BOLIVIA

MARKET TOWN DEVELOPMENT AND RURAL-URBAN TRADE

IN THE

ASSOCIATED HIGH VALLEYS OF COCHABAMBA

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Prepared for:

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and
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LIST OF ACRONYMS

APL	Asociación de Productores de Leche
CMA	Cochabamba Metropolitan Area
CIDRE	Centro de Investigación y Desarrollo Regional
CERES	Centro de Estudios de la Realidad Económica y Social
CIPLADE	Centro de Investigaciones para Planificación y Desarrollo
CEDEAGRO	Centro de Desarrollo Agropecuario
COMTECO	Cooperativa Mixta de Teléfonos de Cochabamba
CORDECO	Corporación Regional de Desarrollo de Cochabamba
CORPAGUAS	Corporación de Aguas
COTAVAC	Cooperativa de Teléfonos Automáticos del Valle Alto
CRDP	Chapare Regional Development Project
DAI	Development Alternatives Inc.
DIRECO	Dirección de Reconversión de Coca
DITER	Dirección de Telecomunicaciones Rurales
ECOBOL	Empresa de Correos de Bolivia
ELFEC	Empresa de Luz y Fuerza Eléctrica Cochabamba
ENDE	Empresa Nacional de Electricidad
ENFE	Empresa Nacional de Ferrocarriles
ENTEL	Empresa Nacional de Telecomunicaciones
FENACRE	Federación Nacional de Cooperativas de Ahorro y Crédito
FIS	Fondo de Inversión Social

FNDR	Fondo Nacional de Desarrollo Regional
FSE	Fondo Social de Emergencia
GTZ	Gesellschaft fur Technische Zusammenarbeit
IBTA	Instituto Boliviano de Tecnología Agropecuaria
INE	Instituto Nacional de Estadística
MACA	Ministerio de Asuntos Campesinos y Agropecuarios
PADCO	Planning and Development Collaborative International
PIL	Planta Industrializadora de Leche
PDAR	Programa de Desarrollo Alternativo Regional
PRODESUR	Proyecto de Desarrollo del Sur
PRODEVI	Proyecto de Desarrollo Vitivinícola
SEMAPA	Servicio Municipal de Agua Potable y Alcantarillado
SENARB	Servicio Nacional de Control de la Fiebre Aftosa, Rabia y Brucelosis
USAID	United States Agency for International Development

Central Market - Punata

1 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 INTRODUCTION

Since the early 1980s USAID/Bolivia has been engaged in a challenging development exercise under the umbrella of the Chapare Regional Development Project (CRDP) to promote regional development activities in the Department of Cochabamba, and specifically in the Chapare and the Distrito Sur. The objectives of this development program are to contribute to the reduction of coca cultivation in the Chapare and stem the migration of the highland population to that region to cultivate coca or to work in activities related to its harvesting, processing, and transport.

This strategy has been largely, although not exclusively, rural-based in both the Chapare and the Distrito Sur. It has focused on research and development of alternative crops and cropping systems for Chapare farmers, the provision of credit to permit their adoption of new crops, extension efforts and demonstration farms, and the construction of access roads, bridges, and public infrastructure in rural communities. In the Distrito Sur the strategy has also centered on the improvement of agriculture and rural conditions. These efforts have included a strong emphasis on small scale irrigation projects, improved use of soil resources and water conservation, forestry, watershed management, ecology, and range and livestock management. Improvement of existing rural roads and bridge construction has also comprised an important element in the development strategy of the Distrito Sur. Agricultural marketing strategies have been a recent focus for promising crops in the Chapare and to a lesser extent in the Distrito Sur.

The CRDP has included a minor focus on urban areas. This has been most significant in the Distrito Sur where improvements in the existing electric systems of both Aiquile and Mizque have been made. A new potable water system has been completed in Mizque and significant improvements are programmed for Aiquile. In the Chapare the CRDP's urban focus has been more limited and more recent—centered particularly on street cobbling and sidewalk and curb construction in Villa Tunari with efforts programmed for Ivergarzama.

The agricultural and rural-based emphasis of the CRDP has been a logical and reasonable strategy designed to modify the agricultural and migratory practices of the rural population most closely tied to the cultivation and processing of coca. However, a strategy which is predominantly agricultural and rural based cannot deal comprehensively with the multifaceted development needs of a regional economy as large and complex as that of the Department of Cochabamba. A comprehensive strategy must consider the broader workings of the economy and the critical role that **urban places** play in providing off-farm employment, basic services to the rural population, and as migratory destinations for rural population as they leave agricultural pursuits.

Indeed, it is important to underscore the fact that rural to urban migration is an enduring and important "fact of life" in Bolivia and other Latin American countries. Successful rural development programs often only accelerate the movement of rural population to urban areas. Various factors contribute to this. As agricultural incomes increase and greater investment occurs in equipment, farming operations are increasingly mechanized, and consequently, the need for manual labor is reduced. This reduces the need for much family labor on individual farms and the opportunities for work on other farm units. Similarly as capital formation takes place, more successful farm operators seek to increase the scale of their operations, putting pressure on their less successful neighbors to sell farm properties. Land consolidation and a reduction in the number of farm families and rural population usually results. The remaining rural population experiences rising material and social expectations with improved transportation, communication, education, and health services--further contributing to the movement of population to urban areas.

The strengthening of secondary cities should play a critical role in the "alternative development strategy" pursued in the Department of Cochabamba. The improvement of town-based services (electricity, water, sewer, streets, etc.) and linkages to rural production areas (rural roads and bridges) provide the basic infrastructure which allow the "take off" of private sector agro-processing, small industries, and improved services for both urban and rural residents. Furthermore, the improvement in living conditions and the general urban milieu increase the attractiveness of these secondary cities and mitigate the well developed tendencies of the population to migrate to the department's primate city—Cochabamba.

This report is comprised of two principal components. The first component includes a description and analysis of the nine urban centers which represent the principal settlements in the Associated High Valleys of Cochabamba (Cochabamba, Quillacollo, Sacaba,

Punata, Cliza, Aiquile, Arani, Mizque, and Tarata). A hierarchy of these settlements is established using the urban functions in rural development methodology (Rondinelli 1985). This component presents a description and assessment of the urban physical infrastructure in each urban center in the settlement system. The second component includes recommendations for the improvement, expansion, and/or construction of the urban physical infrastructure in the key market towns identified and recommendations for the provision of technical assistance to those institutions responsible for the provision of these services.

This study was carried out in the Cochabamba region during the month of August 1991 by Robert Kent, Team Leader (Associate Professor of Geography, University of Akron), and the local consultants Eduardo Valdivia, Civil Engineer, and Edgar Guardia, Regional Economist.

1.2 METHODOLOGY

This report focuses on a set of cities and secondary towns located in three similar, but distinct, geographic regions in the Andean uplands of the Department of Cochabamba—the Valle Central, the Valle Alto, and the Distrito Sur. The cities and towns located in the Valle Central comprise Cochabamba, Quillacollo, and Sacaba. This conurbation represents one of the three major urban centers in the country. These towns, which were once distinct, have since coalesced to form an almost continuous urban band across almost 35 kilometers of the Valle Central. Situated almost adjacent to the Valle Central and separated by no more than 10 kilometers of low hills, lies the Valle Alto. Characterized by predominantly rainfed agriculture, the valley stretches 35 kilometers east to west and 15 north to south. Four secondary cities, all provincial capitals, are found here—Tarata, Cliza, Punata, and Arani. To the southeast, about three to four hours by road is the Distrito Sur. Located in small valleys with agricultural and herding hinterlands are Mizque and Aiquile, both provincial capitals.

This report comprises two distinct components, an inventory and a set of recommendations. The inventory includes two parts. The first part represents a social and economic description of the agro-urban system that these cities and towns and their hinterlands comprise and an analysis of the urban hierarchy they form. The second part is an inventory of the existing urban physical infrastructure and the institutions which own and manage it.

