditional Exports

This strategy has identified three constraints to the growth of non-traditional exports: lack of market intelligence; a weak infrastructure; and lack of credit, in order of descending importance. All three relate primarily to export marketing, rather than to production of export commodities. USAID can play a key role in responding to the first of these by supporting organizations assisting local producers and exporters who enter and compete in foreign markets. The existing export-promotion institutions include:

- INPEX (National Institute for Export Promotion);
- CANEB (National Chamber of Bolivian Exporters);
- IBCE (Bolivian Institute for Exterior Commerce - Santa Cruz);

- the departmental-level Chambers of Agriculture; and

- product-specific producer associations, such as ANAPO (National Association of Oilseed Producers) and ASOBOFLOR (Bolivian Association of Floriculturists), which operate at the departmental level.

Two of these institutions, IMPEX and IBCE, are recent creations and require considerable assistance to become consolidated. USAID is currently working on the design of a project for promotion of non-traditional exports, which would emphasize these institutions. Undoubtedly, other organizations will need to be formed for specific purposes.

With regard to the export infrastructure, the most immediate improvements required are the completion of the grain storage and loading structures at Puerto Quijarro on the Bolivia/Brazil border, and the creation of a cargo barge port. These facilities have a paramount strategic importance in giving Bolivia the long-sought-after outlet to the ocean (in this case, to the Atlantic via the Paraguay River). USAID is presently assisting in the establishment of grain-loading facilities in Puerto Quijarro.

Other essential storage and transport facilities for exports are: grain and general-purpose silos in the production areas and at rail loading points; grain railroad wagons; slaughterhouses and meat packing plants; refrigerated storage and meat trucks; and other specialized storage and transport equipment. Capital requirements for some of these facilities are very large. However, with relatively small amounts of initial capital, private investment can be generated for silos and storage facilities. Other donors should cooperate with the government in improving the rail and road systems connecting Bolivia with neighboring countries. USAID should invest in infrastructure to help promote exports of specific commodities, such as meat packing. Meat currently ranks third among non-traditional exports. Meat packing and refrigerated transport facilities aimed at improving sanitation standards for local market will help Bolivia become more competitive over time in international markets as well.

The most important long-term element for promoting Bolivian exports is, without a doubt, the trunk highway running east to west across the country from Chile to Brazil. In general terms, the route would begin in Tambor Quemado on the border with Chile (which connects to Arica); Tambor Quemado to La Paz; then from La Paz to Cochambamba; Cochabamba to Santa Cruz; and Santa Cruz to Corumbá on the Brazilian border, near Puerto Quijarro. It is difficult to believe that Bolivia does not have this central trunk route of the country completely intact. Looking to a future with more bulky commodities to export, and with those

goods coming from various remote locations around the country, this principal route is more vital than ever.

Some stretches of the route are completed and paved: for instance, the road in Chile from Arica to the Bolivian border; from Patacamaya in the central highlands to La Paz; from La Paz back through the highlands toward Cochabamba; from Cochabamba to the Chapare region; and from Santa Cruz north to Montero. The stretch connecting Chimoré in the Chapare to Yapacani in Santa Cruz is scheduled to be completed in 1988 with IDB financing. There has been some work done between Tambor Quemado and Patacamaya, financed by the Japanese, and the IDB has agreed in principle to help upgrade this road in the future. However, additional construction and paving is needed in a 60 kilometer stretch between La Paz and Cochabamba, between Cochabamba and Chimoré, and from Yapacani to Santa Cruz.

Perhaps the key missing segment is the 600 kilometer road from Santa Cruz to Corumbá for connection with the Brazilian road network. The transformation that this road will effect in the Bolivian economy may be compared only with that created by the paved road from Santa Cruz to Cochabamba (constructed with USAID assistance in the 1950s). For higher-value goods (e.g., leather and hardwood products) the road will be a superior alternative to the present railroad. For lower-value-per-ton goods such as soybeans, the road will also be an invaluable advantage in facilitating the importation of production inputs and machinery. Even where a superficial cost calculation indicates that rail freight is cheaper, in many cases exporters will opt for the road because of its speed and reliability, enabling them to meet their contractual obligations. While the financing of this capital-intensive project is likely to be beyond present USAID financial capabilities, USAID could advance it in other ways (e.g., by interesting other potential donors or by participating in studies to quantify its economic impact).

The difficulty of obtaining sufficient and timely credit for pre-export (financing the raw materials, production, and shipment costs for export goods) and post-export (maintaining sufficient working capital until the export payments arrive) has been identified as a critical constraint for Bolivian exporters. USAID could help in this respect by establishing a specific credit line (on commercial terms, but with the operating flexibility required for export operations) for pre-export three to four months) and post-export (one to two months) financing.

Several areas for policy dialogue with different entities in the GOB and other institutions are also identified for both export and internal marketing. These include adjustments in exchange rates, adjustments in railroad rates, and improvements in the credit system. For more detail, refer to section D below.

2. Internal Marketing

The principal constraints mentioned in relation to internal markets are income levels, size of the population, infrastructure, and marketing systems and market information. There are some limited actions that can be taken to stimulate demand for agricultural products in the country. PL-480 resources can be used for labor-intensive projects that build capital in rural areas, especially areas of high underemployment. Construction of farm-to-market roads using hand methods should receive high priority. Because this proposal involves only local currency, it has not been included in the list of projects in the next chapter. It should be thought of, however, as being among the highest priorities.

Another way that consumption can increase is by decreasing consumer prices. With many products, the inefficiencies in the transport and marketing channels are so great that even a minor improvement there can effect a greater impact than would an increase in productivity at the farm level. Therefore, the strategy chosen is to focus on marketing channels from the farmer to the consumer. This implies a comprehensive approach, creating effective marketing channels at the farm level, the transport level, and in wholesaling and retailing.

Two elements of this chain would require heavy investments in infrastructure--transportation and wholesaling. At present there are no wholesale markets in Bolivia. The creation of modern wholesale markets would reduce prices by diminishing product losses and allowing for better utilization of the trucks, which could unload at once and would not be immobilized while the product is being disposed of, as is presently the usual case. Price reduction will occur, however, only if these markets do not lead to price collusion among few, well-established wholesalers. The creation of wholesale markets in Bolivia can benefit from an attentive study of the Brazilian experience with supply centers established by COBAL (Companhia Brasileira de Alimentos) and similar experiences.

USAID should not engage in the capital-intensive aspects of this activity. Various other donors have expressed interest in financing wholesale market infrastructure (e.g., a Japanese-financed market in Santa Cruz). USAID could, however, participate in financing of the studies necessary to design and locate this infrastructure, based on the concepts of a marketing system with its corresponding participants and channels. Indeed, other donors would be wise to reconsider any investments in market infrastructure before the market mechanisms are in place to properly utilize the structures. Extreme caution should be taken to assure that the projects are well-conceived, as there have been more failures than successes in this type of market infrastructure--e.g., the 15 farmers' markets constructed in

Bolivia are largely underutilized or not utilized. Errors made by moving first into heavy infrastructure limit the flexibility of market participants to adapt and evolve.

Transportation infrastructure required for domestic marketing falls primarily into the area of roads. Besides the east to west trunk route discussed above, other links of importance in the primary road system are from La Paz to Tarija and from both La Paz and Santa Cruz to Trinidad. The last of these is receiving a great deal of emphasis by other donors. USAID's role again, is limited. USAID and the other donors could have a major input into rural road projects. However, the limitations on the parts of local governmental agencies, national and regional, have been too severe to make substantial progress. The fact that CORDECRUZ is committing large amounts of funds to the interdepartmental system, rather than the IDB rural roads project in the region, is an indication that the limitations will persist in the medium term. Hence, USAID's strategy should only concentrate on labor intensive projects with cooperation from communities, as described above, until other institutional mechanisms at the local level become available.

USAID's primary role in supporting domestic marketing can focus on the operational aspects of market processes. One such area where USAID support is vitally needed is market information for the farmer, which also implies the establishment of a simple system of grades and standards.

An area where private investment can be rapidly leveraged is in the organization of wholesale and retail chains. Although this may appear to be remote from an agricultural and rural program, the lack of organization in the food distribution system can best be attacked at the level where the consumer is involved. Initiatives earlier in the distribution channels will not have major impacts unless the final stages of the chain provide the needed incentives. Sorting, grading, packaging, quality standards, sanitation standards, and the like, will not be implemented until the retailer requires such measures in order to better satisfy the client. Some improvement is occurring in the marketing system now, but it is limited mostly to provision of imported products to the relatively wealthy portion of the population. The same approach can be extended to the mass population for domestic products.

Part of USAID's support should be oriented toward managerial assistance for wholesalers and retailers. The development of wholesalers and retail chains would be more effective where the physical wholesale infrastructure exists, and should therefore be oriented with priority to where such infrastructure is provided by other donors. Considering that primary product transformation and marketing are chiefly women's activities in Bolivia, the proposed assistance would further the USAID objective of

improving the situation of women. To this end, the NGOs involved should organize women's groups wherever appropriate. The experience of CARITAS in organizing 180 women's centers in Chuquisaca should be carefully studied.

At the same time, the strategy includes emphasis on farmer involvement in organized channel distribution through farmer organizations. Once the channel places requirements on quality, timeliness, product form, and consistency of supply, then the farmer must respond in a different manner. He must organize to be competitive in a more demanding environment. Ultimately, the requirements of the market impact on the production system that he employs. The organization of farmers' groups for marketing and agroindustrial activities should be undertaken with extreme prudence, as many such organizations in the past, in spite of considerable donor assistance, have not been able to offer the farmers better conditions than the intermediaries. In particular, attempts by the IDB and NGOs to equip farmers' groups with trucks have been notably unsuccessful. Farmers' groups involved in marketing stand the best chance of success when they are associated with wholesaler development and retail chains, as described above.

Finally, two commodities receive special attention in terms of the local market--milk and fish. In both cases, agroindustrial capacity and transportation systems severely constrain the capacity of the country to provide these products to the local consumer. In the case of dairy products, the issue is import replacement; in the case of fish, the objective is to decrease costs and increase availability of the product to consumers.

3. Institutional Development

The importance of private agricultural organizations in export production and marketing has been stressed above. They are equally important when dealing with technology transfer, on-farm resource management, input distribution, and the use of credit. Farmers in general, and especially small farmers, are more capable of improving their production and marketing systems when they work as a group, using collective action to facilitate the provision of services and coordinate market decisions. There may be no other single activity that responds so closely to the same set of constraints to which USAID's objectives are oriented. Therefore, efforts such as the PAO Project should be considered an ongoing activity by the mission.

As the agricultural sector takes on more importance as a productive part of the economy, one capable of generating employment and export commodities, the needs of the sector are evolving to new levels of sophistication. The agricultural sector is dependent to some extent on rural institutions'

capability to provide a healthy environment where infrastructure and support services are available to the population and producers.

The strategy includes a specific orientation to support the formation of local service districts in rural areas, including rural provinces. To speak in terms of a local government in Bolivia may seem a concept so foreign to that country's experience that one may be tempted to dismiss the idea as totally unfeasible. In fact, all communities in Bolivia have some form of local organization. The problem is that these local organizations are outside the formal sector, not being legally recognized. Thus they lack legitimacy and the mechanisms needed to carry out more sophisticated tasks. To not formalize and legalize units of local government is to waste resources and to constrain both rural and agricultural development. Support for the concept of local government, although widespread, has not yet been crystallized in a clear and coherent proposition. Nevertheless, the feasibility and need are evident everywhere.

With reference to the effort to restructure the MACA and its related institutions, past efforts have been well placed. However, the issue of decentralization seems to be currently on hold. The present government has taken a series of measures (tax reform, centralization of certain administrative functions, and such), that apparently further centralize power and resources in the executive branch. Given the shape of the state when the present government took over, and the stated intention of the reforms, the desire to decentralize seems to be real. However, the mechanisms to do so have not been available.

MACA should receive USAID's support at the central level to build capability in a narrowly defined set of functions: policy analysis and statistical services. USAID should continue to be open to support MACA at the regional level when more authority over resources--budgets and personnel--is shifted to that level. Simultaneously, USAID can support other institutions including private agricultural organizations so they can play a more active, positive role in formulation of policy. Strengthening statistical services both regionally and centrally is necessary for this purpose.

One of the more far-reaching institutional innovations is the concept of privatization through employee and producer buyouts of agroindustries. This model provides a badly needed alternative for public divestiture of several agroindustries, many of which have been turned over to the DDCs for lack of a better short-run solution. USAID support in privatizing these industrial plants would not only be in line with the policies of the GOB, but would be welcomed by the participants in the agricultural sector.

It should be pointed out that several of the new approaches

in areas such as agricultural research, technology transfer, wholesale and retail chains, export promotion, and even seed production also imply institutional change and development. The seed program in Bolivia, for example, provides a model for private sector development, through both individual firms and collective action, with public sector support from the central and regional levels.

Finally, the aspect of human resource development and training has not been dealt with as a separate subject, but is, instead, addressed in the needs and design of individual projects and activities.

4. Rural Infrastructure

The lack of local governmental organizations capable of generating and managing resources to provide infrastructure and services in rural areas seriously limits USAID's capabilities to assist in this area. Some measures aimed at overcoming this constraint are included above under institutional development initiatives. Also, use of PL-480 funds in road building and other infrastructure projects has been mentioned. However, one special topic of rural infrastructure can be singled out for separate treatment--the need for access roads in areas of migration from the valleys and highlands to the tropical lowlands. This migration has typically been of the rural-to-rural kind, where farm families relocate to colonize in places where more land is available.

This kind of migration is criticized in that all the needed services (such as technical assistance, marketing, health, and education) are not available at the outset. Colonists endure severe hardships, and many become discouraged and return to their places of origin within a year or two. However, once the sacrifices are made, the results can be considered very positive from a number of viewpoints:

- decreasing population pressure in the highlands;
- providing new economic opportunities for disadvantaged rural people;
- increasing production of crops which were previously imported; and
- generating income and employment by expanding new economic frontiers.

Migration is only beneficial when access to land or employment are available in the lowland regions. Bolivia is fortunate in that it has a great deal of virgin land appropriate for use in crops and livestock production; however, access to it is a direct function of road construction and maintenance. The support of USAID and other donors is needed to open economic opportunities in rural areas to migrating colonists.

5. Agricultural Production

As shown above, the primary constraints to expansion of output are mostly found in gaining access to international markets and in the size of local markets. Only in exceptional cases, such as that of soybeans, is it necessary to rapidly develop new productive capacity in the farm sector. Private investment by medium- and large-sized farm enterprises is expected to continue to meet most of the needs in expansion of the "agricultural frontier" in the lowlands. Instead, USAID should concentrate in areas where less advantaged farmers can improve their productive capabilities. The objectives of USAID's involvement in supporting agricultural production focus more on methods to increase the productivity and incomes of farmers, especially small- and medium-sized farmers, rather than to stimulate large increases in output. Most of the same services and organizations that support production for local markets also support production for external markets.

The constraints to production are multifaceted, as is the nature of the response. The major constraints identified were technology transfer, input supply and utilization, on-farm resource management, agricultural research, and transactions costs for obtaining production credit.

In terms of support services to the farm sector, there is a need for increased emphasis in technology generation and transfer. Both kinds of services are at an all-time low in the country, and the weaknesses can be increasingly seen in agricultural production at the farm level. Experiences in providing these services through the central government have been disappointing at best. The constraints in terms of resources, manpower, administrative flexibility, and such, would be extremely difficult to overcome within that institutional structure.

Regarding technology transfer, the strategy suggests a complete change from the traditional style of extension to a new approach based on private individual consulting agriculturists. No pretense is made that this system can cover every corner of the country and every agricultural activity. However, it can undoubtedly outgrow the public extension service in size and impact within a short time. One of the many advantages that a private system of technology transfer offers is that it facilitates USAID's support in many other activities in the farm sector. For instance, introduction of animal-drawn implements for tilling, as well as stationary threshers for harvest, can be facilitated through a private technical assistance program. Practices such as shearing of sheep, llamas, and alpacas, can be introduced, along with the distribution of hand shears. In some cases, distribution of inputs can be coordinated among farmers, and transactions costs to gain access to credit can be reduced.

Consulting agriculturists might also be instrumental in many instances to forming and strengthening various kinds of farmer organizations.

An active system of technical assistance to farmers through private channels also provides and important linkage with agricultural research, creating an effective demand for the results of experiments, and a means of communicating to researchers the needs felt be farmers. Finally, and most importantly, this program offers USAID an opportunity to provide intensive practical and academic training to a large number of technicians, complementing their university education with hands-on training in the field. For many of the participants, it offers a means of completing their thesis to obtain their university diploma.

Input supply constraints are addressed primarily through two programs: fertilizer and seed. In the first, several new options to develop a more economical fertilizer supply for the country have been identified. USAID support is merited to investigate the feasibility of these possibilities. The second, builds on past success in some regions of Bolivia and extends it to the entire country. Academic training to attain a critical mass of technically qualified individuals is essential to guarantee the integrity of the program as it expands.

Most of the products grown in the highlands and valleys are produced for local markets. Farmers in these areas leave a large portion of their land fallow, primarily for nutrient accumulation. Better soil management, primarily planting on the contour, can reduce runoff to retain moisture and avoid erosion. AID should support a program focussing on soil and water management on cropland and grasslands to increase productivity in the valleys and highlands. This system implies better seedbed preparation, especially for quinua, oats, and beans, allowing more uniform plant populations.

Combining the above with high-quality seed, more productive crop stands will be obtained. With modest applications of nitrogen and phosphorous fertilizer, the same soils can be farmed in successive years, thereby releasing the normally fallow land for use in forage production, or fuel wood plantings. Improved range management techniques could reduce over-grazing and obtain greater forage production. Managing grasslands keeps a better vegetative cover on the soil, reducing water erosion and wind erosion. This approach is based on actual experiences in other countries with similar conditions to the highlands of Bolivia.

A decentralized, client-driven research network with a maximum of farmer participation must be formed if technology generation constraints are to be addressed. However, until a system of technology transfer becomes operational, research is of

low priority. Implementation of new strategies in research depends upon the willingness of the GOB to truly decentralize IBTA.

The analysis shows that there is sufficient credit available through the formal system. Many serious problems continue to cause difficulties in its use in the agricultural sector, especially for the small farmer. There is an overwhelming agreement that the credit system needs to be linked with technical assistance. This is just what is recommended for all lines of credit to the sector, either through the PAOs and through private Consulting Agriculturists. USAID projects should use current lines already available when possible to support new projects developed within the next five years. Only in cases where the funds cannot be made available in the manner required, such as export credit, should projects add new money to the credit system. Specific recommended policy changes are found in the following section.

In addition, specific emphasis is called for to improve production of wheat and barley because of the potential balance of payments impact through import substitution. No pretense is made that Bolivia will achieve self sufficiency in either of these in the medium run, and perhaps not in the long run. However, with the free-market policies of the current government, the possibilities for growth of local production are certainly real.

Special emphasis is placed on livestock production as a potential export commodity. First, as mentioned above, marketing processes would be supported through providing infrastructure. Second, when the volume and efficiency of production becomes limiting, steps can be taken to assist small ranchers increase herd sizes.

6. Natural Resource Management

The two areas identified in the sector assessment as worthy of attention are grasslands and forest management. The first of these was addressed above under agricultural production. Regarding forest resources management, the answers are elusive because of the difficulty of access to the northern areas and the limited capability to respond either through a regulatory or a market incentive approach. However, with more than half the land area in forests, and the industry contributing the largest share of non-traditional exports, steps must eventually be taken. It is time for USAID to help take the lead in providing technical assistance to define a plan of action in coordination with the GOB and private sector companies involved in logging and lumber products manufacture. Training of technical personnel is an obvious weak link that should be addressed from the start.

D. Policy Directions Needed

The Paz Estenssoro administration has gone a long way toward creating a clear policy environment for entrepreneurs in Bolivia. Certainly, USAID should continue to support the government and the agricultural sector within the framework which has already been laid out. Only some specific areas where detailed initiatives are still lacking will be addressed here. They fall in the areas of export marketing, import displacement, institutional strengthening, and agricultural credit.

1. Improving Bolivia's Competitive Position in International Markets

The broad guidelines of the Bolivian export policy should be to motivate exporters without resorting to price subsidies. The state must facilitate rather than paralyze the marketing process, encourage competition and productivity increases, and reduce production and marketing costs. Within this framework, the following specific policies are recommended.

a. Application of Export Incentives

The Customs Reimbursement Certificate (CRA), legislated in July 1987, has yet to be applied. It should be put into practice to give exporters an incentive, as well as confidence in GOB export policy. The provisions concerning the CRA in Supreme Decree No. 21660 are very short and not specific enough. The mode of application of the CRA should be made explicit by a code of regulations.

An interesting option suggested by the exporters is that the private banks be allowed to deposit CRAs received from exporters in the Central Bank as a part of their legal deposit required by Supreme Decree No. 21660. In this way the exporters would be able to receive working capital credit against their CRA. The legal ramifications of this proposal require further study.

b. Elimination of Customs and Taxes on Production Goods

The CRA, however, is an expensive and inefficient instrument for promoting exports. It is expensive to the national treasury since it implies a loss of GOB revenue equal to 10 percent of the value of non-traditional exports. It is inefficient since it rewards exports which would have taken place anyway just as much as it rewards genuinely new or expanded exports, and since it gives a disincentive to export more highly processed products, which have a higher percentage of imported inputs.

The CRA was conceived to reimburse exporters for the 20 percent customs duty on imported inputs. Supreme Decree No. 21660 recognizes that this customs duty is an impediment to production, and consequently allows the deferred payment over three years, including a one-year grace period, of customs duties on production goods and inputs.

There have been suggestions of restoring the differential customs treatment of different imports as practiced under the RIFENT with a duty of teo to four percent for agricultural inputs. Others have suggested lowering the uniform customs duty to 10 percent. A simpler and more radical tax policy would do the following:

- o eliminate all customs duties on all production goods and inputs (as listed in Annex 2 of Decree No. 21660);
- o eliminate the CRA; and
- o eliminate the IVA, transaction tax, and other taxes on intermediate goods used in the production process, retaining them only on consumer products (in other words, the value added tax will be replaced by a sales tax on the final product).

This proposed tax reform will have the following advantages:

- o Export goods will have neither tax burden nor protection, so that Bolivia will not discourage those exports in which it has a comparative advantage, nor encourage those exports which do not have a comparative advantage.
- o Domestic agricultural and manufactured goods for the internal market will be cheaper, since they will not include the 20 percent duty on imported inputs, and thus be able to better compete with imported goods in the domestic market, creating more income and employment. - Customers will benefit from the lower cost of nationally produced goods. (These usually are non-luxury items, thus benefitting more the lower-income classes.)
- o Government looses less income, since failing to perceive in customs duties 20 percent of the value of imported production inputs will cost a good deal less than conceding to exporters in tax reductions 10 percent of the export value. The proposed policy will be far less costly to the GOB than an across-the-board customs duty reduction to 10 percent.
- o Paperwork for exporters, importers, local producers and GOB officials will be substantially reduced.

The implications of this proposed tax policy for encouraging exports and domestic production should be carefully studied and discussed by the exporters, importers, producers, and GOB decision-makers.

Unless or until the above measures are implemented, it would be desirable to restore the "right of temporary admission" that was included in the RIFENT regulations, and under which an exporter could import duty-free the inputs necessary for production of export goods, against a bank guarantee which was cancelled upon submission of proof that the corresponding products were exported.

c. A Levy for the Development of Export Products

The importance of increasing the competitiveness of Bolivian products in the international market has been stressed previously. For almost all commodities discussed, improved productivity and reduced production costs are the keys to increased exports. These can only come about through effective technology generation and transfer. It has been calculated that this technology generation and transfer will cost 0.5 to four percent of the export value, depending on the commodity.

It is evident that in the current conditions of a limited GOB budget, the government will never be able to invest in technology generation and transfer for export commodities the amounts which are necessary and economically justified. Thus, the competitiveness of Bolivian exports will increase only if the producers of export commodities will voluntarily, through their associations, raise the amounts necessary to fund effective commodity-specific programs for applied research and technology transfer. Such contributions of the producers could be complemented by donor matching funds.

It is therefore recommended that the producer associations of export commodities (ANAPO, ADEPA, ASOBOFLOR, and such) establish a voluntary levy of perhaps one to two percent of the value of the exports by their members. This could best be done through a discount from the export receipts. (A levy financed by deduction from the CRA would probably not be legally feasible, as the CRA is supposed to be used only for tax payments, and would in any case be slow and cumbersome.) The proceeds of this levy would be channelled to the producers' associations. The associations would then be in a position to hire their own consulting agronomists and to contract research on the piority problems identified by the association members. The associations could decide to contribute a part of the funds to second-level institutions (the departmental chambers of agriculture, CANEB, INPEX, IBCE, and such) for performing specific export-promotion

activities for them. Thus, it will be a bottom-up, demand-driven system of research, technology transfer, and export promotion.

It could be objected that a levy on existing non-traditional exports, controlled by producer associations will not encourage the development of new and innovative export lines. However, the largest export potential lies in the already established non-traditional export commodities-- such as soybean, wood products, cattle products--where such a levy will generate a substantial income. The truly new products have in the medium term a much more limited potential (less than five percent of the total non-traditional export potential) and could be more adequately financed by other mechanisms, such as the Market Town Capital Formation Project and smaller donors.

d. Simplification of Export Requirements

Bolivian exporters are faced with 15 to 20 documents to be completed for each shipment, involving at least 115 copies and 287 questions; this does not include the numerous applications and registrations necessary to become an authorized exporter. In comparison, most European exporting countries require only a commercial receipt, a certificate of origin, and a certificate of insurance (for CIF shipments). Brazil, a major exporting power, requires only an export declaration (for tax purposes) and a fiscal note (owing to its foreign exchange regulations).

It would behoove Bolivia to reduce similarly the number of forms required for export to the minimum necessary for opening an international letter of credit. In particular, an export license is out of place within a policy of free exports.

e. Bilateral Trade Agreements

The Montevideo treaty of 1980, which established preferential customs treatment to the poorest members of ALADI (Asociación Latinoamericana de Integración), has been of relatively little benefit to Bolivia. Only Peru has imported significant amounts of Bolivian products under preferential conditions (US$ 7.1 worth of goods in 1983). Brazil and Argentina, Bolivia's natural trade partners, have been following a policy of punitive customs duties on Bolivian manufactured products amounting to an effective average rate of 52 percent in the case of Argentina and 112 percent in the case of Brazil. These measures are seemingly intended to keep Bolivia in the role of a supplier of raw materials. (Thompson) It is essential to arrive at bilateral countertrade agreements beneficial to all parties.

f. Railroad Rates

Railroad rates in Bolivia have traditionally been elevated in relation to neighboring countries. For example, the cost per ton-kilometer on the Santa Cruz-Corumba line has been 152 percent of the cost on the Brazilian continuation of the same line. Furthermore, the charge per ton for soybeans is 40 percent more than for maize. The Economic Reactivation Decree specifies that the rate for imports shall be equal to that on the connecting international line, where the latter is not subsidized Since the railways of neighboring countries are probably all subsidized, this clause might render the whole provision void. The rates for export goods and for internal circulation will be 40 percent and 70 percent, respectively, of the rate for imports.

In practice, the rates have diminished in August 1987 by 25 percent to 35 percent for soybeans and wood, but they are still higher than on the Brazilian side of the frontier.

While the present rates are excessive, their reduction to the extent envisioned by the decree is likely to be counter-productive, as it will further deplete the capability of ENFE (Empresa Nacional de Ferrocarriles) to maintain its lines and rolling stock. The exporters need a fast and reliable service more than they need a cheap service. A more effective policy would be the privatization of rail transport, discussed in the following section.

g. Privatization of Rail Transport

In principle, there is no compelling reason for the state to have a monopoly on rail transport any more than on road or air transport. As in the case of roads and airports, the state could maintain the rail line and charge private transporters a fee for its use, while competition among transporters will bring about a more efficient service. In the case of rail transport from Santa Cruz to Corumbá (which is certain to become a bottleneck if the expected expansion in soybean production materializes), large producers or ANAPO will find it advantageous to rent locomotives and wagons (in Argentina and Brazil, or from ENFE itself) for hauling their own soybeans to Corumbá or Puerto Quijarro. A start in this direction has been made by the Santa Cruz Chamber of Commerce and Industry and the Argentinian transport firm Atahualpa, which made a pilot run of a passenger rail-bus from Salta in Argentina via Santa Cruz to Corumbá and back. While agreement on the principle of private use of the railroad tracks was achieved, negotiations broke down over the level of fee demanded by ENFE.

A transport policy should be formulated, establishing the principle and modes of private rail service, and setting a reasonable fee whereby users would pay their fair share of track

maintenance, but would not be expected to subsidize ENFE's other operations.

h. A Realistic Exchange Rate

The exchange rate, i.e., the price of foreign currency, is the most important price in the national economy. A high price for foreign currency makes local products comparatively cheap and more competitive in world markets, while making foreign goods expensive and reduces their consumption, thus improving the balance of payments.

The Bolivian economic policy since Supreme Decree No. 21060 of 1985 has aimed to uphold the value of the national currency by selling dollars through the Central Bank in daily public offerings. This policy was successful in eliminating hyperinflation at a stroke, stabilizing the boliviano, and causing the black market in dollars to disappear. However, this policy has had an unintended and nefarious effect on local production and marketing. Since the quantity of dollars offered for daily sale exceeds the demand, the exchange rate is lower than free market forces would determine, i.e., the boliviano is overvalued and the dollar cheap.

This has caused foreign goods to be cheaper than domestic goods, especially goods of the neighboring countries. As a result, the country is flooded with foreign goods, and local producers cannot compete with Argentinian wheat, Chilean apples, European powdered milk, and Brazilian textiles. The net result is relative price stability coupled with decline in local agricultural production and consequently in national purchasing power, along with a balance-of-trade deficit which in the medium term is likely to be untenable, coca exports notwithstanding. A gradual adjustment of the exchange rate, making imports more expensive, is the first requirement for making Bolivian agricultural and other products competitive in their own national market. It seems that such a gradual adjustment is indeed being undertaken.

i. Tightening Up Customs

According to Supreme Decree No. 21367 of August 13, 1986, all imported goods are subject to a uniform 20 percent customs duty (for capital goods, the duty can be paid over a three-year period). However, in the words of Hamlet, "this custom is more honored in the breach than in the observance." Smuggling is endemic and goes on with impudence. (For an eyewitness report, refer to Morawetz.) Bolivia, which is connected to the surrounding world only by four rail lines and a small number of roads, should be relatively easy to provide with effective customs protection if the official will exists. The present customs rates are reasonable and should not be raised

(this would only increase smuggling), but applied with more determination in order to provide protection to domestic production, as well as supply badly needed government revenue.

j. Import Displacement--Dairy Products

Another aspect requiring attention is that of policy, primarily negotiations with the World Food Program (WFP) regarding donations of powdered milk to Bolivia. The Ministry of Planning and Coordination (MPC) negotiates these donations with the WFP and the PIL plants. Currently, donated milk is distributed to the plants at a cost of Bs .45 per liter equivalent, compared to the local producer price of Bs .55. The payments received from the processing plants (PILs) go into a special fund to promote dairy production in the country.

Imports should be placed on the same basis with local products. Part of the promotional fund should be used to reimburse each PIL Bs .10 for every liter received from local producers, thereby reducing the cost of local milk to Bs .45 at the door of the PIL plant. This means of fomenting local production would have several beneficial impacts. It reduces the cost of raw material to the plants, making them more viable, and allowing them to compete better on the open market with imports. Some of the benefit of donated milk is passed along to the consumer.

2. Institutional Reforms

a. Decentralization of MACA

The much-studied and long-awaited reorganization of the Ministry of Rural Affairs and Agriculture revolves around the issue of "decentralization." In the simplest of terms, this means authority over budgets and personnel at the regional or departmental level. It is unrealistic to believe that if funds are allocated from the national treasury to each department, the central government will relinquish its authority over them. Indeed, it cannot, under these circumstances, escape the responsibility for how the funds are used. Therefore, decentralization is not possible without more fundamental institutional reforms to change the means of collection and handling of public revenues.

The most direct manner of carrying out these changes is through tax reform to allow departmental or other local units of government collect taxes to provide services in rural areas, including many of the services now under different MACA agencies. Unfortunately, this possibility has been postponed by its exclusion from the tax reform laws adopted by the current government. However, that tax reform has not yet been implemented for the agricultural sector.

There are some successful examples operating in Bolivia where local public organizations collect user fees to finance the services which they provide. In the absense of the authority to collect taxes, user fees provide another mechanism to reach the same end. Either way, key leaders in the farm sector, including those in the chambers of agriculture, need to participate in establishing the mechanisms for collecting the funds and in the decisions over their use. USAID should work with the GOB and private sector leaders to explore alternatives that would both provide the necessary resources and allow for decentralization of some services.

b. Local Government

The same set of arguments apply to local government services and rural infrastructure as stated above under decentralization of MACA. Indeed, decentralizing MACA services is simply a specific case of the broader issue. However, in the case of rural infrastructure and local government services, the units of organization need to operate on a more limited geographic basis. There is a tradition of organization at the community level. However, most existing communities are too small in size to carry out more sophisticated functions. Entities, such as provinces, should be regarded as the largest workable option. USAID can play a vital role in helping find alternatives for forming rural service districts, focusing first on rural roads.

3. Improvements Needed in the Agricultural Credit System

a. Technical Assistance Linked with Credit

Credit for the small farmers in Bolivia has by and large been dispensed without being accompanied by technical assistance. If farmers are to increase their production, and shift from traditional to export crops, it is important to provide them with technical assistance toward this end. The transfer of technology to enable better farm management, and sound investment of funds is best done when technical assistance accompanies the credit package. The technician would be the catalyst to organize the farmers into groups for dissemination of information for technical demonstration, and for marketing services. A well organized and administered technical services program acts as a deterrent to loan delinquency.

The ICIs and other credit delivery institutions should be encouraged, if not mandated, to employ agronomists and other qualified technicians to provide technical assistance in both production technology and farm administration to credit recipients. It is further recommended that the interest rates on loans be increased by a point or two, to provide for the payment of such service.

The restructured BAB should consider adding technical assistance services as part of the loan package to small- and medium-sized farmers. This may necessitate adding an extra point to the interest rate structure. However, if the work-load of the technician is properly programmed this may not be necessary. Each provincial office will have to determine the feasibility of hiring a technician, and the manner in which he will be employed. A hypothetical case could be made as follows.

Province A has a potential of 2,000 borrowers but only 300 are actual borrowers. The average size of loans is US$ 2,300, giving the BAB branch office a loan volume of US$ 690,000. At a spread of five percent this provides annual interest income of US$ 34,500 for the branch. The cost of employing a technician may be as follows:

Salary and benefits at US$ 500 per month	$ 4,800
Transportation (including fuel, repairs, and depreciation @ US$ 700 per month)	$ 8,400
Total	$13,200

The technician would consume 38.3 percent of the annual income. A small expansion in the average size of loan per farmer could build the loan portfolio to upwards of $780,000 giving the branch office an income of US$ 39,000 per annum, in which case the technician cost is reduced to 34 percent of the annual interest income. An extra percentage point added on to the loan package would produce an additional US$ 6,900 per year, thus reducing the technician costs to about 28 percent of the total annual income. A second technician could be employed to seek and establish a nucleus of 300 borrowers, depositors, and the like. In every instance, the technician should be made aware of what his employment is costing the branch office, and the fact that he is expected to render technical knowledge along with the credit package to enough farmers to pay for his employment, and the branch, regional, and head office overhead. A year-end efficiency bonus might be considered for a technician who administers a sound loan portfolio, assists his clients in increasing their incomes, and has a low loan delinquency in his area. Planning the activity of an extension agent along this module ensures him a job security and the viability of the institution he serves, as well as improving the service to his farmer clients.

b. Dynamization of Credits for Exportation

The shortage of both medium-term credit for investments and short-term credit for working capital has been identified by all of the exporters interviewed as the major constraint to increasing production and exports. At the same time, USAID and other donors have obligated substantial amounts

of credit to Bolivia's economic reactivation program, and disbursements are considerably behind schedule. The main reason is the rigidity of the private banking system, coupled with overly bureaucratic procedures at all levels. Supreme Decree No. 21660 stipulates that arrears of creditors to the intermediate credit institutions (ICIs) will be deducted from the legal reserves of the ICIs at the Central Bank. This measure has introduced welcome discipline into the Bolivian credit system, but the ICIs have perhaps overreacted in becoming extremely averse to risk.

