

AN EVALUATION REPORT OF POTENTIAL SITES IN BOLIVIA AND IN PARAGUAY
FOR THE URBAN FUNCTIONS IN RURAL DEVELOPMENT PROJECT

by

Michael L. McNulty

and

Michael E. Conroy

April 21, 1977

Office of Urban Development
Bureau for Technical Assistance
Agency for International Development
U.S. Department of State
Washington, D.C. 20523

BEST AVAILABLE COPY

I. INTRODUCTION

In an effort to identify an appropriate Latin American site for its Urban Functions in Rural Development project, the Office of Urban Development discussed several alternatives with the Latin America Regional Bureau. On the basis of this consultation, a circular airgram (Appendix 1) briefly describing the project was prepared.

The site selection team composed of Dr. Michael McNulty, TA/UD Urban/Regional Planner, and Dr. Michael Conroy, University of Texas, was invited to Bolivia and Paraguay from March 18 to March 29 in order to discuss the project more fully with Mission staffs and representatives of host government agencies. In both instances, the project generated considerable interest and the team was received very warmly and provided with ample logistical support by Mission staffs.

A. The Project Concept and Background. The goal of the complete interregional project is to identify ways in which urban functions can be strengthened or reoriented so that urban centers more directly complement and support rural development. TA/UD is undertaking a series of field demonstrations, one project each in Africa, Asia, and Latin America, to develop greater understanding of the various functions performed by urban centers and the mix, magnitude, (i.e., order of priority), and location of urban facilities and services required at different levels of the urban hierarchy to more adequately serve different types of agricultural and rural development patterns.

These projects represent the field testing of two hypotheses which have been developed in a series of research efforts commissioned by the Office of Urban Development in recent years. These include a monograph Regional Development: A Review of the State of the Art, produced in August 1974; a working paper, "Planning Assistance for Local Communities in a Regional Context, finished in May 1975; and a monograph entitled, Urban Functions in Rural Development: An Analysis of Integrated Spatial Development Policy, completed in early 1976. These studies have suggested, first, that one can identify the kinds of general services and functions required of rural market towns and of larger places at higher levels in the urban hierarchy in order to facilitate rural development. They imply second, that a coherent framework for planning the development of such functions can be developed in order to fill the gaps in the set of linkages between rural areas and urban areas in direct support of rural development. Testing of those hypotheses in the three different regions requires the selection of a site in each area which possesses some or all of the following characteristics:

- 1) some degree of spatial complexity, including central places of varying size and functional specialization;
- 2) some degree of agricultural development such that the possibility of complementary rural-urban interaction is present;

- 3) some degree of locally- or regionally-oriented planning, interest, and planning capacity so that the externalities of the project, such as in-service training and the development of plans for improved regional interaction, will be realized; and
- 4) a clear expression of interest on the part of the national government of the host country in the project and its potential results.

The project would be most appropriately based at the local level and most interesting in the long run if the in-country site selected was also a focus for planned host country, Mission, or other international investment which would provide the expectation of resource-availability to follow up and implement some or all of the projects identified and given priority in the study.

B. The Bicol Subproject. The first of these studies is now underway in the Bicol River Basin in the Philippines, the Asian site for the project. Some brief comments on the project in the Philippines will be useful for purposes of subsequent comparison with alternative Latin American sites which were considered. The Bicol area was identified by the Philippines Government as a lagging region with a high potential for agricultural growth and development. Its agricultural potential stems from its rich volcanic soils, extensive table-lands, and ample labor supply. Its relative poverty is a result of its frequent inundation by floods and

typhoons and of its relatively low priority in the past as a recipient of national developmental resources. The basin includes approximately 1 million people, 81% of them rural. There are two medium-sized cities (Naga and Iriga) and a relatively complex structure of smaller market towns and central places. The basin is presently the focus of extensive GOP and AID flood control, irrigation, road construction, and potable water projects, as well as pilot community and regional planning programs. The Bicol River Basin Program Office, a GOP agency, is providing the local institutional base for the TA/UD project. A project agreement signed on June 30, 1976, provides for a comprehensive analysis of the present and potential role of rural service centers and towns in the Bicol. The project is intended to provide an improved capacity for spatial planning at the regional and sub-regional level and the identification and packaging of projects to improve the system of rural service centers.

C. Objectives of Site Selection Trip. The specific objectives of the trip to Latin America were as follows:

- 1) To inform Mission personnel in greater detail about the purposes of the project, expected results, and alternative potential administrative structures for carrying out the project;
- 2) To obtain Mission and host country government recommendations on alternative potential sites for the project within each country;

- 3) To explore the appropriateness of each alternative site using data available from the Mission and national government agencies and, wherever possible, visit potential sites;
- 4) To discuss the project with potential local government collaborators; and
- 5) To assess the availability of local technical personnel to contract, staff, and/or subcontract portions of the project in each country.

The remainder of this report presents the recommendations of the site selection team based on their evaluation of the alternative sites discussed and/or visited with Mission and host government personnel in Bolivia and Paraguay. For each country, the evaluation considered the national setting with respect to settlement patterns planning structures, host government and Mission programs and the nature and level of interest expressed. The particular advantages and disadvantages of each site considered are presented more fully in subsequent sections.

D. Summary of Conclusions and Recommendations. Although interest in the project was high in both countries, in terms of general settlement characteristics, the nature of government planning structures, and the specific selection criteria presented in section A above, Bolivia is

clearly the more appropriate country site for the project.

Within Bolivia several alternate sites were discussed at length with government officials at the national and local levels, Mission personnel, and other knowledgeable professionals. On the basis of these discussions and a review of the materials available to the TA/UD team, we believe that Cochabamba would be the most appropriate site, Santa Cruz would be less desirable but feasible, while Chuquisaca and Tarija are the least appropriate and probably not feasible as project sites.

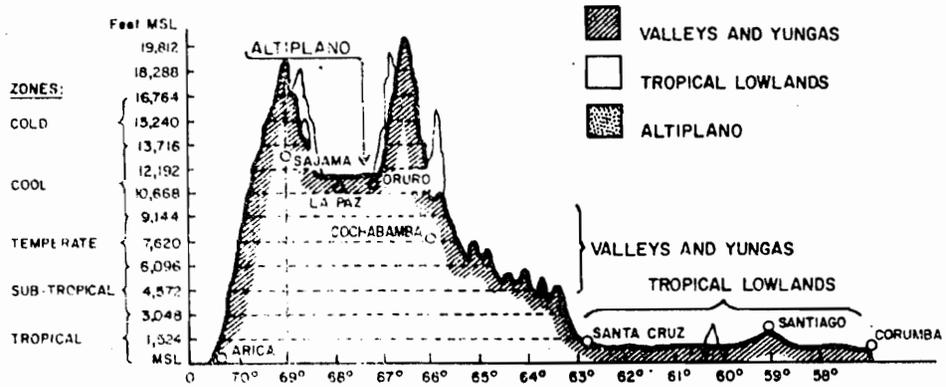
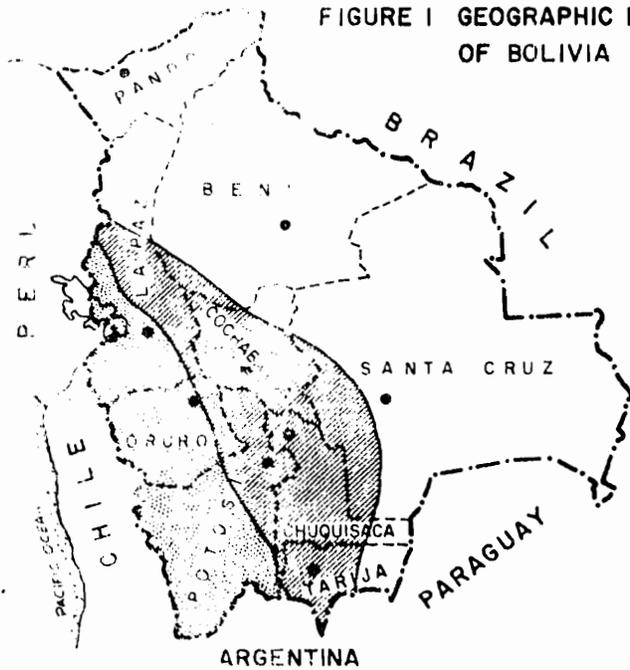
II. BOLIVIA

The work of the site selection team was greatly facilitated in La Paz by the Mission personnel who evidenced a keen interest in and appreciation of the conceptual basis of the project.