The second major component of this report represents a series of recommendations based on the results of the research, fieldwork, and analysis reported in the first component. One key element in these recommendations is a listing of new or modified urban physical infrastructure in the cities and towns examined which will support additional agricultural development either directly or indirectly in their rural hinterlands. This listing also will identify the institutions, public or private, which should plan, finance, construct, operate, and maintain this infrastructure. Finally, the report describes the technical assistance needs to strengthen small town and urban center support for agricultural development and the institutional context in which this technical assistance would best operate.

The collection of data to describe and analyze the urban hierarchy of the sample of cities and towns was undertaken using the urban functions in rural development methodology development by USAID (Rondinelli, 1985). Data collection was accomplished using several approaches. Because of the size of the three cities located in the Valle Central of Cochabamba (Quillacollo, Cochabamba, and Sacaba), the team had to depend almost exclusively on secondary data sources. However, in the six intermediate cities which comprised the rest of the study group—Tarata, Cliza, Punata, Arani, Mizque, and Aiquile—it was possible to conduct detailed field surveys in order to describe and then subsequently analyze the urban hierarchy of these towns. In these cases, internal demand and consumption of agricultural products within each town and its tributary region was measured with a survey of agricultural and closely related commodities sold by periodic marketers in the town on its principal weekly market day (Conteo de Puestos de Feria). These surveys involved counts of the number of sellers of distinct agricultural products in each of the towns. An assessment of the size and diversity of the weekly livestock fair, including counts of the various types of livestock for sale and unstructured interviews with buyers and sellers on the origin and destination of the livestock was also undertaken. These data on agricultural fair marketers were supplemented by a another survey, which also involved actual counts, of the number of permanent establishments selling agricultural products, agricultural inputs, basic food stuffs, and cottage industries producing artesian goods with local materials (Conteo de Puestos de Venta Permanente). Trade flows of the principal agricultural commodities being marketed in each town were estimated using unstructured interviews with buyers and sellers of agricultural commodities and with conversations with a variety of key informants including prominent local residents and local governments officials (Determinación de Flujos Agrícolas). The field surveys also contributed to an understanding of the quantity and types of non-farm employment and to the characteristics of town-based services to agricultural production, processing, and marketing in each town. In this case a survey instrument that could be used as both a questionnaire and as a survey-observation sheet was utilized (Servicios a la Producción, Procesamiento, y Mercadeo Agrícola - Funciones). This survey-observation sheet included information on institutions, provision of agricultural inputs, services directly or indirectly related to agricultural activities, and agro-industrial establishments.

Although field counts, observations, and interviews were important data sources, published and unpublished data from a variety of sources supplemented those data gathered in the field. Indeed in the case of some information required to describe and analyze the urban hierarchy, the data simply could not be gathered in the field, and the discussion here is totally dependent upon the presence of secondary data sources (published and/or unpublished). Such is the case for those data relating to population and migration, where in most instances only very old data or the most sketchy secondary data are available.

The inventory of physical infrastructure in the case study cities and towns was accomplished through site visits to each town, interviews with local officials, and a review of published and unpublished documentation. The interview/survey instruments for the

above-mentioned urban functional and physical inventories are reproduced in **Annex 1**. Interviews and site visits were conducted in each of the nine cities and towns.

The conclusions and recommendations presented in this report must be considered to represent those of a pre-feasibility study. The topical and geographical breadth of the scope of work under which this report was prepared and the time constraints stipulated for the preparation of the report, permitted only the first stage in the determination and feasibility of municipal infrastructure needs and a technical assistance program for municipalities.

Additionally, any urban/regional analysis which seeks to examine the role key market towns and secondary cities can play in the economic development of the Department of Cochabamba must consider the settlement system of the entire department and possibly even adjacent areas of the department of Potosí, not just that represented by the Associated High Valleys. Other areas with large rural populations have not been considered here—the west, notably the Province of Ayopaya, the Norte de Potosí, and the Chapare. It is recommended that these areas must be considered in any further analysis of key market towns in the Cochabamba region and their role in any "alternative development" strategy.

1.3 EXECUTIVE SUMMARY

1.3.1 Urban Hierarchy and Market Town Rankings

The urban hierarchy of the Department of Cochabamba represents a classic example of a disarticulated settlement system. It is dominated by a single metropolitan center of nearly 450,000 (the Cochabamba Metropolitan Area which includes Quillacollo and Sacaba) representing about 40 percent of the department's total population and nearly 80 percent of the urban population. The next largest urban center is Punata with a population of about 11,000. Perhaps no more than five towns have populations over 5,000. The remainder of settled "urban places" in the department are small and are of little or no significance in the regional economy.

The key market towns in the study are identified and evaluated using five criteria which permitted a rapid appraisal of their significance in the local and regional economic systems. Four of the criteria are based on field surveys conducted by the research team. These are:

- the number of permanent commercial establishments which are directly or indirectly related to agricultural activity;
- the number of periodic marketers on the town's principal market day engaged in sales of products directly or indirectly related to agricultural activity;
- the number of wholesale buyers and sellers of agricultural products present on the principal market day;
- the number of livestock offered for sale on the principal market day.

The final criterion used in assessing each settlement is estimated population. These data are based on secondary sources.

The Cochabamba Metropolitan Region (CMA), which is comprised of Cochabamba, Quillacollo, and Sacaba, cannot be considered as representing a "market town or market towns". Instead the CMA is representative of a major urban center of national significance. Indeed after La Paz and Santa Cruz, it represents Bolivia's third largest urban area. Consequently, the CMA despite its obvious significance as an engine of regional development, is not included in the ranking of the market towns.

Three towns which represent key market towns with significant potential for development into important secondary or intermediate level cities are identified:

- Punata
- Cliza
- Aiquile

A review of the criteria and the data used in the ranking exercise (**Table 1.1**) demonstrate the dominant role of Punata in the regional economic system. Cliza, despite its proximity to Punata, also represents an important market town in the Valle Alto. Aiquile, the third market town identified is smaller than Cliza, but it plays a dominant role in the regional economy of the southern part of the department of Cochabamba, the Distrito Sur.

TABLE 1.1
ECONOMIC ACTIVITY IN PROVINCIAL CENTERS OF THE VALLE ALTO AND DISTRITO SUR OF THE DEPARTMENT OF COCHABAMBA, 1991

	Permanent Establishments* (Agriculturally Related)	Periodic Marketers* (Market Day)	Wholesale Marketers* (Buyers and Sellers)	Livestock Market* (All animals for sale)	Estimated Population
Punata	626	1,845	74	1,735	8-11,000
Cliza	319	1,707	30	324	6- 7,000
Aiquile	286	467	12	129	6,000
Arani	134	491	16	135	3,500
Mizque	98	135	0	108	2,000
Tarata	71	98	4	0	2,400

*Based on field surveys by PADCO team, August 1991.

1.3.2 Urban Physical Infrastructure

The extent and level of service provided by the urban physical infrastructure in almost all of the towns surveyed is generally very deficient. The needs for potable water and sanitary sewerage systems are urgent in almost every settlement studied. The only bright spot in this panorama is the provision of electric service, which is good.

Infrastructure investments are recommended for the key market towns of Punata, Cliza, and Aiquile. These recommendations for investment are ranked based on the following three criteria:

1) Infrastructure investments that will contribute directly or indirectly to immediate productivity increases.

2) Investments which will contribute to improving basic health and welfare of the residents of market town.

3) Investments that improve the urban environment and could generate significant local employment opportunities.

1.3.2.1 Punata

As the most important market town in the Department of Cochabamba, Punata requires the largest and most comprehensive investment in physical infrastructure. Specifically it needs:

- Improvement and cobbling of critical farm to market roads which will increase the connectivity of the local transport network and dynamize marketing of farm produce in Punata;
- Construction of basic marketing infrastructure in urban market areas;
- Improvement in the potable water and sewage systems;
- Cobbling of urban streets.