To increase credit availability, the FERE (Fondo de Reactivacion) has recently been increased from US$ 60 M to US$ 80 M. A part or all of the US$ 20 M increase should be earmarked for non-traditional exports. In addition, increased use could be made of the SAFICO (Sistema Andino de Finanzamiento al Comercio), which provides credit to importing Andean countries with foreign exchange problems in order to increase regional commerce. When such countries cannot establish an international letter of credit, a firm command could be used as an instrument for obtaining the payment from SAFICO.

The blockage of credits as a serious constraint to expanding agricultural exports applies a fortiori to domestic production, since producers for the domestic market are typically smaller and thus even less able to comply with the stringent bank collateral requirements. For such producers, an adjustment of the type of guarantee (lien on the crops or agricultural machinery, rather than mortgage on urban property) is necessary, as well as endowing credit officials through appropriate training and guidelines with a more developmental attitude.

The Central Bank could also increase the availability of warrant credit through the ICIs to agro-industries in order to facilitate the purchase of the raw materials (soybeans, rice, sugarcane, grapes, coffee, and such).

c. Restructuring of the BAB

Commercial banks will extend credit to a limited number of small farmers who can provide adequate collateral, or who happen to have a sponsoring organization, such as a UCF, the Camara Agropecuaria, or a producer association to support, supervise, and assist the banks in the administration and collection of loans. Credit unions, integral cooperatives, and farmers associations are another possible vehicle for extending loans to small- and medium-sized farmers, but they are local organizations, specific in their aims, and are not fully organized on a national scale.

There is a need for a rural development bank to provide financial services on a national scale to Bolivia's small farmers

and rural dwellers. Ideally, this bank should be operated as a viable enterprise. A subsidy may be required at first to compensate for the high cost of establishing a financial intermediation program to serve small- and medium-sized rural clientele. However, if such an institution is to survive and become viable, it must find the means to do so from its own resources.

The current emphasis on working through the private sector should not cause the donor community to write off the potential of the Banco Agricola de Bolivia (BAB). In spite of its past problems, the BAB is the only credit institution in Bolivia that reaches a large number of small producers, and its loan recovery performance has recently improved. With the GOB's will to overhaul the BAB, and donor financial and technical assistance, it could be made an effective credit mechanism for the small-farm sector.

The BAB has an institutional infrastructure presently in place and other characteristics that would permit it to fill a void and act as a full fledged financial intermediary for small- and medium-sized farmers and other rural dwellers. It is encouraging to note that this possibility has already been identified through other studies conducted under USAID auspices, and that the recommendations that evolved have caused the GOB to consider taking action in this respect.

BAB should undertake a campaign to sell shares to small farmers, artisans, and other rural dwellers. The shares could be sold on an installment basis as a percentage of each loan with no ceiling and the annual dividends would be added to the share capital and accrue to the benefit of the individual shareholder. Such purchase of share capital serves as an off-the-farm investment and would be repaid to the owner under certain conditions, such as:

(1) Repayment of share capital would be made to the shareholder at age 65 or earlier if he/she chooses to retire from farming. This would provide a nest-egg for retirement.

(2) Share capital would be repaid upon the death of the shareholder to the spouse or other beneficiary, in which case it would act as life insurance protection.

(3) Share capital would be paid to any shareholder deciding to emigrate, or should he/she move to an area of the country where BAB does not have a branch to serve him/her. This acts as savings.

(4) A shareholder may transfer shares to next of kin, if the transferee is actively engaged in agriculture.

The BAB should consider establishing a participatory process for setting policy guidelines at the national and regional levels. This could be accomplished by dividing the country into districts; for example, each province could be considered a district. Small farmer shareholders of the bank would vote by ballot in their district to choose a district delegate to attend regional meetings of BAB, perhaps on a quarterly basis. At the regional (departmental) level delegates would be chosen to attend the BAB annual meeting. From such regional delegates, one or two could be selected to act on the Board of Directors, while the remainder can act as an advisory body to the Board.

As the BAB develops into a full-fledged commercial bank to serve rural areas, in addition to making production loans, it should also offer credit to develop the distribution and marketing of production. Creating a market demand for products quite often can stimulate increased farm production with a minimum credit input.

d. Reassess Interest Rate Structure

The interest rate structure should also be further examined. If the BAB is to accept deposits, it can only expect to do so by paying rates of interest on deposits comparable to those paid by the commercial banks. Currently commercial bank interest rates on deposits run between 15 and 20 percent. The BAB would operate at a loss if such deposits were loaned at 13 percent, the same rate as for BCB-refinanced funds. It would be forced into making two classes of loans; for example, agricultural credit loans at 13 percent and short-term commercial or agricultural loans at a rate of, for instance, 25 percent using depositor funds. Another alternative is to maintain a uniform interest rate raising it to around 1 1/2 percent per month on loans and pay a 12 percent interest on deposits, in which case a lower commercial interest rate on loans justifies a lower rate on deposits.

e. Loan Guarantee Programs

Legally, and in the interest of good business principles, financial institutions are required to set aside reserves for bad debts and other contingencies prior to the distribution of their profits in relation to the risk they expect to face. Agricultural credit institutions are consistently faced with such additional risks as crop failures, and the farmers face similar hardships. There is a current move in Bolivia to establish a loan guarantee fund that would ensure the farmers repayment of the loan, and a "continued open door" to credit for ensuring production. Study is also being given to the utilization of a portion of the interest paid on PL-480 loans as a contribution to a guarantee fund of this nature.

Both of these initiatives are sound and should be explored in greater depth for feasibility and practicality of application, limitations to be imposed and the medium for financing.

f. Farmer-Owned Bank

At a regional congress of the Chambers of Agriculture (CAs) held in Tarija in November 1987, there was a good deal of dissatisfaction expressed with regard to the private bank (ICI) delivery of agricultural credit to small farmers. The causes in general terms were defined as being:

- excessive collateral requirements; and
- disinterest of the private banks in doing business with small farmers.

Criticism was also levelled at the BAB for its poor administration of funds, bureaucracy, disregard, and lack of service to farmers. This led to the surfacing of an idea that perhaps the CAs should organize an Agricultural Development Bank of their own. The idea has merit, and a farmer-owned bank of this nature could, if properly managed, play an extremely useful role in agricultural development. Stock shares could be sold and initial capitalization come from the CAs, cooperatives, producer associations, marketing associations, and others. A program of systematic savings could produce a good deal of new capital.

In the event that the CAs proceed with the launching and establishment of a national agricultural credit bank, both technical and financial assistance should be rendered to the extent necessary to see the project off the ground.

g. Management Training

Successful and viable institutions and organizations are generally administered by competent managers. Good management is an extremely important cog in the wheel of financial administration. The agricultural credit system in Bolivia lacks skilled management, particularly in the middle and front line echelons. Sufficient importance is not placed on the value of time, and the productivity of resources and labor in relation to it. Self-reliance and institutional viability to make decisions and to carry projects through to a successful conclusion is a deterrent to development and a breeding of mistrust in business relationships between the institution and the client. Although many academically prepared people enter the agricultural credit system, their willingness to put theory or idea into practical use should be bolstered with on-the-job training.

Provision for funding should be made to develop and support a specially-designed case study management training program for "on-the-job" employees of the entire credit systems. An additional program on small farm management, designed for small farmers, is also in demand. The preparation of the material and currriculum could be assigned or undertaken by the project IDEA. In every project with both credit and training components (most USAID projects in Bolivia are in this category), the training should be given to not only the project beneficiaries but also to the credit officials involved in project implementation.

It should be clear that the BAB must undertake to upgrade the skills of its employees. Management should be strengthened at all levels, with particular emphasis on the middle and front-line levels. An in-depth detailed proposal setting forth guidelines and procedures for the restructured BAB to follow in order to attain and maintain viability should be the subject of a separate study, followed by a period of technical assistance to assist in its implementation.

h. Future Status of FOCAS and PL-480

The question arises as to the future status of Market Towns Capital Formation Project in terms of whether it becomes a private or a public sector enterprise, or a mixture of both. The same question arises as to the future of the PL-480 Executive Secretariat as a credit institution. The GOB is proceeding to overhaul the nation's financial system and the future role of the Executive Secretariat in that system as a second-story institution has not been prescribed. The Executive Secretariat is not subject to regulations applicable to other financial institutions, and the same applies to the Market Towns Capital Formation Project. The Secretariat's operations are successful and have demonstrated that a well-managed institution plays a pivotal role in developmental finance. The program's characteristics can serve as a model to be emulated by other second-story financial institutions in Bolivia.

Where does the PL-480 Executive Secretariat go from here? This subject has sufficient depth to warrant a special study. It cannot remain in limbo for an undetermined period of time. Some ideas are advanced herewith for consideration:

1) PL-480 can choose to become a private sector financial institution of the second-story type. Shares could be sold to the Camara Agricola, to cooperatives, UCFs, agroindustries and private individuals. Its governmental structure could be based on a system of district delegates who would elect the Board of Directors. This would place the Executive Secretariat (PL-480) under the control and regulations of the monetary authorities, which is as it should be. It

would then function in all respects as a privately-owned bank and offer a full line of banking services.

2) Another approach would be to have PL-480 become a public/private sector, second-story financial institution with the controlling interest (51 percent) in the hands of the private sector. Four directors would be appointed by the GOB, while five would be elected by the private sector, for a total of nine. This could lead to a merger between PL-480 and the Bank for Development in the BCB or with the BAB. The tendency in this case would be to avoid proliferation and multiplicity.

3) A third alternative would be to simply merge the operations with the Bank for Development in the BCB, at some appropriate date in the future, and have the sun set on the operations as currently structured. This would place the Executive Secretariat back in its initial role of making soft term loans and grants, rather than becoming involved in operations-while the Bank for Development of the BCB would assume the role of the Executive Secretariat and undertake all of its obligations.

CHAPTER V

CONCEPT PAPERS FOR THE FUTURE USAID PROGRAM

Chapter III established a priority order of constraints according to which ones were seen as most limiting to reaching the goals of the GOB and the USAID Mission's program for the agricultural sector. In chapter IV it was shown how various USAID interventions can respond to many of the constraints. The prioritization of these interventions follows a similar rationale as that of chapter II; that is, the interventions are prioritized according to the significance of the constraints they address. For the purposes of simplification, the general categories of constraints have been prioritized as follows:

- gaining access to market channels for non-traditional exports;
- increasing efficiency in domestic marketing and expanding markets;
- strengthening public and private institutions;
- improving rural infrastructure, especially construction and maintenance or rural roads;
- increasing productivity at the farm level; and
- utilizing natural resource utilizization and protection of the environment.

Again, naturally, there is a considerable overlap among these categories. For example, constraints to promoting non-traditional exports fall within the areas of marketing, institutional development, improvement of infrastructure, and increase of productivity. Also, some of the specific constraints belong in more than one category. For example, credit for marketing activities, especially for exports, is a high priority; however, production credit is a much lower one.

Much of the infrastructure needed in Bolivia for both export marketing (roads and railroads) and domestic marketing (wholesale markets) requires heavy investments. This was given very high priority. The ranking of the "rural infrastructure" category of constraints reflects the relative importance of the kinds of investments appropriate for USAID--rural roads, transport and storage facilities, processing, and other agroindustrial capacity on a limited scale. However, in the long run for the country as

a whole, basic infrastructure should be given much greater importance.

The activities identified to receive USAID support for the period 1988-1992 are prioritized below . Only those programs which would be appropriate for use of USAID resources are included. Activities that could receive support from other donors, many of which require heavy investments in infrastructure, are not included. The concept papers for each activity are presented next. These papers explain the nature of the activity and the need for USAID support. The local institutions through which each program might be implemented are also identified.

The prioritized list of activities included in the sector strategy is shown in the figure on the following page. The term "activities," as opposed to "projects," is used here because many of the areas identified for USAID support could be grouped with others to form workable projects.

The marks ("X") indicate the main categories of constraints to which each activity responds. The process of prioritization was not, however, done mechanically using only the above information. Several other considerations intervened, such as the sequence of interdependent activities, feasibility of accomplishing the goals of the activity, long-run implications, and, especially, the desire to balance the set of activities to respond to different primary objectives (growth-versus-equity). A few comments about how these factors influenced the prioritization of activities will be useful.

Improving domestic market channels was placed immediately after export promotion because of its expected impact on small farmers, and middle- and low-income consumers. This reflects the desire to maintain a balanced strategy between export-led growth--which impacts disproportionately on certain enterprises, industries, workers, and regions--and activities that would increase the incomes of a larger portion of producers and consumers. Market information follows in third place because it is conceptually linked to market channels. It could either be implemented as part of the same project or be dealt with separately.

Technology transfer is placed higher in the order of priorities than would be the case through a strictly mechanical process. This activity can bring several benefits or advantages that are not apparent on the surface. Not the least of these is the influence it may have in the creation and operation of private agricultural organizations. It is also expected to have a high impact on rural productivity and incomes. The extent to which an effective cadre of change agents is put into place and

PRIORITY ACTIVITIES FOR USAID SUPPORT, 1988-1992

	Exports	Markets	Institu	Infrast	Product	Environ
1. Promotion of Non-traditional Exports	X		X			
2. Farmer/Consumer Product Marketing Channels		X	X			
3. Private Market Information Network		X				
4. Technology Transfer and Training			X		X	
5. Policy Analysis and Statistical Services	X		X			
6. Expansion of Seed Production Capability	X		X		X	
7. Privatization through Employee and Producer Buyouts		X	X			
8. Farmer Organizations for Marketing and Agroprocessing		X	X			
9. Packing Plants and Refrigerated Transport for the Livestock Industry	X	X		X		
10. Cargo Facilities for Expanding Exports	X			X		
11. Access Roads in Areas of Agricultural Expansion		X		X		
12. Productivity Improvement through Soil and Water Management					X	X
13. Local Involvement in Rural Infrastructure and Services		X	X	X		
14. Wheat and Barley: Import Displacement through Increased Productivity					X	
15. Fertilizer Supply					X	
16. Harvesting, Processing, Transporting and Marketing of Fish		X		X		
17. Decentralization and Improvement of Bolivian Agricultural Research					X	
18. Forest Management in Northern Tropics						X
19. Livestock Development for Small Farmers and Ranchers in the Llanos	X				X	

backstopped will have an impact on doors being opened in many directions, including coordination of marketing functions at the farm level and distribution of inputs through use of supervised credit. The weakness of this activity is the risk of not generating the resources to achieve a system that provides technical assistance evenly to farmers of all sizes throughout the country.

Policy analysis and statistical services is in fifth place. As noted in the previous chapter, most policy issues currently concerning the agricultural sector are related to export promotion, import replacement, and credit. This activity would be placed in a higher order of priority if it were not for nagging doubts about its chances of success. The Ministry of Agriculture has been a weak member of the policy formulation and implementation team of the GOB for the agricultural sector. Therefore, for this activity to be successful, the policy team must influence or coordinate with various ministries. Success depends in large measure on the set of participants at any one time.

Seed production is high on the list because of this activity's impact on productivity of export crops, such as soybean, and import replacements, such as wheat. The seed program in Bolivia has also provided a healthy example of privatization and institution building where public and private sectors work together to provide services.

The next two activities relate to both marketing and institutional constraints. Formation of new farmer organizations at the community level to coordinate farmer marketing is closely related to the organization of marketing channels (the second priority), and also to the PAO project currently in the USAID portfolio. In fact, this activity could be incorporated into either of them. Privatization through employee or producer buyouts is associated with another current USAID project--Industrial Transition--and could be included as another alternative to reach the same goals.

The next two activities--meat packing and cargo facilities at Puerto Quijarro on the Brazilian border--again relate to export promotion, but through improvement in infrastructure. These could be placed as higher priorities for the development strategy of Bolivia, but are lower priorities for receiving USAID support because of their orientation toward capital investment. These may be attractive developmental alternatives for other donors, such as the IDB and the World Bank.

Activities 11 and 12 can also be discussed as a pair. They relate primarily to marketing and infrastructure. Local involvement in rural infrastructure and services refers to the

development of mechanisms for forming units of government or service districts in rural areas. The lack of such institutions severely limits the country's ability to provide rural roads, school building construction and maintenance, drainage and irrigation, and other local infrastructure and services. The lack of roads, in turn, is a contraint to marketing. Building and maintaining access roads in the lowlands to facilitate broader participation of colonists into areas of agricultural expansion should be a very high priority. It is one of the measures that seems to create positive impacts from the standpoint of stimulating economic growth while generating income and employment for small farmers.

Both activities--forming service districts and building access roads--might be placed higher in the list were it not for doubts about attaining the policy changes needed to form autonomous units of local government with the authority and capability to operate.

The following priority impacts on productivity, small farmer incomes, natural resource utilization, and environmental protection. It employs a proven approach to soil and water management focusing on reduction of runoff and increased moisture infiltration that,in turn, bring yield responses. A side benefit, which has important long-run consequences is erosion control.

Next, two specific commodities, wheat and barley, are emphasized followed by fertilizer supply. Wheat and barley are important because of the possibilities for improving productivity and displacing a certain amount of imports. Fertilizer could make a great difference in the yields of these two crops and others, such as potato. Several new alternatives are identified for study. However, it is not yet clear that any of them will necessarily lead to a less costly supply system than that which is currently available.

Fish processing and marketing has been included even though several other donors are already involved in this activity. USAID might have a useful role in complementing the activities of these other programs, primarily with capital for infrastructure. Since it is the low income of the Bolivian consumer that limits his or her diet, rather than sources of protein, this activity has not received higher priority.

The main reason for assigning alow priority to agricultural research is that technology currently available fails to reach the farmer because of the nearly total lack of a technology transfer mechanism. Therefore the bottlenecks are: (1) technology transfer, then (2) generation of new technology. If the first of these is overcome within a reasonable time, Bolivia

will then face the problem of capturing the necessary resources to conduct research. Finally, it has to organize a research service that orients its efforts to farmers' needs. The feasibility of obtaining positive results in the short run are seen as limited.

Management of forest resources is "needed" in Bolivia, but solutions to the utilization and regeneration of native species in the inaccessible northern tropics are ellusive. Possible mechanisms to create positive incentives to guide lumber companies into being more responsible for managing forest resources, or regulatory mechanisms to force them to do so, both appear limited. The technical feasibility of different alternatives is also unclear. Because of the severe limitations, this activity is given a low priority.

Finally, beef production in the lowlands is included. Its low priority is due primarily to timing in relation other activities that open market channels for beef and beef products, especially the construction of packing plants. Until markets are more accessible, the rancher has little incentive to increase production. Assuming that Bolivia increases its competitive position in foreign markets, ranchers will need assistance to increase herd sizes.

The listing of the 19 activities is repeated on the following page, this time showing the approximate magnitude of USAID resources required. The second column sums these amounts consecutively, giving the cumulative total, which reaches 197 million US dollars for all 19 activities. Naturally, some of these costs could be covered by local currency.

PRIORITY ACTIVITIES FOR USAID SUPPORT, 1988-1992
Estimated USAID Contribution in Millions of Dollars

		Each Activity	Cumulative
1.	Promotion of Non-traditional Exports	12	12
2.	Farmer/Consumer Product Marketing Channels	10	22
3.	Private Market Information Network	1	23
4.	Technology Transfer and Training	10	33
5.	Policy Analysis and Statistical Services	5	38
6.	Expansion of Seed Production Capability	6	44
7.	Privatization through Employee and Producer Buyouts	10	54
8.	Farmer Organizations for Marketing and Agroprocessing	10	64
9.	Packing Plants and Refrigerated Transport for the Livestock Industry	15	79
10.	Cargo Facilities for Expanding Exports	5	84
11.	Local Involvement in Rural Infrastructure and Services	15	109
12.	Access Roads in Areas of Agricultural Expansion	50	159
13.	Productivity Improvement through Soil and Water Management	10	94
14.	Wheat and Barley: Import Displacement through Increased Productivity	5	164
15.	Fertilizer Supply	1	165
16.	Harvesting, Processing, Transporting and Marketing of Fish	6	171
17.	Decentralization and Improvement of Bolivian Agricultural Research	15	186
18.	Forest Management in Northern Tropics	1	187
19.	Livestock Development for Small Farmers and Ranchers in the Llanos	10	197

In the table below, the current USAID portfolio can be seen, ranked in order of priority in a similar manner to that above. The first five projects listed are scheduled to continue to 1990 and beyond, and will therefore continue to be an important part of the USAID program. As will be seen, these projects tie closely with the activity listing shown above.

PRIORITIZATION OF CURRENT USAID PROJECTS BY SAME CRITERIA USED FOR 1988-1992 STRATEGY

	Exports	Markets	Institu	Infrast	Product	Environ
1. Export Promotion	X		X			
2. Private Agricultural Organizations			X			
3. Industrial Transition		X		X		
4. Market Town Capital Formation		X		X		
5. Rural Roads II				X		
6. Chapare Regional Development				X	X	
7. Agribusiness and Artisanry			X		X	
8. Emergency Agricultural Credit					X	

First in priority is export promotion, which is practically identical to the activity listed in the table above, also assigned first priority. It appears both as an exist-ing project and as a new activity in the strategy because it was in the PID stage at the time the sector assessment was done. Second is private agricultural organizations, which will continue to hold an important place in the future USAID program. Several activities for the future USAID strategy relate to strengthening PAOs and using every opportunity to create new ones.

Industrial transition is a very timely project, but an area in which the policies of the GOB have stagnated because of the lack of positive, viable alternatives. There is strong justification for continued USAID support. Similar arguments can be made for the Market Town Capital Formation Project.

The Rural Roads II project continues to address a need, but faces limitations as discussed above. This small project has struggled for years to become viable, with little capability to respond on the part of local institutions.

The last three existing projects do not relate closely to priorities identified for the future USAID strategy. They are Chapare Regional Development, Agribusiness and Artisanry, and Emergency Agricultural Credit. The first of these is a response to the USG and GOB objective of reducing coca production for the illegal drug trade. Its impacts in regard to meeting the constraints identified in the sector assessment relate to infrastructure and production. However, the regional focus of the project limits the benefits that can be expected. The last two projects are related to improving the formal banking system and providing funds for agricultural credit.

It is worth noting a number of activities that were considered for the USAID strategy, but were finally excluded. Three of these deal with export commodities in the highlands and valleys--wool and alpaca, coffee, and quinoa. The World Bank has supported wool and alpaca production for several years through the Ulla Ulla project with INFOL. The main emphasis was on breeding alpaca to obtain white fiber, and on wool processing. The latter led to investment in equipment for a textile mill; the machinery and tools have been stored for several years, but never installed. The frustration of not getting a response from either the public or private sector to put the plant into operation has caused the World Bank to pull back its support of this program. Unfortunately, this also means discontinuity of the breeding program, which is sorely needed. USAID can work with the GOB and the World Bank to determine the best course of action. Meanwhile, USAID will concentrate its resources on technology transfer, including the teaching of annual shearing of animals and range management to increase forage production. Regarding coffee and quinoa, the general export promotion activities described above hold true for these two commodities, along with many others.

Another concept for a possible USAID supported activity, one that falls in the area of import displacement, is the processing of dairy products. The focus would be on expanding the milkshed in the lowlands and transforming milk into a more easily transported product, such as powdered milk, for the nation-wide market, especially in La Paz. This is not expressly included in the USAID strategy as a separate activity. If USAID support were needed it could be obtained through the privatization efforts.

Two other possible activities deal with grasslands management and reseeding. The first is for the lowlands, and

includes the concept of "zoning" areas for different phases of livestock production, e.g., cow-calf operations versus fattening for market. The motivation behind this concept is to shift production cycles to different areas to avoid losses of cattle because of flooding. The second activity is oriented to establishing permanent improved pastures in the highlands on communal grazing lands. Both of these activities require considerable coordination among ranchers and farmers. Acceptance by the farmer is questionable.

A badly needed area of support is in construction and maintenance of rural roads. As stated above, the limiting factor is the lack of legal mechanisms to allow organization at the local level to raise funds for operational costs during construction and, later, for maintenance. Therefore, a new project similar to the Rural Roads II Project of USAID is not included in the strategy.

Three activities related to credit were contemplated. One would continue to support the efforts to train personnel in commercial banks, on the assumption that these institutions can be coaxed into becoming more involved in the agricultural sector. The likelihood of this occurring appears low. Another was to make funds available to informal intermediaries for lending to farmers. Local money lenders often have property in urban areas that would qualify as collateral for commercial loans. They perform a legitimate and badly needed function by extending credit to the farmer right on his property, with little or no paperwork, and no delay. Providing a greater volume of funds through these channels, at favorable interest rates, would certainly create more competition and reduce rates to the farmer. This bold idea was not included in the strategy because the majority of the funds would not go to the agricultural sector, but instead would go for other commercial uses, such as trade. It is, however, a concept that can be further developed for incorporation into the mission strategy in the future. Finally, the concept of developing a private farmer-owned bank was mentioned earlier. USAID will be involved in a policy dialogue with the agricultural leaders and chambers of agriculture in this regard. However, until the mechanisms become clear and local institutions take the decision to act, no USAID resources are directed to this specific activitiy.

Two activities related to human resources development were considered. One dealt with overall training and the other with higher education. Instead of creating a separate activity for training, the strategy includes human resource development in each of the other activities. For training overseas, USAID may create a special fund to handle training for all project needs and general needs. Formal university training in Bolivia was not

included as an area for direct USAID support, however, for a number of reasons:

- No evidence was found to indicate that the quality and quantity of graduates in agriculture and related sciences from the Bolivian university system is inadequate to meet the needs for both private and public institutions.

- the principal resource required for formal education is the funding for faculty salaries. USAID is limited in the ways it can support local universities.

Rather than formal university education, the needs identified fall into the area of practical training and opportunities for employment and participation in the agricultural sector.

Two institution-building activities related to MACA received attention, but were not included in the USAID strategy. One focused on MACA's role as a coordinating institution to channel resources from international and local sources to sector programs and projects. One of the frustrations of central planners and decision makers in the agricultural sector in Bolivia is the fact that many donors bypass MACA Central and reach directly out to local organizations and target groups to implement projects. Not only does the ministry fail to participate in any meaningful way in the decision making process over these resources, it often cannot manage the detailed information about the projects in order to coordinate among them. Although this is a tempting area for USAID to provide assistance to MACA, the analysis demonstrates that (1) central planning is not in line with current government policies, and (2) the possibilities of creating a capable, credible planning unit to intervene on behalf of the rural population and farm community is limited.

The other institution-building activity with MACA was the reorganization or restructuring of MACA, which pivots around the decentralization of various functions of the Ministry and its agencies. However, the effort to decentralize is currently "on hold". Therefore, as suggested in the strategy, USAID can support the activities for which MACA is able to delegate authority over budget and personnel to the regional level, and in which the farm community can participate in the decision-making process. An extreme option for MACA in order to get off-center on this issue would be to relocate the central offices of the Ministry in another departmental capital in closer contact with leaders in the agriculture sector. Alternatives for USAID supporting such a move were developed, but then excluded from the final strategy because of the amount of resources that would be oriented toward central government institutions, rather than regional and private institutions.

The alternative of supporting the DDCs in their efforts to develop more capability in policy analysis and planning were considered. The conclusion reached, however, is that their role would best be in regional planning, which deal less with policy and more with the planning of investments in infrastructure, transportation systems, and the spatial dimensions of growth. This too, was given low priority for USAID support in the medium-term because of the need to focus on the priority concerns with marketing, and private sector development.

Finally, there is a need for a system to gather agroclimatic data to provide an early warning system for harvest times and quantities. Other countries, such as Perú and Ecuador, have had success with such efforts, helping farmers make decisions over what crops to plant and when to market them. The reason that it is not being included in the strategy is the sophistication of a system of this kind, requiring specialized personnel, and the salaries to retain them. The quantity of resources required would be magnified by the complexity of Bolivia's ecology, being made up of a great many microclimates.

1. Promotion of Non-Traditional Exports

Above the individual exporter, the export-promotion institutions can be visualized as a pyramid, the descending levels of which are:

- INPEX (National Institute for Export Promotion) and CANEB (National Chamber of Exporters of Bolivia)
- IBCE (Bolivian Institute of Foreign Trade - Santa Cruz)
- The departmental-level Chambers of Agriculture
- The product-specific producers' associations such as ANAPO (National Association of Oilseed Producers), ASOBOFLOR (Bolivian Association of Floriculturists), and the like. They, too, are organized at the departmental level.

INPEX was created by the Economic Reactivation Decree No. 21660 of July 10, 1987, and is in the process of being developed. The minister of MICT will serve as president of its board, and the president of CEPB (Confederation of Bolivian Private Entrepreneurs) will be its vice-president. Nine board members will represent the private sector--the presidents of the nine departmental federations of private entrepreneurs--and five will come from the public sector. National budget contributions will be proportional to the representation; specifically, about 60 percent will come from the private sector and 40 percent from the public sector. INPEX's areas of activity will include the following:

- Planning: Conducting studies of foreign markets and of the exportable products; writing a national annual export plan with targets for every commodity; and undertaking studies of transport, of export policy, and the like.
- Promotion abroad: participating in trade fairs and expositions; carrying out negotiations; contracting of professional promotion firms; opening of trade offices in key importing countries; publishing of a directory of exporters; promoting foreign investment in Bolivia; and participating in international trade negotiations (such as GATT, Andean Pact and ALADI).
- Information and documentation: establishment of a computerized trade information system regarding markets, products, prices, duties, and such, with connections to international trade information networks and terminals in the departmental capitals (especially Cochabamba and Santa Cruz).

- o Training of exporters: Conducting seminars, courses, business visits abroad, and technical assistance in product-specific matters.

INPEX does not intend to perform all export promotion activities itself, but will instead act as a coordinator for the specific promotion activities undertaken by the regional export promotion institutes and producers' associations. The national budget of INPEX will pay for local personnel and logistical expenses. Donor assistance is expected to consist of equipment, subscription to international information networks, technical assistance, costs of promotion abroad, and such. IDB/JUNAC have financed pre-investment studies of the major export sectors and contributed some office equipment and technical assistance to INPEX.

CANEB is a not-for-profit association of private exporters. It has some 350 members, and branches in Cochabamba and Santa Cruz. Other branches are planned in Riberalta or Trinidad and in Sucre to cover all of the national territory. The main activities of CANEB are:

- o commercial information service;
- o marketing studies (market profiles and surveys of Bolivian exportable commodities);
- o publication of an exporters' newsletter;
- o promotion of Bolivian products in international trade fairs; and
- o representation of the interests of Bolivian exporters to the relevant government services.

It may be seen that there is some overlap between the activities of CANEB and those of the new INPEX, the difference being that CANEB represents the private sector interests while INPEX represents both the private and public sectors in promoting Bolivian exports. Both have legitimate roles deserving USAID support, and their activities should be carefully defined to avoid duplication.

IBCE is based in Santa Cruz and was created in March 1986 as a joint undertaking of CORDECRUZ and the CAO (Chamber of Agriculture of Santa Cruz). It is a not-for-profit civil association with financial and administrative autonomy. The National Chamber of Forestry, the Santa Cruz Chamber of Industry and Commerce, the departmental Chamber of Exporters, and the MICT are also represented on the board of directors. IBCE has received JUNAC technical assistance for its establishment. The functions of IBCE are as follows:

- o to provide commercial information (e.g. directory of exporters, of exportable products, guides of exporting procedures to particular countries, and such);
- o to identify and develop exportable products;
- o to improve export infrastructure (participate in committee for simplification of export procedures);
- o to develop an export mentality (through the press and radio and television campaigns);
- o to promote abroad (through diffusion of publications, commercial missions, participation in trade fairs, and negotiations);
- o to train (such as seminars on international transport, packaging, countertrade, organization of expositions, and product-specific seminars);
- o to participate in trade agreements and commercial negotiations; and
- o to organize enterprises more efficiently for exports (technical assistance to particular enterprises).

Product-specific associations of exportable products (ASOBOFLOR, ANAPO, FEGACRUZ, and such) assist their members in obtaining training, company-specific technical assistance and export credits.

USAID assistance to export promotion should consist of:

- o technical assistance for strengthening the capabilities of INPEX, CANEB, IBCE, and future export institutes in other departments, as well as producers' associations;
- o assistance in simplification of export procedures;
- o funds for pre-feasibility studies of promising export lines, and feasibility studies of specific export-oriented investments;
- o development of information systems regarding foreign market prices, demand, requirements, potential customers, and investors;
- o contracting (on a commission basis) promotion firm(s) in the U.S. and other countries for creating markets for Bolivian exports, something likely to be, at least in the first phase, more cost-effective than financing the

establishment of Bolivian trade missions in other countries;

- technical assistance to specific enterprises on demand; and

- a line for pre- and post-export credits.

Most of the above items have been contemplated in the USAID Export Promotion Project, which is at present at the PID stage, with a proposed USAID budget of about US $12 million. This project is well-conceived and appropriate for the present phase of Bolivian exports.

The difficulty of obtaining sufficient and timely credit for pre-export (financing of raw materials, production, and shipment costs for export goods) and post-export (maintaining sufficient working capital until the export payments arrive) has been identified as a critical constraint for Bolivian exporters. USAID could help in this respect by establishing a specific credit line (on commercial terms, but with the operating flexibility required for export operations) for pre-export (three to four months) and post-export (one to two months) financing.

2. Farmer/Consumer Product Marketing Channels

One cannot insist too strongly on the fact that marketing is an integral process, where significant impact at the producer level can happen only if improvements are undertaken in the marketing channels between producer and consumer, consisting of the wholesaler and retailer levels. Since intermediary costs, profits, and physical losses account for some 65 percent of the final consumer price, the potential exists for significant gains to producers and consumers by improving the efficiency and competitiveness of wholesalers and retailers. Only a more competitive wholesale market will offer the farmers better prices for their products. A more demanding retail market--one insisting on better selected, graded, and packaged products--will likewise increase the processing done at the producer level and, consequently, the prices paid to the farmers. Organized retailers will also be able to plan their requirements, thus allowing farmers to schedule their production; this will be especially useful for farmer groups formed under the proposed "Farmer Organizations for Marketing and Agro-Processing" project.

The establishment of a wholesale market will help, but is not a necessary condition for, the initiation of wholesaler development activities. Such activities would include the following:

- training wholesalers in commodity handling, financial management, business organization, and sales techniques;
- computerizing their financial and inventory management;
- organizing study tours to other Latin American countries with a more developed wholesale marketing sector, including the study of supermarket operations;
- increasing competitiveness in the sector by encouraging wholesalers to diversify into more commodity lines, and by assisting enterprizing retailers (see below) to enter wholesaling; and
- providing directed credit for implementing the recommended improvements.

The above development of wholesaler capabilities should, however, be matched by a corresponding development of the countervailing power of retailers. This can best be done by promoting the establishment of voluntary retail chains. Retail chains have experienced considerable success in various Latin American countries. They were inspired by the U.S. experience with supermarket chains, but adapted to Latin conditions and applied at the retailer level. The three types of retail chains--corporate, voluntary, and cooperative--shall be described below.

- A corporate retail chain is a string of shops owned by a single entrepreneur, with the shop attendants being his employees.

- A voluntary retail chain (practiced especially in Argentina and Brazil) is formed by a wholesaler who establishes a common warehouse and links with a group of retailers to supply them with a range of goods. Each retailer owns his/her shop.

- A cooperative retail chain (as established in Costa Rica and the Dominican Republic with USAID assistance) is formed by a group of retailers who establish a facility for joint procurement. In such chains the individual retailers operate their groceries independently and competitively, but organize a central purchasing agency to undertake bulk procurement and gain bargaining power vis-a-vis the wholesalers. The central agency also provides technical assistance to the members regarding store display, inventory management, financial management, and such.

Retail chains have experienced a remarkable expansion in Puerto Rico and have been successfully established (with USAID assistance) in Brazil, Costa Rica, and the Dominican Republic. One of the first activities of the proposed project will be to organize study tours for leading retailers to these countries, in order to introduce the notion to Bolivia.

The proposed project for improving prices to producers and consumers through increasing the efficiency of wholesalers and establishing voluntary retail chains could be implemented through the wholesalers' and retailers' trade associations, organized under the departmental chambers of commerce. The thrust of the project will be on technical assistance and training, with complementary commodities and credit. Its goal-level indicators will be the improvement of prices and service at the producer and consumer levels. An appropriate scale for this project may be US$ 10 million over five years.

3. Private Market Information Network

Market information is usually the first topic in marketing improvements and, therefore, the present almost total lack of marketing information in Bolivia is remarkable. Product prices are routinely collected by municipal or MACA officials in the major markets and published biweekly with a very limited circulation; this is appropriate for MACA statistical purposes, but useless for the producer and consumer. Transporters rely on their own information networks (telephone calls to persons in their confidence) for determining to which markets to travel for purchasing or selling. The small producers who sell to transporters at the roadside have no source of current market price information.

Experience in radio price information service exists in Bolivia, as RADIO ACLO of Sucre has operated such a service from about 1980 to 1985, until galloping inflation made this price service of little value.