A. General Background. Bolivia is situated in the center of South America, between 10° and 23° South latitude and 57° and 69° West longitude. It is bordered on the North and East by Brazil, on the Southeast by Paraguay, on the South by Argentina and Chile and on the Northwest by Peru. The Eastern Range of the Andes crosses the country, dividing it into three large easily identifiable regions, as shown in Figure 1. The "altiplano" is a zone of high plateaus from 10,000 to 14,000 feet above sea level. It contains roughly 15% of the total Bolivian population (4.5 million in 1976) on roughly 15% of the total land mass. A lower mountainous zone characterized by generally highly-fragmented inter-mountain valleys, with altitudes from 4,000 feet to 10,000 feet above sea level covers some 30% of the country and encompasses about 68% of the population. The remaining 55% of Bolivia consists of tropical lowland plains, largely in the Northern and Eastern portion of the country, and contains less than 17% of the estimated population. (cf. Boisier, 1972).

The Bolivian economy was dominated for more than 400 years by the mining sector. The "mountain of silver" at Potosi was the principal focus (it is not too strong to say sole focus) of interest in Bolivia for colonial Spain. The wax and wane of mining in Bolivia during those

FIGURE 1 GEOGRAPHIC PROFILE OF BOLIVIA



Source: Agricultural Development in Bolivia: A Sector Assessment
 (Draft) LA/DR-DAEC/P-75-6

centuries was the single most important determinant of development for most of Western South America, including the agricultural areas of Chile which supplied foodstuffs to the mines and the commercial transactions of Peru through which the precious metals were shipped.

During the past 25 years growth of total output in Bolivia has been sporadic. From 1952 to 1962 the economy was virtually stagnant as adjustments to land reform policies and the nationalization of the mines in the 1952 Revolution took place throughout the economy. Average annual growth over that period was about 0.1 percent. From 1962 to 1972, as noted in the 1974 Ag. Sector Assessment "GNP increased at an annual rate of about 5.4 percent as economic performance reflected response to monetary reform, increased petroleum production, improved mineral proces, and a surge of agricultural activity in the Santa Cruz region" (p.1).

Agriculture and manufacturing now contribute slightly higher proportions of gross domestic product than mining (see Table 1a). But recent growth appears to have been strongly led by 45% per year increases in exports. Mineral products other than petroleum accounted for 81% of Bolivia's earnings in 1968. Principal among them were tin, silver, and wolfram. Exports of mineral products grew by nearly 29% per year from 1968 to 1974; but the share of minerals in export earnings fell to 60% by 1974 because petroleum exports increased by 110% per year (see Table 1b).

B. Settlement Pattern. According to preliminary data from the 1976 census, 32.8% of the Bolivian population lives in 9 cities of 20,000 or more, only 9.5% lives in the 88 cities of from 2,000 to 20,000 persons, and fully 49.7% of the population lives dispersed in

Table Ia

Sectoral Composition of Bolivian
Gross Domestic Product, 1963 and 1973

<u>Sectors</u>	<u>1963 Percent</u>	<u>1973 Percent</u>	<u>Average Annual Growth Rate, 1963 to 1973</u>
1. Agriculture	22.1	15.1	1.9
2. Mining	11.2	12.5	9.3
3. Manufacturing	12.8	13.6	8.4
4. Construction	3.7	3.8	7.2
5. Energy	1.3	1.8	13.3
6. Transport	8.8	8.2	6.1
7. Commerce-Finance	13.8	16.8	11.0
8. Government	7.5	9.9	12.9
9. Other Services	18.8	18.3	6.8
TOTAL	<u>100.0</u>	<u>100.0</u>	<u>7.3</u>

Table Ib

Structure of Bolivian Exports, 1968 and 1974

<u>Exports</u>	<u>1968 Percent</u>	<u>1974 Percent</u>	<u>Average Annual Growth Rate, 1968 to 1974</u>
1. Minerals	81.4	59.9	28.8
2. Petroleum and Natural Gas	14.3	29.3	110.2
3. Agricultural Products	3.7	8.7	130.6
4. Industrial Products	0.6	2.1	206.7
TOTAL	<u>100.0</u>	<u>100.0</u>	<u>45.1</u>

Source: Calculated from Tables I and II in La Marcha de la Economía Nacional, published by the Corporación Boliviano de Fomento.

completely rural areas. The distribution of the population over the nine departments in Bolivia and its distribution among central places in each may be seen in Table 2. The largest cities over 20,000 are, in order of size: La Paz (654,000), Santa Cruz (256,000), Cochabamba (205,000), Oruro (124,000), Potosi (77,000), Sucre (62,000), Tarija (39,000), and Montero (28,000).

This settlement pattern reflects strong vestiges of the colonial economy around the mining of precious metals and the subsequent historical importance which mining has had for growth in total output. The four most important cities during the colonial period were Potosi, Sucre, Oruro, and La Paz, all centers oriented to the actual mining of or to the commercialization of mining products. All four are located in areas of relatively very little agricultural potential. The growth of Cochabamba in the first half of this century and the spectacular growth of Santa Cruz since 1950 have been related in part to the growing importance of agriculture, especially commercial agriculture, and petroleum in the Bolivian economy.

Migration in recent years, according to fragmentary data, appears to be moving the population in the direction of recent economic expansion. According to the 1975 pre-census demographic study, the greatest volume of net migration was movement into the department of Santa Cruz. Net migration to La Paz was the next strongest inflow. Among the seven other departments, only Oruro, the site of substantial recent mining expansion, was a net recipient of migrants. Cochabamba, the department from which migration to Santa Cruz is easiest, experiences substantial net emigration.

TABLE 2: Distribution of Bolivian Population
by Department and Size of Center, 1976

	<u>Total Population</u>	<u>Cities over 20K</u>		<u>Centers w/2K-20K</u>		<u>Centers below 2K</u>	
	<u>(000's)</u>	<u>Number</u>	<u>% of Pop.</u>	<u>Number</u>	<u>% of Pop.</u>	<u>Number</u>	<u>% of Pop.</u>
<u>BOLIVIA</u>	4,479*	9	32.8	88	9.5	680	7.9
<u>Departments</u>							
La Paz	1,484	1	44.0	16	4.8	185	6.2
Beni	NA	NA	NA	NA	NA	NA	NA
Chuquisaca	357	1	17.4	5	3.6	57	6.2
Cochabamba	730	1	28.1	15	9.8	102	8.6
Oruro	311	1	39.9	8	11.5	91	11.5
Pando	34	-	- -	1	11.8	6	8.8
Potosi	658	2	15.2	18	13.8	111	7.6
Tarija	188	1	20.7	5	18.6	13	3.7
Santa Cruz	715	2	39.9	20	13.8	109	10.6

Source: Calculated from draft study by Ministry of Urban Affairs and Housing, using 1976 census data, as found in AID/Bolivia draft DAP.