1.3.2.2 Cliza

- Improvement in the principal farm to market roads which serve the Cliza market, including cobbling and bridge construction;
- Improvement in the provision of potable water for the urban population.

1.3.2.3 Aiquile

- Investment in Aiquile should be focused on completing those infrastructure projects either initiated or planned for Aiquile by PDAR/USAID's regional development program for the Distrito Sur—potable water, sanitary sewer, and connection to the regional electric network.

1.3.3 Technical Assistance

The urban physical infrastructure of the urban centers investigated in this study is owned and managed by a variety of private companies, municipal governments, or co-operatives. Those services handled by municipal governments are frequently poorly managed. Cooperatives offer mixed results with both good and poor service. Municipal governments' problems in management include underpricing of service, poor administration, and lack of technically competent personnel to maintain and service the systems.

Both the municipalities and cooperatives which provide basic urban services would benefit significantly from the implementation of an extended and intensive program of technical assistance. Indeed, **if any investments occur in the improvement, expansion, or creation of urban physical infrastructure under an "alternative development" program, intensive and long-term technical assistance must be provided to those institutions (municipalities, cooperatives, etc.) that are to take charge of those services.**

1.3.3.1 Scope of a Proposed TA Program

A department-wide program is proposed for Cochabamba. It would focus primarily on the key market towns identified for productive and social infrastructure investments, but it would also include all other municipalities and public service providers in the urban centers of the department—ranging from Cochabamba to the small urban centers of the Chapare.

The key market towns would be the focus of intensive and continued TA including municipal services management, revenue generation issues, technical operation of municipal services, urban and municipal planning, and public finance and accounting. Other towns would benefit from short-term TA in the these areas, as well as short courses, training activities, and long-term follow-up.

1.3.3.2 Institutional Alternatives for Delivery of Technical Assistance

The technical assistance program outlined above could conceivably be sited or administered through a variety of institutions and mechanisms. The principal institutional alternatives are:

- A national government agency (i.e., PDAR or CORDECO);
- A local government agency with regional outreach potential (the Municipality of Cochabamba);
- A NGO with an interest in urban development;
- An independent TA group comprised of expatriates and nationals.

Of the institutional alternatives identified above, the consulting team concludes that the Municipality of Cochabamba represents the institution that is the most sympathetic to the problems of municipal and urban development and the one with the most institutional expertise in these areas. It is recommended that a technical assistance office be established in the Municipality of Cochabamba to support TA and training activities. It would

require staffing by local professionals as well as staffing by a technical assistance team of national and international experts, with possible participation of US Peace Corp volunteers.

1.3.3.3 Personnel Needs for a Technical Assistance Team

The specifics of the recommended long- and short-term TA program are as follows:

Long-Term

- Municipal (public) services management specialist (36 mo.);
- Local government fiscal specialist (36 mo.);
- Urban/municipal planner (36 mo.).

Short-Term

- Potable water systems, technical operations (12 mo.);
- Local government finance and accounting (12 mo.);
- Service cooperative specialist (organization and operations) (12 mo.).

Open Field Market - Aiquile

2 URBAN FUNCTIONAL AND PHYSICAL INVENTORIES

2.1 THE REGIONAL/URBAN HIERARCHY

The urban hierarchy of the Department of Cochabamba demonstrates a poorly articulated urban system not unlike that found in many Latin American countries or major regions within these countries. The department is dominated by a "primate city", Cochabamba, which has recently evolved into a metropolitan area encompassing the once distinct neighboring towns of Quillacollo and Sacaba. The Cochabamba Metropolitan Area (CMA), with a population of about 425,000, accounts for over 40 percent of the department's total population, and nearly 80 percent of its urban (town-based) population (CIDRE 1990:9).

There is a considerable jump between the first level of the urban hierarchy and subsequent levels. The next largest city (second level) in the department's urban hierarchy is Punata with a population estimated between 9,000 and 11,000. Cliza and Aiquile with populations between 6,000 and 7,000 represent a third level in the settlement system. The remainder of the department's provincial capitals (including Mizque, Arani, and Tarata) are characterized by populations ranging from 1,500 to 2,500. These latter cities represent a fourth level of population centers which are generally of only local importance and dominate very small tributary regions. Many of the towns in the Chapare region, while not provincial centers, also belong to this fourth level of central place—Villa Tunari, Ivergarzama, Sinahota, and Eterezama.

The lowest level of settlements in the department's central place hierarchy (a fifth level) have populations ranging from a few hundred to perhaps as many as 1,000. These places

are not really urban at all and actually represent agricultural villages (hamlets) with few "urban" functions. Those functions that are present are usually limited to a soccer field, a central plaza, an elementary school, a cemetery, a church or chapel building, a low-level representative of the central government (prefectura/corrigedor), perhaps a telegraph office, a couple of stores where a limited supply of food stuffs can be purchased (abarrotes), and a small periodic market site. In the Valle Alto, Villa Rivero, Toco, San Benito, and Arbieto are settlements characteristic of this lowest level of the settlement hierarchy.

The disarticulated or unbalanced character of the department's settlement system can be better understood by considering the settlement hierarchy formed by a balanced/developed settlement system. A balanced central place or settlement system which is dominated by a metropolitan center of say 500,000 (similar in size to the CMA), would typically comprise a second level with 1 or 2 cities between 100,000 and 150,000, a third level with 4 to 5 places cities around 25,000 to 50,000, a fourth level with perhaps as many as 10 settlements with around 10,000 to 15,000 inhabitants. Lower levels of settlements with correspondingly smaller populations would also be found. In the case of Cochabamba, the key point is that the urban system lacks any urban centers at the intermediate levels—there is a major metropolitan area and then there are no other settlements in the urban hierarchy until one reaches those relatively small centers like Punata, Cliza, and Aiquile.

While the population data reported above provide a general approximation of the relative location in the urban hierarchy of each settlement in the study group, data on economic activity and marketing patterns confirm this pattern. The town of Cochabamba alone boasts about 12,000 periodic and street vendors (**Table 2.1**), and if one considers the entire CMA this number probably reaches 14,000. Punata and Cliza, the next largest centers in the hierarchy, have approximately 1,850 and 1,700 periodic and street vendors, respectively. Aiquile and Arani follow with about 500 each, while Mizque and Tarata have only about 100 each (**Table 2.2**).

In the six towns of the Valles Altos studied, the number of permanent establishments either selling agricultural or related products or providing services demonstrates a similar pattern (**Table 2.3**). Punata again dominates with over 600 such establishments, followed by Cliza and Aiquile with around 300 each, and then Arani, Mizque, and Tarata each with about 100. The number of wholesale buyers and sellers in each town on its principal market day, as well as the number of livestock offered for sale in each of the town's livestock markets demonstrated relatively the same pattern (**Tables 2.4** and **2.5**).