The establishment of a nation-wide radio market information service will be of considerable help to small producers in two ways:

- the individual producer, knowing the current wholesale prices at the destination markets and the transport price (which is fairly constant), will be in a better position to negotiate with the transporter; and

- the price information will assist groups of small producers in determining the viability of renting a truck and hauling their produce together to the market that offers the best prices.

At present, UNITAS--an umbrella organization for 19 NGOs (non-governmental organizations) operating in Bolivia--is contemplating establishment of a market information service on a nation-wide scale.

USAID assistance in the establishment of a farmer-oriented market price information network is considered by the present mission to be the most important USAID intervention in domestic marketing, owing to its low cost, relatively speedy and easy implementation, widespread usefulness, and support by all sectors of the population. The system should have the following features:

- Price dissemination should be by radio (most Bolivian farmers have access to radio, while printed information is expensive, slow, and of limited circulation).

- It would be sufficient at the present stage to announce daily the price at which the transporter sells to the wholesaler (this is the price of primary interest to the producer) prevailing at the wholesale centers of the departmental capitals (these are more significant than the prices paid at the local fairs), for the most important agricultural products during that particular season, as well as the quantities sold (in general terms such as "abundant," "normal," or "scarce").

- So that the listeners would be aware of the meaning of different terms, for example, "large Peruvian potatoes", a system of grades and standards is needed. It should be established in consultation with producers, wholesalers, retailers, consumers and other interested parties, with the help of technical assistance, and approved by MACA. In particular, the grading system must be conceived in a way which makes business sense to wholesalers. Only in this case will they follow it. To unify the widely varying traditional weights and measures system (a "carga", for example, has a different weight for different products in different regions), platform balances should be available in rural assembly centers.

- The NGOs, coordinated by UNITAS, are likely to be a more appropriate implementing agency than MACA, since they are more likely to have the operating funds necessary for permanence of this activity.

- ERBOL (Escuelas Radiofónicas de Bolivia), a not-for-profit radio education network, may be the most appropriate vehicle for the daily announcements. ERBOL is a nation-wide network of 15 radio stations operated by volunteer organizations. Alternatively, broadcasting could take place through the ASBORA (Asociación Boliviana de Radio) network of commercial radio stations, or throu the GOB's "Radio Illimani" network.

- The envisioned mode of operation would be for an NGO employee in each departmental capital to collect daily the wholesale prices and availability of the major agricultural products and transmit them by phone via computer modem to a center in La Paz, where the information would be collated and dispatched via modem to all ERBOL stations for dissemination. The use of a modem would save enormously on phone bills that would otherwise constitute the main operating cost. Alternatively, the information could be communicated via shortwave radio

- USAID inputs would consist mostly of equipment (computers with modems, possibly bicyles or motorcycles for the information collectors, and such), technical assistance

for system design and establishment, and operating costs during the running-in period. The total cost would be well under US$ 1 million.

- Once the system is successfully operating it might be feasible to include additional information such as expected harvesting dates and production in different regions; however, it is highly recommended to start with a simple system consisting only of wholesale prices and market availability of the main products.

- Due to the low cost of this project, operationally it would be convenient to combine it with the proposed "Farmer Organizations for Marketing and Agroprocessing" project, which would have the advantage of having the same implementing agency, or alternatively with the proposed "Farmer to Consumer Marketing Channels" project, in the event that either of these projects is approved for USAID financing.

4. Technology Transfer and Training

The traditional approach to technology transfer in LDCs has been to strengthen publicly-financed extension services. However, the current policy of the GOB is to reduce services from central ministries. Funds from the national treasury for new programs are extremely limited. Even if some funding were available from the public sector, the possibilities of developing a successful program through public institutions is felt to be remote in the medium term. Instead, an approach to recover recurring annual costs is needed.

One alternative is to create mechanisms whereby private agricultural organizations or other local autonomous institutions can collect fees or taxes to pay the costs of providing services. Such mechanisms, however, have also been limited by the GOB, both in Decree # 21060 and in the tax reform law. Even if a viable option is encountered, the PAOs themselves pose another set of limitations due to their weak institutional and managerial base. Another more radical approach is to promote the formation of completely private, independent "Consulting Agriculturists." Although this approach cannot be expected to satisfy the needs of the majority of the farmers in the country, it can develop to fill a void for many of them, and will be an important complement to the existing efforts through other institutions, public and private.

a. Consulting Agriculturists

Consulting agriculturists are people trained in agricultural sciences who provide technical information, guidance, and training to a clientele of farmers for a fee. They are privately practicing professionals who provide services much in the same manner as would a physician or lawyer. In many countries anyone holding at least a B.S. degree (Ingeniero Agrónomo) in an agricultural field can register as a consulting agriculturist and commence to practice. Fees are determined by free, open competition.

Several decades ago, Colombia opted for technology transfer as the strategy for agricultural development and selected consulting agriculturists as the mainstay of innovation adoption. In addition to the public extension service, there are over 3,000 registered consulting agriculturists expert at commercial crops (such as cotton, rice, maize, wheat, and sugar cane) plus horticultural crops (potatoes, fruit, vegetables, and the like, except for flowers and strawberries). The fact that many of the personnel of the Colombian government's agricultural apparatus, including extension agents, abandoned public services to become private practitioners reveals that they were satisfied that more professional and financial progress could be made serving as consulting agriculturist. The close financial linkage between

the farmer-client and his counsel was, and is, a healthy one. In such a case, the direct beneficiary of technology transfer, i.e., the farmer, pays for said service.

b. Advantages

This program aims at solutions that underlie a great variety of areas at the same time: training; extension; transfer of technology; production and productivity; competitive salaries; increased farmer income; and others. The main advantages, from a governmental viewpoint are the following:

- little or no cost for technology transfer;
- rapid transfer of new technologies prompting adoption of innovation; and
- feedback from farmers to the research institutions.

The disadvantages are the following:

- the loss of some political clout;
- the loss of government messengers; and
- little influence on which innovations would spread and how fast. (Decisions are made on the basis of farm/farmer economics and not on national covenience.)

c. Training

Candidates for the consulting agriculturist program would be individuals who have graduated from an agricultural university or from a university with an applicable agriculture speciality, chosen on merit and according to specific entrance requirements to enter a one-year, hands-on training program. Each course/scholarship would be for a full year encompassing both crop seasons (where there are two).

The specialized one-year program will combine classroom learning with hands-on field work at a 3:2 time ratio. The concept is that far too many of the would-be agriculture specialists or "extensionists" coming out of the Bolivian halls of academia have come out of precisely that--halls of learning with little practical experience. To graduate from this speciality school, the person would have to be approved by an examining committee comprised of individuals from outside the school including top-quality farmers. The exam would be written, oral, and practical performance.

A basic breakdown of the technology transfer school follows:

Location:	One school in the lowlands; one school in the highlands; and two schools in the valleys.
Teacher Profile:	Teachers in the fields of large livestock; small livestock; farm machinery; agronomic crops; tree crops; fruit crops; horticulture; range management; soils; and other specialities depending on the region of the country. Special emphasis would be place on identifying staff members who have been successful working with farmers and farm communities. A knowledge of extension methods and abilitiy to relate to the conditions in rural areas is critical to the effectiveness of the training.
Student Profile:	25 to 30 students per class and five to six students per teacher on field days.
School Year:	The scholastic year would be based on a full year two-crop cycle, to ensure adequate hands-on field work.
School Week:	Each week would have two to three classroom days and two to three field days. The field days would begin during the first week of the school year, thereby giving the students practical experience from the start. .
School Plant:	Each school would be comprised of a dorm; class-clubroom combination; dining hall; library and study area; and four staff rooms.
Facilities:	Each school would have full set of classroom materials (low on the electronic gadgetry, and high on the more basic supplies like the vis-a-vis boards, since these are the kinds of aids the extensionist would need once in the field). Six vehicles for each school with 8-person capacity per vehicle for field trips.
Student Benefits:	Each graduate qualifying for benefits to get started in private consulting would receive a motorcycle (100-150cc) and trailer for his field mobility. In addition, there would be a start-up subsidy for each extensionist. There would be several master's scholarships awarded per year, starting the third year of the program, also available to school staff and based on competitive merit. (The number of scholarships is not a fixed number.)

The program will also offer trainees an opportunity to finish his/her thesis in areas related to agricultural technology transfer: extension methods, adoption of technology, rural community organization, and others. However, the completion of a thesis is not a requirement to obtain the title "Consulting Agriculturist."

At or near the end of the term there would be a comprehensive examination including:

- a written component covering technical details, computations and agricultural principles;
- an oral/verbal component with emphasis on communication skills; and
- a hands-on demostration such as yoking a pair of work animals, hitching them to a plow or disk harrow, and operating the implement or calibrating a seeding drill. The examining committee for this component would contain more good farmers than professionals/academians.

Those who pass all three components of the exam would be issued a provisional Consulting Agriculturist Certificate. After five years of professional practice and attendance of a minimum number of field days and seminars, aProfessional Consulting Agriculturist diploma would be issued.

Provision will be needed for establishing and maintaining professional standards, and the continued issuance of Consulting Agriculturist Certificates. It is envisaged that by the time a second or third class graduates, the graduates will form a professional association to:

- establish norms and standards of professional conduct/performance; and
- establish the curriculum contect and comprehensive examination context.

Any institution in a position to offer the training specified by the professional association should be permitted to do so. The professional association should prescribe the content/conditions of the comprehensive examination and would issue the provisional consulting agriculturist diploma/status.

d. Operation of the Program

Upon graduation, the individual would be free to choose where he/she works--for the government, lending institutions, or private companies. For those who wish to enter private

independent consulting, competitively offered, initially subsidized, opportunities would be available. These graduates would be given a start-up subsidy to allow them to go to the field and obtain clients on an individual, competitive basis. About 20 or 25 start-up underwrites would be offered. This would include funds to cover living expenses and pay minimal operating costs (such as for motorcycle operation) until they developed a paying clientel. The basic thrust would be to set up his/her services on a purely competitive basis much like the old-fashioned doctor would do when going out into the country and hanging up his shingle to bring in clients.

The extensionist's income would depend on how many farmers, farming communities or associations he/she could get to accept his/her services. In many instances, it is expected that the extensionist would bargain for a percentage of the sale of crops as his income for services rendered. If the consultant is effective, crop yields will indeed increase for the farmer, thereby guaranteeing the consultant a certain income. Also, it is not expected that the extensionist would limit his area of activity. He/she would be free to compete openly with other extensionist services (governmental or otherwise) thereby creating an entrepreneurial spirit in the extension services. The more clients he/she has, the better he/she would do.

e. Linkage with Agricultural Research

No direct institutional tie exists between the research institution and the consulting agriculturist. However, individuals seeking new or current information for their clients are usually frequent and diligent attendees of field days, workshops, and seminars sponsored by research and development institutions. Therefore, the public sector experimental stations generate technical information and the corps of consulting agriculturists convey it to the farmers and translate it into farming practice.

f. Linkage with Agricultural Credit

Directly or indirectly the consulting agriculturists will be involved with credit. Financing institutions should be encouraged to include the consultants cost as an input with a cost, the same as any other purchased input, in the loan package, when included in the loan tabulation, the bank would disperse installments to the consulting agriculturist during the crop cycle with final payment when the crop was harvested and loan repaid. Such an arrangement helps both borrower and lender.

The Financer:

1) Can be reasonably assured that the lent money would be spent on the crop production activity, and not directed diverted.

2) Can be reasonably assured that the farming operations will be properly done at the appropriate time, thereby assuring a yield adequate to cover loan repayment.

The Borrower:

1) Can be reasonably assured that there will be adequate funds to cover the cost of the purchased inputs, available when needed.

2) Can be reasonably assured he will be following a sound productive program producing adequate crop yield to repay the loan, pay the consultant, and provide a fair income from farming.

The consulting agriculturists will develop the loan application, and may, on behalf of his client, negotiate with the loan officier. The lending institution may request (or insist) that the client farmer have the services of a consulting agriculturist as a condition of the loan.

g. Linkage with PAOs

The consulting agriculturists operating on the highlands are expected to have communities as their client, or at least work through them if they serve individual farmers. As such they will be instrumental in consolidating individual needs into a single loan application for submission to the financing institutions. It is anticipated that with a loan application submitted by, or through, the community, credit will become available to small farmers. Thus, the consulting agriculturist may be both a catalist and a vital component for credit availability to the small producers. Likewise, the financing institutions may (should) require that a condition of such loans be the services of a consulting agriculturist.

It is also anticipated that there will be mutual interest between Private Agriculture Organizations (PAOs) and consulting agriculturists. PAOs can often carry out tasks such as the following:

- o outline the needs of their farmer members;
- o provide the consultant with the names and addresses of their members;
- o provide an operational hub, perhaps including office facilities; and
- o perhaps contract for services on behalf of their members.

h. Underwriting of Consultants

In order to stimulate the graduates and avoid too many of them gravitating to the commercial agricultural environment of Santa Cruz, where extensionist work might appear fast and easy, incentives and start-up subsidies would be graded so that there would be an economic rationale for going to the hardship areas of the country. This would be like a differential or hardship allowance. Hence, underwrites would only be for a few months in an area such as the commercial farms of Santa Cruz, but may be for 15 to 20 months in the highlands.

Each consulting agriculturist who accepted an underwrite, tied to a particular agricultural zone, would be issued a motorcycle; but vehicle title may remain with the initial training institute, at least for some time, with operating cost the responsability of the consulting agriculturist.

It is envisaged that the consulting agriculturist program would run until at least three classes had graduated, and the first class had at least two or three years of field service. At that point:

- o adjustments may be made in the curriculum content and duration;
- o a few of the more competent successful consulting agriculturist be offered scholarships for a masters degree abroad;
- o an adroit, articulate, communicative, successful consulting agriculturist may be recruited to each institute staff;
- o adjustments may be made in the scholarship and underwrites; and
- o the motorcycles may be sold to the practicing consulting agriculturist (at fair market value) and the proceeds used to pay for the training of new classes.

i. Continued Professional Development

Built into the graduate's support would be a monthly reconfirmation program from the specialty school whereby the graduate-consultant would have free access to the school for problem solving and consulting services. In addition, the consultant would be tracked by the school in order to establish a roster of exceptional talent and accomplishment which would allow the consultant the opportunity to receive scholarships for MS studies in the school best suited to his speciality and accomplishments. Not only the consultant would be candidates for

master's degree scholarships, but the teaching staff could also compete for them. This would ensure that teachers maintained themselves professionally progressive, hands-on oriented, and would greatly add to their incentive to stay on the staff, longevity on the staff being in itself a desireable feature of the program.

The MS scholarship priviledge would kick in after the extensionist had completed two years of practice. After five years on the program, the extensionist would become a Senior Consultant.

5. Policy Analysis and Statistical Services

In light of the importance of effective agricultural policy formulation and implementation to export promotion and improvement of marketing channels, an integrated Policy Analysis and Statistical Services Project is proposed for USAID's consideration. The objective is to attack the key constraints to effective agricultural policy analysis in the context of the overall strategy that is recommended for the mission's future agricultural development assistance program in Bolivia. The project could be included as a component in the mission's planned Agricultural Planning and Institutional Development Project.

As part of this strategy, it is urged that USAID encourage MACA to decentralize its decisionmaking--including funding--authority to enhance the capability of its regional offices to serve their respective farmer clients. So as not to give mixed signals, it is imperative for USAID to take care to restrict its support of MACA headquarters in La Paz to those functions that are unequivocally the purview of a central office ministry. Such are the activities proposed for MACA in the project under discussion.

The Policy Analysis and Statistical Services Project is foreseen to consist of four activities:

(1) Public Policy Analysis Support;
(2) Private Policy Analysis Support;
(3) National Rural Household Survey; and
(4) Improvement of Sectoral Statistics.

a. Activity 1: Public Policy Analysis Support

A small policy analysis unit will be set up as an advisory service in MACA. It will be set up independently of the Sector Planning Directorate to permit the unit to deal with policy in a broad sense. Within MACA, it will be responsible for the development and assessment of alternative agricultural sector strategies and policies, and under the guidance of the minister for setting priorities among them. In performing this role, it will help set both a tone and a sense of direction for the government's agricultural policy. A fundamental mandate of the unit will be representation and defense of farm community interests. Of particular importance in this connection will be its interactions with other ministries, including UDAPE in MPC.

Given the fragility of agricultural policy gains under the Paz administration, MACA must have the analytical firepower to trace the consequences for the sector of what may appear to be tempting changes in instruments of macroeconomic policy. The unit will be lean, consisting of three highly trained Bolivian professionals. It will not do intensive research on its own, but

will be in a position to contract with sources of analytical excellence both in and out of the country.

b. Activity 2: Private Policy Analysis Support

The private sector, including both agribusiness and farmer organizations, have little capability to sponsor and finance studies and outline alternatives for solutions to sector problems. Complementing the creation of a policy analysis unit in MACA will be the development of policy analysis capability within the private agricultural sector.

The objective of this activity will be to allow farmers and agroindustries to play a more informed, constructive role in agricultural policy formation. Experience in other countries--Ecuador and Peru, for example--suggests that a modest investment can have high returns. Possibilities for the location of policy analysis capability include private agricultural organizations (agricultural chambers and associations), agroindustrial associations, and non-governmental organizations, among others. Besides providing technical assistance, USAID might match the funds of these organizations to gather data, carry out analyses, and distribute results. The matching ratio might be 3:1 for two years, 2:1 for two years, and, finally, 1:1 for two years.

c. Activity 3: National Rural Household Survey

A nationally-representative survey of rural households will be conducted to obtain up-to-date information on such issues as the distribution of income in rural Bolivia, determinants of income, farm size distribution, migration, market access, use of technical assistance and credit, crops mix, input use, sources of non-farm incomes, and such. In one sense, the survey will repeat the 1978 National Socioeconomic Farm Survey, but it may be appropriate to include rural non-farm households as well.

The MACA statistics division should not attempt to carry out efforts of this magnitude directly. Instead, it will be contracted out to local organizations, either private or NGO. The MACA statistics division and the policy unit will cooperate to define the nature and context of the survey, and also to supervise the contractor. Both the data and the results of the analysis will be given broad distribution.

d. Activity 4: Improvement of Sectoral Statistics

In contrast to attempts to replace or turn established statistical systems upside down, this activity will build modestly on what exists. Special attention will be paid to improving quality control in data collection, making data transmission and processing more rapid and efficient, and, perhaps most importantly, publishing and distributing current and past

information as broadly as possible.

Primary data in the field is increasingly gathered by PAOs and sometimes by NGOs. The intent will be to support the data gathering function of these organizations and to make MACA's Statistics Office more of a networking, outward-looking, service organization.

It is estimated that the USAID contribution required for this project will be $5 million.

6. Expansion of Seed Production Capability

Seed is one of the few modern agricultural inputs that can be produced in Bolivia. Production programs have been started in several parts of the country with the support of USAID and with that of the Swiss Mission, leading to a savings in foreign exchange of over three million dollars U.S. annually. Experience has demonstrated that the use of high-quality seed increases both the yields and quality of farm products, improving the competitive situation of Bolivia's agricultural sector. The most notable example has been the impact on soybean productivity in Santa Cruz and the Chaco region of Bolivia, which has possibilities for an expansion of exports in soybean and soybean by-products. The production and distribution have become largely private sector activities, leading to a sustained program with few recurring costs to the central government.

The impact of the seed programs have been concentrated in the Department of Santa Cruz. In Cochabamba, the strides made in seed improvement are impressive, but fragmented; there is no department-wide program operating to support the formation of new seed companies, much less individual growers. In Chuquisaca and the Gran Chaco of Tarija, seed programs have been initiated, but small companies and growers have had only a short time to formate and implement operations. In other areas, even less effort has been made.

One of the principal limitations to increasing seed production is the availability of qualified local technicians to support seed growers through certification services, which have become more than just a technical service in some regions of Bolivia. It has become a focal point for coordination of regional programs, with the backing of local private and public institutions. The Regional Seed Boards have become a vehicle through which the farmer participates in the organization and decision-making processes for the entire program. Through the Boards, farmers agree to service fees they pay for services payed the programs self-sustaining.

The importance of having a sufficient number of highly qualified individuals in the regional certification services cannot be overly stressed. Several years of investment and effort by numerous farmers and local institutions, as well as international donors, ride on a small group of young, dedicated technicians who have been drawn into the program within the last five years. Some of the programs, especially those in Santa Cruz and Cochabamba, are growing to a point of sophistication where the level of technical knowledge required is notably greater. Yet, none of the personnel currently working in certification have degrees beyond the BS level and few have had extensive training outside of Bolivia.

Another constraint is the supply of foundation seed. Foundation seed is the base from which the seed grower builds. Without it, he is limited to cultivating a product that may not stand out as being really superior to the common materials which the farmer uses to plant. It is difficult for the producer of foundation seed to recover the cost on a strictly commercial basis because of the small quantities involved. Therefore, it is usually produced by public institutions. The mechanisms for providing funding to IBTA, CIAT, and other public organizations need to be further explored and implemented for this vital service to be performed. Again, qualified personnel are needed.

Although USAID has supported seed production in the country for some time, the total investment in terms of capital has not been large. Most infrastructure and production capital has been provided by the private sector. Also, no long-term training in seed technology has been financed by any foreign donor to date.

A new project is needed with the objective of contributing to increased productivity by developing effective seed supply systems. This implies strengthening the industry in regions where it exists and developing it in the regions where it does not exist. The priorities for this project include:

a. Strengthening foundation seed programs;

b. Promoting small-medium scale seed operations on rice, potatoes, cereal crops (potato efforts should link up with efforts being displayed by IBTA, SEPA, AZAR, others).

c. Promoting greater utilization of improved seeds through information, education, credit, incentives, and such;

d. Strengthening overseas and in-country training activities for people involved in the system;

e. Strengthening certification services; and

f. Strengthening leadership interegional and national seed councils.

The specific areas where USAID support is needed are cited below.

<u>Training:</u>

- At least 15 persons working in certification, foundation seed units, and national-regional seed councils trained to the MS level in seed technology and closely related fields

- Intensive and in-service courses overseas

- An in-country seed training center within Bolivia to carry out training programs on a whole range of activities within both public and private sectors

Infrastructure/Equipment/Vehicles:

- Vehicles for certification/foundation seed personnel
- Small seed conditioning plants in one or two regions
- Many small portable threshers and seed cleaners suitable for small-scale seed operations, to be leased/sold to communities, cooperatives, colonization groups, individual seed growers, and such
- Offices, laboratory space, and additional minor equipment for certification services
- Small-scale potato seed warehouses suitable for storage with diffused light.

Information/Strategies/Policies:

- Gather and distribute information about seed for decision makers
- Provide information and orientation to decision makers in seed councils so as to develop adequate strategies and policies for seed industry development

Technical Assistance:

- At least two expatriate advisors for the life of the project, for at least four years. Assignments will begin before MS candidates depart for training.
- Several local advisors focusing on the development of systems and technology in target regions of the country.
- One local advisor focusing on training and promotion of seed utilization.

7. Privatization Through Employee and Producer Buyouts

Since the early 1970s a number of innovative financial techniques have been applied in the U.S. and a number of developing countries most notably in Mexico and Malaysia for expanding the base of private capital ownership. These techniques conform to the general philosophy known as "Economic Democracy." In the same way that political democracy is built on the premise that every person is entitled to participate in the political process through a vote, the basic tenet of Economic Democracy is that every person is entitled to a share of productive capital, which will provide him/her with capital income in addition to his/her work income. This access to productive capital is provided by an innovative mechanism where capital ownership is not cooperative or collective rather, it takes place through the individual ownership of shares in a profit-oriented corporation by its employees and by other sectors of the population.

a. Experience in Other Countries

In the U.S., a device known as ESOP (Employee Stock Ownership Plan) has been applied. It consists of a completely leveraged buyout of some or all of the shares of a company by its employees. An ESOP buyout involves no out-of-pocket costs or salary deductions for the employees; the shares pay gradually for themselves out of the increased cash flow generated by the employees' productivity. Any net profits are paid out to the employees stockholders as dividends. Congress has declared broad-based ownership to be a goal of U.S. economic policy--a goal of equal importance as is full employment--and has passed some 18 laws facilitating ESOPs. As a result, the most economic way for a U.S.-based corporation to raise new capital is to distribute shares through an ESOP to its employees, and the most advantageous way for an owner who wants to sell out for any reason is to sell his shares to his employees through an ESOP. To date, over 8,000 U.S. corporations have become partially or wholly employee-owned, and over 8,000,000 employees have become co-owners of their companies. The results have been remarkable: labor-management conflicts have disappeared; productivity has increased (companies that are over 20 percent employee-owned are over three times more productive than are comparable non-employee-owned companies; and profitability has been over 50 percent higher.

In Mexico, the concept has been implemented through the Smallholder Corporations (Corporaciones Agropecuarias Ejidales), of which over 10,000 have been established since 1970. In such corporations, the farmers pool their land voluntarily into large units (typically 1,000 hectares) operated as farming enterprises with professional management, in which the farmers both work as employees and receive dividends as stockowners; every farmer's

capital share corresponds to the land he contributed. These have become so successful that many have jointly established agro-industries for the processing of their products.

In Malaysia, Economic Democracy took place through the "bumiputera" ("sons of the land") policy, whereby the government has transformed all of the agricultural estates nationalized at the time of independence into stock corporations owned by their workers who are predominantly of Malay nationality in order to increase the share of the poor Malay majority in the national economy.

Similar ideas are currently being implemented or are under active study in a number of developing countries (such as Indonesia, Bangladesh, Egypt, Belize, Honduras). The chief applications of Economic Democracy in developing countries to date have been the privatization of state-owned industries (especially agro-industries), and the sale of shares of multinational companies by means of self-financing credit to their employees in order to create for themselves a local constituency.

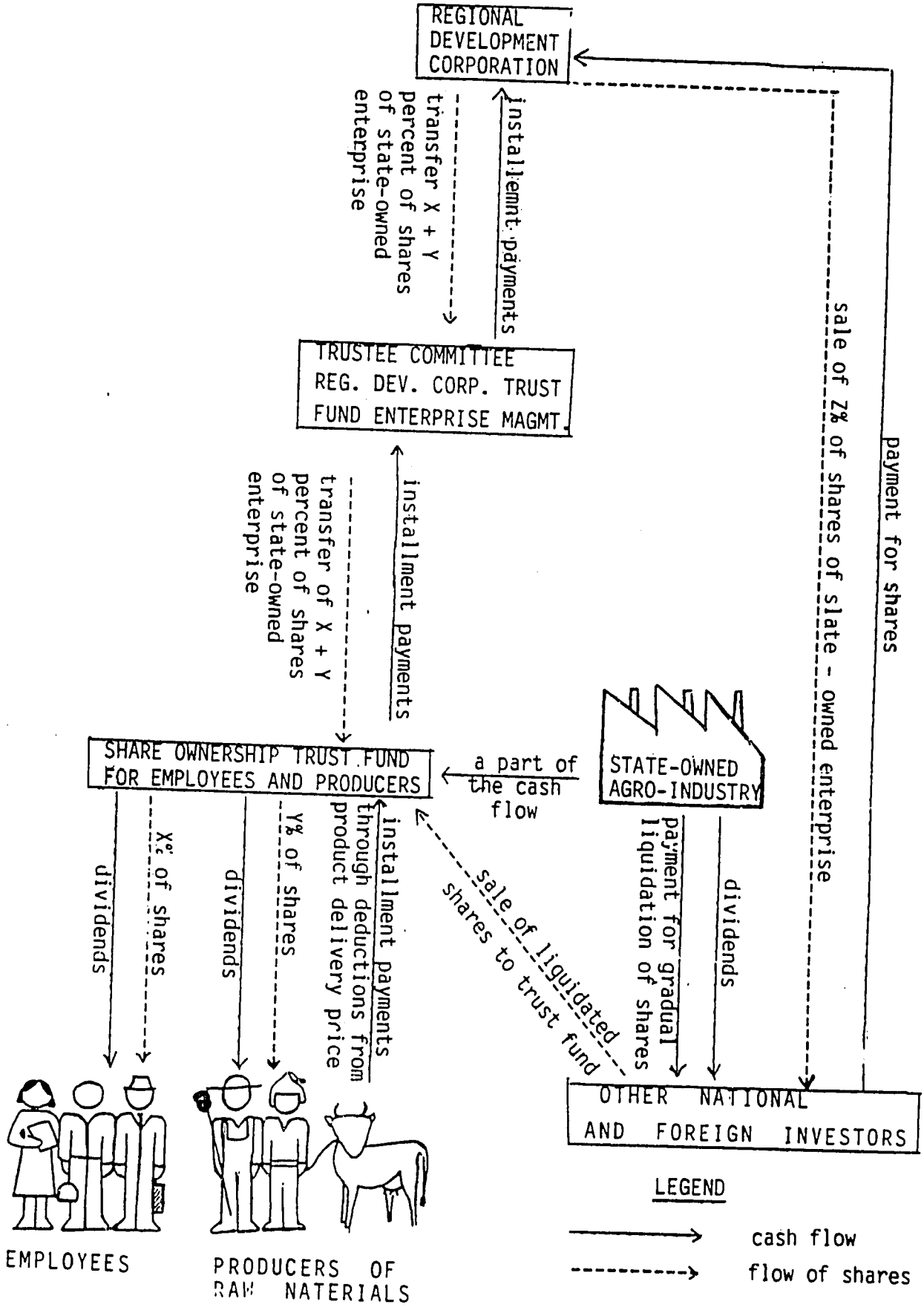
A new conceptual development in multinational investment is the so-called "sunset law," under which a developing country invites foreign concerns to invest under a financial setup that provides them with incentives to gradually transfer their shares to the employees and other host-country citizens, then either phase-out or remain under a management contract. In this way the country can benefit from international capital and knowledge without fearing the long-term dominance of the foreigner.

b. Possible Application in Bolivia

The application of ESOP-like financial techniques tailored to the specific legal, social, and economic realities of Bolivia can ensure that privatization of state-owned industries will come about with minimal socio-political resistance and maximal benefits to wide sectors of the population. In the context of Bolivia, it is desirable that the ownership of agro-industries be shared by their employees and their raw material producers (e.g., in the cases of milk, and sugarcane) or by consumers (e.g., in the case of animal feed plants). The participation of foreign investors can also be beneficial when they can bring provide capital for plant modernization, knowledge of the latest technologies, and international market connections. This participation could be made subject to gradual phase-out under "sunset law" provisions.

Figure V.1 illustrates a possible mechanism for the buyout of a state-owned agroindustry by its employees and producers of raw materials. The process would involve the following steps:

Figure V.1 : A PROPOSED MODEL FOR THE TRANSFER OF STATE-OWNED AGRO-INDUSTRIES TO OWNERSHIP BY THEIR EMPLOYEES AND PRODUCERS OF RAW MATERIALS



- The DDC or another GOB agency makes a decision to transfer an agro-industry.

- A feasibility study is undertaken to determine the measures necessary to make the enterprise viable and to improve its performance. An independent evaluator is commissioned to determine the fair market value of the enterprise, chiefly based on its expected future profits.

- The DDC or another GOB agency involved emits shares representing this value.

- The DDC or another GOB agency establishes a formula for allocation of the shares: X percent to the employees of the plant, Y percent to producers of the raw materials, and Z percent to outside (national and/or foreign) investors. (In principle, all shares can be allocated to the employees and producers, without the participation of outside investors.)

- The DDC establishes, in discussion with the employees, a formula for determining the number of shares to be allocated to each employee (the formula can take into account salary, and seniority).

- A trust fund is legally established for holding in trust the X percent of the shares allocated to the employees and the Y percent allocated to the producers until they shall have been paid.

- A trustee committee consisting of representatives of the DDC, employees, producers, and plant management, is formed to oversee the trust fund.

- The shares allocated to the employees and producers are transferred to the trust fund. (Since this is a transfer and not a sale, the requirement for a 25 percent downpayment and a bank guarantee for the remainder should not apply.)

- An agreement is made to deposit annually a part of the increased cash flow of the enterprise into the trust fund; the amount shall be sufficient to pay the DDC for the employees' X percent of the shares over approximately 10 years (without interest, since the shares are held in trust and not sold on credit).

- An agreement is made to deduct from the delivery price to the producers a sufficient amount to pay for their Y percent of the shares over approximately 10 years (without interest, for the same reason).

- The remaining Z percent of the shares are sold to other national or foreign investors for cash or credit, with an agreement giving to the trust fund the right to buy out these shares in the future. (Assuming the rate of return on capital to be 15 percent, the present value of an investment after 25 years is only three percent of its current value, so that investors especially foreign could be induced to receive a present discount of around four or five percent in exchange for ceding their shares after 25 years.)

- A communications program is set up to explain to the employees that the shares held in trust will become theirs only if the enterprise generates, through their efforts, sufficient funds to pay for them.

- At the end of the fiscal year the enterprise pays 10 percent of the value of the employees' shares (in the case of a ten-year payout program) through the trust fund to the DDC, and each employee receives title to 10 percent of his/her shares. (However, the employee actually receives the shares only upon retiring or separating from the enterprise.)

- After paying all obligations due and setting aside reserves, the enterprise declares dividends (each employee and producer receives the dividend corresponding to his/her number of shares, even though they are not yet fully paid for).

- Each employee and producer regularly receives a statement indicating the number of shares held in trust for him/her, the number of shares already vested in him/her, the current value of the shares, and the dividends distributed. (An objective valuator annually updates the value of the shares.)

- The trustee committee votes on behalf of the employees' and producers' shares as long as they are not paid for. The employees and producers vote the shares after they gain title to them.

- Upon retirement, if an employee or producer wants to sell the shares, he/she must offer them first to the trust fund ("right of first refusal"), which normally buys the shares and allocates them in the same way to new employees and producers, thus avoiding reconcentration of the shares in the hands of outside investors.

It should be noted that the establishment of an employee and producer stock ownership plan does not necessitate the existence of a stock market. (In the U.S., most ESOPs have been

established in closely-held companies that are not traded on the stock market.) On the other hand, these stock ownership plans create a stock market "from the bottom up" by establishing the share values and generating a steady buying and selling of shares within each company.

c. USAID's Recommended Role

The above process, although it may sound complex, would be in practice much simpler to implement than any of the 8,000-plus ESOPs already existing in the U.S., since no bank financing is involved and neither credit (at the very high current rate in Bolivia) nor guarantees would be necessary; the whole process (except for the part sold to outside investors on commercial terms) consists of "in-house" transactions between the DDC and the trust fund. USAID credit funds would, in general, not be necessary for implementing the proposed model for employee/producer buyout. In this situation, USAID would have an invaluable but relatively inexpensive role as a catalyst of the privatization process. USAID could initiate and assist this process by doint the following:

- Funding the expatriate and local expertise necessary for the feasibility study and valuation of the enterprise, the legal establishment of the trust fund, and the two-way communication process with the employees and producers for explaining the buyout mechanism to them and incorporating their suggestions into the design.

- Funding other expenses (commodities, or training) necessary for COMTRAINDU (Comisión de Transición Industrial) to establish a successful buyout program.

- On a case-by-case basis, if (a) the feasibility study determines that additional investments are necessary and if (b) outside investors are not available, USAID will be asked for credits destined to modernize the plant in order to make it competitive (not for the buyout of existing assets). Such credits would be made to the trust fund, with the DDC as guarantor, so that the new assets will increase the share value of the employees and producers.

In Bolivia there are 105 state-Owned enterprises, 23 of which are agro-industries. Under the above conditions, a USAID budget of $10 million over five years would be sufficient for making a good start on employee and producer buyouts of those agro-industries which could be, according to the feasibility studies, viable under the new ownership.

8. Farmer Organizations for Marketing and Agro-Industries

Farmer organizations provide a means for large numbers of producers to respond to market indicators in a coordinated fashion. Actions such as forward contracting, distribution of inputs, quality control, transportation, packaging, storage, and other market functions between the field and the point of sale to wholesalers can be achieved efficiently through medium- or large-scale private collective action. Often, organizations give the farmer a better negotiating position vis-a-vis the intermediary, thus enabling him to obtain a larger share of the final product price.

The experience in Bolivia and other developing countries indicates that farmers' associations based on mutual trust (usually on kinship or close community ties), and often informal or semi-formal in structure, function well in marketing. Formal organizations, such as cooperatives, on the other hand, sometimes encounter difficulties due to lack of financing and competent administration. Several NGOs (e.g., CARE in Chuquisaca) have been doing a noteworthy job of organizing small producers into groups for marketing (as well as for technical assistance, credit, and such).

The objective of assisting small farmers to increase their income and living standards could be furthered by increasing the capabilities of selected NGOs to organize farmers' groups for marketing. Considering that primary product transformation and marketing are basically women's activities in Bolivia the proposed assistance would also further USAID's objective of improving the situation of women. To this end, the NGOs involved should organize women's groups wherever appropriate, and generally view the woman as a producer and not only as a homemaker. The assistance would consist mostly of (a) providing the existing NGO cadres who are engaged in increasing farmer productivity the necessary means of transport, tools, and equipment; and (b) financing the training of farmer leaders in marketing, simple accounting, and financial management.