* 208,000 less than official census for unknown reasons.

The high level of dispersed rural population is recognized by the Bolivian government as a source of "rigidity" in the spatial structure, an obstacle, that is, to the transformation of the economy. The recent Five Year Plan noted quite clearly that the relative dispersion of the population creates difficulties for the generation of external economies and economies of scale sufficient to serve as a basis for a solid and diversified level of development." (Volume IV, P. 53).

The Bolivian government also recognizes the deficiencies in spatial organization which appear as the country shifts the sectoral composition away from mining and into expansion of agricultural and industrial production. The Five Year Plan suggests, for example,

the majority of the urban centers are not organically integrated to their respective rural areas ... This indicates that such centers do not completely fulfill a dynamic role for their respective areas of influence because they do not function adequately as marketing centers and as centers for the diffusion of cultural and technological innovation. Nor do they possess the economic and social infrastructure for the support of the production and adequate functioning of their respective campesino communities. (Ibid.)

C. Spatial Planning Structure. Bolivia has an unusually long history of explicit concern with spatial dimensions of development. The Bolivian Government has developed one of the most sophisticated systems for effectively decentralized regional planning that can be found anywhere in Latin America, and it appears from the most recent five-

year plan that development plans prepared by the individual departmental planning bodies are, in fact, being incorporated into the investment and spending plans of the central government.

Bolivia was one of the first of the Latin American nations to develop an explicit plan for regional development. That plan, developed in the late 1960's, sought to eliminate regional differences in per capita income and to "polarize the economic space" by focussing investment on the departments of Santa Cruz and Oruro as the nation's two "growth poles" (Boisier 1972). By late 1972, however, the growth pole strategy was being abandoned for a variety of practical and political reasons. (Conroy 1973). By that time, however, there had developed considerable regional planning expertise in the central government and considerable regional data, including a complete set of regional accounts for the period 1963 to 1972.

During this period the Central government encouraged the formation of development committees and development corporations in each of the nine departments. These local development groups were granted a portion of the royalties earned by the central government from export products produced in the respective department. Since then the groups have grown into the principal departmental planning groups and the principal administrators of region-specific government programs in their respective areas, especially in those departments favored by relatively abundant export production. The development committees in Santa Cruz, Chuquisaca, and La Paz have become particularly strong and have grown to have sizeable professional staffs.

The responsibility for national economic planning in Bolivia is centered in the National Council of Economics and Planning (CONEPLAN),

a council composed of the principal planning-related ministers as well as representatives from the military and private sector. Its administrative arm is the Ministry of Planning and Coordination. The Ministry is divided into four major divisions: Global Planning, Sectoral Planning, Project Analysis, and Regional Planning. The director of the Regional Planning division has full responsibility for the coordination of the departmental committees.

The departmental committees, however, have an element of independent power base as well. For their membership consists of the departmental Prefect (governor) who is often a military man and is appointed by the Minister of the Interior; the mayor of the departments' largest city, also appointed by the Minister of the Interior; a representative of the local military garrison; and the committee president who is appointed personally by the President of the nation. The evolution of departmental projects begins with studies done locally and projects formulated locally which are then negotiated through the central planning bureaucracy. The relative weakness of some department planning groups attributable to a scarcity of resources is expected to be improved very soon by a new decree-law which will provide regular revenue-sharing disbursements from the central government to those departments which do not have an independent royalty income.

D. Alternative Sites. In the course of discussions with Mission personnel and GOB officials, four alternative sites or combinations of sites were proposed including the Departments of Cochabamba, Santa Cruz, Chuquisaca and Tarija. Each of these potential sites were considered in some detail. The TA/UD team together with Mr. Bastiaan Schouten of the Mission's Rural Development Office visited the development committees in Sucre (Chuquisaca) and Cochabamba. Although the team did not visit the other two sites, they were discussed fully with knowledgeable professionals and ample materials were provided by Mission personnel and GOB officials.

1) Chuquisaca. The Department of Chuquisaca, with a population of 357,000, lies in the southeast of Bolivia and contains only one urban center of any size, Sucre. The city of Sucre is a beautiful colonial city of some 62,000 set to one side of verdant plateau at about 9,600 feet above sea level. It is the legal capital of Bolivia, although it has been superceded by La Paz as the functional capitol. It is the capital of the department of Chuquisaca and is located in Northwest corner of the department. It is 730 kilometers Southeast of La Paz and 370 kilometers from Cochabama. Its historical origins were as an administrative and residential center for the administrators of the mines at Potosi, 60 kilometers to the Southwest and 5000 inhospitable feet higher. At present it is an administrative and educational center for the nation as a whole;

the Supreme Court and San Xavier University are both located there. It also serves as a focus for tourism by Bolivians as well as foreigners, as an agricultural service center, and as the location of industrial plants producing cement, hats, and other products.

The Department of Chuquisaca, as one may see in Table 3, is very heavily agricultural (79.8% of the labor force). Although more densely settled than the national average, it is the least densely populated part of the long-settled portions of the country. Value-added per capita is well below the national average, although physical productivity of its principal agricultural products is generally above the national average.

Although Sucre is the capital of Chuquisaca, its location relative to the rest of the department suggests that the department as a whole would not form any sort of natural or functional region around Sucre. If the study were based there one would need to define a more meaningful region on a scale below the departmental level, possible the three northernmost provinces of Chuquisaca: Oropeza, Yamparaez, and Zudanez. Sucre is only 35 kilometers from the boundary with the department of Potosi and about 60 kilometers from the boundary with Cochabama. An alternative regionalization would take the southernmost provinces of Cochabama, the three mentioned above in Chuquisaca and the contiguous provinces of Potosi. The last alternative would encompass the city of Potosi as well. A final alternative, proposed by representatives of the Committee for Development and Public Works of Chuquisaca, would consist of a study along the entire 250 kilometer road from Sucre to Monteagudo, southeast of Sucre.

Table 3

Basic Departmental Characteristics,
Department of Chuquisaca

1. Population (1975): 357,000 Percent of Bolivia: 7.6
2. Land mass: 51,516 km² Percent of Bolivia: 4.7
3. Density (persons/km²): 6.9 Percent of Bolivian mean: 130.1
4. Value-added (1973): b\$882,903 Percent of Bolivia: 6.8
5. Value-added per capita (1973): b\$2747 Percent of Bolivian mean: 88.7
6. Sectoral Distribution of the labor force (1975):

Agriculture: <u>79.8%</u>	Commerce: <u>5.1%</u>
Mining: <u>0.0%</u>	Government: <u>2.5%</u>
Industry: <u>2.4%</u>	Services: <u>4.5%</u>
Construction: <u>3.0%</u>	Petroleum: <u>0.2%</u>
Transportation: <u>2.1%</u>	Energy: <u>0.2%</u>

7. Agricultural production, Percents of National Output and Productivity per Hectare (1972):

<u>Product</u>	<u>Output</u>	<u>Productivity</u>
Wheat	10.4	105.9
Corn	0.0	-
Corn	20.9	101.9
Coffee	0.0	-
Cotton	0.0	-
Potatoes	11.4	107.6
Quinoa	0.0	-
Rice	0.0	-
Sugar Cane	0.0	-
Wheat	32.7	94.6
Bananas	0.0	-
Citrus	4.8	102.9

8. Percent of Bolivian livestock:

Cattle: <u>9.1</u>	Sheep: <u>10.2</u>	Llamos and
Swine: <u>22.7</u>	Poultry: <u>13.5</u>	Alpacos: <u>0.0</u>

The level of interest in the project by the resident of the Development Committee and his professional staff was very high and they assured the members of the team that they would be willing to provide considerable logistical support and counterpart personnel to the project.