Aiquile and Arani demonstrate a number of population and economic characteristics which are similar. Yet, Aiquile occupies a higher place on the settlement hierarchy by

TABLE 2.1
CITY OF COCHABAMBA: MARKETS AND NUMBER OF VENDORS, 1990

No.	MARKETS	NUMBER VENDORS	PERCENT
CENTRAL MARKETS			
1	27 de Mayo	212	0.93
2	25 de Mayo	36	0.16
3	Calatayud	1,063	4.64
4	Fidel Aranibar	525	2.29
5	San Antonio	779	3.40
6	La Pampa	5,673	24.79
7	Miami-La Paz	1,316	5.75
8	Triangulo	92	0.40
	SUBTOTAL	9,696	42.36
PERMANENT DISTRICT MARKETS			
9	Cala Cala	48	0.21
10	Muyurina	40	0.17
11	Villa Ingavi	103	0.45
12	El Rosario (La Chimba)	17	0.07
13	Villa Mejico	64	0.28
14	Osorio	57	0.25
15	Reforma Agraria	45	0.20
16	Chapare	43	0.19
17	Loreto	49	0.21
18	Progreso (Cinematografos)	41	0.18
19	Huayra Khasa	88	0.38
20	Lacma	23	0.10
21	Canata (Playa ganado)	11	0.05

TABLE 2.1
CITY OF COCHABAMBA: MARKETS AND NUMBER OF VENDORS, 1990

No.	MARKETS	NUMBER VENDORS	PERCENT
22	Colquiri	90	0.39
23	Jaihuayco	20	0.09
24	Cruce Taquina	207	0.90
25	15 de Abril	25	0.11
26	Base Aerea	16	0.07
27	Villa Granado	13	0.06
28	Alamos (Final America)	11	0.05
29	M. Zonal 23 de Marzo	19	0.08
30	Mercado Temporal	17	0.07
	SUBTOTAL	1,047	4.57
WEEKLY DISTRICT MARKETS			
31	Av. America	355	1.55
32	Av. Humboldt	214	0.93
33	Av. Heroinas	133	0.58
34	Av. Gral. Blanco	81	0.35
35	Villa Loreto (F. Franca)	153	0.67
36	Villa Moscu	58	0.25
		994	4.34
STREET VENDORS			
37	Vias publicas-plazas	11,151	48.72
	SUBTOTAL	11,151	48.72
TOTALS		22,888	100.00

Source: Censo y registro de locales y sitios Municipales. Instituto de Investigaciones de la Facultad de Arquitectura (5 tomos) 1990.

TABLE 2.2
PERIODIC MARKETERS SELLING AGRICULTURAL AND RELATED PRODUCTS IN THE PROVINCIAL CAPITALS OF THE VALLE ALTO AND DISTRITO SUR, COCHABAMBA, AUGUST 1991

PRODUCTS/ SERVICE	PUNATA		CLIZA		AIQUILE		ARANI		MIZQUE		TARATA		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Vegetables	413	22.4	349	20.4	138	29.6	117	23.8	16	11.9	25	26.0	1058	22.3
Prepared food	279	15.1	252	14.8	64	13.7	100	20.4	15	11.1	21	21.9	731	15.4
Grains	258	14.0	270	15.8	26	5.6	71	14.5	0	0.0	1	1.0	626	13.2
Tubers	279	15.1	143	8.4	29	6.2	59	12.0	34	25.2	16	16.7	560	11.8
Groceries	159	8.6	118	6.9	32	6.9	43	8.8	24	17.8	7	7.3	383	8.1
Artesian production	102	5.5	139	8.1	38	8.1	13	2.6	10	7.4	3	3.1	305	6.4
Spices	127	6.9	78	4.6	40	8.6	21	4.3	12	8.9	8	8.3	286	6.0
Fruits	59	3.2	51	3.0	57	12.2	16	3.3	8	5.9	3	3.1	194	4.1
Meats	27	1.5	121	7.1	14	3.0	25	5.1	3	2.2	4	4.2	194	4.1
Small animals	49	2.7	108	6.3	0	0.0	12	2.4	0	0.0	0	0.0	169	3.6
Coca	18	1.0	13	0.8	23	4.9	4	0.8	7	5.2	3	3.1	68	1.4
Shoe repair	31	1.7	29	1.7	0	0.0	0	0.0	0	0.0	0	0.0	60	1.3
Dairy products	14	0.8	13	0.8	0	0.0	3	0.6	2	1.5	0	0.0	32	0.7
Forage	16	0.9	7	0.4	0	0.0	2	0.4	0	0.0	5	5.2	30	0.6
Firewood	9	0.5	13	0.8	0	0.0	0	0.0	0	0.0	0	0.0	22	0.5
Inputs	5	0.3	3	0.2	2	0.4	3	0.6	4	3.0	0	0.0	17	0.4
Fuel, kerosene, lubricants	0	0.0	0	0.0	3	0.6	2	0.4	0	0.0	0	0.0	5	0.1
Cement	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	1	0.0
TOTALS	1845	100.0	1707	100.0	467	100.0	491	100.0	135	100.0	96	100.0	4741	100.0

* Counts realized on principal weekly market day.
Source: PADCO team field surveys, August 1991

TABLE 2.3
PERMANENT ESTABLISHMENTS SELLING AGRICULTURAL AND RELATED PRODUCTS IN THE PROVINCIAL CAPITALS OF THE VALLE ALTO AND DISTRITO SUR, COCHABAMBA, AUGUST 1991

PRODUCTS	PUNATA		CLIZA		AIQUILE		ARANI		MIZQUE		TARATA		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Groceries (abarrotes)	170	27.2	85	26.6	75	26.2	28	20.9	31	31.6	17	23.9	406	26.5
Chicherias	116	18.5	51	16.0	84	29.4	68	50.7	25	25.5	19	26.8	363	23.7
Workshops (metal, electric, tire and bicycle repair, welding, and automotive)	86	13.7	40	12.5	22	7.7	7	5.2	6	6.1	7	9.9	168	11.0
Restaurants, cafes, etc.	50	8.0	22	6.9	38	13.3	14	10.4	17	17.3	10	14.1	151	9.8
Fresh produce	48	7.7	36	11.3	0	0.0	0	0.0	0	0.0	0	0.0	84	5.5
Meat	36	5.8	25	7.8	0	0.0	0	0.0	0	0.0	4	5.6	65	4.2
Hardware and construction materials	33	5.3	13	4.1	15	5.2	0	0.0	2	2.0	0	0.0	63	4.1
Clothing (artesian)	27	4.3	11	3.4	8	2.8	3	2.2	2	2.0	7	9.9	58	3.8
Misc, artesian products	13	2.1	9	2.8	16	5.6	2	1.5	1	1.0	2	2.8	43	2.8
Bakers	7	1.1	6	1.9	9	3.1	5	3.7	3	3.1	1	1.4	31	2.0
Grain mills	8	1.3	2	0.6	6	2.1	4	3.0	3	3.1	2	2.8	25	1.6
Furniture (artesian)	5	0.8	8	2.5	5	1.7	2	1.5	3	3.1	2	2.8	25	1.6
Fuel and lubricants	12	1.9	4	1.3	4	1.4	0	0.0	2	2.0	0	0.0	22	1.4
Agricultural inputs	10	1.6	1	0.3	2	0.7	0	0.0	1	1.0	0	0.0	14	0.9
Coca	3	0.5	4	1.3	2	0.7	0	0.0	0	0.0	0	0.0	9	0.6
Milk products	2	0.3	2	0.6	0	0.0	1	0.7	2	2.0	0	0.0	7	0.5
TOTAL	626	100.0	319	100.0	286	100.0	134	100.0	98	100.0	71	100.0	1534	100.0

Source: PADCO team field surveys, August 1991

TABLE 2.4
WHOLESALE BUYERS AND SELLERS IN THE MARKETS OF THE PROVINCIAL CAPITALS OF THE VALLE ALTO AND DISTRITO SUR, COCHABAMBA, AUGUST 1991

PRODUCT	PUNATA		CLIZA		AIQUILE		ARANI		MIZQUE		TARATA		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Tubers (Buyers)	40	54.1	6	20.0	0	0.0	5	31.3	0	0	0	0.0	51	37.5
Grains (Buyers)	8	10.8	17	56.7	3	25.0	2	12.5	0	0	4	100.0	34	25.0
Vegetables (Sellers)	14	18.9	6	20.0	9	75.0	0	0.0	0	0	0	0.0	29	21.3
Fruits (Sellers)	9	12.2	0	0.0	0	0.0	9	56.3	0	0	0	0.0	18	13.2
Chancaca (Sellers)	3	4.1	1	3.3	0	0.0	0	0.0	0	0	0	0.0	4	2.9
TOTALS	74	100.0	30	100.0	12	100.0	16	100.0	0	0.0	4	100.0	136	100.0

Source: PADCO team field survey, August 1991

TABLE 2.5
LIVESTOCK OFFERED FOR SALE IN THE PROVINCIAL CAPITALS OF THE VALLE ALTO AND DISTRITO SUR, COCHABAMBA, AUGUST 1991