Farmer organizations dealing primarily with tranportation and marketing could be usefully combined with the creation of rural assembly centers (centros de acopio) whenever appropriate. These centers would be simple, low-cost structures consisting usually of a concrete floor, tin roof, facilities for washing, and simple grading of the products, as well as stalls for exhibiting them. As is the case with the primary transformation machinery, such centers should be built only where the interested groups are willing to acquire them on a loan basis with appropriate guarantees and at realistic interest rates, and charge a fee for their use, to assure that they will be effectively utilized.

Credit could be used to finance rustic storage structures (e.g., sheds for potatoes and onions) to enable the farmers to conserve their produce in good condition to a season of higher prices. Such sheds should be individual or communal structures where each farmer holds his product separately.

This activity could usefully be combined with organizing small farmers for simple product transformation, such as wheat threshers, rice hullers, or fruit driers. The equipment itself should be provided at realistic prices and interest rates. It has been amply documeted that subsidization is one of the best ways to corrupt farmer organizations. On the other hand, the collateral requirements should be appropriate (equipment and crop pledges and cross-guarantees, rather than mortgages), and the organization and training could be provided on a grant basis.

The proposed activity will complement the PAO (Private Agricultural Organizations) project that is currently being implemented with USAID assistance. That project aims at increasing the capacities of established producers' associations and cooperatives, as well as departmental chambers of agriculture and federations. Its thrust is on technical assistance. On the other hand, the proposed project will capitalize on the considerable existing technical manpower, acceptance among the farmers, and renewable budget resources of the ONGs to form new farmer groups around marketing and agro-industrial activities, and its thrust will be on providing commodities and credit. It is expected that the proposed project will assist many more farmer groups - each being smaller in size and comprising smaller farmers - than the PAO project is currently doing.

Extreme caution should be taken to assure that the projects are well-conceived, as there have been more failures than successes in this type of market infrastructure. For example, the 15 farmers' markets constructed in Bolivia - most of which are underutilized or simply not utilized - stand as mute witnesses to this.

The assistance should be designed judiciously so that the NGOs and farmer groups involved would not become dependent on USAID funds. A rough estimate of the absorptive capacity of farmers' organization for marketing and agro-industries, including credit, would be about US$ 10 million over five years.

9. Packing Plants and Refrigerated Transport for the Livestock Industry

In Bolivia, cattle is usually slaughtered in municipal abattoirs that do not have an adequate design to facilitate the killing and do not meet normal sanitary requirements. Cooling meat products immediately after killing is necessary to prevent the natural enzymes from degrading and producing toxic products in meat.

There is only one slaughter plant (in Beni) with equipment to cool and freeze meat. It has two refrigerated storage chambers with a capacity of 80,000 kg or approximately 500 head of cattle. However the refrigeration equipment, the killing floor, and the main structure need to be restored. Initial estimates are that at least US$ 60,000 are needed to place the plant in a good working condition. This plant does not utilize the blood and only part of the viscera is utilized and sold. It does not meet normal or international sanitary conditions in its present condition.

In the city of Santa Cruz about 350 head of cattle are killed daily in the municipal abattoir, a plant designed to process 80 head per day. It does not have refrigeration equipment and does not process blood and other valuable sub-products. This inefficiency increases the cost of the final product.

Neither does Cochabamba have a slaughter plant meeting sanitary requirements. Pork processing plants kill their hogs in municipal abattoirs or in private killing floors, but in both cases the sanitary conditions are poor. With no cooling facilities, the carcass begins to deteriorate immediately after killing.

Bolivia has no facilities to transport beef and pork products under refrigeration. The same condition is true for poultry and fish production. The end result is that the consumer may be deprived of obtaining a product which otherwise would be available if refrigerated transport would be established.

The objective of this program is to finance the construction of packing plants for beef and pork. The plants would not only meet local sanitary conditions but also international standards. Veterinary inspection would be upgraded to meet international standards. Thus, animals could be killed not only for domestic consumption but also for export. The project would also facilitate the purchase of vehicles and equipment to transport meat products under refrigeration inside the country and eventually outside the country. The urban population would consume meat of high sanitary quality.

Packing plants would initially be constructed in La Paz, Santa Cruz, and Cochabamba, after which secondary cities would be included. Refrigerated transport facilities would also be established in the three major cities to facilitate internal marketing. The total production of these three plants would be about 49,950 tons of beef carcasses from 277,500 bovine and 15,675 tons of dress pork from 237,500 hogs per year. The reconditioning of the packing plant at Trinidad could be included in the project.

The participants of the project would be the municipalities; the organizations of livestock producers, including the Chaco; and other interested groups. Care should be taken to avoid overdimensioning individual investments, especially those which give key market positions to a limited number of participants. Assistance to install small and medium sized storage and transport facilities should be made available to a large number of cattlemen and market participants of various kinds.

The project has been estimated to cost about $us 18.75 million which would be invested in four years. The input from USAID would include the following:

		Millions of US$
Packing Plant for La Paz: capacity 300 cattle and 300 hogs per day	:	3.5
Packing Plant for Santa Cruz: capacity 560 cattle and 350 hogs per day	:	5.2
Packing Plant for Cochabamba: capacity 250 cattle and 300 hogs per day	:	2.8
Acquisition of both refrigerated storage and sport	:	3.5
TOTAL		15.0

US$ 3.75 million would be the contribution from municipalities, the Federation of Livestock Producers, associations of livestock producers, and others. To obtain resources, municipalities would sell bounds and stocks for the new facilities. In the case of transport facilities, agroindustrial companies would be the participants.

Care should be taken not to overdimension individual investments.

10. Cargo Facilitities for Expanding Exports

The immediate requirement for improving the export infrastructure is completion of the grain storage and loading structures at Puerto Quijarro and the creation of a general-cargo barge port to handle the considerable export volumes that are expected from the lowlands, especially if the predicted large increase in soybean production materializes. These facilities are of paramount strategic importance in giving Bolivia the long-sought-after outlet to the ocean (in this case, to the Atlantic via the Paraguay River). Although Puerto Quijarro is not expected to completely replace rail shipments to Brazilian ports (especially Paranaguá), it will give exporters a valuable alternative.

USAID is presently assisting in the establishment of grain-loading facilities in Puerto Quijarro. These should be completed, and USAID assistance continued for initiating construction of a general-cargo barge port. The new barge ports should be administrated by a privately-owned enterprise (although ownership could be mixed) to assure their efficient operation.

While USAID should generally not be engaged in capital-heavy projects, in this case the initiative has been well placed in Puerto Quijarro by allocating a relatively small amount of funds US$ 5 million to this highly strategic investment. While this is not likely to be sufficient for completing the cargo port, it would finance the necessary engineering studies and allow the construction of some essential facilities, so that other donors could complete the port's infrastructure.

In addition, USAID should enter into a diaolgue with other donors and with Bolivian officials concerning the east-west trunk route across the country, including both road and rail connections.

11. Local Involvement in Rural Infrastructure and Services

The formalization and legalization of local units of government in rural areas to provide services such as farm-to-market roads, school buildings, drainage systems, potable water, and such, require the development of new legal systems and constitutional reform. This implies an understanding and agreement on the concepts and methods of operation of administrative and political systems at the local level. However, few Bolivians have ever had the opportunity to directly participate in governmental decision-making and operations at the local level. To formulate new laws or to change legal structures at the onset would, perhaps, just end in debate. Instead, several models of local government should be allowed to evolve and develop before clear concepts for the legal system can be formulated. This would occur wit6h a degree of technical assistance and perhaps a smaller amount of financial assistance.

There is room for immediate action by working through an international agreement between USAID and the GOB to allow for a project to help form service districts in several parts of the country. The GOB, probably working through the Ministry of Planning and Coordination (MPC), would assign to the project the right to form the districts under an arrangement of "administrative exception." The districts would fall under special rules for the duration of the project. At the time of project completion, the new laws would either be approved, or the situation would revert to its previous state.

The districts could take the form of "special service districts" for particular services (such as road repair or irrigation and drainage), or they could be larger in scope, encompassing a range of responsibilities in infrastructure and services. Probably most would fall into the former category, at least initially. However, the districts would likely evolve into more activities over time. It is also possible that leaders can take the initiative at the provincial level, thereby assuming more of the service and infrastructure responsibilities at this level. The project would regard this as one more model to be supported, and would work with the provinces in the same way it would with smaller special service districts. It is not envisioned that units larger than the provinces would be formed, the only possible exceptions being soil and water conservation districts or watershed management districts.

Ideally, at least one district would be formed in each department; if possible, as many as two to three would be created. The concept is to involve as many people as possible during the life of the project in order to arrive at clear understandings and agreements on the administrative systems to be employed. Priority should be given to places where chances of success are greatest, i.e., to those places in which the citizens

already have some experience in the organization of local groups. For example, the municipal elections in December 1987 provided an opportunity to initiate work with selected rural alcaldias (mayors' offices) throughout the country. The civic committees of the Beni's provinces constitute a second set of candidates for immediate assistance. Other forms of informal, but functioning, local organizations (such as Ayllus) could be selected as a third set of candidates.

The authority needed to be given from the central government should include the following rights:

- The right to form a service district with a defined boundary with approval of the majority of voters registered as residents within the area of jurisdiction of the proposed district.

- The right to collect taxes on property for specific purposes with approval of the majority of voters in the district.

- The right to enter into contracts, including opening bank accounts, employing staff, or contracting with construction companies.

- The right to receive assistance directly from USAID or other donor agencies, and from the national treasury and department development corporations.

- The right of emminent domain to expropriate land (with reimbursement of value to owner to establish access ways for roads and drainage canals).

The central government should also establish a matching funds system whereby for each Boliviano collected locally from property taxes, the national treasury would deposit another Boliviano. This measure is important because, for example, as a district is formed to maintain roads or provide other services, the National Road Service and other national agencies no longer have to provide this kind of support. This is a disincentive to form service districts. However, to the extent they were formed, the result would be having fewer government resources dedicated to the rural sector and more available for urban areas. Therefore, the matching funds system is vital to ensure that the central government does not diminish its support to rural areas. Obviously, these mechanisms will result in an increase in the tax base from which the governmental system as a whole (local and central) operates.

USAID support through the project would focus on strengthening the capacity of local governments to offer public services on a sustained basis through the following mechanisms:

the generation of local resources; the training of employees; the administration of local government; and the education of the public on the functions and responsibilities of government and citizens. Districts would normally be small, and taxes would be collected only with the approval of the voters for specific purposes. Therefore, the project's involvement in systems of public administration is not expected to be a serious problem. Some districts may not even have a permanent staff; instead, they may simply collect funds at certain times to contract a private construction company to repair, improve, or extend the road system.

The project might begin with an international tour, whereby 15 to 25 potential rural district would visit other countries where such governmental systems exist. These leaders should at least visit county governments, service districts, and port authorities in the United States. Other useful examples may be found in some Latin American countries.

The formation of districts should not be distorted by offers of funding from international donors for infrastructure projects. Therefore the project would include very little funding for investments. Its main contribution is technical assistance. A small amount a money might be set aside for vehicles, office and/or garage space, and office equipment for some of the larger districts or provinces. A training fund should be included. Leaders and administrators from one district should travel to other districts to learn from others' experiences. Meetings at the national level will be needed to reform the constitution and to draft laws that would legalize and restructure the governmental system so that local governments would play a significant role in the development of the rural sector.

12. Access Roads in Areas of Agricultural Expansion

The "agricultural frontier" in the lowlands is being expanded rapidly in Santa Cruz and the Alto Beni. In the latter area, families are migrating from the area of La Paz to take up farming in the lowlands using slash-and-burn methods. Settlements occur along exisitng roads into the northern areas of the department of La Paz and the southwestern area of the department of Beni. In the eastern lowlands, the migration is even more intense, ocurring to the east of the city of Santa Cruz within about 20 kilometers on both sides of the rail line to Brazil, beginning at the Rio Grande and running about 100 kilometers to the east, and along the road running north-south on the east side of the Rio Grande, connecting Pailon near the railway bridge with Los Troncos on the road from Okinawa to Trinidad. This road was just completed four years ago, improving access on the eastern side of the Rio Grande.

The phenomenon of expansion of agriculture into virgin lands is nothing new in Bolivia. Thousands of families have moved to the lowlands to take advantage of the virtually free land available to anyone who wishes to work it. In Santa Curz Mennonite farmers have occupied vast areas to the south and east of the city. Japanese and Okinawan farmers have established colonies to the north. Agricultural companies composed chiefly of local residents have been formed to cultivate larger expanses. The direction of the recent expansion in this department has been spurred by the following three factors:

- The railroad bridge over the Rio Grande is the only bridge in the area; thus, it is also used by trucks to cross the river. (The alternate means of crossing the river--a pontoon bridge--is unreliable in rainy weather and expensive.)

- The eastern area, with low humidity and precipitation around harvest time, offers a more favorable climate than does the central area to the north of the city. This has caused most of the cotton production in the department to shift to the east.

- The prospects of export markets for soybeans through Atlantic ports, using the railway to the Brazilian border, look highly promising.

The area described above is still mostly in timber, with several large tracks cleared by agricultural companies or, more often, by Mennonite farmer colonies. These tracks are being expanded each year using mechanized methods for both clearing and farming. Along the road to the east, parallel to the rail line, and the road running north from the bridge, small farmers using slash and burn methods are predominant. Here, too, the amount of

land in cultivation is expanding, although some of it returns to barbecho (jungle) after a few years of hand cultivation.

With the agricultural expansion in the lowlands, and the diminished alternatives for employment in other sectors throughout the country, leaders in La Paz and Santa Cruz are convinced that they must prepare for a large influx of colonists from the highlands and valley areas of the country over the next few years. Some persons speculate that the wave of migrants might be even greater than in the past. Rising social and economic problems are foreseen if Santa Cruz's incoming migrant population does not find sufficient economic opportunities. Departmental leaders can foresee that if nothing is done, a marginalized mass of disadvantaged people will grow on the fringe of the city--a group of people with inadequate services, housing, and income. Therefore, the department has developed a policy of deliberately trying to make opportunities available to participate in the expansion of the region through salaried employment, self-employment and investment opportunities. (CORDECRUZ, 1987)

One of the most direct means available to improve economic opportunities in the lowlands is to improve access to land resources. In fact, this has proven to be one of the only ways to assist colonists during the first few years while they are establishing themselves in the lowlands areas. Fortunately, with the agrarian reform laws of the country, accessing land is mainly a matter of providing physical access. Therefore, a program for construction of farm-to-market roads in the lowland areas of agricultural expansion is seen as being highly positive, especially during the next few years.

If a feeder road were to be constructed every five kilometers throughout the area described in Santa Cruz, the total length of roads needed would be over 1000 kilometers. Perhaps another 400 might be needed in the Alto Beni. It is recommended that they be all-weather roads along similar design criteria as are currently being used in the Rural Roads project.

The first option considered for implementing the project envisions the DDCs covering operating costs and the Rural Roads Department of the National Road Service (SNC) executing the project. USAID would provide the necessary equipment and parts to build the roads. Once completed, the roads and equipment purchased would be turned over to the maintenance department of the SNC. This option, however, assumes that the DDCs will have the funds available to invest in the projects, perhaps a wishful assumption. The BID/CAF project for road construction in Santa Cruz has suffered serious delays because of lack of operating funds from CORDECRUZ.

Consequently, one must consider a second option in which

road construction would be entirely financed by USAID using the "turn-key" approach, i.e., by contracting with local construction firms. The SNC may supervise the project, if it wishes to do so. At the end of the construction, one of two options can be used:

- the road network could be turned over to the SNC for maintenance, or

- a service district for the maintenance of roads could be could be formed by the colonists; under the terms of the project, this would be termed "Local Involvement in Rural Infrastructure and Services." The matching funds system implies that the central government would still maintain a financial responsibility in supporting the area.

13. Productivity Improvement Through Soil and Water Management

An autonomous national program would be established to address the natural resource constraints of the highlands and valleys. The program would address all of the natural resources, including cropland, grassland, woodland, brushland, fruit tree land, and--as last priorities--the already-eroded lands and the control of gullies. Priority activities recommended to remove the constraints for the highlands and valleys include the following:

- o develop and dissiminate simple and economical methods of seed bed preparation to ensure total infiltration of the rainfall each day on cropland;
- o develop simple and economical methods of improving soil structure and fertility, such as legumes, green manures, mulching, composting, and earthworm culture;
- o develop a management system for grasslands that will ensure total infiltration of the rainfall where it falls, to increase grass production;
- o develop a management system for brushlands, woodlands, and fruit tree land that will ensure total infiltration of the rainfall where it lands, to increase tree crop production; and
- o as a low priority, provide adequate infiltration for certain areas of the upper valleys to partially remove the drainage and flooding constraints in that region.

Farmers often relate the stagnant or decreasing yields they achieve to the erosion of their soils. Experience shows that it is not necessary to carry out a great deal of promotion to convince them to apply conservation methods. Farmers are receptive to demonstrate for themselves on a small scale that conservation is worth the effort. The effort must be simple and practical. However it must demonstrate good conservation principles and concepts (theory) without the farmers realizing that they are putting into practice all of the sophisticated theories involved. Acceptance is related directly to whether the action fills a real need in their lives, that being increased agricultural production.

The main feature of a conservation program would be to help the farmers set up 20-square-meter conservation plots on their own farms and compare new ways to prepare their seed beds. Then, they would plant the new seed beds and the rest of their fields with the same crop as they have done in the past. The harvest from the conservation plot is then compared to the harvest from

the farmers' traditional method of preparing the seed bed. In this manner farmers can see if the new way is worth the effort of a little change in his methods. Of course the increase in production must be enough for the farmer to want to make some adjustments in his farming methods.

The diagrams included on the following pages (figures V.2, V.3, and V.4) demonstrate how a conservation comparative plot is layed out in the field. The name found to be accepted by farmers is not "test plot," "experimental plot," or "demonstration plot," but "area of comparison." Even though they are experimenting and demonstrating, there are some negative implications in using those terms.

There are three main types of comparative plots: those for cropland, grassland, and forestry/fruit treelands. An additional trial (figure V.5) is included, this being gully control through the use of only one meter-high dikes made of materials such as stakes, sod, soil, or rocks. There is also a summary (table V.1) showing that only eight conservation practices are necessary to use in order to adequately treat most watersheds. The summary also demonstrates in which land uses each practice applies. One will also note that every farmer has the opportunity to try his own method to increase infiltration of rainfall into his soil so as to increase production. The soil conservation practice that results in the highest production is the one that is recommended. The farmer or leader who developes the best practice gets to select a name for the practice (usually his own name is used).

A very simple engineering level made of raw materials that the farmer already has on the farm is used, at no out-of-pocket cost to the farmer. This level ("A" frame level) is used by the farmer to survey and check his construction for every type of conservation work necessary. He can even use the crude but accurate level to lay out an irrigation canal on a grade or prepare a level spot for constructing his house. The farmer is not forced to depend on a topographer or surveying technician to carry out the practices.

Each farmer is encouraged to teach at least five different farmers to establish a similar conservation plot on his own farm. Repeating the teaching of this system at least five times helps him feel more comfortable about this new technique and he eventually feels like an expert conservationist. Also teaching five new people spreads the conservation word in a multiplying fashion. What motivates a farmer to want to teach another? Experience in other Latin American countries has shown that he is proud to show off his healthier, taller, more robust, and heavier crops.

Also, the opportunity to "show off" his larger produce at the local fair at the end of the harvest is a motivating factor.

Figure V.2

COMPARATIVE TEST PLOT FOR CROPLAND

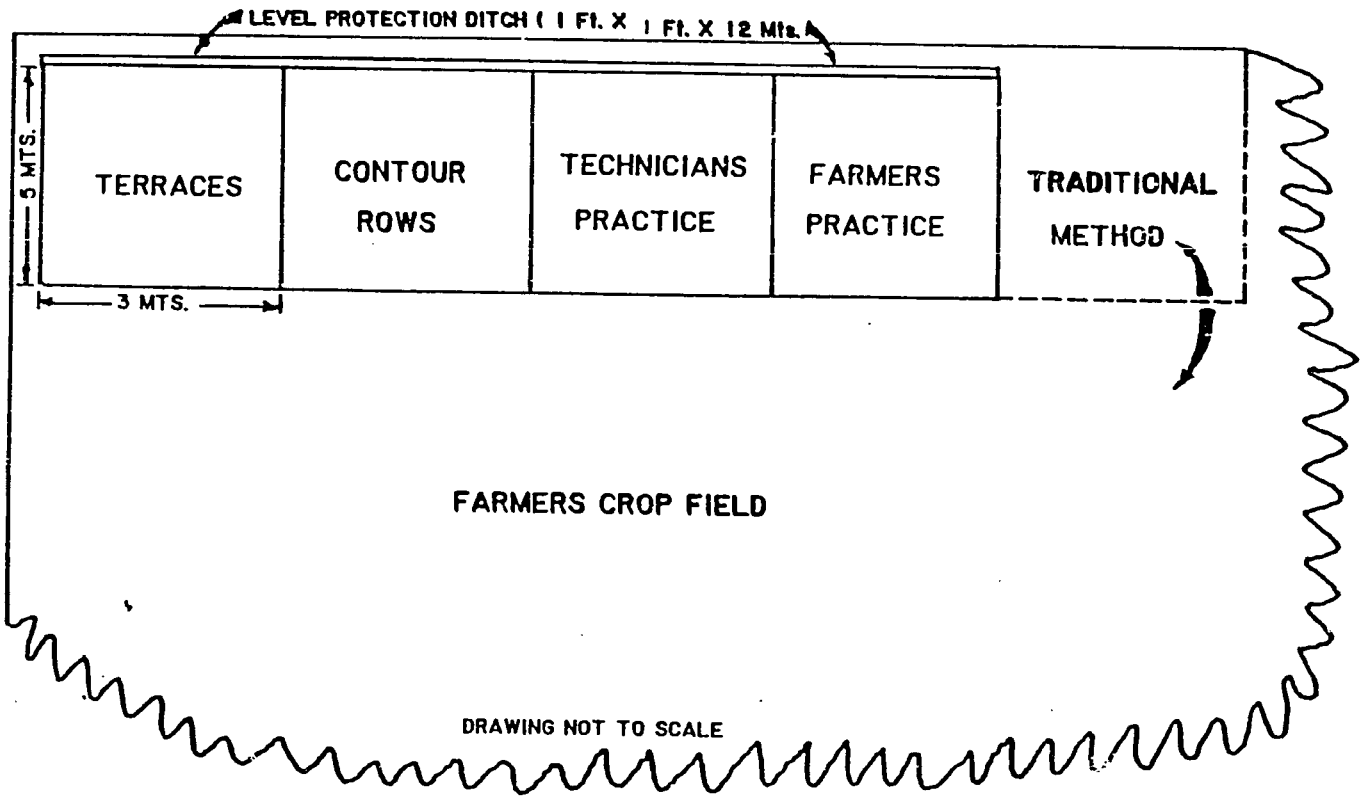


Figure V.3

COMPARATIVE TEST PLOT FOR GRASSLAND

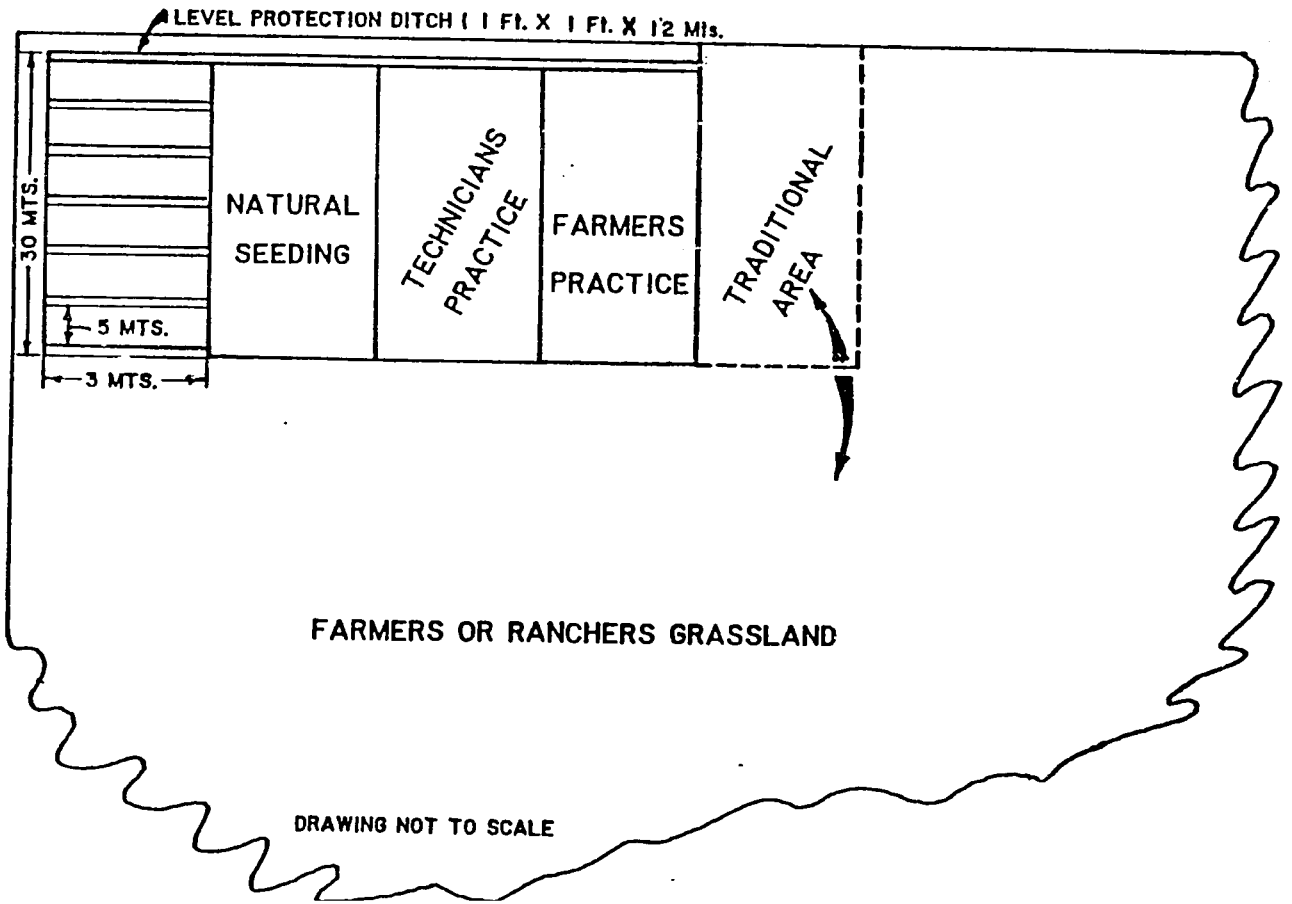


Figure V.4

COMPARATIVE TEST PLOT FOR FORESTRY AND FRUIT TREES

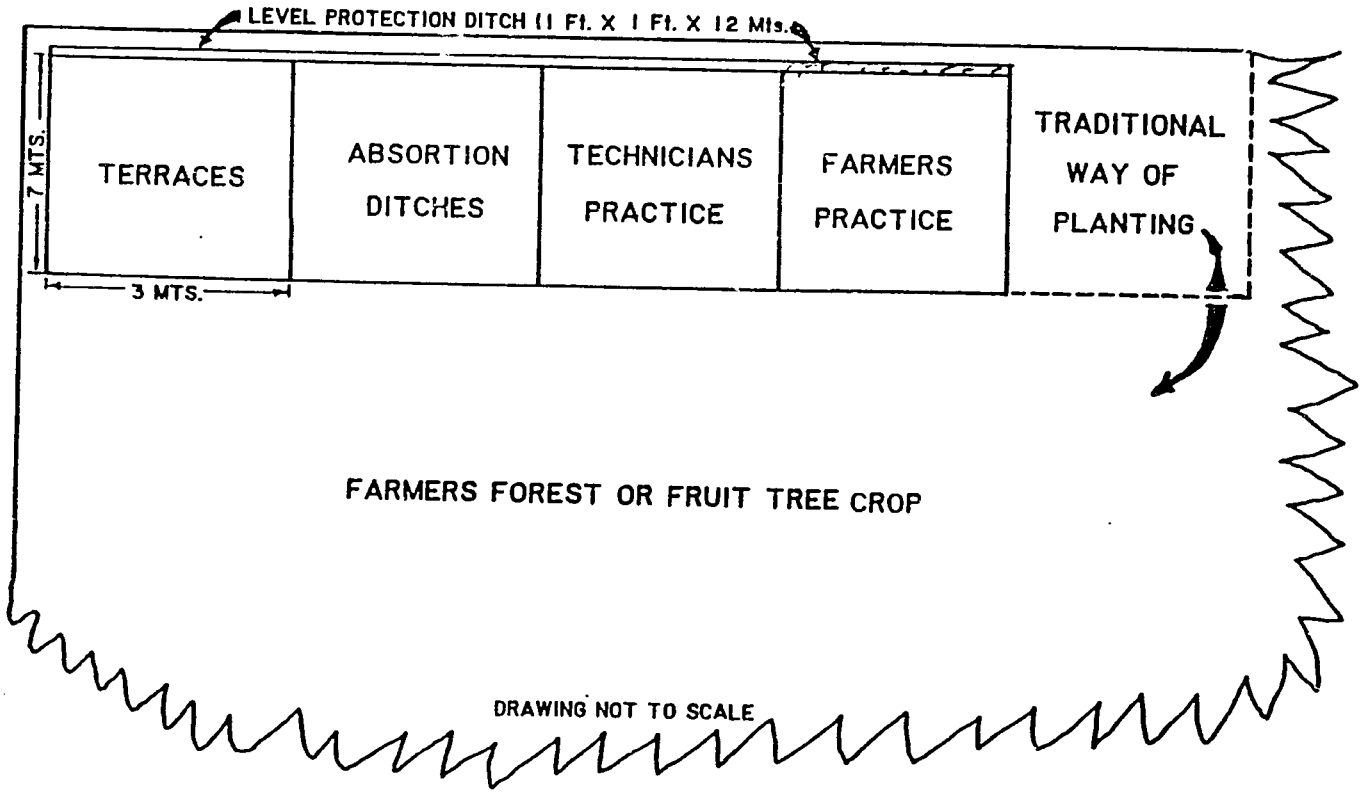


Figure V.5

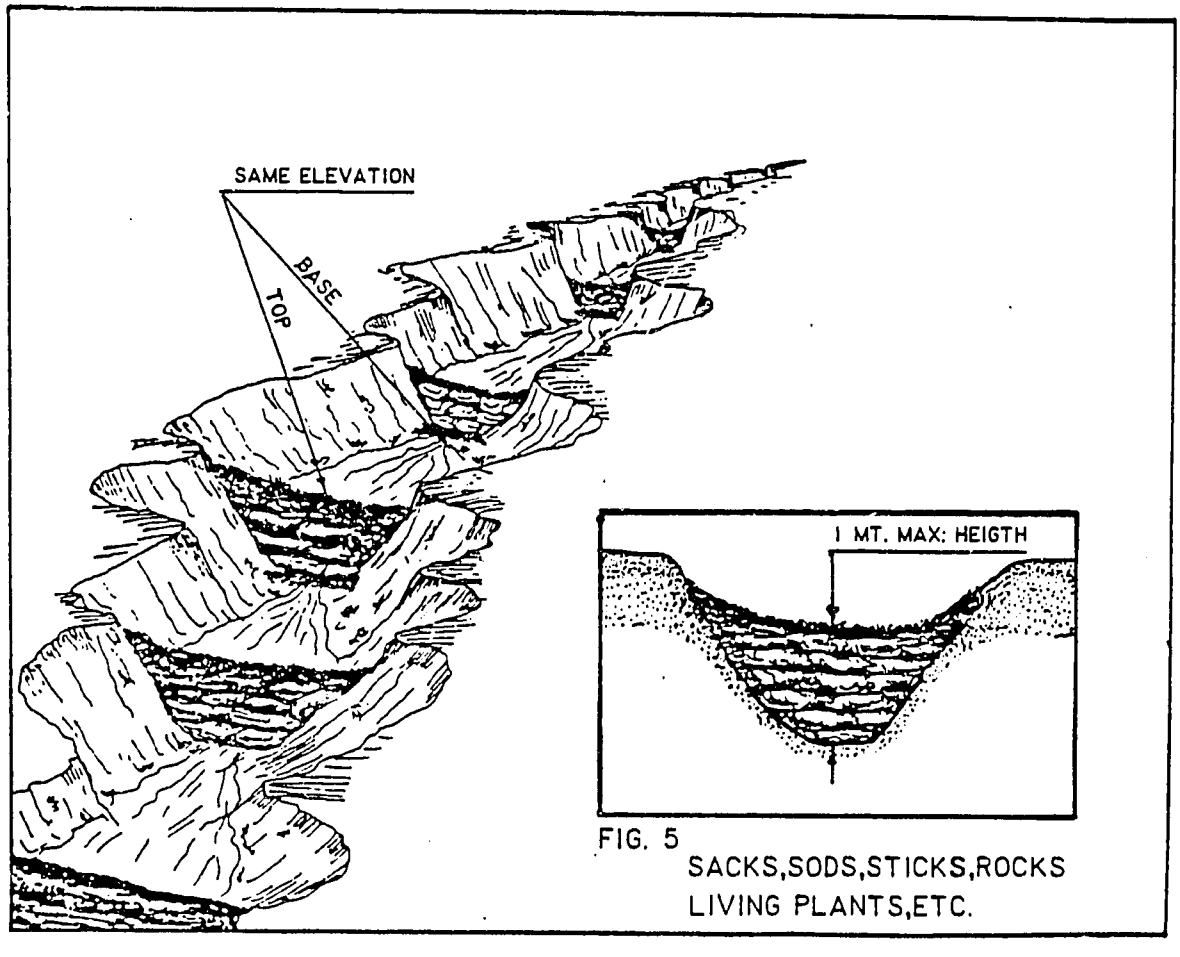

SAME ELEVATION
BASE
TOP
1 MT. MAX: HEIGTH
FIG. 5
SACKS,SODS,STICKS,ROCKS
LIVING PLANTS,ETC.

Figure V.6 WATERSHED MANAGEMENT PRACTICES

CONSERVATION PRACTICES	LAND USES WHERE PRACTICES APPLY		
	Cropland	Grassland	Forestland
Level Bench Terraces	X		X
Contour Farming (Level Ridging)	X		
Natural Seeding		X	X
Short Duration Grazing		X	
Small Infiltration Ditches (1 Ft.X1 Ft.X? Ft. Long)		X	X
Watering Holes (Uniformly Distribute Grazing)		X	
Mulching (Residue Management)	X		X
Gully Plugs (Dams less than 1 meter high)	X	X	X

Some funds need to be programed in order to ensure that this event is held. At the fair, there are ways to demonstrate the new techniques responsible for the substancial increases in production for the farmers who have employed the new practices. Prizes should be awarded to the highest increases in production and/or the best produce exhibited. Results of the program would be carefully documented on film.

How a national resource conservation program could be set up is described below:

A. Establish a system in an existing organization such as CUMAT--or perhaps in a separate autonomous organization--to administer the funds, to purchase the small amount of equipment, and to provide the appropriate maintenance needed for five years. Salaries after the second year would be reduced each quarter, as the technicians develop their consultative service clientele. These consultative services would eventually replace the salaries of the technicians by the end of the project. All personnel--either voluntary or salaried--will be prohibited to become involved in politics, as their only job is to teach soil conservation practices for the main purpose of increasing agricultural production.

B. Set up a training program for farmers and use the same course level for the training of the technicians. Under this, the following would be considered:

   1. Establish goals for:

      a) the number of farmers to be trained;

      b) the number of technicians/supervisors to be trained; and

      c) the number of conservation comparative areas to be established by the farmers on their own lands.

   2. Select a radio communications specialist to assist farmers in the preparation of effective, simple, and economical radio tapes explaining the technical packages for cropland, native pastureland, woodland, brushland, and fruit tree land. These would be broadcast in the following languages: a) Spanish; b) Quechua; c) Aymara; and d) Guarani (for lowlands).

C. The communities will select farmers to serve as volunteer Guias Agrícola (Agricultural Guides) or Paratécnicos--one for every 10 farmers in each community or PVOs. 55,000 Guias Agrícolas will be needed to cover the estimated 550,000 farm households in Bolivia.

D. Select a local farmer supervisor to supervise every 10 Guias Agricolas in each department. 5,500 local farmer supervisors will be needed to cover the 55,000 Guias Agricolas. These 5,500 local farmer supervisors could be paid only three days a week to cover their necessary travel expenses without further compensation. Most of them would also use their own bicycles and keep them maintained.