The advantages of a Sucre location would seem to include the following:

1. The Chuquisaca Committee is acknowledged as one of the technically most capable in Bolivia, probably second only to Santa Cruz.
2. The Chuquisaca area contains some of the most difficult rural development problems to be found away from the altiplano in Bolivia. The poor soil quality, low population density, isolation from domestic and export markets, and difficult topography might provide a challenging critical test of the fundamental hypotheses which underlie the urban functions project.
3. The generalizability of a study sited in Chuquisaca to other high altitude, low density, mountain valley regions of southeastern Cochabama, eastern Potosi, northern Tariza, and the rest of Chuquisaca would be clear and direct.
4. Sucre and Chuquisaca will become more important as a focal point for Mission efforts over the next three to five years.
5. The permanence and continuity of the Committee in Sucre, when combined with its relatively large resources, suggests that there will be an effective institutional presence to carry out some or all of the projects identified by the study.

There are a number of disadvantages to Chuquisaca which also must be weighed. They include:

1. The relative simplicity of the present regional structure and the low probability that it will develop into a more complete structure in the near future reduce significantly the interest which the region offers as a potential test for some of the central research questions of the study.
2. The low population density and poor agricultural conditions suggest that an analysis of the linkages between the few, small, and isolated rural service centers would provide less insight into rural development processes than might be the case in relatively more density settled areas.
3. The generalizability of a site in Chuquisaca to other nearby regions may be offset by the non-generalizability of the area beyond that part of Bolivia.
4. The difficulty of defining a meaningful functional region around Sucre which does not cross political boundaries used commonly for data gathering may make elaboration of a project there considerably more difficult.
5. The prospect of incorporating the hinterlands of both Chuquisaca and Potosi to form a meaningful region of sufficient complexity would increase the administrative problems considerably.
6. Sucre and Chuquisaca are not among the areas targeted for significant public and private investment over the next five years. The GOB has drawn its plans to

emphasize the La Paz - Cochabamba - Santa Cruz belt, as one can see in Table 4. Chuquisaca ranks 7th out of 9 departments for both public and private investment.

2) Cochabamba. Cochabamba is the third largest city in Bolivia (205,000 inhabitants in 1976) and the capital of the department of the same name. It is located at about 8,600 feet above sea level and at the center of a string of wide, relatively fertile valleys. The department of Cochabamba is only slightly larger than Chuquisaca, but it contains more than twice the population. Although there are few city-specific data on economic structure available, the relatively large proportion of the labor force in industry encountered in Cochabamba is almost all located in the capital city. Value-added per capita in Cochabamba is 8.1% above the Bolivian mean, reflecting both higher agricultural productivity and the presence of industry. (See Table 5)

The topography of the department of Cochabamba also includes portions of all three major ecological zones. The lowland Chaparé province is the source of 66% of the national production of coca and 60% of the nation's banana crop. The area also produces temperate zone cereals such as wheat and barley with productivity levels well above the national levels.

The site selection team was able to briefly meet the president of the regional development committee (CORDECO for Corporation for the Development of Cochabamba), and several of his technical staff. They explained how Cochabamba has become the principal commercial center of the nation, serving as a major transshipment and processing point

TABLE 4. BOLIVIA: PLANNED GROSS INVESTMENT BY DEPARTMENTS, 1976-80

(Millions of U.S. Dollars 1975)

Departments	Total Gross Investments			
	Total		Public	Private
	Absolute	Relative		
TOTAL	3,454.00	100.0	2,436.00	1,018.00
1. Santa Cruz	676.98	19.6	477.46	199.55
2. La Paz	656.26	19.0	462.84	193.42
3. Cochabamba	497.38	14.4	350.78	146.59
4. Oruro	328.13	9.5	231.42	96.71
5. Potosi	272.87	7.9	192.44	80.42
6. Tarija	231.42	6.7	163.21	68.21
7. Chuquisaca	203.79	5.9	143.72	60.06
8. Beni	96.71	2.8	68.21	28.50
9. Pando	72.53	2.1	51.16	21.28
* National Programs	417.93	12.1	234.76	123.18

* Planned investment in more than one Department.

Source: Ministerio de Planificación y Coordinación: Table 25, p. 82 and Table 37, p. 110, as quoted in the draft DAP.

Basic Departmental Characteristics,
Department of Cochabamba

1. Population (1976): 778,000 Percent of Bolivia: 16.6
2. Total area: 55,595 km² Percent of Bolivia: 5.1
3. Density (persons/km²): 13.9 Percent of Bolivian mean: 323.3
4. Value-added (1973): b\$2,200,579 Percent of Bolivia: 16.8
5. Value-added per capita (1973): b\$3349 Percent of Bolivian mean: 108.1
6. Sectoral Distribution of the labor force (1975):

Agriculture: <u>66.0%</u>	Commerce: <u>5.0%</u>
Mining: <u>1.4%</u>	Government: <u>2.4%</u>
Industry: <u>9.6%</u>	Services: <u>5.8%</u>
Construction: <u>3.4%</u>	Petroleum: <u>0.6%</u>
Transportation: <u>3.4%</u>	Energy: <u>0.3%</u>

7. Agricultural production, Percents of National Output and Productivity per hectare (1972):

<u>Product</u>	<u>Output</u>	<u>Productivity</u>
Wheat	12.8	109.3
Corn	65.6	101.2
Soy	19.5	94.4
Coffee	6.9	90.3
Cacao	0.0	-
Peas	27.4	110.7
Quinoa	0.0	-
Wheat	8.4	95.6
Sugar Cane	0.0	-
Maize	32.3	115.1
Bananas	60.0	112.4
Citrus	9.8	102.9

8. Percent of Bolivian livestock:

Cattle: <u>2.9</u>	Sheep: <u>16.2</u>	Llamas and
Swine: <u>16.9</u>	Poultry: <u>21.1</u>	Alpacas: <u>5.9</u>

for agricultural products coming from Santa Cruz, from Chuquisaca and other points south, and from La Paz.

CORDECO has had virtually no resources of its own, for it earns no royalties from exports. The committee reportedly has had a history of instability in its leadership, although we were assured that this is now a thing of the past since the President of Bolivia has just recently named his personal economic advisor as the committee's new president. It was also mentioned that a new decree-law is expected momentarily which will provide Cochabamba with regional resources from the central government.

Table 6 indicates the relative magnitude of resources available for 1977 to the three committees. These are approved spending plans, demonstrating relative local priorities and implying for Cochabamba that the central government has agreed to make those funds available.

Although the 1976 census has not yielded, yet, estimates of the population of individual cities and towns other than the largest, one can see from the map of Cochabamba that the spatial structure of the region around the city is quite complex. The department contains three times the number of central places between 2,000 and 20,000 encountered in Chiquisaca. The topography of the central valleys permits greater communication, and the greater density of the population and greater agricultural potential creates potential for communication.

Cochabamba was seen as an attractive project site by the GOB regional planners, in part because of the potential benefits of the study in an area of considerable agricultural potential, and because the

Table 6

Public Expenditure Plans by Departmental
Committees: Chuquisaca, Cochabamba,
and Santa Cruz, 1977

<u>Sector</u>	<u>Chuquisaca</u>		<u>Cochabamba</u>		<u>Santa Cruz</u>	
	<u>b\$ (000)</u>	<u>%</u>	<u>b\$ (000)</u>	<u>%</u>	<u>b\$ (000)</u>	<u>%</u>
Agriculture	73,489	50.5	17,510	18.8	24,890	1.7
Mining	-	-	1,000	1.1	-	-
Industry-Tourism	31,556	21.7	19,100	20.6	867,644	60.0
hydrocarbons	-	-	-	-	-	-
Construction	-	-	-	-	-	-
Energy	4,000	2.7	-	-	55,220	3.8
Transport	4,250	2.9	1,450	1.6	323,886	22.4
Commerce	-	-	-	-	-	-
Government	-	-	-	-	132,886	2.9
Housing-Urbanism	3,300	2.3	320	0.3	56,853	3.9
Other Services	28,831	19.9	53,403	57.6	30,881	2.1
TOTAL	145,426	100.0	92,783	100.0	1,447,064	100.0

Source: Plan Anual Operativo 1977, Tomo VI, Plan Operativo Regional

training components of the project would benefit a regional committee which needs them more than others. Other than a site on the Altiplano, Cochabamba was the first choice of the GOB representative.