PRODUCT	PUNATA		CLIZA		AIQUILE		ARANI		MIZQUE		TARATA		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Cattle	675	37.8	181	55.9	100	77.5	0	0.0	20	18.5	0	0	976	39.3
Sheep	578	32.4	52	16.0	0	0.0	101	74.8	20	18.5	0	0	751	30.3
Hogs	446	25.0	56	17.3	20	15.5	30	22.2	10	9.3	0	0	562	22.7
Donkeys/mules	20	1.1	30	9.3	0	0.0	0	0.0	44	40.7	0	0	94	3.8
Goats	45	2.5	5	1.5	0	0.0	4	3.0	14	13.0	0	0	68	2.7
Horses	21	1.2	0	0.0	9	7.0	0	0.0	0	0.0	0	0	30	1.2
TOTALS	1785	100.0	324	100.0	129	100.0	135	100.0	108	100.0	0	0.0	2481	100.0

Source: PADCO team field survey, August 1991

virtue of its much more significant permanent economic infrastructure—286 establishments as opposed to Arani's 134. Its relative size and location within the Distrito Sur are other considerations—the closest other settlement is Mizque, about 30 kilometers distant and less than half its size, while Arani is dwarfed by its neighbor Punata only 10 kilometers away. Gray's (1990) excellent study of the marketing system of the Distrito Sur clearly establishes Aiquile as the central place in the region and confirms our conclusions.

See **Map 1** for the spatial relationship of the nine cities of the Associated High Valleys of Cochabamba that comprise the present market town development study. (**Annex 2** contains individual city maps for the nine urban centers.)

2.2 URBAN INVENTORIES

2.2.1 COCHABAMBA METROPOLITAN AREA (Cochabamba, Quillacollo, and Sacaba)

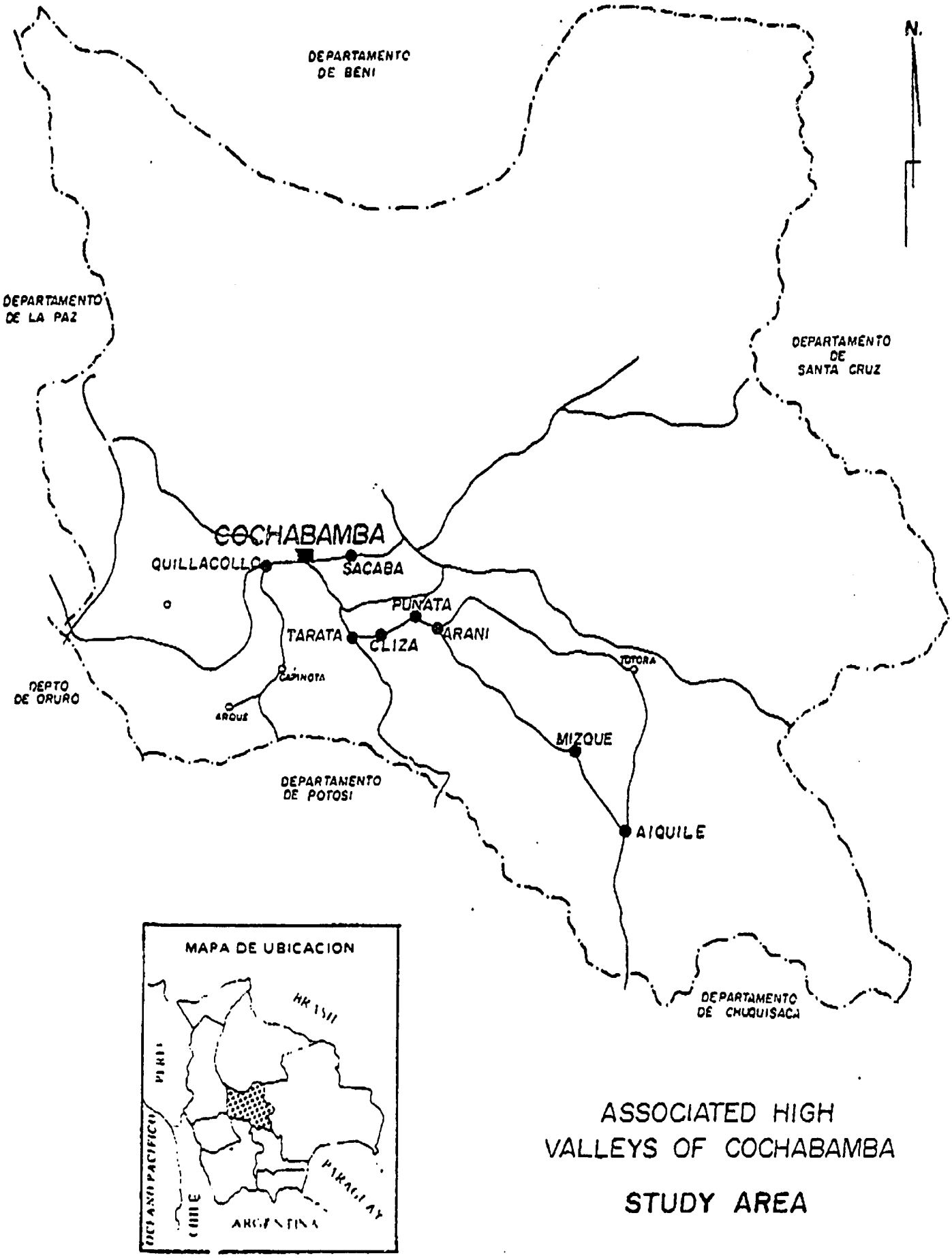
2.2.1.1 Population and Migration

The growth of the urban areas of the towns of Cochabamba, Quillacollo, and Sacaba in the last 10 to 15 years has significantly blurred the spatial distinctions that can be made among the three cities. Essentially, the three cities now comprise a large conurbation (or metropolis) strung out along a 35 kilometer axis with Quillacollo in the west, Cochabamba in the center, and Sacaba in the east, which might realistically be called the Cochabamba Metropolitan Area (CMA).

Population data for the CMR as well as the Department of Cochabamba are varied and contradictory. The last official census in Bolivia was conducted in 1976 and since that time the Instituto Nacional de Estadísticas (INE) and other organizations have produced a number of estimates and projections of population totals. These include INE with its *Atlas Censal* in 1982, CIDRE with its *Cochabamba en Cifras* in 1990, and a series of documents focusing on migration, population, and employment in Cochabamba financed by the United Nations Fund for Population Activities and the International Labor Organization and undertaken by the Centro de Estudios de Población of the Universidad Mayor de San Simon in Cochabamba. The documents currently available as a result of this project's work focus specifically on the three cities which comprise the CMA. These documents appear to reflect the most accurate information available at the present. These have been used as the principal data source in this discussion of the CMA.

The total population of the urban areas which encompass the CMA, estimated in 1988, stands at just over 420,000. This population is roughly divided between Cochabamba with 360,000 (Camacho and Polo, 1991:16), Quillacollo with 49,000 (Polo 1991:4), and Sacaba

Map 1



ASSOCIATED HIGH VALLEYS OF COCHABAMBA

STUDY AREA

with 14,000 (Camacho 1991:7). By way of comparison, CIDRE (1990:9) reports a total population for the CMA of 439,000, divided between Cochabamba with 338,000, Quillacollo with 74,000, and Sacaba with 27,000. A further comparison may be both useful and confusing—local municipal officials in Quillacollo, however, estimate that the town's population stands between 30,000 and 35,000.

Population growth in the CMA has been phenomenal in the last 15 years, mirroring trends in other urban areas in Bolivia and in Latin America in general. Between 1976 and 1988 Cochabamba's population is estimated to have grown at a rate of 4.6 percent, surging from 210,000 to its current 360,000 (Camacho and Polo 1991:11-12). While the absolute growth of Quillacollo and Sacaba has not been of the same magnitude, the growth rates have been even greater during the same 13-year period with Quillacollo growing from 19,500 to 49,000 and Sacaba from 6,000 to 14,000 (Polo 1991:4; Camacho 1991:7). This population increase represents annual growth rates of 8.0 and 7.3 percent, respectively, for Quillacollo and Sacaba.