E. Establish a Bolivian rural and urban volunteer group to be trained technically, using the U.S.'s VISTA concept. Each would supervise 10 of the 5,500 local farmer supervisors. 550 volunteers will be needed for these positions as sub-regional supervisors. Another option for these volunteers would be to pay employees a small salary three days a week, i.e., enough to cover their travel expenses. The volunteers would be responsible for their own transportation. They would receive a small room-and-board stipend, salary and transportation allowance per month.

F. Select an additional 55 Bolivian volunteers, also using the VISTA concept of the U.S., to function as regional supervisors, each supervising 10 sub-regional supervisors. The financial arrangements would be similar to that of the volunteers above.

G. Select seven departmental directors (one for each department with the exception of Beni and Pando) to supervise the 55 Bolivian volunteer regional supervisors in addition to serving as técnico/choferes. These técnico/choferes would be assigned a four-wheel drive, nine-passenger "carryall" vehicles and be responsible for the technical training, supervision, administration, and reporting of accomplishments for the entire department. The reporting system would be extremely simple.

H. Select a salaried assistant national director of the Natural Resources Program to supervise the seven departmental directors.

I. Select a national director of the natural resources program to supervise the assistant director of the program, the administrator, the controller, communication specialist, coordinate with the advisors of soil conservationist, native pasture management, and native woodland management. The director is responsible for the technical and overall assistance being provided to 550,000 Bolivian farm households.

J. Purchase 12 four-wheel drive, nine-passenger vehicles. One vehicle would be assigned to each of the seven departmental directors, the assistant national director, the national director, and the three technical advisors (i.e., the soil

conservationist, the native pasture specialist, and the forester/fruit tree specialist).

K. The need to establish about 1,500 hectares of improved pasture grasses would be desirable, yet very expensive. However, it would be well within the estimated 10 million U.S. dollars required to implement the proposed program. The range seeding equipment needed and the estimated costs-per-department are as follows:

	$US point of mfg
One set of equipment	
Rubber tire tractor 65-75 Hp	12,000
Rubber tire tractor 50-60 Hp	10,000
Sod seeding drill, 12ft.	5,000
4 wheel trailer, 4-5 ton (2,000 each)	8,000
Spring tooth harrow	300
Lister Plow	1,000
Fertilizer spreader pto operated	5,000
Bulk fertilizer supply carts (5,000each)	10,000
	50,000
Duty to be paid on landing (50%)	75,000

14. Wheat and Barley: Import Displacement Through Increased Productivity

Increases in production of these two crops in the highlands and valleys can be achieved through simple innovations. First among these is the use of mechanical threshers for wheat. Wheat is currently threshed by hand on the ground, where it picks up a high percentage of rock and other contaminants, such as barley seeds. (Barley is harvested before wheat and, therefore, is already present on the "threshing floor.") The product is given inferior treatment upon reception not only because of the lower percentage of grain per 100 pounds, but also because the rock causes wear on the grinding equipment in flour mills. In addition, the quality of grain is diminished because of the contamination of off-type grains, including barley seeds. Since the Bolivian farmer is competing with imported grain of a fairly high quality, his access to the market is limited unless he can improve the quality of his product.

Any improvements made in field production to remove off-types of wheat and other grains (such as oats and barley) are lost during threshing. Therefore, mechanical threshers are essential to wheat production. The threshers should be small, stationary units with gasoline engines, but should be on wheels so that they may be moved between farms.

The second innovation is the provision of high-quality, fertilizer-responsive seed appropriate for the agroindustrial uses of each crop. Seed improvement programs are active in some areas of the country, but require trained personnel. In addition, seed supply has been the critical limiting factor in expanding wheat production in the eastern lowlands. Because the valley areas have not been able to supply the required quantities, some farmers in the lowlands are now producing their own seed. However, wheat seed production in the tropical lowlands is precarious because of the difficulty of controlling seed-borne diseases. Strengthening seed production programs in the valleys will provide a base of support for lowlands production as well.

Seeding wheat and barley in the highlands and valleys at more uniformly spaced, higher proportions will result in higher yields. These extensive grain crops are often marginal to the main activity of the farming operation. Therefore, the farmer dedicates less time and effort to them. With rustic implements, farmers are unable to prepare the soils properly and in a timely manner, and cannot plant carefully. Access to animal-drawn disk harrows and cyclone seeders would make a difference. Preferably, this equipment should be available on a hire/rental basis.

Finally, with the above contraints removed, access to modest amounts of nitrogen-phosphorous and pure nitrogen fertilizers

will have a large impact. With the abundance of plant nutrients the seedlings will send forth more profuse tillers, providing many more grainheads and foliage to support them. In many places, yields will be in the range of 2.5 or more tons, well above the one ton (sometimes less) amount frequently encountered.

Implementation of these activities is closely linked with the strengthening of other programs, such as the seed program in various valley and highlands regions, systems for technology transfer, and credit. Besides working through NGOs and PAOs, Consulting Agriculturists provide a mechanism for distributing much of the technology mentioned.

There will be a need for investment funds to purchase the seeding machinery and threshing machines. Sets of seeding equipment are envisaged to cost $US 150 per set. Thus for each community or cooperative, equipment cost is expected to be:

10 sets of seeders	@ 150 each	$US. 1500
2 threshers	@ 1000 each	2000
		3500

Total investment in machinery: 600 communities x 3500 = $ 2,100,000

Overall impact area: 36,000 hectares

Yield increase: 0.75 tons/hectare = 27,000 tons

Value of increased production and import displacement:
27,000 tons x $ 180/ton = $ 4,860,000

15. Fertilizer Supply

Bolivian agriculture is "low nitrogen" agriculture; that is, it has perhaps the lowest per capita and per hectare utilization of fertilizer nutrients in the world. All crops except legumes (which supply their own nitrogen) show symptoms of an inadequate supply of nitrogen nutrient. Nominal amounts are imported, these being largely due to bilateral assistance from countries such as Holland, Japan, and the USA. The types and grades of fertilizer available reflect these supplying countries' production. Most available are of the grade N-P-K 15-15-15 and Urea (45 percent nitrogen). Since it is thought that potassium is not needed, a 20-20-0 or a 18-46-0 grade would avoid the purchase of unnecessary potash. Whatever the source or grade, fertilizers are not readily available for farmer purchase and are relatively expensive in relation to world market prices and farmers' commodity output prices.

There is some awareness of the need for an abundant supply of relatively low-cost fertilizer for Bolivian agriculture to speedily and efficiently expand agricultural output. It is understood that the YPFB has been looking at the production of ammonia from natural gas and the subsequent conversion of ammonia to urea for more than two decades. One serious handicap is that the output, even from a relatively small processing plant, is several times the national demand. Negotiations with neighboring countries for sale of fertilizers so the plant may supply a command area have not yet been carried out.

At this juncture several options exist:

- Reexamine the most current YPFB project for an ammonia/urea plant that is rated at 65 metric tons of ammonia per day or about 18,000 tons of nitrogen per year. The reported cost estimate for the modular plant was US$ 80 million. The idea of a joint YPFB-private investment project might be considered by the YPFB.

- Reexamine the previously-mentioned nitrogen manufacturing facility. Dismember it so that the ammonia manufacturing capacity be examined separately and reestimate the cost in comparison with higher capacity units. Also, examine and make a cost estimate for the conversion of ammonia to nitric acid. The nitric acid, in turn, would be used to manufacture the following:

  a) Fertilizer-grade ammonium nitrate
  b) Explosive-grade ammonium nitrate
  c) Nitrophos N-P grades (using indigenous or imported phosphate rock)
  d) Ammonium nitrate sulfate for sulfur-deficient soils
  e) Calcium ammonium nitrate for highly acidic soils

- Start anew with ammonia plants of varying sizes (including cost estimate) and located downstream. The following chemicals would be produced in these plants:

  a) nitric acid, ammonium nitrate,and nitrophos 20-20-0
  b) urea and urea-ammonium phosphate 23-23-0

- Use the 10-inch, clean-product petroleum pipeline that extends for 60 kilometers from Arica, Chile, to the Bolivian highlands. The pipeline has the ability to withstand the approximately 4,000 meters of head that develop. The pipe presently contains automotive diesel fuel. It could be used to convey from Arica to Bolivia (with additional pumping stations) such products as: sulfuric acid, urea/ammonia nitrogen solution and phosphate rock slurry. (The possibility of the conveyance of phosphoric acid or ammonium nitrate solution would need to be checked.)

With the previously-mentioned basic materials, a fertilizer processing plant of adequate size to efficiently supply only Bolivian needs may be put into operation. The nation needs both nitrogen and phosphate fertilizer; it may be a mistake to start a domestic fertilizer industry on only urea. While such a course may improve the payout on the nitrogen manufacturing facility, it does the following:

a) It provides the nation with only urea, the least suitable fertilizer for Bolivian agriculture. Surface-applied (as it is by most Bolivian farmers), urea vaporizes with a loss of about 30 percent of its nutrient value. Also, three weeks are required for the urea's conversion into the nitrate ion used by plants, especially in the cool valleys and highlands. Ammonium nitrate on the other hand, with 50 percent as the nitrate ion, is immediately available. The other 50 percent, as with urea, becomes available in a few weeks.

b) It will handicap internal phosphate processing, and may force the nation to import already-processed phosphates for many years. Processing phosphate rock depends on abundant supplies of low-cost sulfuric, nitric, or phosphoric acid. Of these, nitric acid can probably be supplied most efficiently and abundantly, since it is an indirect product of natural gas.

Therefore, it behooves Bolivia to look at needed plant nutrients, primarily nitrogen and phosphorous, and to identify a way to supply the types that enhance efficient agricultural productivity. The panorama begins with natural gas and rock phosphate and ends with such commodities as consumable and

exportable grains and meats. To concentrate on only one segment, such as urea manufacture, may simultaneously help and handicap such a conversion cycle. To resolve the issues raised above, USAID should finance a new study of the alternatives.

16. Harvesting, Processing, Transporting and Marketing of Fish

It is estimated that Bolivia has the potential to produce 200,000 tons of fish per year; however, in 1986, only about 3,871 tons were produced, approximately 1.93 percent of the potential. The limited infrastructure for the catching, processing, and refrigerated transportation of fish has been identified as the principal constraint to the development of the national fish industry.

The general objective of this program would be to facilitate the development of the national fish industry. The specific objective would be to finance the construction of three separate fish complexes or fish industries. One of the complexes would be located on the highlands, the second in the Amazon watershed, and the third on the Pilcomayo River. Funds would be available to construct cleaning facilities for fish, ice-making units, refrigerated storage, refrigerated transport, and cold storage in centers of consumption.

The various components would be physically separate, and would be independently owned and operated by private entrepreneurs. Individual fishermen would own and operate fishing boats. Processing plants would be owned and operated by private cooperatives comprised of fishermen, or perhaps through ESOPs.

The program has been estimated to cost US$ 5.5 million. It is expected that the three complexes would be constructed by the end of the next five years. Investment cost would include the following:

1. Fish cleaning facilities (3 units)	US$ 750,000
2. Ice making units (3)	US$ 750,000
3. Refrigerated storage (3 units)	US$ 1,500,000
4. Refrigerated transport (3 complexes)	US$ 1,500,000
5. Metropolitan cold storage (3 complexes)	US$ 750,000
6. Other	US$ 250,000
TOTAL :	US$ 5,500,000

Participants and direct beneficiaries of the program would consist of the 2,700 fishermen and their families (about 13,500 people). Other beneficiaries would be people who will be employed by the three complexes. The urban population of Bolivia would benefit by having available fresh and processed fish of high quality at a low price.

17. Decentralization and Improvement of Bolivian Agricultural Research

The need for improved and more effective agricultural research in Bolivia is growing. With the focus on export commodities and the organization of internal marketing channels, farming will become more competitive. Furthermore, efforts to strengthen activities in technology transfer create a demand for technology generation; indeed, the "consulting agriculturist" system described earlier depends greatly on the receipt of information about new techniques and practices that can increase productivity and reduce costs.

The chapter on constraints pointed out that one of the weaknesses of the current research system is that the results are not published. An active system of technology transfer helps overcome this problem to a large degree. Consulting agriculturists can gain access to researchers and learn of the results of experiments without having to wait for a published report. Another constraint was that research is conducted on individual crops or enterprises, independent of others and with no relation to the overall management of the farm family's resources and limitations. Too, there is a lack of feedback from the producer to the experiment station and researcher. Again, the technology transfer mechanism responds to this constraint.

Therefore, an active system of transfer agents (the consulting agriculturists) creates a demand for research and helps orient the supply. Precisely for this reason, more resources will be needed from the supply side. Additional mechanisms of farmer participation in the research system need to be implemented. This implies decentralization to the departmental level, which is where farmer associations, cooperatives and other groups are organized. The need for a client-driven system with more resources also implies that farmers must directly contribute to covering part of the costs.

The best example of such a system in Bolivia is CIAT, with headquarters in Santa Cruz. Being decentralized, CIAT has the possibility of obtaining local funds, partly from farmer groups. However, the system of financing was set up at a time when farmer associations negotiated prices with industry and government, and in doing so also agreed upon a retention of funds, typically 0.5 to 1.0 percent of the sales price, part of which went to CIAT through the Chamber of Agriculture. The retention was agreed to by the association, but was obligatory to its members. This arrangement no longer exists for most products. Even when it did, it allowed a very minor degree of client control and interest in the research program. The experiment station did not have to respond directly to the client. The contribution to the research center was in the form of general support not tied to performance of any one program. There was no obligation to

produce specific results and hand them back to the farmer group. It is no surprise that most association members refrained from contributing.

Although a system of contributions from farmer groups is necessary as an addition to resources and to create a client-oriented research system, farmers cannot be expected to pay a majority of the cost. The effect of research has traditionally been to make farmers more efficient and competitive, but the benefits are eventually passed on to agroindustry and the consumer. Furthermore, research generally falls into the category of a "public good." That is, the organization that produces the information cannot always capture enough of the benefits to cover the cost. As soon as the information gets out to a few farmers, others can adopt the techniques without paying the costs of the research.

The following steps are proposed:

- that IBTA research facilities be decentralized to the departmental level;
- that departmental development corporations contribute to cover some of the general costs;
- that agricultural commodity groups/associations identify research needs and contribute to cover some of the specific costs of research programs of interest to them; and
- that USAID set up a special research fund to be used as a matching fund to augment the contribution of producer groups. For every Boliviano contributed by producers, USAID might contribute two Bolivianos during an initial two-year period. USAID's contribution might then reduce to a one-to-one ratio over time.

The producer groups would use their own funds and those of the USAID matching fund to contract with private or public research organizations to do the following:

- conduct the experiment;
- gather the pertinent research information;
- tabulate and interpret the results/data; and
- publish the results, if desired.

Selected institutions would be contracted to do specific experiments. Financial conditions call for 25 percent to be paid when the experiment is established, 25 percent when all research results have been gathered, and 50 percent when the data have

been compiled, interpreted, and submitted in a well-prepared report. There would be no less than two unannounced inspections while the experiment is in progress.

To accomplish the above, the institutes would need the following:

- o to be autonomous so as to do the research they could get funded;
- o to allow staff to consult with private independent clients and share the fee with the institute;
- o to bridge funding through the transition from assured public funding to generating their own funds; and
- o to become adept at technology transfer, charging a fee for the information.

This strategy has the disadvantage of focussing narrowly on immediate problems of high economic priority. Factors such as integrated farm management/economics may not receive adequate attention. However, acknowledging said handicap:

- o it would force clear hard thinking involving agricultural/biological principles, probabilities of success, utility of the information generated, and benefit:cost ratios;
- o it would force researchers and research institutes to clearly define their capability to conduct relevant research and to identify how much they could handle;
- o researchers would appreciate that the task of research is not complete until the results are tabulated, the data interpreted, and the report published; and
- o it would provide incentives to institutions and researchers.

There are some kinds of research that can be accomplised in one location to benefit a large area. Examples of this are Andean crops and cameloids, both being problems of the highlands. Therefore, it might be inefficient to undertake parallel programs in all departments. For this, a federated system of research stations organized according to ecological regions proposed. Given that the DDC and farmer group contributions are nearly

always department-specific, it is wise to group the departments in the following manner:

Highlands	:	La Paz, Oruro and Potosi
Valleys	:	Cochabamba, Chuquisaca and Tarija
Lowlands	:	Santa Cruz, Beni and Pando

A regional research fund would be established, with the DDCs allocating 75 percent of their research budgets to the research institutes within their department and 25 percent into a "regional" fund, for allocation to problems/projects of a regional nature. This fund would be used to contract with existing research centers to undertake activities of common interest to each region.

18. Forestry Management in the Northern Tropics

Fifty-one point four percent (51.40%) of Bolivia's land area is under forestry cover. Much of its forests are virgin commercial stands. A good portion of the timber that is harvested is removed into Brazil without any concessions or taxes paid to Bolivia. A very limited number of personnel are available to manage these concessions. Professional training in forestry is oriented toward reforestation of valley regions. Virtually no management of forest resources occurs in the northern tropical areas. Physical access to these areas is difficult.

With a well managed harvesting system, and the payment of concessions and taxes for the exploitation of Bolivia's timber resources, the country would be able to support the services needed to implement the management practices necessary to ensure the long term regeneration of Bolivia's forest products. A small organized entity would be necessary to regulate private lumber companies to ensure that the practices are implemented.

Bolivia must first develop an effective forest management program to conserve and utilize this vast section of its land resources. USAID should finance a study on how the forest management in the northern tropics of Bolivia should be undertaken in order to capitalize on the valuable timber resource. The study should include the best tropical foresters that can be contracted, a regional environmental specialist and other personnel needed in order to ensure that:

- the harvesting procedures utilized would provide Bolivia with sustained timber yields for years to come;
- the best trees would be left for reseeding;
- any other alternative methods that allow for natural regeneration would be considered;
- the number and types of technicians to manage Bolivia's forest resources would be identified, along with the alternatives for training them;
- the methods for creating incentives for lumber companies to carry out better management practices, plus methods for enforcing regulations, should be identified; and
- comapnies that harvest the forest products should pay a fee to support the management of the forest industry.

The study recommending the management decisions necessary to sustain Bolivia's timber resource should not cost more than one million US dollars.

19. Livestock Development for Small Farmers and Ranchers in the Lowlands

Once market channels for the slaughtering and transporting of beef and beef by-products to distant consumer markets are improved, farmers and ranchers will have increased incentives to build up herd numbers and improve production methods. However, two serious constraints to increasing herd sizes were identified to be (a) annual flooding of the northern lowlands of the Beni and (b) cash flow.

In the Beni, flooding of ranches causes considerable losses of cattle, up to 20 percent in one year. USAID could facilitate the construction of high-ground refuges for cattle for the flooding season, particularly in support of small ranchers. A refuge consists of high ground about 20 meters wide, 100 meters long, and 1.5 to 2.0 meters high; it would provide dry ground on which cattle could wait until the waters subside.

Another phenomenon restricting herd size is the tendency of ranchers to sell pregnant cows for slaughter. Cattle producers sell cows because of cash flow difficulties. In more accessible places, ranchers milk beef cows, and produce cheese that is sold weekly, thus helping to cover costs from one season to the next. This cannot be done in many parts of the Beni. Having no credit available, they have to sell the breeding stock.

A USAID program to promote the development of small ranchers would be aimed at the following:

- finance the construction of high ground refuges to prevent cattle losses during flooding in small ranches;
- finance the retention of pregnant cows that are sold during the year by small producers to level their cash requirements; and
- provide technical assistance to small ranchers not only to increase production (and productivity) but also to promote and develop livestock organizations and/or cooperatives so that those problems of transport, marketing, price of products, and such, could be faced effectively.

The target group would be composed of small ranchers. In this case, a "small rancher" would be defined as one having a maximum of 300 head of cattle. The program would cover the complete area of the lowlands including the Chaco. The estimated

cost is US$ 10.0 million to be invested in four years. Investment cost would include the following:

o Retention of Pregnant Cows; about 770 rancher loan participants at US$ 7,320 each	US$ 5,636,400
Average loan would finance the cost of two bulls, 50 heifers and US$ 1,220 (20 percent of total cost of animals) for farm improvements.	
o High Ground Refuges; about 376 participants at US$ 10,000 each	US$ 3,760,000
3. Technical assistance to finance four livestock production specialists, vehicles, and equipment and logistic support	US$ 603,600
Total	US$ 10,000,000

The would be a total of about 1,146 participants (5,730 rural inhabitants) with herds having less than 300 head. If a participant obtains credit for both the building of refuges and the retention of pregnant cows, then the number of participants would be less.

ANNEXES

ANNEX A

USAID PORTFOLIO DESCRIPTION

There are currently nine ongoing development assistance projects being implemented with USAID/ARDN funds. Four of these projects are being managed by the Private Sector Office, while the remainder are under the admnistration of the Agriculture and Rural Development Office. Of the nine projects, four will be terminated near the end of CY-1987, and two will begin in CY-88. The following are brief statements of the objectives of these projects.

0466 Rural Access Roads II: D. Hess
$0.300 Grant, $9.042 Loan, 1978-1987, ARDO

To enhance the capacity of the Rural Roads Department of the Servicio Nacional de Caminos to effectively carry out the planning, selection, design, and execution of rural road and bridge improvement, and the maintenance of roads, bridges, and equipment. It also improves access to and from farms by upgrading secondary roads and bridgework in the Department of Cochabamba.

0472 Agribusiness and Artisanry: D. Jessee
$2.150 Grant, $9.200 Loan, 1978-1987, PSO

To improve/expand the promotion and financing of private agribusiness and artisanry enterprises by commercial banks and other financial institutions. Since 1986, the project includes assistance in restructuring and improving the efficiency of the financial sector.

0543 Chapare Regional Development: D. Hess
$4.400 Grant, $12.500 Loan, 1983-1988, ARDO

Seeks to modify and improve the agricultural and forestry systems of farmers in the Chapare to respond better to diverse, profitable marketing opportunities with sustained, environmentally-compatible, medium-technology production models. Includes infrastructure improvement, agricultural/forestry production, agribusiness development and marketing, and project administration/institutional development. A recent amendment provides assistance to farmers in regions outside the Chapare from which most Chapare residents migrate.

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0573 Market Town Capital Formation: D. Jessee
$3.500 Grant, $15.000 Loan, 1986-1991, PSO

Increases the level of productive private investment in Bolivia's rural and semi-urban areas; improves the capability of the ICIs (intermediate credit institutions) and IPUs (investment promotion units) to perform more effectively; and establishes a credit fund to finance projects through the IPUs. The loan component finances market town investments undertaken by the private sector.

0577 Industrial Transition: D. Jessee
$6.000 Grant, 1987-1991, PSO

Seeks to support the GOB's efforts in privatization through technical assistance in the areas of management, valuation of assets, sales negotiations, public relations, and credit financing for working capital needs of privatized enterprises. A major output of this assistance is expected to be its catalytic role in attracting private investment.

0585 Export Promotion: A. Diaz
$11.500 Grant, 1988-1993, ARDO

Supports private sector efforts to expand and diversify Bolivia's exportable production, and to increase exports of Bolivia's non-traditional products. Includes strengthening the Export Promotion Institute, establishing credit line(s), developing policy studies, and developing and implementing an information system for exporters.

0589 Private Agricultural Organizations: D. McIntyre
$4.200 Grant, 1986-1990, ARDO

Strengthens the capacity of private agricultural producer associations to provide services to members.

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0591 Emergency Agricultural Credit: D. McIntyre
$10,000 Grant, 1986-1987, ARDO

Contributes to Bolivian economic reactivation by providing agricultural credit through ICIs for small- and medium-sized farm operations in Bolivia during the 1986/87 and 1987/88 crop planting and production cycles.

N/A PL-480, Title I: D. Hess
$20,000, 2/4/85-8/20/85, ARDO

N/A PL-480, Title III: D. Hess
$60,000, 4/9/86-4/22/87, ARDO

These two activities, representing three separate agreements, are managed cooperatively by USAID/B and the PL-480 Executive Secretariat, an autonomous Bolivian agency that makes the local currency counterpart from sales of Titles I and III available through two dozen lines of endeavor. Major programs are agricultural credit, agricultural production and marketing, health, and rural and community development.

ANNEX B

PORTFOLIO OF OTHER DONORS

The following material is summarized from Matriz de la Cooperacion Internacional (Analisis Preliminar) published in May 1987 by the Ministerio de Asuntos Campesinos y Agropecuarios (MACA), La Paz, Bolivia. Totally disbursed projects were eliminated from the report. Projects whose descriptive title does not include a department name are national in scope.

1. Summary

	Projects Number	Authorized US$000	Remaining US$000
International			
EEC	4	64420	24512
IDB	1	24513	24513
IICA	2	198	198
JUNAC	7	2146	1170
UNDP	9	13068	11891
UN/FAO	23	26171	23233
UNFADAC	1	12750	2750
World Bank	1	18000	10000
World Food Program	2	16275	12206
Subtotals	50	177541	110473
Bilateral			
Canada	3	851	185
France	1	348	234
Germany	3	20044	10120
Great Britain	4	4383	983
Japan	5	32037	9800
Swiss	18	36781	17538
Subtotals	34	94444	38860
TOTAL	84	271985	149333

2. Detail

Agency/Project	Descriptive Title	Starts /Ends	Auth Remains

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I. United Nations Development Program (UNDP)

UNDP has a portfolio of $13.1 million ($11.9 million undisbursed), consisting of one on-going project to finance project preparation plus nine authorized agricultural development projects, five of which are in operation, each in a defined geographic area.

82/01	Project Preparation-Tar/Chuq/Pot	84/87	1657	614
84/CO	Ag Dev Rio Copani Watershed-La Paz	84/87	632	501
85/002	Ag Dev Gran Chaco-Tarija	87/90	2729	2729
86/011	Ag Dev Valle Grande-Sta. Cruz	87/90	2300	2300
80/20	Ag Dev San Buenaventura-La Paz	86/87	390	390
86/022	Ag Dev Irrigation and Dryland-Potosi	87/89	1460	1460
86/023	Ag Dev Irrigation and Dryland-Oruro	86/89	1750	1750
86/024	Ag Dev Irrigation and Dryland-La Paz	86/89	1560	1560
86/030	Ag Dev/Irrigation and Dryland-Coch/Pot	87/90	590	587
	Total UNDP		13068	11891

II. United Nations Food & Agriculture Organization (UN/FAO)

UN/FAO manages its own technical cooperation program, projects funded by member-nation trust funds, a joint UNDP/FAO program, a special non-governmental organization program, and multi-country regional projects affecting Bolivia. The resulting portfolio of 23 authorized or nearly-authorized projects has an LOP value of US$24.4 million with undisbursed funds of US$23.2 million:

Technical Cooperation Program	636	440
Trust Funds	5854	5854
UNDP/FAO Joint Program	16434	16434
Non-Governmental Organization Program	165	15
Regional Projects	1290	490
UN/FAO Total	24379	23233

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A. Technical Cooperation Program:

Provides technical assistance in support of national or regional agricultural programs.

4507	Women's Ag Org & Trng-La Paz	86/87	100	100
4509	Inland Fish Mktg & Consumption	85/86	19	19
4510	Input & Product Price Policy	85/87	105	25
6651	Pub Ag Sect Reorg	86/87	60	56
6655	Nat Food Security System	87/88	150	150
6756	Univ Andina "Simon Bolivar"-Chuquisaca	87/88	90	90
	Subtotal TCP		636	440

B. Trust Funds:

Projects financed by member governments, administered by UN/FAO. (Last project is under study.)

16/NOR	GON/Watershed Mgt Rio Tarija-Tarija	85/90	1223	1223
18/NTE	HOL/Sm Fm Fert Tech-SCr/Coch/Pot/Tar	86/90	2317	2317
G-2010	HOL/Micro Irrig Rehab-La Paz	87/91	2314	2314
	Subtotal Trust Funds		5854	5854

C. UNDP/FAO Joint Program:

Jointly financed projects administered by UN/FAO. (Last two projects are under study.)

82/001	Ag & Rural Dev Proj Prep-Tarija	85/87	964	964
84/405	Ag Div & AgInd Dev Yungas-La Paz	85/90	634	634
85/001	Micro Irrig-La Paz/Oruro/Potosi	87/89	4500	4500
85/002	Ag Dev Gran Chaco-Tarija	87/90	2729	2729
86/011	Ag Dev Valle Grande-Santa Cruz	87/90	2300	2300
86/022	Ag Dev Micro Irrig & Dryland-Potosi	87/90	1461	1461
86/023	Ag Dev Irrig & Dryland-Oruro	87/90	2278	2278
86/024	Ag Dev Irrig & Dryland-La Paz	87/90	1568	1568
	Subtotal UNDP/FAO Joint Program		16434	16434

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D. Non-Governmental Special Program:

UN/FAO administers NGO projects funded by organizations in member countries. Only one of four listed projects contains undisbursed funds.

20/BIL	Collect/Diffuse Andean Ag Practice	84/87	165	15
	Subtotal NGO Special Program:		165	15

E. Regional Projects:

Bolivia's share of regional projects administered by UN/FAO

ITA	Prevention of Africa Swine Fever	83/87	900	100
4513	LAC Fert Proc & Supply Studies	96/87	240	240
6658	Ext Trng Sm Fm Tech Transfer	87/88	150	150
	Subtotal Regional Projects		1290	490

III. InterAmerican Institute for Cooperation in Agriculture (IICA)

IICA provides technical cooperation in support of national programs. It plans and budgets its program on an annual basis. In 1986, it operated seven projects with a value of US$428,000. Two of these are being continued in 1987 with the addition of US$198,000:

2AB2	Tech Trng of Public & NGO Technicians	40	40
3AB1	Integrated Ag Dev-Pot/Beni/Pando	158	158
	Total IICA	198	198

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IV. Japanese International Cooperation Agency (JICA)

JICA provides special grants of equipment and machinery and for construction of facilities and related technical cooperation. JICA's current portfolio includes a single construction project plus its annual grant of inputs and machinery, but it is reviewing three specific projects for funding in 1987 or 1988.

Annual Grant of Ag Inputs & Machinery	77/87	27037	5300
Const/Equip Fish Dev Cntr	86/88	5000	4500
Const/Equip Seed Center-Cochabamba	87/?	negotiating	
Art Insem Cntr-Santa Cruz	87/?	negotiating	
Ag Dev of Santa Ana-Tarija		requested	
Total JICA		32037	9800

V. Swiss Technical Cooperation

The Swiss government has a portfolio of 18 projects with an LOP value of US$36.8 million and an undisbursed value of US$17.5 million. These projects emphasize production, marketing, and campesino training but they cover a wide variety of other subjects throughout Bolivia.

TOFGAL	Todos Santos Milk Prod/Mktg-Santa Cruz	74/89	3550	41
REYGAN	Beni Beef Prod-Beni	69/89	2650	41
BAYFIN	Community Dev-Trj/LPz/Chq/Coch/Pot/Or	83/89	8100	4750
FRUDEC	Fruit Culture-Cochabamba	76/90	2540	345
FOREST	Reforestation-Cochabamba	84/90	5800	5000
PROFOR	Reforestation Program-LaPaz/Potosi	85/87	760	310
UPSEPA	Seed Potato Production-Cochabamba	84/90	4200	2200
CIFEMA	Ag Mach R&D and Ext Cntr-Cochabamba	77/90	1910	310
AGRUCO	Agrobiologia-U/Cochabamba	85/90	1060	720
	Alto Beni Development-La Paz	84/90	2950	2120
CIAC	Ag Prod Cen Invest Apoyo Camp-Potosi	83/88	214	214
ACCOPA	Yungas Coffee Production-LaPaz	83/88	168	168
SEFO	Forage Seed Production	87/90	1710	310
PLAREG	Regional Planning	85/89	660	510
	Inst Politech Tupac Katari-Potosi	87/89	146	146
	Tng of Campesino Promotors-Cochabamba	87/89	135	135
	Video for Tng Campesinos-Cochabamba	87/89	130	130
	Support for Campesino Tng Cntr-LaPaz	87/89	98	98
	Swiss Technical Cooperation Total		36781	17538

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VI. World Bank

The World Bank has a single US$18 million agricultural project with an undisbursed balance of $10 million.

	Ulla-Ulla Development-La Paz	77/86	18000	10000
	World Bank Total		18000	10000

VII. InterAmerican Development Bank (IDB)

IDB currently has no undisbursed projects. A single project with a value of US$24.5 million is in negotiation and considered in the balance. Six additional projects have been submitted for consideration:

- Swine Prod in Tarija & Santa Cruz II 10 million
- Irrig Dev In Guadalquivir River 45 million
- Livestock Development in San Ignacio de Moxos
- Pump Irrigation in Valle Alto de Cochabamba
- Sm & Med Irrig in La Paz, Cochabamba and Tarija
- Agric Dev in Provincia Vaca Diez

The report from which this information was taken did not include the US$45 million second tranche of the second IDB agricultural credit program signed in March 1987. This is not included in the IDB balance.

0111	Rural Development in Alto Beni-La Paz		24513	24513
	InterAmerican Development Bank Total		24513	24513

VIII. European Economic Community (EEC)

The EEC contributed financial support to four active projects whose total authorized value was US$64.4 millions, of which US$24.5 million remain undisbursed.

77/15	Ulla Ulla-La Paz	77/86	2020	1298
79/23	Agricultural Census	84/89	1400	714
83/7	Rural Micro Projects I-Oruro/Potosi	83/92	50000	20000
84/8	Rural Micro Projects II-La Paz/Patacam	85/89	11000	2500
	European Economic Community Total		64420	24512

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IX. United Nations Fund Against Drug Addiction and Control (UNFADAC)

UNFADAC has a single active project authorized at $US12. million, of which $US2.8 million remains undisbursed.

84/495	Agroindustrial Diversification-La Paz	85/90	12750	2750
	UNFADAC Total		12750	2750

X. World Food Program

The World Food Program provides food products to be used in projects as compensation for work performed by its beneficiaries. It currently has two projects valued initially at US$16.3 million, of which US$12.2 million remains undisbursed.

2703	Agriculture and Forestry	85/89	9093	6820
2578	Sm Fm Dairy Models	84/88	7182	5386
	World Food Program Total		16275	12206

XI. France

The GOF has a single active project, originally authorized at US$348,586, with an undisbursed balance of US$23,352:

	Rur Dev in InterAndean Valleys-La Paz	82/88	348	234
	Government of France Total		348	234

XII. Canada

Canada has three active projects, originally authorized at US$851,000, of which US$185,000 remains undisbursed:

	R&D on Quinua-La Paz/Potosi	78/87	461	81
	Altiplano Forest Res-Potosi/Oruro/LaPaz	80/87	160	60
	Bolivian Wood Preservation-Tarija/SCruz	85/88	230	44
	Government of Canada Total		851	185

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XIII. Federal Republic of Germany

Germany has three active projects originally funded at US$20 million, of which US$10.1 remains undisbursed:

Altiplano & Valley Irrig-LPaz/Coch/Chiq	77/88	15433	7717
TA for Alti & Val Irrig-La Paz/Coch	84/88	3222	1014
Int Rur Dev S.Ignacio de Velasco-SCruz	85/87	1389	1389
Federal Republic of Germany Total		20044	10120

XIV. Great Britain

Great Britain maintains four projects funded at US$4.4 million, with an undisbursed balance of US$1.0 million.

British Trop Ag Mission-Santa Cruz	76/87	1750	600
Inland Fisheries I-Beni	79/90	2350	300
British Mktg Mission-Santa Cruz	80/87	250	50
Tng in Fisheries	85/87	33	33
Great Britain Total		4383	983

XV. Junta del Acuerdo de Cartagena (JUNAC)

The regional organization JUNAC operates five active projects in Bolivia, with two more in negotiation, for a total portfolio of US$2.1 million, of which US$1.2 million are undisbursed:

02.02.DA	Control of Food Balance	negoc	216	216
02.02.01	Contl Coffee Rust-LaPaz/Coch/SCruz	85/88	101	101
02.03.03	Prevention of AFR Swine Fever	83/87	820	300
02.03.02	Control of Sigatoka Negra	84/87	100	100
06.02.01	Wood Construction Technology	83/87	470	70
06.02.04	Rural Tech Dev	86/87	303	247
	Food/Agric Statistics	negoc	136	136
	JUNAC Total		2146	1170

ANNEX C

FUNDS PROVIDED FOR AGRICULTURAL CREDIT
BY INTERNATIONAL ORGANIZATIONS

There is no system placing public sector debt in domestic channels in Bolivia (bond or treasury note). Funds raised from such an activity could be invested in development programs in the country. All developing countries have had to resort to external financing many of their development programs and Bolivia is no exception. The influx of funds from external sources either in the form of grants or other soft terms has enabled the GOB to subsidize certain credit programs at the expense of the external lenders, without adequate consideration for this imported capital to generate domestic capital.