We see, then, the following advantages associated with a Cochabamba location:

1. The region is relatively self-contained, relatively complex in spatial terms, and **thus** more interesting from the point of view of urban-rural interaction.
2. Cochabamba appears to possess greater potential for generalizability to other Latin American situations. As an intermediate-size, agricultural, trade, and processing center, Cochabamba is comparable to numerous cities in Venezuela, Colombia, Mexico, and Brazil.
3. The agricultural hinterland of the city of Cochabamba possesses considerable productive potential and suitability to an analysis of the importance of urban functions in rural development.
4. The direct benefits to Bolivian planning efforts may be greater in Cochabamba than in any alternative Bolivian site.
5. Cochabamba is an area of relatively high priority for the Bolivian government, as evidenced by government investment plans, new strengthening of the development committee, and central government resources made available for 1977.

6. Cochabamba, fits the original criteria for site selection more closely than any of the other sites considered.

There remain, nonetheless, several formidable disadvantages:

1. The local development committee cannot offer either the same quantity of logistical support nor the same quality counterpart professional staff as the committee in Chuquisaca.
2. Cochabamba is not any longer the primary area for activity by the Mission.
3. The committee in Cochabamba has not demonstrated as much interest in rural development as the committee in Chuquisaca. The figures in Table 6 are somewhat misleading however, for the large allocation in "Other Services" consists principally of the multipurpose Miticuni project which involves rural roads, electrification, and irrigation.

3) Santa Cruz. Santa is the true Bolivian boomtown. It has become, since 1950, the single most important focus for migration, investment, and government development efforts. The department of the same name is the largest department in Bolivia, although most of it is completely uninhabited. The economic boom in Santa Cruz is based on sugar cane, cotton, large scale corn cultivation, cattle, and petroleum (See Table 7). As a recently-settled area, one could expect to find significant gaps in the urban-rural system because the system has not had time to adjust to its needs. By the same token, the unsettled, clearly disequilibrium nature of such a system creates formidable difficulties in identifying an optimal or quasi-optimal set of supportive projects.

The Santa Cruz Public Works Committee is considered the wealthiest, most technically competent, and most successful committee of its type in the country. It has undertaken large scale planning and direct investment.

The principal advantages of locating the project in Santa Cruz would appear to be:

1. The local committee would be capable of providing strong logistical and professional support for the project.
2. The study might serve to kindle greater interest in committee projects oriented to rural development by demonstrating the integral links between urban and rural development on that agricultural frontier.

Page 7

Basic Demographic Characteristics,
Department of Santa Cruz

1. Population (1976): 712,000 Percent of Bolivia: 15.2
2. Land mass: 370,597 km² Percent of Bolivia: 33.7
3. Density (persons/km²): 1.9 Percent of Bolivian mean: 44.1
4. Value-added (1973): b\$2,215,391 Percent of Bolivia: 16.9
5. Value-added per capita (1973): b\$3442 Percent of Bolivian mean: 111.1
6. Sectoral Distribution of the labor force (1975):

Agriculture: <u>45.9</u>	Commerce: <u>10.7</u>
Mining: <u>0.0</u>	Government: <u>6.4</u>
Industry: <u>10.6</u>	Services: <u>12.1</u>
Construction: <u>4.2</u>	Petroleum: <u>2.0</u>
Transportation: <u>7.1</u>	Energy: <u>4.5</u>

7. Agricultural production, Percents of National Output and Productivity per Hectare (1972):

<u>Product</u>	<u>Output</u>	<u>Productivity</u>
Woolley	-	-
Coca	-	-
Corn	30.7	134.6
Coffee	6.9	22.1
Cotton	100.0	100.0
Potatoes	4.5	108.2
Quinoa	-	-
Rice	7.2	102.7
Sugar Cane	85.1	100.7
Wheat	2.9	92.2
Bananas	2.0	38.9
Citrus	24.8	91.5

8. Percent of Bolivian livestock:

Cattle: <u>28.6</u>	Sheep: <u>2.4</u>	Llamas and
Swine: <u>16.9</u>	Poultry: <u>13.6</u>	Alpacas: <u>0.0</u>

3. The magnitude of public and private resources to be channeled into the area are unsurpassed elsewhere. That implies that the probability of encountering resources with which to undertake projects designed for the area is likely to be greater in Santa Cruz than elsewhere.

The disadvantages include:

1. The generalizability of study would be weakened, both because of the atypical nature of the local economy and because of the unsettled spatial structure one encounters there.

2. The marginal benefits of the actual planning and training associated with the project would be less in Santa Cruz than in either Cochabama or Chuquisaca.

1. Tarija. Tarija is the southernmost department in Bolivia. Topographically it contains transitional zones leading from the high mountain valleys in Chuquisaca and Potosi to the rolling hills of northwestern Argentina. It is a small department with only 188,000 inhabitants. It is predominantly agricultural, but with an agriculture distinguished only by the high proportion of the nation's potato crop produced there .

Tarija was recommended by several persons but the relative simplicity of its spatial structure, its distance from Bolivian priority development areas, and the low level of investment planned all suggest that it would be inappropriate as a site.

III. PARAGUAY

The Mission provided excellent support for the site selection team during their stay in Asuncion. Arrangements also were made for the team to visit San Pedro department resulting in^a most interesting and memorable trip.