Much of this growth can be attributed to positive net migration flows. Recent survey data suggest that approximately 43 percent of Cochabamba's present population can be classified as migrant. Just less that one-third of these are recent migrants (since 1983) while the remaining two-thirds are earlier migrants (before 1983) (Camacho and Polo 1991:25). Quillacollo demonstrates a similar pattern with about 47 percent of the current population classified as migrant, and as is the case with Cochabamba roughly one-third of these are recent migrants (since 1983) and two-thirds are earlier migrants (Polo 1991:64-65). Migration appears to have contributed somewhat less to Sacaba's growth, where about 33 percent of the current population is classified as migrant. About 40 percent of these have migrated to the city since 1983, while the remaining 60 percent arrived before that time (Camacho 1991:107,123-124).

Current data on origin areas for migrants are sketchy, but generally these seem to suggest a process of sequential chain migration where migrants move from rural areas to small towns then to secondary cities and finally to metropolitan centers. In Cochabamba, nearly three-quarters of all migrants (72 percent) have come from urban centers, one-quarter (26 percent) originate in rural districts, and a small percentage are foreigners (3 percent) (Zegada et al. 1991:262). The pattern in Quillacollo is similar, with 80 percent of the migrants originating in urban centers, 18 percent coming from rural districts, and the remainder coming from the exterior (Polo 1991:64). Only about one-third of all immigrants to Quillacollo originated in the Department of Cochabamba, but most of these (about 75 percent) migrated from rural areas. The Departments of Oruro, La Paz, and Potosí account for 20, 18, and 17 percent of all Quillacolla's immigrants respectively (Polo 1991:65). Sacaba demonstrates a pattern of immigration more typical of a small town. Its

immigrants are divided almost equally between rural and urban origins, with less than one percent originating in the exterior (Camacho 1991:124).

The provinces which comprise the CMA also serve as a source of migrants to the Chapare Region. The data on these flows are again sketchy, contradictory, and sometimes suspect. Nevertheless they appear to represent the best available estimates until the results of the census planned for 1992 are available. Perhaps the best data are those from a data base compiled by DIRECO on farmers and reported by Painter and Bedoya (1990). These data suggest that almost exactly two-thirds of the Chapare's farmers originated in Cochabamba Department. Of these farmers, 15 percent reported their province of origin as Quillacollo, about 12 percent as the locality of Sacaba, and 3.6 percent as Cercado (Cochabamba) (Painter and Bedoya 1990:19-21). Data collected by CERES and reported by Rivera (1990:11), which may be less reliable than the DIRECO data, note that nearly 10 percent of those colonos interviewed reported Cochabamba as their place of origin, while only 3 percent reported Quillacolla. As both data sets report farmer interviews, it seems reasonable to assume that the vast majority of these migrants originated in the rural areas of the provinces comprising the CMR and not from the urban areas.

Some observers believe that the urban area of the CMA represents a significant migration source of Chapare bound migrants. They suggest that as much as 65 percent of the migrants to the Chapare come from the urban area of the CMA. The research team was not able to identify any documentary evidence that supports this conclusion, nor have any specific data sources been cited which would allow a detailed analysis. Indeed, the suggestion that a major metropolitan area would be a significant source of migrants to a rural colonization zone where agriculture (even the cultivation of coca) is the primary economic activity seems exceedingly remote and contradicts other experience in Bolivia and elsewhere in Latin America.[1]

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[1]This belief that the CMA is a major source of migrants to the Chapare may be attributable to several factors (Painter, 1991:Personal Communication). One reason might be that many Chapare families maintain "split economic units" where males maintain the farmstead in the Chapare and the females engage in petty trade and sales most often in Cochabamba. This temporary or periodic residence of females in the city may lead some to conclude that their permanent residence is there or that they migrated from there to the Chapare, when neither is the case. Additionally, the transportation infrastructure of the department of Cochabamba necessitates that almost all rural and small town migrants to the Chapare must pass through the city of Cochabamba. On their way to the Chapare many may remain in Cochabamba temporarily to seek work or to stay with relatives, again perhaps contributing to the conclusion that their original residence was in the city of Cochabamba, when it was not. Sometimes confusion may also arise when observers fail to carefully distinguish between the two major population groups in the Chapare—the permanent settled residents with property (about 2/3 of the total) and temporary migrants or the "población flotante" (about 1/3 of the population). The economic characteristics of these groups are very different as are their migration patterns and propensities. Finally, some observers may believe that an urban to rural migratory pattern which has been reported in Peru with migration between Lima and the coca producing regions of the Upper Huallaga Valley

2.2.1.2 Employment

The general structure of employment in the CMA is portrayed in **Table 2.6.** The economically active population of the CMA numbers nearly 150,000, and most of these (125,000) are located in Cochabamba. The remainder is divided between Quillacollo (17,000) and Sacaba (5,000).

TABLE 2.6
EMPLOYMENT BY SECTOR AND CATEGORY FOR THE URBAN CENTERS OF THE COCHABAMBA METROPOLITAN AREA, 1988 (COCHABAMBA, QUILLACOLLO, SACABA)

Sector and Category	Cochabamba		Quillacollo		Sacaba		Total	
	No.	%	No.	%	No.	%	No.	%
Primary	**3,795**	**3.0**	**1,288**	**7.7**	**1,261**	**25.8**	**6,344**	**4.3**
Agriculture	2,995	2.4	1,231	7.3	1,261	25.8	5,487	3.7
Mining and Other	800	0.6	57	0.3	0	0	857	0.6
Secondary	**30,776**	**24.6**	**5,109**	**30.4**	**1,254**	**25.6**	**37,139**	**25.3**
Manufacturing	19,399	15.5	4,051	24.1	845	17.2	24,295	16.5
Elec/Gas/Water	954	0.7	80	0.5	20	0.4	1,054	0.7
Construction	10,423	8.3	978	5.8	389	7.9	11,790	8.0
Tertiary	**90,630**	**72.4**	**10,386**	**61.8**	**2,386**	**48.7**	**103,402**	**70.4**
Commerce/Rest/ Hotel	34,029	27.2	3,878	23.1	931	19.0	38,838	26.4
Transportation	9,305	7.4	1,571	9.4	604	12.3	11,480	7.8
Finances	4,996	4.0	354	2.1	12	0.2	5,362	3.7
Services	42,300	33.8	4,583	27.3	839	17.1	47,722	32.5
TOTAL	125,201	99.9*	16,793	99.9*	4,904	99.9*	146,885	99.9*

Sources: Camacho 1991; Polo 1991:96; Zegada et al. 1991:83
* Sum of disaggregated percentages do not equal 100 percent due to rounding.

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also exists in Cochabamba. But, there is no evidence to suggest such a pattern exists in Cochabamba.

The primary sector represents less than 5 percent of the total employment in the CMA. Most of this is concentrated in agriculture and directly related activities. Among the three cities that comprise the CMA, the percentage of employment in the primary sector, and especially agriculture, is inversely related to the size of the urban center. Hence, Sacaba has about 25 percent of its economically active population in the primary sector, while Quillacollo and Cochabamba have about 8 and 3 percent respectively.