Beginning with lines of credit obtained from the World Bank, out of a total of US$ 189,500,000, the sum of US$ 161,230,000 (85%) was still in the pipeline as of December 31, 1986. (Table C.1) An amount of US$ 63,300,000, or 39.3%, is programmed for release during 1987. The public sector has 73.7% of the total credit, with the remaining 26.3% going to the private sector. The agricultural sector; receives US$ 3,000,000 (1.5%) of this line of credit through MACA.

The Interamerican Development Bank, has extended lines of credit totalling US$ 683,384,000 for seventeen public sectors and five private sector projects. (Table C.2) Of the total, US$ 232,557,000, or 34% has been utilized as of December 31, 1986. Programmed for disbursement during 1987 is the amount of US$ 71,372,000, representing 15.8% of the amount remaining in the pipeline. The credit line is apportioned at 70.8% to the public sector and 29.2% to the private sector. The agricultural sector receives US$ 132,000,000, or 19.3% of the total credit line.

The Corporación Andina de Fomento approved lines of credit in the amount of US$ 132,019,000 with 63.0% going to the public sector and 37.0% to the private sector. (Table C.3) As of December 31, 1986, only 12.4% of the global credit line had been used. The amount of US$ 32,220,000 or 27.9% of the pipeline amount is programmed for release in 1987. The agricultural sector has access to US$ 20.0 million.

Bilateral lines of credit were extended to Bolivia by at least a dozen countries amounting to US$ 565,784,000. (Table C.3) This amount is distributed between the public and private sectors on a percentage basis of 74.5% and 25.5%, respectively. The pipeline in global terms held 57.0% of the total credit extended, and the disbursement for 1987 amounts to 47.1% of the credit in the pipeline.

Bilateral Agencies have also been instrumental in providing credit to Bolivia on a grant or non-reimbursable basis amounting to US$ 327,320,000. (Table C.5) These funds are programmed for technical assistance, health, education, institution building, rural development, and other worthwhile projects. The funds are almost equally divided between the public and private sectors. As of December 31, 1986, the amount of 71.4% of the total credit available remained in the pipeline, with 55.9% programmed for disbursement during 1987.

The total amount of the lines of credit available for distribution between the public and private sectors (Table C.6) amounts to US$ 1,283,603,000 with 68.5% going to the public sector and 31.5% to the private sector.

For the year 1987 a total of US$ 36,163,500 is available for credit to agriculture (Table C.7). These credit lines come from FIDA (5.94%), USAID (14.86%), PL-480 (14.38%), United Nations (1.37%), BAB-recovered capital (33.11%), and other non-governmental organizations (0.54%). These funds, added to other external funds earmarked for the agricultural sector in the pipeline, provide for adequate credit to the sector for probably the next two to three years, taking loan recoveries into account.

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TABLE C.1

WORLD BANK

CREDIT LINES
(Thousands of US$)

NAME OF PROJECT		CONTRACT NUMBER	EXECUTING INSTITUTION	TOTAL FUNDS	AVAILABLE FUNDS 12-31-86	PROGRAMED DISBURSEMENTS 1987
.Financiero Sector Publico	2/		MINFIN	11,000	11,000	1,300
iclaje Gas Vuelta Granda		1719-BO	YPFB	15,500	15,000	9,100
talecimiento Municipal	1/		HAM	15,000	15,000	100
abilitacion Sector Energia	1/		MINENR	6,500	6,500	0
.Rural Omasuyos Los Andes		933-BO	MACA	3,000	250	250
:enimiento Carreteras		1587-BO	SNC	25,000	1,500	1,000
ortacion Reconstruccion RIC I		1703-BO	BCB	36,800	36,800	30,075
ort. para la Reconst.RIC-II	1/		BCB	27,100	27,100	0
TOTAL, PUBLIC				139,900	113,150	41,826
Exploracion Minera		940-BO	FONEM	3,950	2,080	2,080
o Social de Emergencia	1/		BCB	7,800	7,800	4,500
rt. para la Reconst.RIC-II	1/		BCB	20,000	20,000	0
rtacion Reconstruccion RIC I		1703-BO	BCB	18,200	18,200	14,924
TOTAL, PRIVATE				49,950	48,080	21,504
TOTAL, GENERAL				189,850	161,230	63,330

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E: Gaceta Oficial de Bolivia, July 10,1987

TABLE C.3

INTERAMERICAN DEVELOPMENT BANK

CREDIT LINES

(Thousands of US$)

NAME OF PROJECT	CONTRACT NUMBER	EXECUTING DISTRIBUTION	TOTAL FUNDS	AVAILABLE FUNDS 12-31-86	PROGRAMED DISBURSEMENTS 1987
Programa Global de Preinversion	733/SFBO	INALPRE	4,135	2,582	946
Carret. Chimore Yapacani	568/SFBO	SENAC	86,000	9,200	8,842
Explor. y Produccion Hidrocarburos	432/OCBO	YPFB	3,000	3,000	400
Gasoducto al Altiplano	95/ICBO	YPFB	69,000	44,600	9,994
Fomento Ganaderia Porcina	612/SFBO	CORDECH	6,433	969	385
Programa Nal. del Transporte	755/SFBO	SENAC	9,200	8,900	1,124
Programa Nal. del Transporte	483/OCBO	SENAC	43,800	43,600	1,250
Alcantarillado Cochabamba	571/2/SFBO	SEMAPA	9,600	1,100	1,051
Agua Potable Alcantar. Tarija	725/SFBO	CODETAR	10,100	9,600	2,910
Progr. Emergencia Semillas	741/1/SFBO	BCB/IBTA	22,200	1,000	159
Agua Potable La Paz	571/1/SFBO	SAMAPA	23,000	9,100	3,003
Carret. Chimore Yapacani	803/SFBO	SENAC	8,300	8,300	0
Explor. y. Produc. Hidrocarburos	120/ICBO	YPFB	46,800	41,511	11,365
Progr. Emergencia Transportes	741/2/SFBO	SENAC	15,300	10,300	413
Progr. Des. Agric. Chaco Boliviano	579/SFBO	COGEPAI	11,051	3,000	1,849
Carret. Chimore Yapacani	235/ICBO	SENAC	32,100	32,100	0
Explor. y Produc. Hidrocarburos	709/SFBO	YPFB	84,200	72,900	6,501
TOTAL, PUBLIC			484,219	301,762	50,192
Programa Global de Preinversion	733/SFBO	INALPRE	7,165	7,165	630
Progr. Global Min. Peq. y Mediana	479/OCBO	BCB	25,000	22,500	3,500
Prog. Global Agropecuario	712/SFBO	BCB	32,000	2,200	1,140
Progr. Global Credito Agrop.	213/ICBO	BCB	100,000	100,000	10,000
Prog. Reactiv. Indl. Minero	118/ICBO	BCB	35,000	17,200	5,910
TOTAL, PRIVATE			199,165	149,065	21,180
TOTAL, GENERAL			163,384	450,827	71,372

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Table C.3

PANDEPA DEVELOPMENT CORPORATION

CREDIT LINES

(Thousands of US$)

NAME OF PROJECT	EXECUTING INSTITUTION	TOTAL FUNDS	AVAILABLE FUNDS 12-31-86	PROGRAMED DISBURSEMENTS . 1987
Interconexion Central Oriental	ENDE	10,500	10,500	6,843
Chimore Yapacani	SNC	7,500	7,500	2,500
Estudio San Buenaventura Cobija	SNC	1,049	1,049	714
Reactivacion Industrial	BCB	15,000	9,118	4,038
Emergencia Vial	SNC	6,030	2,231	1,422
Vuelta Grande San Rocue	YPFB	16,700	16,700	0
Programa Nacional del Transporte	SNC	10,500	8,013	2,600
Manten. Vial Distritos del Sur	SNC	15,975	15,975	4,586
TOTAL, PUBLIC		83,254	71,086	22,703
Mineria Pequena y Cooperativisada	BAMIN	12,000	12,000	6,107
Cerveceria Boliviana Nacional	CBN	6,500	6,500	1,000
Flor de Empresa	FE	265	55	50
Credito Global Agropecuario	BCB	20,000	20,000	860
Mineria Mediana y Pequena	BISA	10,000	6,000	1,500
TOTAL, PRIVATE		48,765	44,555	9,517
TOTAL, GENERAL		132,019	115,641	32,220

SOURCE: Official Gazette of Bolivia, July 10, 1987

TABLE 3.-

BILATERAL SOURCES OF CREDIT

CREDIT LINES

(Thousands of US$)

NAME OF AGENCY/COUNTRY	TOTAL FUNDS	AVAILABLE FUNDS 12-31-86	PROGRAMED DISBURSEMENTS 1987
Japon	31,100	24,100	14,100
Argentina	119,000	25,571	16,401
ITALIA	19,000	19,000	10,000
FDLT	36,962	24,744	9,899
Boliviano-Peruana	21,000	214	214
Alemania	54,117	52,729	11,845
Japon RIC-II	50,000	50,000	0
Espana	9,500	9,500	9,500
Reino Unido	5,750	5,750	5,750
FIDA	26,200	19,612	2,767
USAID	47,450	33,415	32,315
Rep. Popular de China	1,360	1,360	1,360
TOTAL, PUBLIC	421,439	265,995	114,151
Boliviano-Peruana	9,000	92	92
Espana	5,500	5,500	5,500
Alimentos desde la Argentina	51,000	10,959	7,014
USAID	77,095	37,702	23,273
Reino Unido	1,750	1,750	1,750
TOTAL, PRIVATE	144,345	56,003	37,629
TOTAL, GENERAL	565,784	321,998	151,780

SOURCE: Official Gazette of Bolivia, July 10, 1987

TABLE C.3

BILATERAL AGENCIES

NON-REIMBURSABLE COOPERATION (GRANTS)

Thousands of US$)

NAME OF AGENCY/COUNTRY	TOTAL AMOUNTS	AMOUNT DISPOSABLE 12-31-86	PROGRAMED DISBURSEMENTS 1987
Japon	26,270	26,270	12,170
USAID	13,903	5,161	2,485
Alemania	13,101	9,273	9,273
COTESU	39,722	20,220	19,510
Italia	36,188	30,965	7,786
Holanda	35,825	35,825	14,810
TOTAL, PUBLIC	165,009	127,714	66,034
COTESU	4,348	2,481	2,481
USAID	81,916	66,065	48,926
Otros *	76,047	37,647	13,302
TOTAL, PRIVATE	162,311	106,193	64,709
TOTAL, GENERAL	327,320	233,907	130,743

* PNUD/UNICEF/UNFDAC/SUECIA/PMA/OIEA/OEA/NORUEGA/JUNAC/FAO/CIDA/CEE/CARE/CANADA

SOURCE: Official Gazette of Bolivia, July 10, 1987

TABLE C.6

SUMMARY OF DISPOSABLE EXTERNAL CREDIT

DISTRIBUTION FOR PRIVATE AND PUBLIC SECTORS

(Thousands of US$)

FINANCIAL INSTITUTIONS	PUBLIC SECTOR	PRIVATE SECTOR	TOTAL, GENERAL
B. I. D.	301,762	149,065	450,827
Bilaterales Credito	265,995	56,003	321,998
Cooperacion No Reembolsable	127,714	106,193	233,907
Banco Mundial	113,150	48,080	161,230
C. A. F.	71,086	44,555	115,641
TOTAL, GENERAL	879,707	403,896	1,283,603

SOURCE: Official Gazette of Bolivia, July 10, 1987

TABLE C.7

EXTERNAL FINANCING OF AGRICULTURAL CREDIT

1987

(In US$)

DEPARTMENTS	F I D A	U S A I D	PL - 480	U.N.	C. E. E.	B. A. B. Don. Japanese	B. A. B. Rec. Capital	ORG.NO. GUB. (ONG'S)	TOTAL
Cochabamba	1.546.000	618.125	600.000			1.637.612	1.634.000		6.368.894
Chuquisaca		720.250	700.000			2.446.897	2.354.000	154.000	6.708.303
Tarija		720.250	700.000			1.285.335	2.173.000	40.000	5.251.741
La Paz		516.000	500.000	495.000	368.500	1.894.679	1.555.000		5.329.179
Potosi	600.000	618.125	600.000		390.000	1.247.251	742.000		4.197.376
Oruro		258.000	250.000		500.000	514.134	300.000		2.155.290
Santa Cruz		929.875	900.000			495.092	1.948.000		4.272.967
Beni		155.875	150.000				1.052.000		1.357.875
Pando		155.875	150.000				216.000		521.875
TOTAL	2.146.000 --	4.692.375 +682.625(1)	4.550.000 650.000(1)	495.000 —	1.258.500 —	9.521.000 —	11.974.000 —	194.000 —	36.163.500 --
TOTAL GENERAL	2.146.000	5.375.000	5.200.000	495.000	1.258.500	9.521.000	11.974.000	194.000	36.163.500

(1) Funds Granted to FENACRE for Cochabamba, Chuquisaca, Tariji & Oruro.

SOURCE: USAID/B

ANNEX D

FIVE YEAR PROJECTION OF CREDIT REQUIREMENTS

A five-year projection of requirements for farmer working capital, farm investment capital, and agro-industrial investment is shown in Table D.1. The projections were made keeping in mind that a restructured BAB would be operating, and that more small farmers would be added to the current number being served. In fact, the BAB management indicated that BAB primarily would be serving those farmers whose loan limits do not exceed US$25,000. Furthermore, BAB intends to structure itself into two operating departments: one devoted to development and another to commercial loans. The development department would continue to lend funds to small farmers with refinancing from the BAB as it is currently doing, while the commercial deptartment would promote and mobilize rural savings and deposits, paying competitive interest rates on deposits and charging commercial rates for the loans advanced from such funds.

In addition, the PL-480 and private bank programs would be promoting, generating, and mobilizing more rural savings, helping augment the financial system's capital resources and increase the allocations to the agricultural sector. A strong demand for low-cost credit will continue to exist. It will be sought by farmers and others engaged in the agricultural industry, because it can be used to free existing capital for investment in other, more lucrative enterprises. Bolivia has a strong, although untabulated informal-dollar money market. Many small farmers prefer to borrow from the informal sources at higher loan cost, because it eliminates bureaucratic paper and hassle, and is timely. To facilitate the delivery of credit to more of the nations' farmers will require further organization and streamlining of the BCB/ICI credit delivery mechanism, such as reduced paperwork and properly established and functioning development and credit departments in the ICIs and the BAB.

Furthermore, the absorptive capacity for credit must be expanded, meaning the farmers will require orientation. Credit extended freely without technical expertise in its applications will result in a delinquency problem as past history has indicated. Thus, the farming community must be provided with technical knowledge in terms of switching crop patterns from traditional to non-traditional export crops, to the planning of diversified production, and for the prudent investment of their credit funds. The need for an improved domestic and export marketing system, storage, transportation, and agro-industrial development will have a bearing on the volume of credit that could and should be prudently extended.

Having regard to the aforesaid, the five-year projection (Table D.1) is based on the following assumptions:

- Column A deals with the number of farmers the credit system hopes to serve. The BAB annual report for 1986 indicates that they served 14,545 farmers, while FENACRE, LA MERCED, and other cooperatives are providing service to an additional 10,000 to 12,000 small farmers. Precise figures were not available, but estimates are that the private banks are also serving another 10,000 to 12,000 thousand. From this it can be deduced that about 35,000 farmers are currently using credit from formal sources, approximately five to six percent of the nation's farmers. The projection leads off assuming that for 1988, about 42,000 farmers will be utilizing the formal credit system. This number is augmented annually by increments to reach 70,000 by the year 1992.

- Column B indicates the average loan amount per farmer. For 1986, the average loan per farmer under the PL-480/CAE program amounted to $US 788 (Table E-5). The BAB figures for the year ending December 31, 1986, showed small farmers loans to average $b 2,614 ($US 1,233), while the larger farmers averaged $b 4,839 or ($US 2,283). The overall average for BAB borrowers for 1986 was $b 4,198 ($US 1,980). (BAB, 1985-1986). The projection commences in 1988 with an average loan of $US 2,300 per farmer. This is increased by five percent annually over the five-year period.

- Column C carries a figure at the top of $ 91,206 representing the amount of refinanced funds in the system for the winter crop cycle 1987, and the summer crop cycle 1987/88. (BCB-Dpto. de Desarrollo, Office Visit, November 1, 1987) The figures for the remaining years reflect the estimated amount of farm credit required, and is arrived at by multiplying Column A by Column B.

- Column D is an estimate of the capital envisioned for investment in agro-industrial and agricultural marketing projects amounting to $US 140 million over the five-year period. There is no historical basis behind these estimates, rather they are taken as a (modest) representative volume in proportion to the amount of production credit.

- Column E represents the combined farmer and agro-industrial funds required for the particular year.

- Column F deals with funds recovered from loans advanced in the prior year(s) and put back into the system. The recovery rate, taking into consideration both operating and investment capital, is based on a 60 percent collection of the previous year's loan portfolio for the

first two years, and 70 percent per year thereafter. The recovery rate is depressed not so much because of delinquency, but because the credit system is expanding, and recovery of medium-term loans takes more time. Also, there is some flight of capital from the agriculture sector.

- Column G reflects the additional funds required year-by-year for breaching the deficiencies as shown. The net result is that over the five-year period a total of nearly 376 million US dollars will be required to augment the funds that are in the system, including those that will be recovered during the period.

- Columns H,I,J, and K reflect the manner in which the loan volume is distributed between working and investment capital. The ratios used are based on a "Demand for Credit Projection" prepared by the BCB for the 1987/88 agricultural year. (BCB-Dpto. de Desarrollo, Anexo No. 1, Camaras Agropecuarias y Federacion de Ganaderos) The ratios in the BCB projections were 68.2 percent for working capital and 31.8 percent for investment capital. The calculations in the Table D.1 projections are based on 60 percent working capital and 40 percent investment capital.

- Finally, one can see in the lower part of the table the funds already in the system or programmed to go into the pipeline by the various international donors over the next few years. The total of these programs amounts to 413 million US dollars, very close to the 376 million projected to be needed for the next five years. Based upon this analysis, the assessment team concludes that no additional funds beyond the amounts already programmed will be required from international donors in the medium-term for agricultural production and investment credit.

TABLE D.1

CAPITAL REQUIRED FOR AGRICULTURAL CREDIT IN BOLIVIA - 5 YEAR PROJECTION

(US$)

	A	B	C	D	E	F	G	H	I	J	K
								LOAN DISTRIBUTION			
								WORKING CAPITAL		INVESTMENT CAPITAL	
YEAR	NO. OF FARMERS	AVERAGE SIZE OF LOAN (000)	FARMER LOANS	INVESTMENT AGRO INDUSTRY	TOTAL LOAN AMOUNT	LOAN RECOVERY (60%)	ADDITIONAL FUNDS REQUIRED	FARMING (50%)	LIVESTOCK (10%)	FARMING (20%)	LIVESTOCK (20%)
					-US$ (000)						
1987	FUNDS IN SYSTEM		91,206								
1988	42,000	2,300	96,600	20,000	116,600	54,723	61,877	48,300	9,660	19,320	19,320
1989	48,000	2,415	115,920	20,000	135,920	69,960	65,960	57,960	11,592	23,184	23,184
1990	54,000	2,535	136,890	30,000	166,890	95,144	71,746	68,445	13,689	27,378	27,378
1991	61,000	2,660	162,626	30,000	192,626	116,823	75,803	81,313	16,262	32,525	32,525
1992	70,000	2,790	195,300	40,000	235,300	134,838	100,462	97,650	19,530	39,060	39,060

Funds Received	375,848
Funds in System 1/	413,333

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[illegible] IN SYSTEM OR PIPELINE 1/		$US (000)
[illegible] Ganaderia Porcina (1)	612/SFBO	6,433
Global Agropecuaria (1)	712/SFBO	32,000
Global Credito Agricola (1)	213/ICBO	100,000
[illegible] - Linea Bi-Lateral (1)		26,200
Corporacion Andina De Fomento (1)		20,000
[illegible] Campana Agro De Verano (2)		63,000
Para Exportaciones Agricolas (2)		10,000
[illegible] (2)		20,000
[illegible] Local BCB (2)		15,100
[illegible] - Plan Chaparre (3)		16,000
PL-480 Fideo-Comiso (4)		13,500
PL-480 Otros Combinados (Agricolas) (4)		26,100
PL-480 FOCAS (5)		35,000
USAID - CAE (5)		10,000
Emergency Ag. Credit (6)		20,000

		413,333

1/
SOURCE:
(1) Gaceta Oficial de Boliva - July 10, 1987
(2) BCB - Dpto de Desarrollo
(3) Plan Chaparre Office - Cochabamba
(4) PL-480 Executive Secretariat - Office Visit
(5) PL-480 Focas Management - Office Visit
(6) USAID/BOLIVIA - A.R.D. Division

ANNEX E

BOLIVIA FINANCIAL INSTITUTIONS WITH AVAILABLE CREDIT

I. Banco Central de Bolivia

The Banco Central was created by the General Banking Law of 1928. It is the apex organization in Bolivia's financial system. Its principal responsibilities are the following:

- to monitor and regulate financial institutions;
- to monetize;
- to maintain national and international reserves;
- to exercise overall control and maintain a stable financial system;
- to regulate foreign exchange; and
- to act as the agent of the GOB in accepting and disbursing international credit and financing lines.

By virtue of a Supreme Decree dated February 29, 1940, the BCB was authorized to examine the need for rural credit as a means to accelerate agricultural development in the country. This brought about the creation of the Banco Agricola de Bolivia, referred to elsewhere in this report.

In 1967, the U.S. Government and the Bolivian Government agreed to establish a "Fund for Agricultural Refinancing" to be administered by the BCB. The purpose of this fund was to refinance agricultural loans to farmers through the ICIs. The initial funds amounted to eight million dollars from USAID, with one million from the GOB being denominated as "Fondo de Refinanciamiento Agricola" (FRA-1). This was followed by FRA-2, funded with eight million dollars by USAID/B and three million by the GOB. FRA-2 was earmarked specifically for small farmers. Other international lending agencies (such as the BID later advanced funds to the BCB for refinancing livestock production, and agricultural production in general. In the intervening period, the BCB had advanced refinancing through the ICIs for various agencies and programs, such as the "Programa Agricola de Emergencia" (PAE) and the "Fondo Agropecuario de Emergencia" (FAE), the later funded with $US 20 million on a 50/50 basis between USAID/B and the GOB.

In accordance with Supreme Decree No. 21660, dated July 10, 1987, the BCB is empowered to regulate terms and conditions for the refinancing program to the ICIs and beyond the borrowers.

The following are items to which the ICIs must subscribe:

(1) Interest rates on lines of credit refinancing by the GOB shall be fixed based on the LIBOR rate, plus 5 percent. The effective LIBOR rate applicable to a loan agreement is that which is in effect the date when the loan instrument is drawn. The interest rate charged to the ICIs will not exceed the LIBOR rate, and the final beneficiary an additional five points.

(2) The BCB is prohibited from reprogramming past due loans for the ICIs, therefore, loans that are due and not paid are charged by the BCB to the ICI's current or legal deposit account with the BCB.

(3) Furthermore, the BCB has not established expressed quotas for refinancing the needs of the various departments or regions. It has the funds available for refinancing and will do so on the basis of "first-come first-served."

(4) In order to expedite the refinancing procedures, the Banco de Desarrollo of the BCB no longer approves loan applications. This responsibility together with that of the selection of clients, acceptance of collateral, and such, are left entirely to the discretion of the ICIs.

With the enactment of Supreme Decree No. 21660 authorizing the restructuring of the BCB, the former Departamento de Desarrollo was converted into the Banco de Desarrollo in the BCB. The Banco de Desarrollo has the primary function of administering the various lines of credit made available by the international agencies and the GOB in accordance with the BCB guidelines. As indicated in Table E.1, the ten most prominent lines of credit being administered as of January 10, 1987, amount to $US 332 million. The agricultural lines of credit amount to $US 182.5 million or 54.9 percent of the total. These amounts indicate that there is no shortage of capital in the credit delivery system at this time.

TABLE E.1

SUMMARY OF AVAILABLE CREDIT LINES AS OF JANUARY 10, 1987

Line	Purpose	Term	Available Amount $US
A. Fondo de Reactivación Industrial y Minero 118/IC-BO (BID)	Industry & Mining	up to 7 years	16,928,000
B. Programa Global Minero(***) 479/IC (BID)	Mining	up to 5 years	24,934,050
C. Programa Global Agropecuario (BID) y Agroindustrial 213/IC-BO(***)	Agronomic-Industrial	up to 10 years	135,100,000
D. Sistema Andino de Financiamiento del Comercio SAFICO (*) (CAF)	Exports	up to 180 days	10,000,000
E. Programa de Contribución del Gobierno Suizo	Imports	up to 3 years	3,216,000
F. Programa de Reactivación Agropecuario 741/SF-BO(**) (USAI/GOB)	Agronomic	up to 12 mos.	18,097,776
G. Fondo Agropecuario de Emergencia (**)(USAID/GOB)	Agronomic	up to 12 mos.	19,331,408
H. Fondo Extraordinario de Reactivación FERE-CT	Working capital & assets.	up to 5 years	53,076,958
I. Fondo Extraordinario de Reactivación FERE-FONVI(*)	Housing	up to 20 years	40,000,000
J. Programa de Contribución del Reino Unido	Imports	up to 3 years	1,920,000
	TOTAL	$US	332,007,184

Source: División de Lineas, Banco de Desarrollo.

(*) Available on November 1987.
(**) Agricultural Summer Campaign 1987/1988
(***)Includes local contribution.

II. Private Commercial Banks

Bolivia has 17 private commercial banks (Figure E.1), of which 12 are domestic and five are international. For all intents and purposes, international banks at this time have ceased domestic lending activities.

All of the commercial banks in Bolivia belong to ASOBAN, the national banking association. All Bolivian banks also belong to the UBB, the Bolivian Banking Union. The primary purposes of these two organizations are:

1. the representation of the banking industry in legislative and/or lobbying endeavors, and

2. the undertaking of special studies. (The UBB has, on occasion, endeavored to syndicate loans.)

Commercial banks can involve themselves in all normal commercial banking activities. They can accept current, time deposit and savings accounts, as well as provide short-, medium- and long-term loans. They can offer letters of credit, guarantees, and other commercial transaction facilities. They use their own internal resources, their deposit base, to refinance lines for their financial activities. Their revenues are derived primarily from loans and other commercial transactions, and their costs are primarily money costs, asset costs and labor costs (in that order). (Refer to Figure E.1 on the following page.)

The Bolivian commercial banks acted as prominent financial intermediaries during the 1960s and 1970s. The economic and financial developments of the 1980s reduced their principal function of mobilizing and allocating resources, with the result that the commercial banking system has shrunk somewhat in terms of real volume of transactions, and in the number of institutions, with rumors of more mergers, offers to sell, or even liquidation in the offing. The financial situation of the private commercial banks as of July 31, 1987, is listed in Table E.2 according to size of banks. As can be noted, banks are in jeopardy due to the high rates of delinquency and/or external debt. External financing except for BCB refinancing, has been curtailed.

In accordance with the Ley General de Bancos and revisions contained in Supreme Decree No. 21660, the commercial banks must maintain on deposit with BCB an amount equal to 20 percent of their savings and deposits. The legal reserve requirement for time deposits is 10 percent. These legal reserve rates apply to both dollar and bolivian deposits.

The commercial banks are required to make adequate provision for loans in arrears along the following lines:

Figure E.1

FINANCIAL SECTOR INSTITUTIONS

- 1. Monetary System
  - BANCO CENTRAL DE BOLIVIA Y BANCOS COMERCIALES
- 2. Credit System
  - State Banks
    - Commercial Specialized
      - Banco del Estado
      - Minero
      - Agricola
    - Mixed
      - Banco de la Vivienda
  - Private Banks
    - Commercial Domestic
      - Boliviano Americano
      - Cochabamba
      - Credito de Oruro
      - Santa Cruz de la Sierra
      - Hipotecario Nacional
      - Mercantil
      - Nacional de Bolivia
      - Ind.Gan.del Beni
      - Potosi
      - La Paz
      - Union
      - Progreso
    - Commercial Foreign
      - Popular del Peru
      - Nacion Argentina
      - Do Brasil
      - Real S.A.
      - City Bank
    - Specialized
      - Industrial S.A.
      - Financiamiento Ind.S.A.
      - Inversion Bol.S.A.
- 3. Other Institutions
  - Credit Associations
  - Insurance Companies
  - Mutuals
  - Exchange Houses

Stock Market — Being formed

Source: Bolivia Financial Sector Assessment, 1986
James S. Munson and Roberto Barbery Ameller.

TABLE E.2

SOURCE: GERENCIA DE FISCALIZACION
BANCO CENTRAL DE BOLIVIA
(IN THOUSANDS OF DOLLARS)

FINANCIAL SITUATION OF PRIVATE BANKS AS OF JULY 31, 1987

NAME	CAPITAL AND RESERVES	EXTERNAL DEBT	LOANS IN ARREARS DELINQUENT	LOANS IN ARREARS PENDING	TOTAL
1 .- BANCO DE SANTA CRUZ	9,800	21,400	880	1,200	2,080
2 - BANCO MERCANTIL	8,300	840	1,140	1,680	2,820
3 .- BANCO HIPOTECARIO NACIONAL	6,160	810	450	860	1,310
4 .- BANCO BOLIVIANO AMERICANO	5,560	2,140	860	2,810	3,670
5 .- BANCO NACIONAL	4,790	8,200	2,310	4,590	6,900
6 .- BANCO DE COCHABAMBA	4,040	2,550	1,290	3,260	4,550
7 .- BANCO DE LA UNION	3,770	0	490	1,330	1,820
8 .- BANCO BIG BENI	3,750	834	770	640	1,410
9 .- BANCO DE LA PAZ	3,470	666	186	617	803
10 .- BANCO LATINO AMERICA DE DES	3,110	0	9	40	49
11 .- BANCO DEL PROGRESO	2,200	0	56	466	522
12 .- BANCO INDUSTRIAL DE BOLIVIA	1,880	2,047	91	361	452
13 .- BANCO DE POTOSI	1,450	1,075	410	754	1,164
14 .- BANCO POPULAR DEL PERU	(9,470)	11,820	100	2,240	2,340
15 .- BANCO DO BRASIL	(10,580)	11,430	0	3,860	3,860

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- Loans in arrears 6 to 12 months - additional reserve of 20%

- Loans in arrears 13 to 24 months - additional reserve of 40%

- Loans in arrears beyond 36 months call for a 100% reserve.

To avoid the concentration of large loans in the hands of a few particular borrowers, no financial institution may loan to any one individual an amount in excess of 20 percent of the paid capital and reserves.

Commercial banks must also conform to the rule governing the deposit/paid-up capital ratio. In the past, that ratio was allowed to rise to 30 to 1. The new rule dictates that it shall not exceed 10 to 1. A commercial bank's liability to the BCB should not exceed five times the bank's paid-up capital, nor surpass 50 percent of its loan portfolio.

Banks are required to report monthly information pertaining to their operations, such as interest rates charged to clients, conditions of loan portfolio and delinquency, names of clients with loans surpasing $US 50,000. Independent auditors, either foreign or national, will be hired to audit the banks for this purpose.

The above-mentioned and other operational restrictions have impeded the CB's ability to engage actively in agricultural lending. In order to comply with the provisions of D.S. 21660, their operations must be disciplined accordingly. In addition to the provisions mentioned earlier, CBs are reluctant to enter on a massive scale in agricultural lending to small farmers for two important reasons:

1. the hypothecation of land titles is not recognized as negotiable collateral, and

2. in the case of client default of payment, the CB's legal deposit (encaje legal) with the BCB is automatically reduced by the amount of the defaulted debt. This leaves the commercial bank with no real collateral and with less capital with which to work.

It should also be noted that through the government-owned banks, such as the BAB and the Banco del Estado, small- and medium-sized farmers were able to obtain loans on a much more liberal basis, using crop or other chattel liens as collateral. A large percentage of these borrowers became delinquent and did not repay their loans to the BAB. Currently, they do not qualify

for loans from those institutions and lack the required collateral to obtain loans from the commercial banks.

In terms of capital formation or savings mobilization, the commercial banks have suffered decreases by as much as 1000 percent since 1981 (International Resources Group Study, 1986). Other institutions, such as credit unions, are experiencing a similar situation. There is, however, a great deal of cash in Bolivia coming from the informal ("black") market and the drug trade. A large part of this informal market of funds is handled by private financiers, investment firms and ordinary individuals. There is no tabulated data available on this market, but estimates of this liquid capital range from $US 300 to 1,500 million. As the economy stabilizes and the inflation rate settles, it is expected that much of this will flow back into the formal banking and financial system. In the meantime, it is financing short-term credit demands for all sectors of the economy at usuriously high interest rates.

During the 1985-1986 summer crop season, under the Fondo Agropecuario de Emergencia (FAE), the commercial banks and the Banco del Estado (acting as ICIs) made a total of 10,134 loans amounting Bs 185.4 billion. This amount was loaned to farmers in the nine provinces for 17 different varieties of crops. (Banco Central, Departamento de Desarrollo.)

To expedite the approval and release of loans to small- and medium-sized farmers, and in order to qualify for BCB refinancing, commercial banks were requested to establish their own development departments. Such a department is generally staffed by a loan officer, an agronomist and an accountant, with additional staff as volume and conditions warrant.

Currently commercial banks are operating with restricted margins (five percent) on the refinanced loans to the agricultural sector. The margin spread of 10 to 12 percent on their own funds seems adequate. The reduction in loan volumes due to decreases in savings/deposits (providing less money to lend and adding to the high costs of operation) has cut heavily into the profit margins of commercial banks.

III. Banco Agricola de Bolivia (BAB)

The BAB was organized in 1942. It is a GOB-owned institution designed specifically to provide credit to the agricultural sector in Bolivia. During its 45 year history it has loaned approximately $US 360 million dollars. The BAB has a network of 10 regional agencies and 52 provincial agencies, thus bringing agricultural credit services nearer to the farmers than does any other financial institution. As of December 31, 1986, it had a loan portfolio of $US 29.3 million loaned to more than 17,000 borrowers, of whom 76 percent were small farmers using 41 percent

of the loan portfolio.

The BAB has been on the verge of total failure on several occasions. The last time it received a new lease on life took place on July 5, 1979, through Supreme Decree No. 16669 when funds were made available as follows:

Bolivian Ministry of Finance (Bonds)	$US 46.0 million
USAID via Central Bank and Treasury	22.0 million
Japan, Germany and Holland	23.0 million
Total	$US 91.0 million

(Torres and Larson, 1986)

These funds entered the BAB system during 1981-1982. The hyperinflation and operating losses caused a shrinkage of assets $US 53.7 million in 1985. In 1986 it received donations of $US four million from Japan and $US 3.1 million from Holland. For the 1987 operating year, a tenth donation was received from Japan for $US 4.9 million. Most of these donated funds were used to pay operating expenses.

As of March 31, 1986, the loan portfolio of the BAB revealed the following data:

Total loan portfolio: $b 55,902,700 millon ($US 29,391,500)	100 %
Loans in current status: $b 19,770,032 millon ($US 10,394,300)	35 %
Loan in delinquent status: $b 36,132,658 millon ($US 18,997,200)	65 %

(Banco Agricola de Bolivia)

The BAB proposes to have the National Treasury assume the write-off costs for uncollectable past due loans, justifying this on the basis that most loans were granted subject to poor policies dictated by former Bolivian governments. The BAB is currently not a viable institution due to high overhead costs, reduced income producing loan volume, and narrow spreads on its operating capital.

The BAB's operations for 1985 and 1986, respectively, are shown in Table E.3. It will be noted that the number of borrowers for the two-year period remained almost constant, while the loan volume from 1985 to 1986 grew by 300 percent. It should also be noted that in 1986 the BAB contributed only 0.4 percent the total funds in the operation. It is obvious that its operations rely totally on external funding.

On the other hand, it should be noted that the BAB has been

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making an effort to lend to small farmers. Table E.4 illustrates the fact that 72.6 percent of its loans went to small borrowers in 1986 for an average of $b 3,955 per loan, benefitting 15,984 farmers, thus making the average loan per farmer to $b 2,614. (Some loans are made to groups of farmers, so the average size of loan is greater than the average amount received per farmer.) Another 27.4 percent of BAB clients are "other" farmers, with an average loan per farmer being $b 48,396. The total loan volume distribution was 68.4 percent to small farmers and 31.6 percent to others.

The BAB has no financial resources of its own and relies entirely on the BCB rediscount lines for its loan funding. It can only increase its loan volume to the extent that the BCB makes funds available. The interest rate the BAB charges to borrowers is 13 percent out of which the BAB realized a four-point spread.