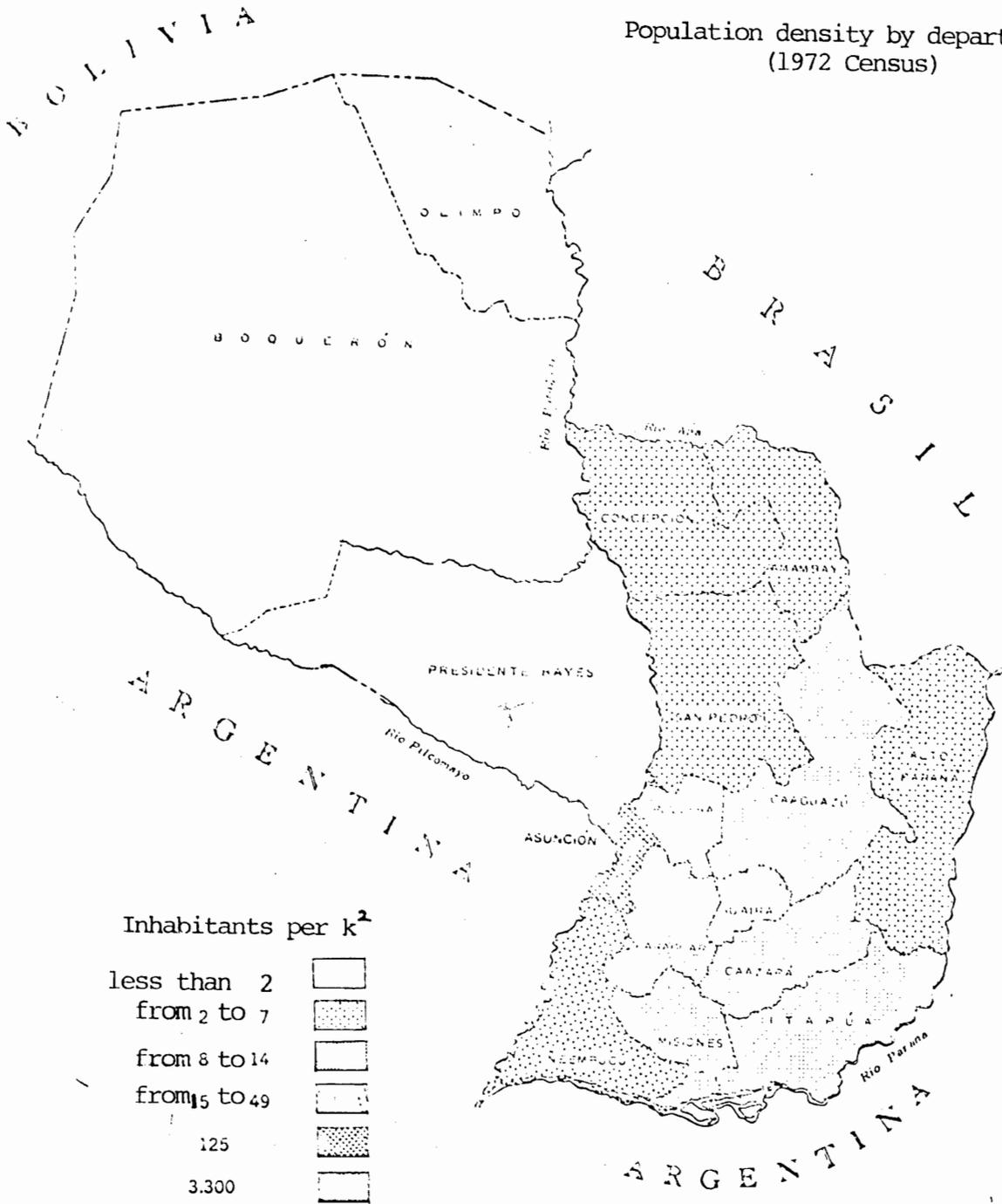
A. General Background. Paraguay, like Bolivia, is also a landlocked country in the heart of South America. It borders on Bolivia to the Northwest, Brazil to the North and East, and Argentina to the South. Although the area around Asuncion is relatively densely populated, the average population density for the nation is low, less than 6 persons per square kilometer (see Figure 2). The population of Paraguay is small (2,358,000 in 1972), 63% dispersed (or in places smaller than 2000 persons), but is growing at 3.0% (average annual growth from 1962 to 1972).

The country is divided geographically into very distinct zones by the Paraguay River, a tributary of the Rio de la Plata which is navigable by ocean-going freighters for several hundred kilometers beyond Asuncion. To the East of the Paraguay River there lies a vast undulating plain which is almost completely uninhabited, the Paraguayan Chaco. Ecologically the Chaco varies from tropical grasslands and savannah close to the River to extremely dry plains toward the Bolivian border which are comparable to the arid grassland of West Texas. Virtually the only economic activity in the Chaco is extensive cattle grazing, with cattle density seldom exceeding 0.5 per hectare (about 5 acres per head).

Figure 2

PARAGUAY

Population density by departments
(1972 Census)



DIRECCION GENERAL DE ESTADISTICA Y CENSOS

Eastern Paraguay contains 97% of the population of the country, 40% of the land mass, virtually all of its arable land, and virtually all of its agricultural production. As one can note in Figure 3, most of that area is covered with virgin forest and grassland.

The Paraguayan economy is largely agricultural. Approximately 36% of gross domestic product, 85% of the value of exports (1972-1974), and 51% of employment is provided by the agricultural sector. An additional 14% of exports is provided by forestry-related products (USAID/Paraguay Small Farmer Sub-sector Assessment). Agricultural output has been increasing at real rates of 5.9% per year in recent years (1970-1974). Manufacturing accounts for only 16.7% of GDP, and mining for a miniscule 0.2% (see Tables 8a and 8b).

The most significant economic event in Paraguay's present and near future is the construction of a massive hydroelectric project just north of the city of Presidente Stroessner on the Parana River border with Brazil. The project, named "Itaipu" from the Guarani for "a place of singing stones," is expected to have a generation capacity of 20 million kilowatts, tripling the output of Aswan and doubling that of the largest Soviet or American dams. Construction is now underway on the bypass channel. At the peak of construction it is estimated that from 16,000 to 20,000 workers will be employed directly on the dam itself, roughly 70% of whom are expected to be Paraguayan. The full cost of the project, to be

Table 8a

Sectoral Composition of Paraguayan
Gross Domestic Product, 1962 to 1974

<u>Sector</u>	<u>1962-64 Percent</u>	<u>1972-74 Percent</u>	<u>Average Annual Growth in Output 1965 to 1974</u>
Agriculture	37.6	35.8	3.8
Mining	0.2	0.2	17.6
Manufacturing	15.7	16.7	6.0
Construction	2.3	2.3	9.8
Energy	0.6	1.2	15.9
Transport	4.2	3.7	5.3
Commerce	22.3	23.2	6.3
Government	3.8	3.9	5.3
Other Services	13.3	12.3	5.5
TOTAL	100.0	100.0	5.2

Source: AID/Paraguay, Small Farmer Sub-Sector Assessment.