Secondary sector employment comprises about one-quarter of the regional total (37,000). Proportionally this is divided almost evenly among the three cities, although Cochabamba dominates in the absolute number of jobs in this sector. Manufacturing is the most important category in this sector (16.5 percent). While Cochabamba again dominates in the absolute number of jobs, it is notable that proportionally both Quillacollo and Sacaba have larger percentages of their populations employed in manufacturing activities. This is clearly the result of the establishment of both formal and informal manufacturing enterprises along the two arterial routes that connect Cochabamba with its two suburban satellite cities. Undoubtedly manufacturers located in these areas peripheral to the metropolitan center because of lower land prices, the ability to assemble large parcels of land, and the easy access these locations provided for both workers and shipping and receiving goods. The location of manufacturing in these areas has contributed to the growth of both Quillacollo and Sacaba and the in-filling of the open space between the towns and Cochabamba. Construction employment represents the only other significant employment category in the secondary sector, averaging 8.0 percent in the CMA. This is spread relatively equally among the three cities. Construction will likely remain an important job provider as the region grows and as average incomes increase.

The tertiary sector represents the most significant source of employment in the CMA, accounting for 70 percent of the economically active population. Services comprise the greatest number of jobs, 33 percent, followed by commerce/restaurants and hotels, 26 percent. Transportation and finances represent about 8 and 4 percent of the economically active population respectively. The differences among the three cities in the proportion of the population engaged in the tertiary sector are significant, and are inversely related to population size. In Cochabamba the tertiary sector accounts for 72 percent of all employment, while the figure drops to 62 percent in Quillacollo and 49 percent in Sacaba.

As in other developing countries in Latin America, most of the economically active population in the CMA is employed in the informal sector. In Cochabamba, 55 percent of all workers (68,500) are employed in the informal sector, with an additional 5 to 6 percent (7,000) in domestic employment (Zegada et al. 1991:60). In Quillacolla the percentages are somewhat smaller and the data are reported somewhat differently. In this case, 35 percent (5,900) work informally ("por cuenta propia"), while 8 percent (1,300) work in

family enterprises for which they are not paid a wage (Polo 1991:95). In Sacaba, 50 percent (2,400) of the economically active population works informally ("por cuenta propia"), while 14 percent (700) work in family enterprises for which they are not paid a wage.

Along with the La Paz and Santa Cruz metropolitan areas, the CMA represents one of the three most significant manufacturing/industrial areas in Bolivia. Within the formal sector a large percentage of the manufacturing/industrial activities involve the processing of agricultural products or renewable natural resources. Some idea of the relative importance of these activities can be gained by a review of the membership of the Cámara de Industrias of Cochabamba (1991) (**Table 2.7**). While the data available only report the names, location, and number of affiliated businesses by SIC (standard industrial code) numbers, they do provide a useful reference (see **Annex 1**). Food processing dominates all formal industrial activities in the CMA, accounting for about 22 percent of all enterprises. When combined with beverages, the total surpasses one-quarter of all enterprises. Only two other industrial categories exceed 10 percent, metal products with 15 percent of the enterprises and chemicals with 10 percent. Leather products, wood products, and clothing and textiles all account for relatively small percentages as do paper, plastics, glass, and rubber.

2.2.1.3 Agricultural Markets and Trade Flows

2.2.1.3.1 Market Size and Structure

The Cochabamba Metropolitan Area (CMA) represents the largest market for agricultural and other goods in the department of Cochabamba. Of the three cities, comprising the CMA, Cochabamba is by far the largest market in size and importance. Cochabamba is really a national level market center which is supplied by regional markets such as Cliza, Punata, and Aiquile within the department as well as from other areas outside the department (**Figures 2.1 and 2.2**).

The size of its market is truly dramatic. According to a study done by the Universidad Mayor de San Simon (1990) for the city, there are 22,888 vendors in its 36 official markets and in the streets. Of the total, 42.4 percent operate in 8 central markets, 4.6 percent in 22 permanent district markets, 4.3 percent in 6 weekly district markets, and 48.7 percent are street vendors. Specifics on the number of vendors per market are presented in **Table 2.1**. The permanent markets are open everyday, with the greatest confluence of marketers on the Wednesday and Saturday market days. The weekly district markets operate only on Saturdays. The street vendors operate every day, with a significant increase of their number on Wednesdays and Saturdays. Some street vendors move to Cliza, Punata and other towns during their respective market days.

TABLE 2.7
NUMBER OF FORMAL INDUSTRIAL/MANUFACTURING ENTERPRISES IN THE COCHABAMBA METROPOLITAN AREA, 1991 (COCHABAMBA, QUILLACOLLO, SACABA)

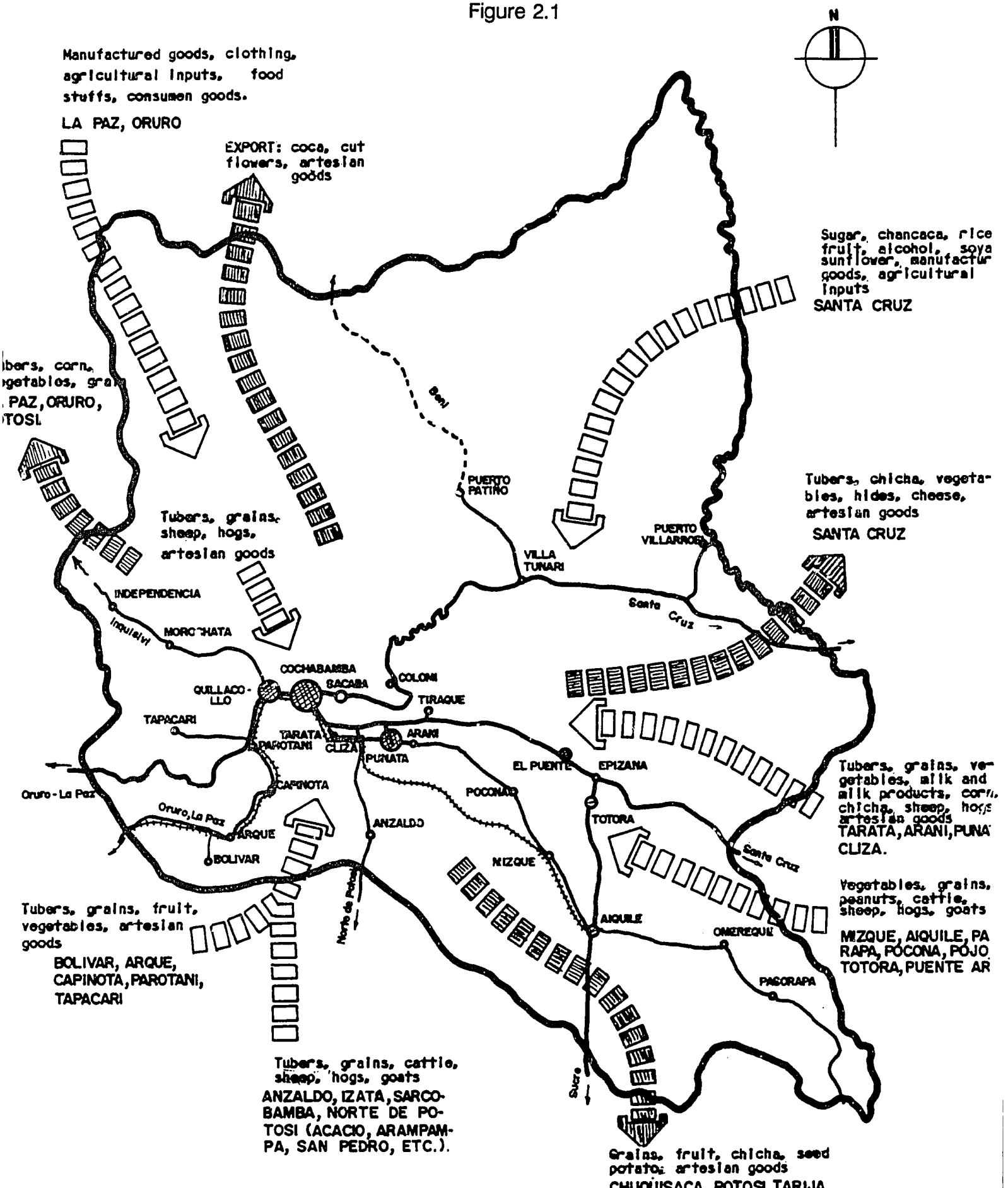
CATEGORY	STANDARD INDUSTRIAL CODE (SIC)	No.	Percent
Food Processing	3112 - 3122	47	21.8
Beverages	3133 - 3134	9	4.2
Rubber	3559	3	1.4
Clothing and Textiles	3211 - 3220	15	6.9
Leather Products	3231 - 3240	17	7.9
Wood Products	3311 - 3560	15	6.9
Metal Products	3710 - 3839	33	15.3
Non-metallic Minerals	3610 - 3699	17	7.9
Paper products	3411 - 3420	12	5.6
Plastic Products	3560	12	5.6
Chemicals	3511 - 3529	23	10.4
Glass	3620	3	1.4
Miscellaneous		10	4.6
TOTAL		216	99.9