Chapter VIII of Supreme Decree No. 21660 outlines the restructuring of the BAB. When completed in accordance with the terms of the decree, the restructuring will convert the BAB from its former status of being a credit delivery institution to that of becoming a full-fledged financial intermediary in the rural countryside. Basically, the BAB will continue to extend credit to small agricultural producers. The following are some of the highlights applicable to the BAB as outlined in the Decree:

(1) Loans in excess of Bs 25,000 per client shall not exceed 25 percent of the total value of the loan portfolio.

(2) Loans should not exceed Bs 50,000 for small borrowers and Bs 1 million for cooperatives or producer associations.

(3) The BAB was instructed to accelerate its collection process on overdue loans, and to re-value the loan portfolio after consulting with the National Treasury about the procedures to be used.

(4) The decree authorized the restructuring of the BAB so as to:

- ensure its viability;
- decentralize its operations and improve the efficiency of the regional branches;
- assign capital to each regional unit;
- adopt an accounting system that conforms to standard accounting principles for each regional or provincial agency;

- simplify and modernize its operational and administrative procedures; and

- establish a strategy that would permit depositors and borrowers of the bank to participate in the ownership and policy making of the institution.

The restructured BAB will require funds for operating capital. Such funds could come from the GOB and possibly from grants from international donors, such as the BAB has been receiving from Germany, Holland, and Japan. The capital base should be large enough so that, when it is multiplied five times through BCB refinancing, a loan portfolio can be developed that would produce sufficient income to make the BAB viable.

IV. Cooperatives

Bolivians throughout the years have organized various and sundry cooperatives, some of which have been successful while others have failed. Successful and operating cooperatives can be found in the sectors of mining, housing, agriculture, transportation, and other labor groups throughout the country. A large majority of the cooperatives listed on the register of INALCO in the Ministry of Labor are "paper cooperatives" and do not function. For cooperatives to become successful, they must have the following components:

- an economic potential to enable the cooperative to become viable as an institution;

- sound and ethical management;

- participation by the members in financing the basic capital requirements of the cooperative;

- an active member information program;

- an annual audit and report to its membership; and

- membership in a national body representing the particular kind of cooperative in question.

When properly administered, cooperatives can give their members economic and social benefits that they might not otherwise be able to attaina on an individual basis.

For the purpose of this assessment, a brief look at the principal cooperatives dealing with agricultural credit will be undertaken. USAID has directed considerable resources, under the PL-480 program, to Bolivian agricultural cooperatives. To do this, it was instrumental in establishing an Integral Cooperative

Program through a grant of funds in 1975. An attempt was made to involve the BAB, the National Office for Integral Cooperatives (ONCICOOP), and the National Federation of Credit Cooperatives (FENACRE). This mix of institutions and services did not function smoothly. In 1985, it was decided that FENACRE would channel the credit to the integral cooperatives as well as to its own affiliates and that PL-480 would be a source of funds for this purpose. In essence, FENACRE became an ICI for the integral cooperatives and, on a smaller scale, to its affiliates. It is expected that shortly the BCB will also confer ICI status on FENACRE.

FENACRE was organized in 1962. It is a second story institution consisting of about 220 individual community credit cooperatives, out of which 94 are based in rural areas and about 126 are urban-based. The approximately 185,000 members involved in this activity. A comparison of the FENACRE operations for the years 1974 and 1986 shows the following growth:

	Total Assets	Total Loans	Net Worth & Reserves
1974	$b 20,370,765	$b 3,775,829	$b 11,502,200
1986	$b15,858,748,078	$b10,392,637,732	$b 3,352,004,652

(Source: FENACRE Annual Reports)

As the above figures indicate, the financial inputs given to FENACRE coupled with good management have made it an organization that can impact on the economies of its client members.

Members of the FENACRE system can borrow up to five times the amount of their deposits at the time of making the loan. A compulsory method of capitalization is used, wherein a member places 10 percent of the proceeds of this loan in his deposit account. As the deposit account increases, the ability to borrow also increases. Some member cooperatives have loan ceilings and when a member has a sufficient deposit to enable him to borrow to the ceiling, he can elect not to make further deposits.

Loans are made for annual production purposes and are generally for eight to ten months. Some long-term loans have also been advanced, and the 1986 Annual Report shows a sum of $b 976,564,054 in this line item. Long-term loans are generally made for periods of three to five years. The interest rate charged on production loans made with PL-480 or BCB funds is 13 percent plus a one percent commission. FENACRE has a five point spread, out of which two percent goes to the affiliated cooperative. Some of the FENACRE cooperatives extend credit-in-kind.

All loans have the maintenance of a value clause pegged to the value to the U.S. dollar. FENACRE cooperatives accept multiple kinds of loan guarantees, such as a land title or

certificate of land purchase. Loans under US$ 500 must have one cosigner; loans exceeding $500 must have two cosigners plus the signature of the spouse (if the recipient is married) and the loan documents must be legalized. The fact that cooperatives have experienced low levels of delinquency suggests that the system is working well.

Another cooperative that has a successful operating record is La Merced in Santa Cruz. It is affiliated with FENACRE, but because of its size and because it operates with a number of rural branches, PL-480 and other agencies have opted to classify it as an ICI. Furthermore, this cooperative is in the process of negotiating ICI status with the BCB.

During the period of hyperinflation, La Merced suffered heavy losses. It was forced to sell urban property it owned to pay its external debt and to normalize its fiscal operations. As of December 31, 1986, the revalued assets of La Merced amounted to $b 3,939,126,000 and the loan portfolio stood at $b 558,366,000, of which $b 121,564,719 or 22 percent went for small farmer credit. The net worth and reserves totalled $b 3,120,158,000. This cooperative is now in good financial condition. (La Merced Annual Report, 1986)

La Merced obtained funds from the BID and PL-480 for on-lending to its farmer borrowers. Out of its total outstanding loan portfolio to agriculture at the end of 1986, 82 percent of the funds came from PL-480 and 11 percent from BID. The lending procedures in La Merced follow the FENACRE pattern. Delinquency is under control, and interest rate on PL-480 funds is 14 percent annually to the borrower. Loans advanced from their own funds are currently being loaned to members at three percent per month or 36 percent annually.

The GOB continues to exemplify a keen interest in cooperative development, and in a news release dated November 7, 1987, that appeared in El Diario, the Minister of Labor indicated that $US 10 million had been earmarked to support the continuing development of cooperatives. A number of the agricultural cooperatives are operating satisfactorily now that they have access to external funding to supplement their own capital and sufficient income to employ quality management. Since PL-480 funding is available through ICIs to cooperatives, and particularly through FENACRE, the Minister's announcement may be quite timely. Dormant cooperatives could be revived or merged with a neighboring cooperative to enable them to become viable and of service to their members. In short, cooperatives can be successful and meaningful to their membership and to the economy as whole if properly managed.

V. PL-480 Agricultural Production and Marketing Program.

The program is supported by U.S. wheat sales to Bolivia under two successive PL-480 agreements (1978 and 1985) between the governments of Bolivia and the United States. Funds raised by such sales are placed in a trust fund administered by the Executive Secretariat and lent through ICIs for a five-year period, after which the principal-plus-interest is repaid by the ICIs to the trust fund to be re-lent. In this manner, a perpetual source of funds will be available on a rotating basis to the ICIs.

The stated objectives of the PL-480 funds is to establish a credit source for small- and medium-size farms and related small-scale agricultural industries. Private banks and other financial institutions are used to distribute and administer the credit. USAID found the PL-480 mechanism very attractive; it was efficient and avoided troublesome bureaucracies in governmental institutions and no infusion of new funds were required. Consequently, the Executive Secretariat automatically become a second-story financial institution, channeling the PL-480 funds exclusively through private sector ICIs.

The Executive Secretariat answers to the Joint Commission for Rural Development (JCRD). This commission is made up of the representatives of the GOB and USAID/B. It establishes the general guidelines for the operations of the PL-480 program.

The day-to-day operations are performed by the Executive Secretariat whose principal tasks are project evaluation and the monitoring of projects. The Executive Secretariat, a legal decentralized body of the GOB is empowered to enter into contracts; it is supervised in this role by USAID/B with the ultimate financial control being exercised by the Department of Project Coordination and Control (DPCC) of the Ministry of Finance.

Following the hyperinflation of 1984, the USAID producer credit program in Bolivia was essentially decapitalized. This situation and the lack of funds from other sources made PL-480 a dominant element in Bolivian development credit.

The program grew rapidly, with 49.2 percent of the total accumulated program disbursements allocated to credit as of March 31, 1987. During this period, the Executive Secretariat using both Title I and Title III generated funds managed 15 financing lines, with 29 different subactivities or specific projects. The total of the disbursed funds to these projects amounted to $US 30.0 million. In addition, the Executive Secretariat administered the 1986 Emergency Agricultural Credit Fund that had disbursed $US 7.8 million, making for a total disbursement of $US 37.8 million during the first quarter of 1987.

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The PL-480 Program has been a remarkably successful for several reasons:

(1) it came on the scene with funds at a time when funds were scarce, following the rampant inflation and near-decapitalization of financial institutions in 1984;

(2) its Executive Secretariat is well organized and interested in providing services;

(3) it allows the ICIs maximum flexibility in programming the investment and repayment of loans for their borrowers; and

(4) it has little interference from political pressures and few limitations imposed by government bureaucracy.

The selection of participating banks as ICIs with the Secretariat is done through an established formal procedure. Eleven of the thirteen national private-sector commercial banks participated in the PL-480 Trust Fund program. As of May 1987, each of these banks had made at least 12 loans, and four banks had made more than 50 loans. Loans by the ICI's are made mostly to individuals, however, some banks have made group loans as a cost-reducing mechanism. In such cases group members cosign for each others' loans. This mechanism enables the bank to meet with borrowers and plan their credit needs.

The Executive Secretariat lends to the bank at eight percent and the ICI lends to the borrower at 13 percent. Thus, the ICI earns a five percent spread. In addition, the borrower pays at one percent flat commission on the value of the loan, which serves to compensate the ICI for any risk of default. The maximum loan to an individual farmer or artisan is $US 15,000 and the limit for agro-industry is $US 70,000. Special projects in excess of $US 70,000 may be financed with joint approval by the ICI and the Executive Secretariat. All loans from PL-480 to the ICIs and from the ICI to the borrower are subject to a "maintenance of value clause" where the loan is pegged to the exchange rate for the U.S. dollar. The ICI's assume 100 percent of the risk for all loans.

As of May 1987, there were eight private sector commercial banks, FENACRE, and LA MERCED cooperative participating in the PL-480 Emergency Agricultural Credit Program (CAE). Table E.5 indicates the total volume of credit delivered and the names of the participating ICIs. As can be noted, an amount of $US 8.6 million was disbursed to 10,889 farmers under this program. FENACRE was the largest user of funds delivering 38.7 percent of the total loan volume to 73.6 percent of the farmers, for an average loan of $US 414. This points to the fact that more of the nation's small farmers can be reached through well organized

and administered cooperatives or other similar entities. The figures also suggest that the private banks were not the major participants in the program, and that two of the private banks were suspended from CAE for various reasons.

TABLE E.5

PL-480 DISBURSEMENTS OF EMERGENCY AGRICULTURAL CREDIT PROGRAM FUNDS BY ICI (May 6, 1987)

ICI	Disbursed to ICIs Benef.	%	Amount $US	%	Average Loan size $US
Banco Hipotecario Ncl.	649	6.0	712,191	8.3	1,097
BLADESA	721	6.6	1,472,574	17.2	2,042
FENACRE	8,019	73.6	3,319,279	38.7	414
Banco Santa Cruz de la Sierra	123	1.1	289,090	3.4	2,350
Banco de Potosi	37	0.3	152,612	1.8	4,125
Banco de Credito de Oruro	925	8.5	1,785,042	20.8	1,930
La Merced Cooperativa	207	1.9	299,817	3.5	1,448
BIG- Beni	106	1.0	324,347	3.8	3,060
Banco de la Unión	67	0.6	127,000	1.5	1,896
Banco de Cochabamba	35	0.3	96,500	1.1	2,757
TOTALS	10,889	100.0	8,578,452	100.0	788

Source: USAID/Bolivia, Memorandum to David Cohen and David Jese by Gerardo Mendoza, May 7, 1987.

PL-480 has two credit lines to finance regional development projects through the Unidades Crediticias Financieras (UCFs). All departments except Pando have established UCFs. Twelve private sector banks participated in this program. As of March 31, 1987, total disbursements from Title I and Title III for credit amounted to $US 6,446,215. USAID financed about $US 9.2 million directly with the UCFs, and an amount of $US 9.3 million of Title III funds were disbursed to the UCFs for use as institutional development grants. Of the $US 15.1 million (Table E.6) disbursed during the life of the Departmental Development Coorporation (DDC) Project, $US 9.2 million (60.1 percent) came from USAID, and $US 5.9 million (39.9 percent) from PL-480 funds. Four banks lead the field in use of funds, between them having disbursed 79.0 percent of the total funds. (Refer to Table E.6 on the following page.)

TABLE E.6
DISBURSEMENTS OF DEPARTMENTAL DEVELOPMENT CORPORATION CREDIT, FINANCED UNDER
DDC PROJECT, BY ICI AND DEPARTMENT (THROUGH MARCH 31, 1987)
(Thousand of $US)

Departments / Banks	Total	%	Sta. Cruz	Cochabamba	Tarija	Chuquisaca	Beni	La Paz	Oruro	Potosi
Cochabamba	4,423	29.4	629,2	2,014,4	-	1,720,7	-	25,0	39,7	-
Credit Oruro	3,248	21.6	626,9	339,5	1768.5	-	-	501,5	-	11.4
Santa Cruz	2,314	15.4	2,213,2	74,3	-	27,0	-	-	-	-
B.I.S. Beni	1,898	12.6	-	-	-	-	1,772,2	125,9	-	-
Mercantil	743	4.9	70,0	-	649.0	-	-	-	23,7	-
Hipotecario	859	5.7	-	-	-	-	-	835,5	23,5	-
Nacional	467	3.1	-	-	91.4	270,7	25,4	20,7	52,6	6,4
Union	385	2.5	193,6	192,2	-	-	-	-	-	-
Potosi	250	1.7	-	-	-	-	-	249,8	-	-
La Paz	239	1.6	-	205,6	-	-	-	-	-	33,2
Inversion	149	1.0	-	-	-	-	-	148,7	-	-
BUPRESA	73	0.5	-	-	-	-	-	73,1	-	-
TOTAL	15,054	100.0	3,732,9	2,825,0	2,508,9	2,018,4	1,797,6	1,980,2	139,5	51,0

Source: Unidad de Coordinacion de Proyecto MPC/USAID/B, Memoria, Noviembre 1983-Marzo 1987. (La Paz: MPC/USAID/B), p.37.

The objective of the DDC projects was to provide credit for fixed investments for small- and medium-size farmers, medium-sized private sector firms, and mixed ownership firms (public and private) where majority ownership is in private sector hands. Such credits were not to exceed $US 300,000 and could not be used for feasibility studies, purchase of real estate, repayment of prior debts, and other limitations. The paperwork and loan approval procedures were cumbersome, requiring several levels of approval causing long delays. This situation brought in the FOCAS project whose aim is to simplify procedures and to give UCP the authority to approve most loans.

The FOCAS Project (Formación de Capital en Areas Secundarias)

This program provides financing and technical assistance to productive enterprises in secondary economic areas and areas of marketing priority. (Secondary areas are defined as those areas outside of the cities of La Paz, Cochabamba, and Santa Cruz). The GOB and the USG signed an agreement in July 1986 authorizing the formation of the FOCAS project, its objective being to facilitate investments into the private sector through the ICIs and the UFCs. For all practical purposes, the loan target groups remained similar to those under the DDC project together with loan limitations and restrictions. FOCAS will be channeling the refinancing funds through the ICIs to the proposed projects. The procedures for obtaining credits under this scheme are as follows:

(1) The UCF in the particular region is exclusively responsible for the selection, feasibility survey, and certification of a project(s).

(2) Once the project eligibility has been established, it is presented to a local ICI for its review, analysis, collateral requirement and approval.

(3) The ICI has the final word in credit approvals. It can approve loans up to $US 100,000, based upon a UCF recommendation. However, the ICI carries the sole responsibility for the administration and collection of the loan.

(4) Loans in the category of $US 100,000 to $US 500,000 where FOCAS refinancing funds are used, require an additional approval of FOCAS, UCP (Union for Project Financing), and USAID/B. This is because ICIs do not have a current account or legal reserve with FOCAS (similar to the Central Bank relationship); therefore, extra precaution is taken.

(5) Fixed investment loans may have a repayment period of up to seven years with two years of grace, working

capital has a repayment period up to three years with one year of grace.

(6) Following approval at the required levels, FOCAS disburses the funds to the ICIs and monitors progress on project implementation.

FOCAS began the refinancing of projects in October, 1986. It has approved some 2.8 milion dollars for special projects to date and is responsible for the collection of the 13.5 million dollars advanced by USAID/PL-480 to the former DDC program. These funds are being lent by USAID/PL-480 to FOCAS for working capital. The GOB assumes the responsibility for the repayment of these funds with soft terms, i.e., 40 years with 10 years of grace at an interest rate of two percent for the first 10 years and three percent for the remaining 30 years. The interest rate on FOCAS-refinanced loans that an ICI can charge is 13 percent with a "maintenance of value clause," plus one percent flat commission. FOCAS receives nine percent for the refinanced funds, with a margin of four percent and the flat commission going to the ICI.

The FOCAS project appears to be working well and to be serving a useful purpose for promoting private sector development. It involves both public and private sector institutions in the promotion, planning, and execution of the projects.

ANNEX F

INSTITUTIONAL RESOURCES OF MACA/SPAR

1. Human Resources of MACA/SPAR

There has been a reduction in the total numbers of MACA/SPAR personnel since end 1986. While the geographical distribution of personnel has not substantially changed, the reductions are positive overall, since they may permit improving salaries and working conditions for public employees.

MACA/SPAR PERSONNEL: 1986-1987

	1986	1987	DIFFERENCE	% REDUCTION
TOTAL SPAR	4260	3303	957	7.8
TOTAL MACA	728	663	65	9.1

Despite the reduction in SPAR personnel over the last year, there is still an overall imbalance of personnel. This is seen in the over-concentration of personnel at the central office level (34 percent) resulting in a paucity of technical personnel in the regions. For example, SPAR has only a combined 15 percent of its personnel in Beni, Pando, and Tarija departments.

The nearly 50/50 split that exists between technical-operative/administrative support lines shows an overstaffed administration without a rational assignment of functions. In addition, considering the technical needs of the country, the fact that only 33 percent of the personnel possess a higher education degree is really quite disheartening.

Nearly 58 percent of the SPAR personnel are new. This would point to a lack of stability and a general lack of experience within the sector. The figures also portray that the less senior personnel are less well educated and that few persons with less than five years of service have a higher education.

Of the 2,166 employees in the regions, 72 percent live in the regional capital cities. While about 50 percent of the Bolivian population is rural, only 28 percent of the MACA/SPAR employees are rural-based.

PERSONNEL DISTRIBUTION

AREA	NO. EMPLOYEES	PERCENT
MACA Central-La Paz	338	10.2
Decentralized-La Paz	799	24.2
Decentralized-Regions	1838	55.6
Deconcentrated-Regions	328	9.9
Total	3303	100.0

Note: The term "decentralized" refers to the MACA institutes-IBTA, CDF, etc. The term "deconcentrated refers to the departmental headquarters offices of MACA. There are 8 departmental MACA offices, with a ninth one being created for the Department of La Paz.)

PERSONNEL EDUCATION

LEVEL	NO. EMPLOYEES	PERCENT
College Degree	1011	33
Mid-level/technical	1406	45.1
Basic/intermediate	886	23.9
Total	3303	100.0

CAREER LEVEL (SPAR OVERALL)

LEVEL	NO. EMPLOYEES	PERCENT
Management & technical	1516	45.9
Administrative support	1787	54.1
Total	3303	100.0

CAREER LEVEL (MACA LA PAZ & REGIONS ONLY)

Executive management	20	2.7
Directors & technical	159	21.8
Asst. dir./tech.assistants	169	23.2
Administrative support	232	31.8
Service pers.-drivers, etc.	148	20.3
Total	728	100.0

Note: The above total of 728 represents the MACA total a/o end 1986. The actual total of MACA employees is 663, though the breakdown by category is not available. The basic comparative percentages has not substantially altered with the 9 percent change in total personnel.

EMPLOYEE AGE

YEARS OLD	NO. EMPLOYEES	PERCENT
<25	578	17.5
25-45	2035	61.6
45-75	690	20.9
Total	3303	100.0

(NOTE: 7 percent of employees qualify for retirement).

EMPLOYEE SENIORITY

YEARS OF SERVICE	NO. EMPLOYEES	%
<I	840	25.4
1-5	1048	31,7
>5	1415	42.8

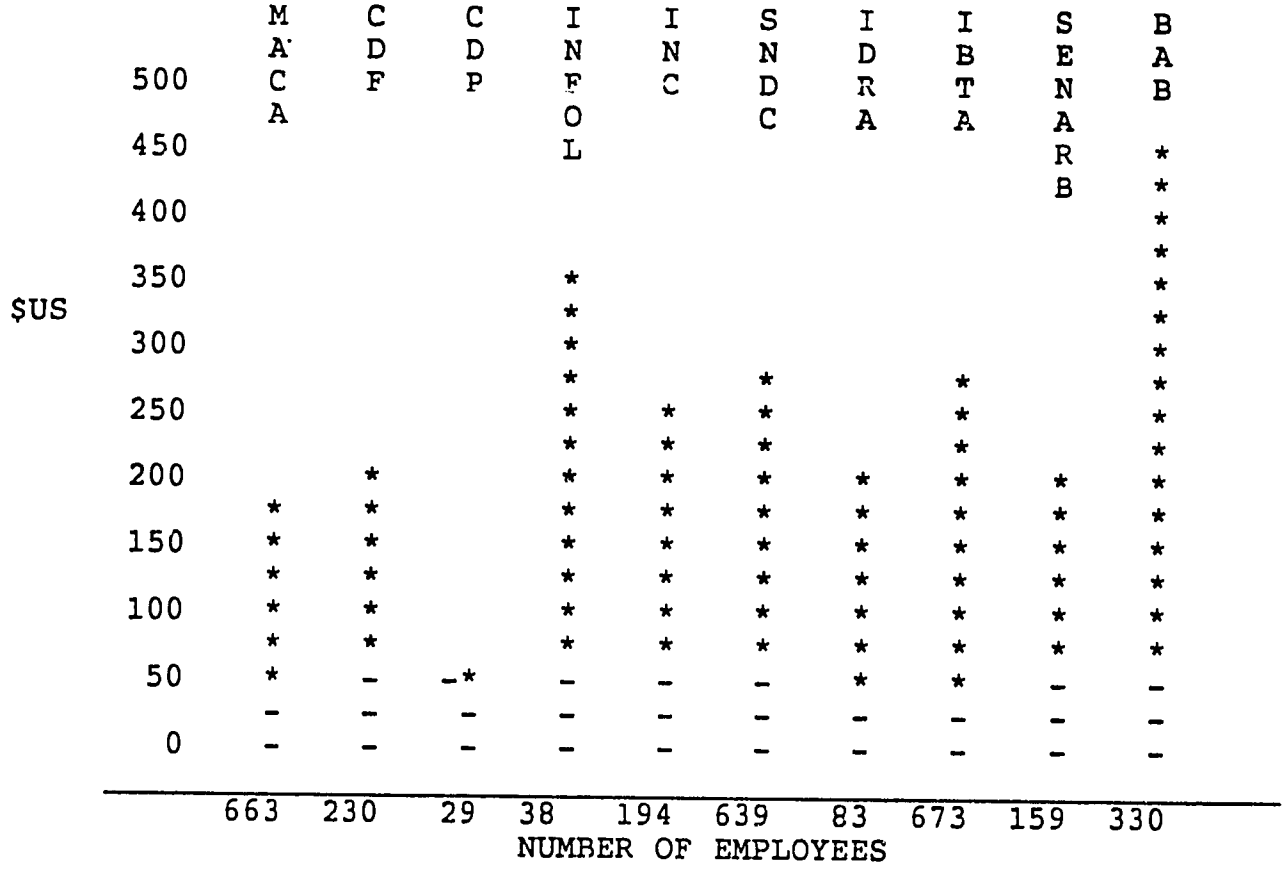
EMPLOYEE SALARY SCALES (MACA CENTRAL & DEPARTMENTAL)
AVERAGE MONTHLY BASE SALARY ($US AT APPROX. 2Bs/$1)

CAREER LEVEL	NO. EMPLOYEES	%	AVERAGE BASE P/M
Exec. management	20	2.75	237
Directors & technical	159	30.49	124
Asst. dir./tech. asst.	169	30.91	74
Admin. support	232	24.31	47
Serv.pers.-drivers,etc.	148	11.54	40

NOTE: 44 percent of the above positions are held by La Paz personnel. The total of 728 employees represents the MACA total a/o end 1986. The actual total of 663 MACA employees-in the bar chart below-shows a 9 percent drop in MACA employees during 1987. This drop has contributed to an improved internal salary scale.

EMPLOYEE SALARY SCALES (MACA/SPAR)
MINIMUM/MAXIMUM MONTHLY BASE IN $US
(APPROX. 2Bs/$US1)

- Minimum Salary
* Maximum Salary



2. Financial Resources of the MACA/SPAR

From 1970 to the present, the GOB expenses for agricultural development have not varied substantially. They have been between 18.9-20.8 percent of the GNP, last year being 20.8 percent (Source: Banco Central de Bolivia). Within this panorama, MACA captures less than one percent of the annual national budget. In the national budget for the seventeen ministries, MACA holds tenth place.

The operational aspects of financing the MACA/SPAR hold interesting insights and serve to understand what kind of financial resources the MACA/SPAR count on.

MACA Central receives its instructions from the Ministry of Finance. Its budgeting is not computerized; therefore, its balances are available only through 1984. Its budget control is done through the internal audit control office. The central auditor's office performs the external control.

At the decentralized level, each entity formulates its budget according to its own particular needs. All the decentralized entities do their own balances, not all of them being audited. There is not much correlation between budget programming and spending. By mid-1987, the decentralized institutions had spent approximately 33 percent of their budget. In general, disbursements are slow to non-existent, depending on the particular condition of the National Treasury at a given moment. The two entities holding budget planning and spending capacity are CIAT-Sta. Cruz and IBTA-La Paz.

In the deconcentrated offices, the situation is similar. There is no budget planning, since the offices obtain their budgets from MACA Central. Budget control is limited to designating expenses through the administration offices. The MACA departmental offices submit their expenses to the MACA Central auditing office, although this is a formality since they do not submit balances.

In summary, there are insufficient operating and program funds for the MACA/SPAR. The disbursement of expenses is determined by the National Treasury which should disburse every quarter but, in actuality, disburses every eight months. "Budget management" is a loosely-used term at best, spending capability about 60 percent. The worst cases are in INC, CDF, IDRA and SNDC. (Reference following chart: ROE approx. 2BS/$1).

MACA BUDGET EXPENDITURES-1987 (MILLIONS OF BOLIVIANOS)

CONCEPT	APPROVED BUDGET	SPENT	%	REMAINING a/o 6/87	% REMAINING
Operations	2.93	1.06	36.4	1.86	63.59
Investment	3.28	1.86	56.7	1.41	43.25
TOTALS	6.21	2.92	47.5	3.27	52.89

(Source: Direccion de Planificación Sectorial-MACA)

ANNEX G

CURRENT PROPOSAL FOR RESTRUCTURING OF MACA

This essay offers observations regarding MICRO's work on the restructuring of Bolivia's Ministry of Agriculture (MACA). They include contributions by MICRsO consultants, Lic. Alberto Paniagua (FAO) and the IBEE. (MACA/MICRO, September 1987). In so doing, an explanation of the future operational aspects of MACA/SPAR are offered.

The Agricultural Development Councils (Consejos de Desarrollo Agropecuario) format is an important new concept for incorporating bottom-up inputs for planning. The purpose of the Councils is to achieve an integrated decentralization and overcome the existing parcelled authority in the agricultural sector. Above all, it aims to alter the present polarized decision-making practices in MACA/SPAR. While, on the one hand, a closed circle of upper-level central decision-makers exists, there is on the other hand a decentralized series of independent decision-making entities that escape any coherent, unifying scheme. Both approaches operate in a relative vacuum of information and communication. The Councils are to be a coordinating mechanism designed to help overcome the wide "margin of doubt" factor in which the MACA now operates.

Certain fundamental administrative roles have been created in the new MACA/SPAR. This reflects new normative, planning roles at the center and increased institutional operational capabilities. The new structure creates a central planning subsecretariat and implementation strategy for the sector; it creates a division for MIS and marketing intelligence capability development; and the aforementioned Councils are created as inter/intra-institutional planning mechanisms.

The areas in which it is essential that capability be strengthened are (a) skills in the technical-normative sector and (b) the production of goods and services for direct user benefit. In the normative area, the planners feel that they will initially need to deny a certain amount of independence to the decentralized entities; yet, once they gain confidence and ability, this regional independence could be loosened again.

Schematically, MACA's new technical, normative, and operative functions are the following:

(1) Functional technical/normative lines

a) Sector Planning

b) Division of Rural Development and Agricultural Development Planning with its respective sub-divisions.

(2) Functional/Operative lines. (These would obey the normative aspects under Part 1.)

a) Eight (8) basic services: research; extension; training; farmer organization; infrastructure; marketing; processing; and credit.

The main criteria in the above is that each functional service's policies, strategies, and priorities will depend on directives from the central technical/normative areas. In the planners' view, MACA Central would be a "Command Center" endowed with global policy and planning authority. MACA Central will control, supervise, and evaluate the adhesion to the central directives, policies, and guidelines. The non-sectorial (private) entities operating in the jurisdiction of the agricultural sector will also fall under the technical/normative parameters of MACA. The regional entities will participate in the Councils in the formulation of global and sub-sectorial policies and will make local realities known through their participation in the Councils. Their unique interaction with large numbers and varieties of users requires that they be given decentralized administrative functions with the broadest possible margins of technical-normative dependence.

Since there is a large gap in "operating intelligence" (data), the design of MACA/SPAR will consider the following:

- planning and design will have to be the key for all the technical-normative and operational functions;
- there must be a constant coherence between general and specific goals, thus the creation of the Councils; and
- there must be user participation from the onset of the planning phases.

The "meeting of the minds" process should establish mutually acceptable objectives and goals. Decisions are to be reached affecting investment priorities, programs, and development projects. The user representatives would ensure that the production goals would be met in accordance with the promotional measures taken by the central agricultural sector authorities.

The restructured MACA/SPAR can be summarized as follows:

- the restructured MACA central will be the rector of the agricultural sector with both sectorial and institutional authority in the technical, normative functions;

- new entities in the restructured MACA can be only technical-normative in both nature and authority;

- the operative functions belong to the decentralized organizations. Therefore, the creation of any new organization must conform to the technical-normative policies of the central organization and to those of its respective territorial entities;

- public sector activities under the SPAR jurisdiction will adhere to the policies and procedures of MACA; and

- the restructured MACA will allow the decentralized service organizations to regain their technical-normative functions once the roles and modus operandus of the central and regional entities has been established.

The following excerpts are selected to best synthesize what is envisioned for the structure of the Bolivian Agricultural Sector today. They capture the essence of thinking on the cooperative interdependence that must be created between a normative and policy-oriented MACA Central and the decentralized organizations- operationally independent but within the policies and norms of the MACA Central. (September 1987).

"As a basic premise, the State sets standards. Limitations of structure within the institutional-state space are determined by the inter/intra-institutional relations. These limitations bring about operational deficiencies."

"The search for efficiency is based on a functional-organizational structure which allows needs to be met and which maintains a continuity of criterion and actions."

"Institutional change should follow an image-objective which establishes the difference between what is and what is sought. The social ambiance, together with the institutional relationships, establish the connections among activities, objectives, strategies...and restrictions and limitations which define goals"

"The Image-Objective proposes to....

- Reverse the present sector problem to allow for self-dependency in food, to create employment and income for the producer, and to promote export areas for creating income.

- Modernize agriculture through the proper use of natural resources--a spatial distribution between population and production.

- Increase production and productivity to achieve the growth rates seen between 1952 and 1964.

- (Establish) a concept of agricultural and rural development, combining a subsectorial normative and fiscal function with the necessary basic operational function.

- (Establish) planning and policy procedures as the focal point of the Central Organization of SPAR.

- Define the functions of the Central Organization and the Deconcentrated Organizations as normative policy and procedures. The Decentralized Services are defined as operational.

- Bring the users into the planning, programming, and project designing procedures, as well as into the service financing aspects.

- (Establish) objective standards for manpower utilization. Improve technical assistance and create a functional operation to handle the needs of the farmer.

- Reorganize the decentralized organizations. Establish seven (7) national services: Agrarian Reform; Rural Development; Credit; Forestry; Fisheries; Agricultural Development; and Water Users' Associations.

The Councils

The basic administrative functions of the regional councils has been outlined above. However, it is important to understand that although these creations are new and are possibly the best mechanism to date for obtaining bottom-up input into the system, in all honesty they have been astutely designed so as not to constitute political threat to the central organization. The astuteness comes in the configuration of the membership and its rights. Article 460 of the "Organizational Statute of MACA" states:

"The Consejos Departamentales de Desarrollo Agropecuario y Rural (CODAR) are the highest advisory units at the departmental level. They are presided over by the departmental directors of MACA and are comprised of the following members, all with right to be heard and to vote:

PUBLIC SECTOR

1. Director of the Corporación Regional de Desarrollo
2. Vice-Rector of the University
3. Regional agent of the Banco Agricola
4. Departmental representative of the Min. of Commerce and Tourism
5. Representative of the MACA Decentralized Entities

PRIVATE SECTOR

1. President of the Camara Agropecuaria Departamental
2. A representative from the Agr. Producers' Association
3. A representative from the Livestock Producers' Assoc.
4. A representative of the Departmental Peasant Organ. with legal status
5. A Representative of the Colonists Organization with legal status

The meetings of this advisory Council are called by the directors of the MACA departmental offices or by the MACA Central. The balance between the public sector menbers and the private sector is a good mix between "business and politics." According to the MICRO planners, the subtlety of the configuration is that the MACA departamental director, presiding over the Council, is included in the "right to voice and vote." This sway factor has been included to satisfy the misgivings expressed by the central government concerning autonomous operations at decentralized levels.

The Regional Council is charged with submitting all recommendations to the National Council of Agricultural Development where national policies and plans will be recommended in accordance with the inputs from the Regional Councils. Both the regional and national Councils will benefit from the existence of technical/administrative advisory councils.

(Full details of the new organizational structure of MACA are in the "Estatuto Orgánico del Ministerio de Asuntos Campesinos y Agropecuarios-MACA"; MICRO, August 1987. These statutes have been submitted to the president and his cabinet for their deliberation and decision. It is estimated that the Councils will be one of the first proposals to be put into effect.

ANNEX H

ANNEX TABLES

BOLIVIA SUMMARY OF BALANCE OF PAYMENTS FOR 1985, 1986, 1987 & 1988
(In millions of US$)

	1985(p)	1986(p)	1987(e)	1988(e)
I. CURRENT ACCOUNT (A+B)	-281.9	-407.0	-507.9	-493.3
A. Goods, Services, and Interest (1+2+3)	-361.9	-498.8	-622.7	-607.0
1. Merchandise				
-Exports (FOB)	71.5	-164.9	-294.6	-288.8
-Imports (CIF)	623.4	546.6	486.0 (1)	552.4 (1)
2. Services (Net)	-551.9	-711.5	-780.6 (1)	-241.2 (1)
3. Earnings from Interest	-60.0	-25.0	-26.0 (1)	-28.0 (1)
-Received	-373.4	-308.9	-302.1	-290.2
-Interest Paid	16.0	12.4	15.4 (2)	19.1 (2)
-Interest not Paid	-162.6	-143.7	-154.0 (1)	-213.7 (1)
-Other Rent	-174.0	-137.2	-112.1 (1)	-35.5
B. Unilateral Transfers	-52.8	-40.4	-51.4 (2)	-60.1 (2)
	80.0	91.8 (3)	114.8 (4)	113.7 (4)
II. CAPITAL ACCOUNT				
A. Direct Investment	-29.8	206.1	174.5	256.0
B. Other Capital	10.0	10.0	22.0	30.8 (1)
i) Medium and Long-Term Capital	-39.8	196.1	152.5	225.2
-Disbursements	-244.8	-122.8	-97.5	25.2
-Amortizations Paid	108.7	232.7	233.3 (1)	294.2 (1)
-Amortizations not Paid	-159.3	-154.0	-65.9 (1)	-64.0 (1)
-Other Capital (Net)	-184.7	-177.3	-244.9 (1)	-185.0 (1)
ii) Short-Term Capital (Net), Earnings from the Informal Sector, & Errors & Omissions	-9.5	-24.2	-20.0 (2)	-20.0 (2)
III. TOTAL CURRENT TRANSACTIONS AND CAPITAL MOVEMENT (OR BOP DEFICIT; I & II)	205.0	318.9	250.0 (5)	200.0 (6)
A. COUNTERPART ITEMS	-311.7	-200.9	-333.4	-237.3
B. LOANS RECEIVED	9.9	0.0	0.0	0.0
C. INTEREST & AMORTIZATION NOT PAID		100.0 (7)		
D. ESF/BOP ASSISTANCE	358.7	314.5	357.0	220.5
E. NET INTERNATIONAL RESERVES (UNFINANCED GAP) (Increase = -)	0.0	7.2	7.2	— (8)
	-56.9	-220.8	-30.8	16.8 (9)

p) Preliminary Figures
e) Estimated Figures
SOURCE: Bolivian Central Bank (BCB)

1) IMF estimates.
2) USAID estimate.
3) ESF/BOP Assistance is excluded.
4) IMF estimate excluding ESF/BOP Assistance.
5) USAID estimate based on the BCB's data for part of the year.
6) USAID estimate based on improved coca eradication efforts.
7) This amount corresponds to a FAR (Fondo Andino de Reserva) loan which the BCB excludes considering it is a short term loan. As a result, the IMF's calculations show approximately US$ 120.8 increase in net international reserves.
8) Purpose of 1988 projection is to show unfinanced BOP gap without ESF assistance.
9) No without ESF/BOP assistance.