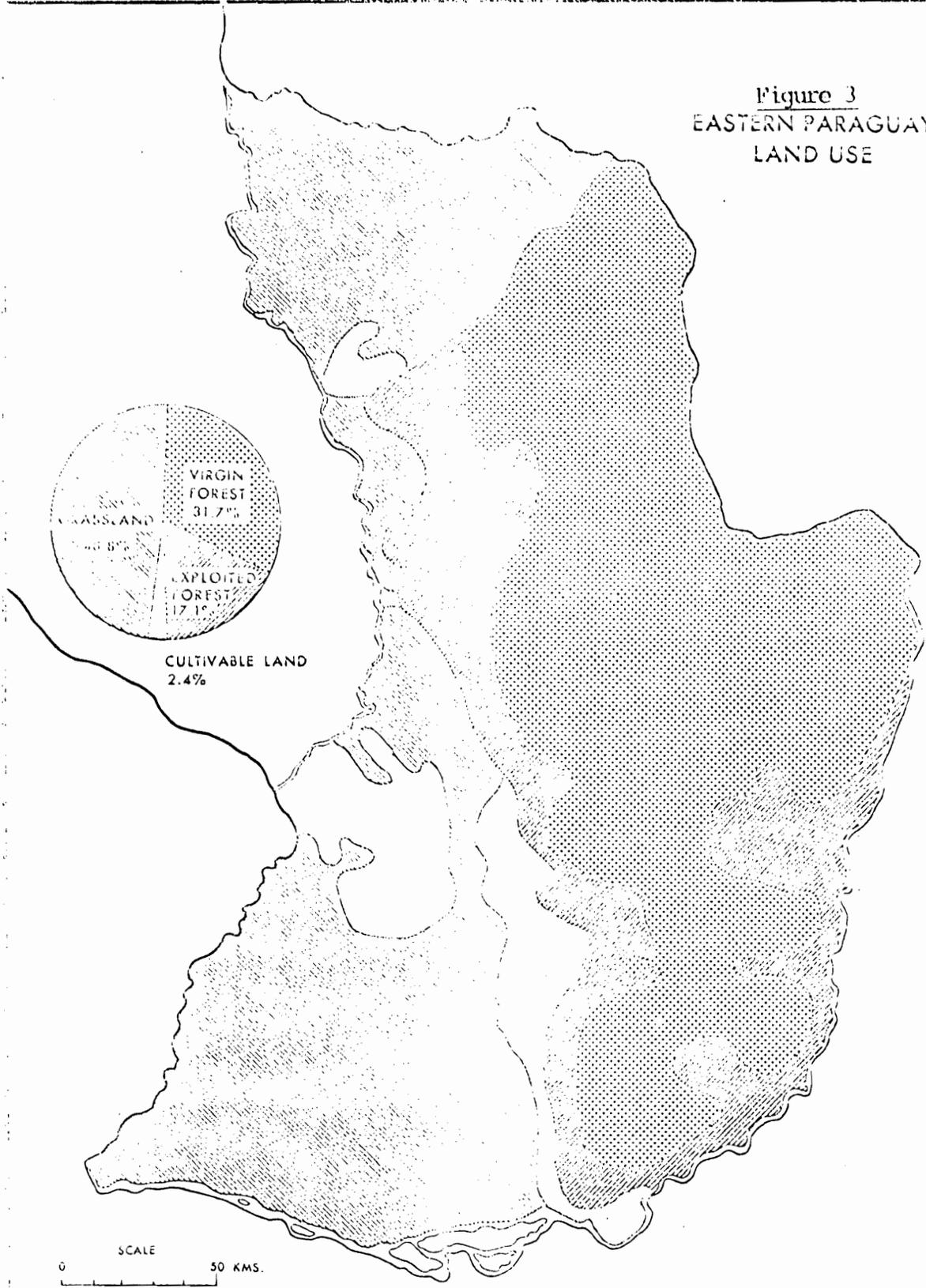
Table 8b

Structure of Paraguayan Exports, 1962 and 1972

<u>Exports</u>	<u>1962 Percent</u>	<u>1972 Percent</u>
Cattle and cattle products	27.9	39.3
Lumber	19.9	11.0
Industrial seeds	2.6	5.8
Other agricultural products	22.1	12.5
Cotton fibers	7.4	4.4
Vegetable Oils and extracts	17.4	12.9
Other industrial products	1.9	11.4
Other products	0.8	2.7
TOTAL	100.0	100.0

Source: Banco Central del Paraguay, Boletín Estadístico Mensual (February 1973)

Figure 3
EASTERN PARAGUAY
LAND USE



SCALE
0 50 KMS.

SOURCE: U.S. DEPT. OF COMMERCE

completed over 10 years, is now expected to reach 8 billion dollars. The long run impact appears most clearly in the expectation that sales to Brazil of electrical energy will double Paraguay's present annual foreign exchange earnings.

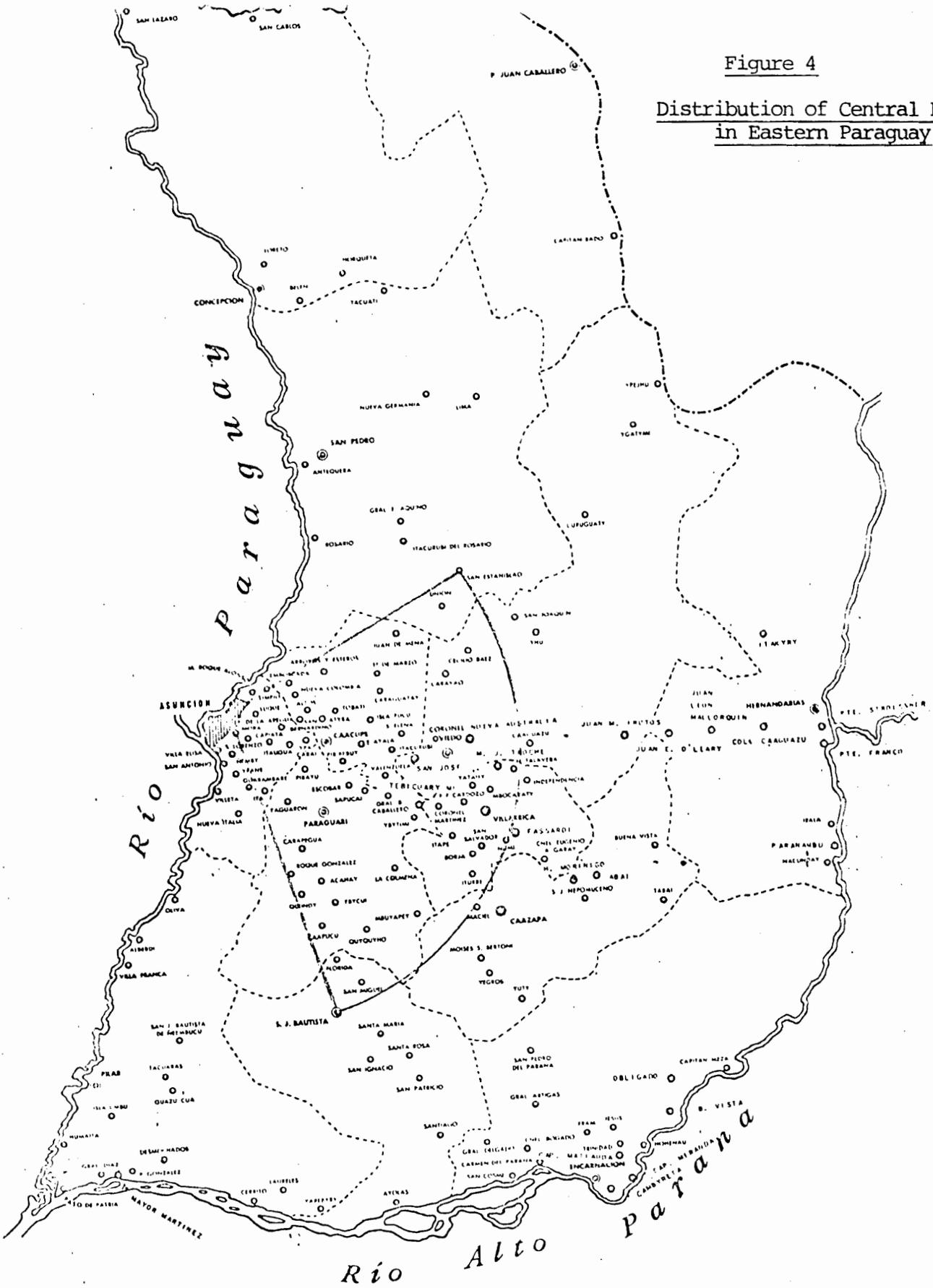
B. Settlement Pattern. For reasons which have been related by some to the 19th Century antipathy between Brazil, Argentina, and Paraguay and to the earlier periods of "raiding" from Brazil and Argentina, the Paraguayan population tends to be clustered close to Asuncion. In fact, a quarter circle with radius of about 90 miles centered on Asuncion is said to include 60% of all central places larger than 2000 and 80% of the total population (see Figure 4).

Paraguay has only one city larger than 40,000. Asuncion has a population of 392,000 in the city proper. If one adds to Asuncion the contiguous towns of Fernando de la Mora (36,834), Lambare (31,656), San Lorenzo (11,616), and Luque (13,921), there are only six other central places with a population in excess of 10,000 or a total of 13 places with population greater than 5000. All central places larger than 5000 are listed in Table 10.

There are two important dimensions to migration in Paraguay worth noting. The first has been the constant process of migration from Paraguay to Argentina. Official Argentina immigration statistics have recorded net flows of Paraguayans over the 1970 to 1974 period in excess of 40,000 per

Figure 4

Distribution of Central Places
in Eastern Paraguay



year, nearly 2% of the total Paraguayan population each year (CPES, 1974). These documented flows may understate total flows. The magnitude of the emigration may be a significant partial explanation for the fact that Asuncion has been growing much more slowly than most capital cities in Latin America over the last decade.

There has also been significant internal migration. A recent unpublished study by Gillespie (1977) indicates that there has been considerable relocation of the Paraguayan population out of the predominantly subsistence agriculture areas toward Asuncion and into the agricultural frontier areas, especially those with active colonization projects. The departments of greatest net loss of population in Eastern Paraguay between 1967 and 1972 were Paraguari (-9.4% over 5 years), Cerdilleros (-8.4%), and Caazapa (-6.3%). The departments which incurred the largest net gains were Alto Parana (+13.6%), Central (+7.6%) and San Pedro (+2.1%). Subsequent to 1972 there has been further large scale migration toward the new employment growth around the Itaipu site in Alto Parana.

There has not been much research undertaken in Paraguay on relative socioeconomic conditions or on social and economic problems in the interior of the country. Those few studies which have been attempted have been stymied by an almost complete lack of government data disaggregated to spatial levels other than Asuncion and the nation as a whole.

C. Spatial Planning Structure. There has been virtually no explicit regional planning undertaken in Paraguay. The problems of planning at the national level with troublesome data at even that level have been the principal preoccupation of the very small government planning staff. There does not exist any formal structure for planning with respect to regional needs. Individual national agencies appear to respond to requests for infrastructure projects in areas outside of Asuncion brought to their attention through political party channels. There is no formal group within the national planning agency (Cabinete Tecnico) charged with considering spatial implications of national plans.

The Municipal Development Institute (IDM) has prepared a set of information on the basic conditions which characterize every major central place in the country, with an emphasis on the presence or lack of urban physical infrastructure. The studies apparently contain little information on socio-economic characteristics and less on urban-rural interaction. The president of the Municipal Development Institute (IDM) expressed considerable interest in the TA/UD project, noting that the mandate of his agency had been extended recently beyond strict city limits. But he also cautioned that the Agency had very few professional resources with which to contribute, in counterpart fashion, to the project were it to be located in Paraguay.

Table 9

Population and Rate of Growth of Central Places in Paraguay
with More Than 5000 Inhabitants in 1972

<u>Central Place</u>	<u>1972</u> <u>Census</u> <u>(000's)</u>	<u>1962</u> <u>Census</u> <u>(000's)</u>	<u>Average Annual Inter-censal</u> <u>Growth Rate</u>
Asunción	392.7	288.9	3.6
Fernando de la Mora*	36.8	10.2	26.1
Emboscado*	31.7	8.3	28.1
Encarnación	23.3	18.7	2.5
Pedro Juan Caballero	21.0	10.4	10.3
Concepción	19.4	18.2	0.6
Villarrica	17.7	16.1	0.9
Lagoa*	13.9	11.0	2.6
Coronel Oviedo	13.8	9.5	4.6
Pilar	12.5	5.3	13.5
San Lorenzo*	11.6	8.6	3.5
Coaguazú	8.0	2.3	24.7
Caacupé	7.3	6.3	1.5
Itá	7.0	6.3	1.2
San Juan Bautista	6.5	6.0	0.8
San Juan Ignacio	6.1	5.1	1.9
Ypacarai	5.2	5.3	-0.2
Paraguari	5.0	4.8	0.3

Source: 1972 Census

D. Alternative Sites Within Paraguay. Evaluation of Paraguayan alternatives proved more difficult than the evaluation of the Bolivian sites discussed above. There exists, in the first place, virtually no data on the socio-economic characteristics of areas outside of Asuncion, except for areas such as San Pedro where one-of-a-kind studies have been conducted

Initial discussions suggested three alternative potential sites in Paraguay. They were:

1. the San Pedro regional development project site, including the three towns of Itacurubi del Rosario, General Aquino, and Villa Rosario;
2. an East-Central zone encompassing the towns of Villarrica and Coronel Oviedo; and
3. the area of direct influence around Asuncion.

Other suggestions which arose in conversations included study areas focussed on Concepcion in the far North and Encarnacion in the Southeast of Eastern Paraguay. These were considered **inappropriate**. Concepcion is very nearly an enclave with little or no hinterland and virtually no links to the rest of Paraguay other than by periodic river-boat. Encarnacion, on the Parana River border with Argentina, offered the interesting possibility of analyzing regional interactions in an international context. That very fact, however, and the significant increase in administrative complexity required to do the study in the full bi-national region appeared to rule out Encarnacion.

1) San Pedro. The regional development project presently underway in three communities of San Pedro department is both imaginative and interesting. After a visit to the area, the team concluded that although the project has definite intra-regional spatial dimensions which warrant further study, the area is too small and lacks the complexity required for the rural development site. The configuration of the roads in San Pedro does not permit taking a larger area, say the department as a whole, as a coherent region.

2) Villarrica - Coronel Oviedo. The two towns are located roughly 125 kilometers east of Asuncion, on the periphery of the zone of greatest population concentration and far enough from Asuncion that one might expect to encounter the resurgence of some higher order functions.

Villarrica is a very old town of some 17,000 located in the midst of savannah and wetlands dedicated to cattle and sugarcane. About 200 persons are employed in local sugar mills, about 1,000 in sugar cultivation, and the rest in diverse agriculture and commerce. The town has not grown much in 30 years, according to local observers. With little new agricultural land to open and no new sources of employment, Villarrica has been a perennial source of out-migration.

Coronel Oviedo is a trading town, 40 kilometers to the North of Villarrica and located at the intersection of the sole highway to the North in Paraguay. It has grown rapidly in the past 20 years to its present size of 10,000. It is expected that it will grow even more rapidly when the road to the North is paved for the 150 kilometers to San Estanislao

during the next two years. For that road also leads to Pedro Juan Caballero, one of two principal border crossings into Brazil. Coronel Oviedo is expected to become the principal interior transshipment, wholesaling, and processing location in Paraguay.

A study of the area of influence of these towns would be interesting in terms of both the contrast between them and their relationships to their respective distinctive hinterlands, and the conflict between them for markets. Such a study would have several disadvantages, however.

1. There exists no local planning or autonomous local administrative agency for which the planning exercise embodied in the study would be either meaningful or useful.

2. The dearth of data on the interior of Paraguay would present formidable obstacles, requiring substantial original survey research.

3. The relative simplicity of the regional structure, however, would not seem to justify the creation of such a survey effort.

4. The activities of the agricultural sector around Villarrica do not appear to be of the sort which would lead one to believe that there exists considerable untapped potential, which might be realized through an upgrading of existing urban services.

3) Asuncion and Environs. Consideration of Asuncion as a focal point of analysis was not seen as a viable option. The GOP has expressed strong interest in decentralizing economic activity away from Asuncion, effectively meaning a decreased interest in the entire region. The Municipal Development Institute, the only potential cooperating agency suggested by the

Mission staff, is excluded by mandate from working in Asuncion. The relative size of Asuncion and the influence it has would require, some suggested, that the entire nation be treated as a hinterland. Finally, since one of the major foci of the project is the development of decentralized spatial planning capability, it appears inconsistent to conduct one of three studies worldwide on the primate capital city of a country without decentralized or spatial planning.

References

- Boisier, Sergio, 1972. Polosde Desarrollo: Hipotesis y Politicos, Estudio Bolivia, Chile, y Peru (UNRISD Report 72.1, Geneva).
- Conroy, Michael E., 1973. "Rejection of Growth Center Strategies in Latin American Regional Development Planning," Land Economics. (November 1973).
- CPES, 1974. Aspectos de la Migración Paraguaya en la Argentina by Pilar Risech, Juan M. Villar, and Stella M. Pavon (mimeo).
- Gillespie, Francis G., Demographic Change in Paraguay: A Human Ecological Approach. Unpublished Ph.D. Dissertation. University of Texas at Austin, 1977.