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HECTARES CULTIVATED AND TOTAL OF COMMODITY PRODUCED OF CEREALS AND ROOT CROPS,
BY DEPARTMENTS OF BOLIVIA IN 1986

(Area Planted in Hectares; Production in Metric Tons)

C E R E A L S

DEPARTMENT:	CHSCA.	LA PAZ	STA.CRUZ	CBBA.	ORURO	POTOSI	TARIJA	BENI	PANDO	TOTAL
WHEAT:										
Area	25823	5561	8578	28998	1548	22881	6853			100242
Production	19091	4832	8458	19293	1572	16084	5003			74333
RICE:										
Area	399	11062	72888	8640			269	14400	5134	112792
Production	671	11938	120935	8835			445	23228	7104	173156
BARLEY GRAIN:										
Area	20582	29678	237	9190	10244	23526	850			94307
Production	14185	29387	376	7470	5842	17418	782			75460
MAIZE GRAIN:										
Area	3011	16787	103758	66576	218	20301	49835	13613	4830	348972
Production	5115	18552	193869	94305	38	29736	83736	20902	7685	553938
QUINOA:										
Area	57	18799		185	9419	19479				47939
Production	23	8422		111	5339	7249				21144
OATS GRAIN:										
Area	265	638		2129	90	707				3829
Production	132	948		3349	45	441				4915
RYE GRAIN:										
Area		40		635		61				736
Production		24		381		30				435
CANAHUA:										
Area		876		114	917	60				1967
Production		830		78	413	58				979
Total, Area	50137	83441	185461	116467	22436	87015	57807	28013	9964	710784
Total, Prod.	39217	74933	323638	133822	13249	71016	89966	44130	14789	904360

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TUBERS

POTATO:										
Area	22600	40700	2062	38400	16300	35040	8006			163108
Production	94673	219956	7596	198500	60500	148600	38400			768225
YUCCA:										
Area	1122	4613	16005	3501			521	11376	4012	41150
Production	8025	26630	154022	24437			1882	105015	56187	376198
OCA:										
Area	1797	5665	270	4556	968	1239	28			14523
Production	6563	8321	167	16382	3285	3093	31			37842
PAPALIZA:										
Area	1067	157	97	3230	105	130				4786
Production	2905	370	206	10162	210	261				14114
Total, Area	26586	51348	18434	49687	17373	36409	8555	11376	4012	223567
Total, Prod.	112166	25512	161991	249481	63995	151900	40313	105015	56187	1196379

HECTARES CULTIVATED AND TONS OF COMMODITY PRODUCED OF BEVERAGE CROPS, FODDER CROPS AND INDUSTRIAL CROPS BY DEPARTMENTS OF BOLIVIA IN 1986

DEPARTMENT:	CHSCA.	LA PAZ	STA.CRUZ	CBBA.	ORURO	POTOSI	TARIJA	BENI	PANDO	TOTAL
(Area Planted in Hectares; Production in Metric Tons)										
BEVERAGE CROPS										
CACAO:										
Area		2982	868	170				500	168	4688
Production		1941	521	107				350	101	3020
COFFEE BEAN:										
Area		26493	501	24				630	82	27730
Production		22234	614	7				452	54	23361
TEA:										
Area		158		31						189
Production		1264		124						1388
Total, Area		29366	2237	225				1130	250	32607
Total, Prod.		25439	1135	238				802	155	27769
INDUSTRIAL CROPS										
COTTON FIBER:										
Area			0653				560			10213
Production			4363				335			4698
SUGAR CANE:										
Area	183	1150	56238	69			16828	2989	231	77778
Production	5433	25283	2083262	697			935907	102098	5836	3158516
PEANUTS:										
Area	4694	493	4896	542			3572			14197
Production	5806	580	5120	475			3241			15222
SOYBEANS:										
Area	1207		55580				3731			60518
Production	1914		75851				5499			83264
TOBACCO:										
Area	100	10	843	10			130	31		1124
Production	90	8	732	8			109	28		975
Total, Area	6184	1653	118210	621			24821	3020	231	163830
Total, Prod.	13243	25871	2169328	1180			945091	102126	5836	3262675

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FORAGE

ALFALFA:									
Area	250	6711	452	11053	5520	321	380		24687
Production	2450	29338	3304	125713	22262	2910	3338		189315
FORAGE OATS:									
Area	562	1735		1266	1578	1609			6750
Production	3228	4459		3455	3156	3218			17516
FORAGE BARLEY:									
Area	2802	41032	105	1042	19767	2597			67345
Production	4888	95874	163	2747	32906	5685			142263
FORAGE MAIZE:									
Area	230			4724					4954
Production	2530			56688					59218
FORAGE SORGHUM:									
Area			17000				93	56	17149
Production			68000				214	214	68345
Total, Area	3844	49478	17557	18085	26865	4527	473	56	120885
Total, Prod.	13096	129671	71467	188603	58324	11813	3552	214	476657

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HECTARES CULTIVATED AND TONS OF COMMODITY PRODUCED OF FRUITS
BY DEPARTMENTS OF BOLIVIA IN 1986

DEPARTMENT:	CHSCA.	LA PAZ	STA.CRUZ	CBBA.	ORURO	POTOSI	TARIJA	BENI	PANDO	TOTAL
(Area Planted in Hectares; Production in Metric Tons)										
BANANA AND PLANTAIN:										
Area		12760	9385	10910			308	9639	3203	46205
Production		97434	87291	78965			3460	65567	33797	366514
PEACH:										
Area	1165	863	84	2601		207	702			5622
Production	6528	2615	305	4061		1396	5842			20747
POMELO-GRAPEFRUIT:										
Area	30	319	810	310			120	260	50	1899
Production	420	4090	9930	4650			1320	2860	400	23670
PINEAPPLE:										
Area	50	235	105	336				40	10	776
Production	350	1410	945	3360				360	80	6505
LIME:										
Area	110	2650	351	390			200	35		3786
Production	865	26500	3632	4290			1800	802		37889
LEMON:										
Area	140	480	690	200			115	110	30	1765
Production	910	3110	5365	1600			722	805	240	12752
MANDARIN TANGERINE:										
Area	110	2239	483	502			198	50	15	3597
Production	770	24629	4088	5271			1668	350	90	36866
ORANGE:										
Area	1218	6585	560	2505			304	158	30	11360
Production	3054	15735	4149	11113			3207	557	460	38275
PAPAYA:										
Area		341	740	289				180	92	1642
Production		3069	6120	2133				1440	644	13406
AVOCADO:										
Area	100	156	110	165			70	60	21	682
Production	640	780	660	1110			480	360	126	4156
GRAPE:										
Area	1325	420	85	400		567	855			3652

Production	6936	1260	496	1550	3290	4403			17935
MANGO:									
Area		105	175	90		5	105	30	510
Production		840	1495	900		45	1015	300	4595
FIG:									
Area	105	55	70	85	67	80			462
Production	705	275	420	510	402	560			2872
WATERMELON:									
Area	95	61	838	200		90	55	10	1349
Production	760	326	6488	1580		830	455	70	10509
Total, Area	4448	27269	14486	18983	841	3047	10742	3491	160641
Total, Prod.	21938	152073	218675	121093	5088	24337	74571	36207	596691

LIVESTOCK FIGURES FOR BOLIVIA
NUMBER OF HEAD, EXTRACTION RATE (HEAD), MEAT PRODUCTION (METRIC TONS)
AND MILK PRODUCTION ('000 LITERS) 1985

	La Paz	Oruro	Potosi	Chsca.	Cbba.	Sta.Cruz	Tarija	Beni	Pando	TOTAL
Beef Cattle										
No. Head	304000	48900	123000	495000	385000	1358000	332400	2454500	14300	5515100
Extraction Rate No. Head	39520	6357	15744	63360	50050	190120	45206	309267	1930	721554
Meat Production (Metric Tons)	6639	1049	2582	11151	8606	33271	7911	53503	328	125042
Dairy Cattle										
No. Cows	17500	1325	340	772	26320	88400	1140	2310	-	138107
Annual Milk Production (Thousands of liters)	9660.0	712.5	135.0	544.5	30774.8	42394.9	957.0	849.6	0.0	86028.2
Sheep										
No. Head	2513800	1664100	139000	582700	1239500	150600	250000	10100	2800	7803600
No. Slaughtered Head	452484	332820	278000	110713	235505	29357	48750	2020	504	1490163
Meat Production (Metric Tons)	3620	2330	1946	996	2120	36	488	22	6	11792
Goats										
No. Head	26200	0	963000	500500	93400	210100	390900	6600	0	2190700
No. Slaughtered Animals	1572	ERR	72225	37538	7005	16808	31272	0	0	ERR
Meat Production (Metric Tons)	17	0	794	413	84	202	375	3	0	1888
Pork										
No. Head	210500	20000	96900	339900	241500	487300	220000	85300	23200	1724600
No. Slaughtered Animals	126300	12000	58140	231132	144900	316745	143000	55445	15080	1102742
Meat Production (Metric Tons)	3789	240	1454	10401	5072	13303	5434	1941	528	42162
Alpacas										
No. Head	90900	54400	22000	0	6600	0	0	0	0	173900
Extraction No. Head Slaughtered	3636	2720	1100	0	264	0	0	0	0	7720

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Llamas										
No. Head	480000	406900	576300	0	15700	300	0	0	0	1479200
No. Slaughtered Head	24000	20345	28815	0	628	0	0	0	0	73788

SOURCE: Office of Statistics, MACA, 1985.

AVERAGE PRICE OF COTTON
FOR MONTH OF MAY

YEAR	PRICE
	($US/cwt)
1974	65.01
1975	54.20
1976	70.41
1977	81.21
1978	70.71
1979	75.21
1980	88.40
1981	87.51
1982	76.69
1983	81.96
1984	88.88
1985	65.07
1986	45.28
1987	72.06

Cotton Outlook Index FOR SM F/1-1/16"/M 1-3/32" CIF northern Europe

Until 1973 the averages are CIF Liverpool and were calculated by ADEPA based on partial data from "Cotton - World Statistics," Bulletin of the Consulting Committee of Cotton and Cotton Outlook.

From January 1974, the source is "Cotton - World Statistics."

PRODUCTION, CONSUMPTION AND EXPORT OF COTTON FIBER IN BOLIVIA

AG. YEAR	AREA PLANTED (HAS.)	PRODUCTION FIBER (qq)	YIELD PER HA. (qq)	INTERNAL CONSUMPTION (qq)	(+) EXPORT (-) IMPORT (qq)
1962/63	3,000	35,880	11.96	56,118	- 20,238
1963/64	3,200	41,600	13.00	62,282	- 20,682
1964/65	3,500	43,890	12.54	86,504	- 42,614
1965/66	4,000	56,000	14.00	94,952	- 38,952
1966/67	4,500	68,670	15.26	85,154	- 16,484
1967/68	4,860	72,900	15.00	90,706	- 17,806
1968/69	5,070	85,531	16.87	63,788	+ 21,743
1969/70	7,150	120,000	16.78	60,974	+ 59,025
1970/71	16,600	228,000	13.73	94,749	+ 133,251
1971/72	46,000	335,000	7.26	95,417	+ 239,583
1972/73	50,000(e)	585,000	11.70	115,125	+ 469,875
1973/74	50,000(e)	580,000	11.60	100,748	+ 469,302
1974/75	50,000(e)	475,800	9.52	68,731	+ 404,470
1975/76	29,664	274,568	9.26	78,255	+ 204,323
1976/77	39,800	339,585	8.53	103,358	+ 206,499
1977/78	31,344	378,633	12.08	73,654	+ 304,279
1978/79	34,143	325,130	9.52	112,574	+ 212,555
1979/80	24,917	156,188	6.27	141,709	+ 14,637
1980/81	14,371	119,402	8.31	134,838	- 4,230
1981/82	8,412	81.811	9.73	88,161	- 15,436
1982/83	8,564	54,477	6,36	54,477	- 6,350
1983/84	5,741	51,607	8.98	51,607	- s/datos
1984/85	9,478	66,462	7.01	66,462	- s/datos
1985/86	10,831	82,876	7.65		

Strating in 1975/76, the production in the Gran Chaco of Tarija is included.

Potential Production of Wheat by Region

Departments	Trad.Area (ha)	Non Trad. Area (ha)	TOTAL (ha)
Chuquisaca	40,832		40,832
Cochabamba	58,844		58,844
Potosi	78,079		78,079
Tarija	19,000	22,000	41,000
Santa Cruz	4,000	170,000	174,000
La Paz	7,500		7,500
Oruro	1,500		1,500
Beni		20,000	20,000
Potential total	209,755	212.000	421,755

Supply Patterns for Wheat in Bolivia

Year	Area (ha)	Prod (MT)	Yield (kg/ha)	Wheat Import (MT)	Flour Import (MT)	Total Import(MT)	Annual Supply Total (MT)	Import % Supply
1950	84,709	45,658	539	33,881	17,399	58,046	103,704	56.0%
1951	84,700	45,658	539	32,487	32,927	78,219	123,877	63.1%
1952	80,000	40,000	500	73,725	16,414	96,522	136,522	70.7%
1953	65,200	31,200	479	71,570	11,210	87,139	118,339	73.6%
1954	65,000	31,200	480	58,792	19,357	85,677	116,877	73.3%
1955	70,000	35,000	500	34,387	21,913	64,822	99,822	64.9%
1956	74,000	37,000	500	13,192	14,781	33,721	70,721	47.7%
1957	75,200	37,500	499	54,722	63,047	142,287	179,787	79.1%
1958	70,000	35,000	500	3,351	64,192	92,507	127,507	72.6%
1959	70,000	35,000	500	14,336	71,902	114,200	149,200	76.5%
1960	70,000	35,000	500	6	77,584	107,762	142,762	75.5%
1961	70,000	35,000	500	4,514	101,503	145,490	180,490	80.6%
1962	80,000	40,000	500	21,400	94,400	152,598	192,598	79.2%
1963	106,150	55,200	520	18,984	103,015	162,060	217,260	74.6%
1964	109,245	57,900	530	4,725	96,126	138,233	196,133	70.5
1965	63,635	35,000	550	15,622	108,582	166,430	201,430	82.6%
1966	74.545	41,000	550	15,109	107,820	164,859	205,859	80.1%
1967	45,000	27,000	600	26,563	127,837	204,114	231,114	88.3%
1968	75,000	45,000	600	54,193	109,927	206,869	251,869	82.1%
1969	76,500	53,200	695	40,603	109,834	193,150	246,350	78.4%
1970	63,130	44,190	700	45,673	161,949	270,602	314,792	86.0%
1971	59,910	47,100	786	46,283	171,283	284,176	331,276	85.8%
1972	64,310	53,590	833	82,752	139,549	276,570	330,160	83.8%
1973	68.860	57,000	828	68,303	84,544	185,725	242,725	76.5%
1974	73,570	62,460	849	85,723	137,521	276,724	339,184	81.6%
1975	76,860	61,750	803	65,430	154,583	280,129	341,879	81.9%
1976	80,815	69,815	864	97,410	69,389	193,784	263,599	73.5%
1977	73,415	48,085	655	160,000	75,000	264,167	312,252	84.6%
1978	79,900	59,925	750	243,218	77,351	350,650	410,575	85.4%
1979	98,070	67,755	691	204,256	37,500	256,339	324,094	79.1%
1980	100,370	60,140	599	251,839	5,556	259,556	319,696	81.2
1981	95,955	66.620	694	295,552	11,111	310,984	377,604	82.4%
1982	96,422	66,000	684	170,000	13,889	189,290	255,290	74.1%
1983	70,507	40,347	572	331,267	20,883	360,271	400,618	89.9%
1984	88,810	68,456	771	273,478	62,500	360,284	428,740	84.0%
1985	93,125	67,730	727	214,907	20,000	242,685	310,415	78.2%

Note: 1. Total annual supply = Production + imported wheat + imported flour/.72
2. Imports % supply = Total imports/annual supply total

Production of Wheat and Percent Area Non-Traditional

1970 - 1986

	Traditional			Non-Traditional			Participation of Non-Traditional Area in Production Area (%)	
Year	Area (ha)	Yield (ha)	Prod (MT)	Area (ha)	Yield (ha)	Prod (MT)		
1970	61,455	698	42,870	1,675	788	1,320	2.65%	2.99%
1971	57,920	789	45,690	1,990	709	1,410	3.32%	2.99%
1972	61,740	845	52,190	2,390	669	1,600	3.73%	2.97%
1973	64,690	841	54,390	4,170	626	2,610	6.06%	4.58%
1974	68,050	846	57,600	5,520	880	4,860	7.50%	7.78%
1975	70,430	791	55,700	6,430	941	6.050	8.37%	9.80%
1976	74,530	845	62,955	6,285	1,091	6,860	7.78%	9.83%
1977	78,380	622	48,755	6,785	1,010	6,855	7.97%	12.33%
1978	80,455	631	50,760	7,200	810	5,830	8.21%	10.30%
1979	90,070	668	60,155	8,000	950	7,600	8.16%	11.22%
1980	92,070	616	56,670	8,300	900	7,470	8.27%	11.65%
1981	88,495	685	60,620	7,460	766	5,715	7.77%	8.62%
1982	85,922	670	57,600	5,250	800	4,200	5.76%	6.80%
1983	69,061	558	38,545	723	1,246	901	1.04%	2.28%
1984	87,232	768	66,998	8,578	986	8,458	8.95%	11.21%
1985	91,664	719	65,875	8,461	1,047	8,855	8.45%	11/85%

Utilization of the National Production of Wheat

Utilization	1979 (a)	1983 (b)	1986 (c)
Flour mills	30.0%	21.0%	19.3%
Small rural mills	31.0%	10.0%	12.8%
Production of chicha drink	7.0%	17.0%	
Concumption on farm	19.0%	40.0%	42.5%
Seed	13.0%	12.0%	10.0%
Others 1			15.4%
TOTAL	100.0%	100.0%	100.0%

Note: 1. Not-specified and losses. When added to the chicha production, the observation made in 1986 conforms to previous observation.

THE IMPORTANCE OF THE TYPES OF FOODS CONSUMED

Highlands	%	Valley	%	Lowlands	%
Potato	27.0	Potato	30.0	Cereals	19.0
Cereals	25.0	Cereals	13.0	Rice	17.0
Sugar	7.0	Maize	8.0	Beef	14.0
Beef	5.0	Yucca	5.5	Sugar	9.0
Milk	4.0	Milk	5.0	Milk	8.0
Total of five products	68.0		61.5		67.0

NATIONAL APPARENT CONSUMPTION OF MILK
(Thousands of Litres)

YEAR	NATIONAL MILK PRODUCTION	LEGAL IMPORTS EQUIVALENCE MILK	ILLEGAL IMPORTS EQUIVALENCE MILK	APPARENT CONSUMPTION MILK
1975	47937.3	47899.0	47899.0	143735.2
1976	57153.3	39698.7	39698.7	136550.7
1977	63319.7	65600.0	65600.0	194519.7
1978	67392.7	102900.0	102900.0	273192.7
1979	70238.2	97900.0	97900.0	266038.2
1980	73239.4	88700.0	88700.0	250639.4
1981	74616.8	84469.9	84469.9	243556.5
1982	77746.6	50220.0	50220.0	178186.6
1983	78984.0	97234.1	97234.1	273452.3
1984	82755.0	103351.8	103351.8	289458.7
1985	86028.2	109469.6	109469.6	304967.3

SOURCE: MACA, Departamento de Estadistica, 1985.

PRODUCTION AND IMPORTATION OF MILK
(Thousands of Litres)

YEAR	TOTAL PRODUCTION OR MILK	TOTAL IMPORTATION (EQUIVALENCE) OF MILK	RELATION PROD+IMPORT.
1975	47937.3	95197.9	0.50
1976	57153.3	79397.4	0.72
1977	63319.7	131200.0	0.48
1978	67392.7	205800.0	0.33
1979	70238.2	195800.0	0.36
1980	73239.4	177400.0	0.41
1981	74616.8	168939.1	0.44
1982	77746.6	100440.0	0.77
1983	78984.0	194468.3	0.41
1984	82755.0	206703.7	0.40
1985	86028.2	218939.1	0.39

SOURCE: MACA, Departamento de Estadistica, 1985.

BOLIVIAN AGRO-INDUSTRIES 1979-1983 -
NUMBER OF ESTABLISHMENTS AND EMPLOYEES

TYPE	No. OF ESTABLISHMENTS					No. OF EMPLOYEES				
	1979	1980	1981	1982	1983	1979	1980	1981	1982	1983
31 Food, beverages and tobacco products	516	538	547	281	161	12,644	12,842	12,553	10,390	12,733
32 Textiles, clothing and leather	336	364	366	250	107	9,826	10,089	8,042	8,071	7,285
33 Wood products and wood furniture	376	390	380	179	90	4,529	4,758	4,394	3,401	2,379
Sub-total, agro-industries	1,228	1,292	1,293	710	358	26,999	27,689	24,989	21,862	22,391
Total industries	1,976	2,106	2,116	1,201	586	42,160	49,068	42,206	34,688	33,858
Agro-industries as % of total industries	62%	61%	61%	59%	61%	64%	56%	59%	63%	66%

NOTE: The results for 1982 are for "informing" establishments only. Those of 1983 are only for establishments with more than 20 persons or more than one site.

SOURCE: National Statistics Institute

INDEX OF PHYSICAL VOLUME OF AGRO-INDUSTRIAL PRODUCTION, 1978-1987 (BASE 1978=100)

CIIU Code	Activity	1986 % of Gross Value Added	1978	1979	1980	1981	1982	1983	1984	1985	1986	Indus. 1987*
	OVERALL INDEX	100.00	100	94.18	91.95	90.11	80.69	77.99	66.22	59.41	60.33	54.24
3111	Abattoirs and meat packing	8.86	100	98.40	95.25	67.82	105.24	103.57	89.22	92.29	122.60	128.91
3112	Dairy products	1.15	100	82.11	101.75	98.42	96.66	98.97	95.15	91.17	79.30	79.10
3113	Fruit and vegetable canning	n/a	100	101.38	52.99	38.11	31.04	42.83	31.43	38.08	69.01	128.52
3115	Production of oils and fats	0.50	100	111.57	144.30	157.66	95.89	99.88	97.55	95.17	105.73	129.34
3116	Milling products	7.14	100	104.01	102.49	99.53	107.81	119.78	90.99	87.51	77.99	63.18
3118	Sugar production and refining	11.00	100	101.12	91.16	90.23	97.30	67.19	68.67	72.40	43.55	0.00**
3119	Cocoa and chocolate production	1.60	100	3.74	7.18	3.24	31.35	42.25	34.85	46.28	53.22	62.86
3121	Preparation of various foods	0.28	100	84.83	93.52	51.32	73.75	82.39	54.22	73.01	68.92	46.14
3122	Preparation of animal feeds	n/a	100	121.32	106.31	109.90	92.74	125.31	116.93	118.34	116.35	129.30
3131	Distillation of alchohol	1.97	100	95.66	97.02	95.82	120.86	112.43	97.13	102.50	158.44	65.40**
3132	Wine making	0.10	100	98.40	95.25	48.25	170.45	206.12	164.89	150.89	143.82	129.31
3133	Beer brewing	7.04	100	101.74	108.97	114.01	91.57	101.36	60.75	52.21	87.06	91.76
3134	Prep. of non-alchoholic drinks	2.95	100	98.40	95.25	87.82	53.42	44.46	37.16	32.15	50.41	73.03
3140	Tobacco industries	2.02	100	98.96	99.42	90.70	48.06	48.32	28.38	41.05	65.56	71.09
3211	Spinning and Textiles	1.79	100	89.44	82.92	74.08	87.40	86.32	78.72	57.93	58.35	55.92
3311	Sawmills and carpentry shops	2.80	100	97.01	94.10	91.27	56.09	45.31	58.94	28.63	33.62	34.41
3512	Fertilizers and pesticides	n/a	100	98.40	95.25	88.92	49.70	28.20	47.27	37.24	22.25	16.60
3559	Prep. of rubber products	0.68	100	75.75	86.77	67.10	73.54	76.85	60.79	48.23	39.01	28.55**
		49.66										

* First semester ** Seasonal production

Source: IDB/UNDP project BOL/87/006 based on BCB data

INPUT COSTS AND VALUE ADDED OF VARIOUS AGRO-INDUSTRIES, 1986 (in %)

CIIU	BRANCH	Mill.$b of 1980	%	Costs of Interm. Inputs: Imported Inputs	Local Inputs	Total	Gross Value Added: Sala-ries	Gross Benef.	Taxes Net of Subsid.	Total
3111	Fresh and processed meats	4068	100	0.71	79.31	80.01	4.45	14.39	1.15	19.99
3112	Dairy products	385	100	5.71	66.75	72.47	16.94	10.35	0.24	27.53
3116-3117	Milling and bakery products	5035	100	25.04	48.22	73.27	6.36	20.38	0.00	25.74
3118-3119	Sugar and confitures	2672	100	5.88	50.64	56.51	10.06	28.45	4.98	43.49
3115-3121	Various food products	681	100	25.55	63.88	89.43	4.49	6.02	0.00	10.51
3131-3134	Drinks	1690	100	7.28	26.92	34.20	15.85	22.65	27.30	65.80
3140	Tobacco	266	100	16.92	13.16	30.08	3.41	5.46	61.06	69.92
3311-3320	Wood and wood products	668	100	3.89	57.49	61.38	14.52	23.26	0.85	38.62
	Total all industries	29373	100	10.85	57.76	68.61	8.72	18.74	3.93	31.39

Source: IDB/UNDP project BOL/87/006, according to BCB information

SYMBOLS AND EQUIVALENT VALUES OF CURRENCIES

US$ or $	United States Dollars
$b	Peso Boliviano or Bolivian Peso, Bolivian cuurency from 1966-1986 ($b 25/ US$ in 1980)
Bs	Boliviano, Bolivian currency beginning in 1987 (Bs 2.15/US$ in December 1987)

ABBREVIATIONS AND ACRONYMS

ABS	Annual Budget Submission of USAID
ACLO	Acción Cultural Loyola
ADAM	Asociación de Artesania y Moda (Handicraft and Style Association)
ADEPA	Asociación Departamental de Productores de Algodón (Departmental Association of Cotton Producers of Santa Cruz)
ADEPOR	Asociación Departamental de Productores de Porcinos (Departmental Association of Pork Producers of Santa Cruz)
ANAPO	Asociación Nacional de Productores de Oleaginosas (National Association of Oilseed Producers)
ARADO	Acción Rural de Desarrollo Organizado (Rural Development Action Organization)
ARDN	Agriculture, Rural Development, and Nutrition
ASBORA	Asociación Boliviana de Radio (Bolivian Radio Association)
ASOBAN	Asociación Bancaria Nacional (National Bankers Association)
ASOBOFLOR	Asociación Boliviana de Floricultores (Bolivian Association of Floriculturists)
ASOVIT	Association of Grape Growers
BAB	Banco Agrícola de Bolivia (Bolivian Agricultural Bank)

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BCB	Banco Central de Bolivia (Bolivian Central Bank)
BE	Banco del Estado (State Bank)
BID	Banco Interamericano de Desarrollo (IDB) (Interamerican Development Bank)
CA	Cámara Agropecuaria (Chamber of Agriculture)
CAE	Crédito Agrícola de Emergencia (Emergency Agricultural Credit)
CAF	Corporación Andina de Fomento (Andean Development Corporation)
CANEB	Cámara Nacional de Exportadores de Bolivia (National Chamber of Bolivian Exporters)
CAO	Cámara Agropecuaria del Oriente (Chamber of Agriculture of Santa Cruz)
CARE	Cooperación Americana para Remesas Exterior
CB	Commercial Bank
CBF	Corporación Boliviana de Fomento (Bolivian Corporation for Industrial Promotion)
CBN	Cerveceria Boliviana Nacional (National Brewery of La Paz)
CDF	Centro de Desarrollo Forestal (Center for Forestry Development)
CDP	Centro de Desarrollo Pesquero (Center for Fisheries Development)
CEPB	Confederación de Empresarios Privados de Bolivia (Bolivian Private Sector Federation)
CERTEX	Certificado de Reintegro Tributario a las Exportaciones (Certificate for Export Tax Credit)
CEUB	Center of Bolivian Universities
CIAT	Centro de Investigación Agrícola Tropical (Tropical Agricultural Research Center in Santa Cruz)
CNRA	Consejo Nacional de Reforma Agraria (National Argraian Reform Council)

COBAL	Companhia Brasileira de Alimentos (Brazilian Food and Nutrition Company)
CODAR	Consejos Departamentales de Desarrollo Agropecuario y Rural (Departmental Agricultural and Rural Development Councils)
CODETAR	Corporación de Desarrollo de Tarija (Regional Development Corporation of Tarija)
COMIBOL	Bolivian Mining Corporation
COMTRAINDU	Comisión de Transición Industrial (Industrial Transition Commission)
CONEPLAN	Consejo Nacional de Planificacion (National Planning Board)
CORACA	Corporación Agropecuaria Campesina (Peasant Farmer Agricultural Corporation)
CORDECRUZ	Corporación de Desarrollo de Santa Cruz (Departmental Development Corporation of Santa Cruz)
CORDEPAZ	Corporación de Desarrollo de La Paz (Departmental Development Corporation of La Paz)
CRA	Certificado de Reintegro Arancelario (Customs Reimbursement Certificate)
CROFOC	Revolving Fund for Community Development T-55
CUMAT	Centro de Investigación y Estudio de la Capacidad de Uso Mayor de la Tierra (Center for Research and Study of Land Use)
DDC	Departmental Development Coorporation
DICOMEX	Dirección General de Comercio Exterior (General Office of Foreign Trade)
DPCC	Department of Project Coordination and Control
EAP	Economically Active Population
EEC	European Economic Community
ENA	Empresa Nacional de Arroz (National Rice Company)

ENFE	Empresa Nacional de Ferrocarriles (National Railroad Company)
ERBOL	Escuelas Radiofonicas de Bolivia (Bolivian Educational Radio System)
ESOP	Employee Stock Ownership Plan
FAE	Fondo Agropecuario de Emergencia (Emergency Agricultural Fund)
FAO	Food and Agriculture Organization
FEGASACRUZ	Federacion de Ganaderos de Santa Cruz (Santa Cruz Cattlemens Federation)
FENACRE	Federacion Nacional de Cooperativas de Ahorro y Credito (National Federation of Saving and Loan Cooperatives)
FERE	Fondo Extraordinario de Reactivacion (Special Reactivation Fund)
FIDA	Fondo Internacional de Desarrollo Agricola (IFAD) (International Fund for Agricultural Development)
FOB	Freight on Board
FOCAS	Formacion de Capital en Areas Secundarias (Market Town Capital Formation)
FRA	Fondos de Refinanciamiento Agricola (Agricultural Refinancing Funds)
GATT	Acuerdo General de Aranceles y Comercio (General Agreement on Trade and Tariffs)
GDP	Gross Domestic Product
GOB	Government of Bolivia
IBCE	Instituto Boliviano de Comercio Exterior (Bolivian Institute of Foreign Trade)
IBRD	International Bank for Reconstruction and Development (World Bank)
IBTA	Instituto Boliviano de Tecnologia Agropecuaria (Bolivian Institute of Agricultural Technology)
ICI	Instituciones Crediticias Intermediarias

	(Intermediary Credit Institutions)
IDB	Intèramerican Development Bank (BID)
IDRA	Instituto de Desarrollo Rural del Altiplano (Highlands Development Institute)
IFAD	International Fund for Agricultural Development (FIDA)
IICA	Instituto Interamericano de Cooperacion para la Agricultura (InterAmerican Institute For Cooperation in Agriculture)
IMF	International Monetary Fund
INALCO	Instituto Nacional de Cooperativas (National Cooperative Institute)
INC	Instituto Nacional de Colonización (National Colonization Institute)
INE	Instituto Nacional de Estadistica (National Statistics Institute)
INFOL	Instituto Nacional de Fomento Lanero (National Institute for Promotion of Wool Production)
INPEX	Instituto Nacional de Promocion a la Exportacion (National Institute for Export Promotion)
IVA	Impuesto al Valor Agregado (Value Added Tax)
JCRD	Joint Commission for Rural Development
JICA	Japanese International Cooperation Agency
JUNAC	Junta del Acuerdo de Cartagena (Andean Pact)
LIBOR	London International Bank Overseas Rate
LIDIVET	Laboratorio de Investigacion y Diagnostico Veterinario de Santa Cruz
MACA	Ministerio de Asuntos Campesinos y Agropecuarios (Ministry of Rural Affairs and Agriculture)
MANACO	Shoe Manufacturing Plant
MICRO	Mecanismo Interno de Coordinación para la Reestructuración Orgánica del MACA (Internal

	Coordination Mechanism for the Organic Reorganization of the MACA)
MICT	Ministerio de Industria, Comercio, y Turismo (Ministry of Industry, Commerce, and Tourism)
MPC	Ministerio de Planeamiento y Coordinación (Ministry of Planning and Coordination)
NGO	Non Governmental Organization
OAP	Organizaciones Agricolas Privadas (PAO) (Private Agricultural Organizations)
OAS	Organization of American States
ONCICOOP	Organización Nacional de Instituciones Cooperativas (National Organization of of Cooperative Institutions)
PAE	Programa Agropecuario de Emergencia (Emergency Agricultural Program)
PAO	Private Agricultural Organizations (OAP)
PCPA	Programa de Credito para Pequenos Agricultores (Small Farmer Credit Program)
PID	Project Identification Document
PIL	Planta Industrializadora de Leche (Milk Processing Plant)
PIPSA	Plan de Inversiones Publicas en el Sector Agropecuario (Agricultural Sector Plan for Public Investments)
PL-480	Public Law 480
PROMASOR	Maize and Sorghum Producers Association
PVO	Private Volunteer Organization
RIFENT	Regimen de Incentivos Fiscales para las Exportaciones No Tradicionales (Official Set of Incentives for Non-traditional Exports)
SAI	Servicio Agricola Interamericano (Interamenican Agricultural Service)
SAID	Textile Company

SAO	Edible Oil Plant
SEFO	Forage Seed Company
SENARB	National Service for Control of Hoof-and-Mouth Disease, Rabies, and Brucelosis
SNC	Servicio National de Caminos (National Road Service)
SNDC	Servicio Nacional de Desarrollo de la Comunidad (National Community Development Service)
SOE	State-Owned Enterprices
SPAR	Sector Público Agropecuario y Rural (Agricultural and Rural Public Sector)
TDN	Total Digestible Nutrients
TGN	Tesoro General de la Nación (National Treasury)
UBB	Unión de Bancos Bolivianos
UCF	Unidades Crediticias Financieras (Refinancing Credit Units)
UCP	Unidades de Coordinación de Proyectos
UDAPE	Economic Policy Analysis Unit
UMSA	Universidad Mayor San Andrés (National University, San Andrés)
UNDP	United Nations Development Program
UNFADAC	United Nations Fund Against Drug Adiction and Control
UN/FAO	United Nations Food & Agriculture Organization
UNITAS	Union Nacional de Instituciones para el Trabajo de Accion Social
USAID	United States Agency for International Development
VISTA	Volunteers in Service to America
YPFB	Yacimientos Petroliferos Fiscales Bolivianos (Bolivian Petroleum Resources Company)

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