Source: Cámara de Industrias de Cochabamba (1991)

The principal agricultural products traded in the Cochabamba markets are, in order of importance: vegetables (mainly onions, tomatoes, carrots, and locotos); tubers (potatoes, oca, and papalisa); grains (corn, wheat, and barley); fruits; and spices. Other commodities traded in the markets include groceries, meats, milk products, prepared food, small animals, clothing, artesian goods, and miscellaneous manufactured goods. There is also a livestock market, located in the south end of the city. Cattle, sheep, and pigs are usually traded in this market, which operates mainly on Saturdays.

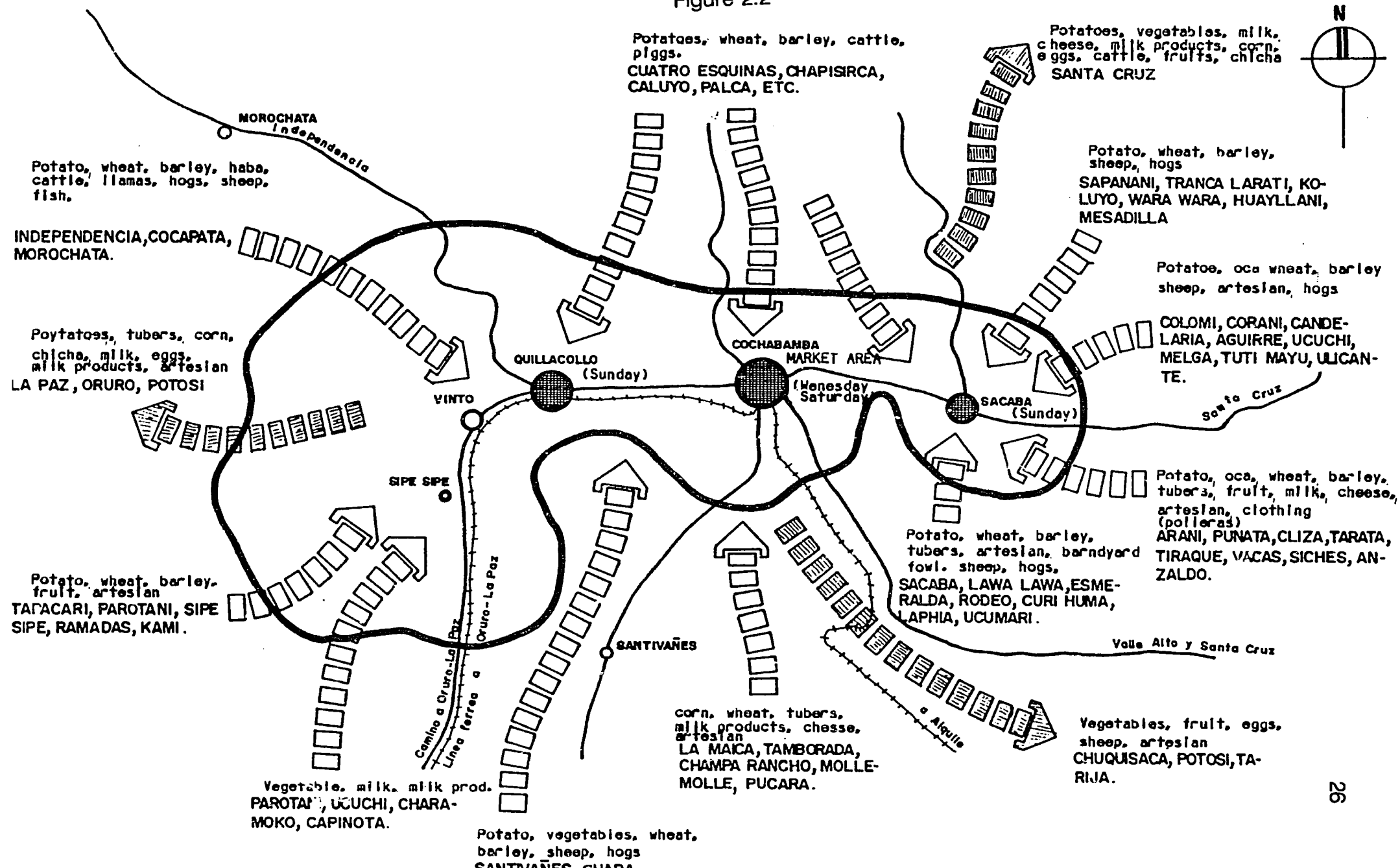
TRADE FLOWS WITHIN AND OUT OF THE DEPARTAMENT OF COCHABAMBA

Figure 2.1



TRADE FLOWS WITHIN AND OUT OF THE VALLE CENTRAL OF COCHABAMBA

Figure 2.2



The trading in the Quillacollo market is done in a permanent central market, a potato market, a grain market, a livestock market, and in the streets. According to municipal authorities, the central market has over 400 sites. Thirty-six percent sell vegetables, 24 percent cloth, 17 percent meats, and 14 percent prepared food. The rest sell groceries and miscellaneous manufactured goods.

The street market (Plaza Bolivar and adjacent streets) is dominated by many small-scale vendors. Almost 1,000 vendors do their trading in this market on Sundays, according to municipal authorities. Thirty percent sell vegetables, 27 percent groceries, 14 percent prepared food, 6 percent spices, and 5 percent meats. The rest sell fruits, potatoes, handicrafts, and miscellaneous manufactured goods. During weekdays, the number of sellers is usually reduced to between 150 and 200.

The potato market (Plaza 9 de Diciembre) operates on Sundays with about 1,200 vendors, selling potatoes, vegetables, prepared food, groceries, and fruits. On Tuesdays and Fridays, the market operates with only 300 to 400 sellers. The grain market operates only on Sundays with 300 sites, selling mainly grains, prepared foods, and groceries. In the livestock market, which operates only on Sundays, about 100 cattle, 150 pigs, and 50 horses/donkeys are usually traded.

Sacaba represents a comparatively small market center, dominated by small-scale vendors. The main products traded are potatoes, grains, and vegetables. The single most important commodity traded is the potato variety Imilla Blanca. The commodities are brought to the market by the producers themselves or by intermediaries. There is some wholesale trade, especially for potatoes and grains.

The markets for the agricultural products traded in Sacaba are located in three separate areas. In addition to the central market there is a potato market and a small grain market, both of which have open sheds with concrete floors which accommodate some of the traders. These markets operate principally on Sundays, with the greatest confluence of marketers. Municipal officials report, however, that in the last couple of years with the opening of the paved road to the Chapare and to Santa Cruz, activity in the markets has increased dramatically on other days of the week.

2.2.1.3.2 Trade Flows

Most of the agricultural commodities traded in Cochabamba are brought to the markets either by individual producers or by intermediaries from smaller regional and provincial markets. These two groups usually sell their commodities to wholesale distributors who in turn re-sell the products to retailers. This last group sells directly to consumers.

There is, in some cases, an intermediate marketing level between retailers and consumers, which is operated by "detallistas" or small retailers.

The agricultural commodities traded in the Quillacollo markets come from surrounding communities. Vegetables, mainly onions and carrots, come from Vinto, Viloma, Itapaya, Sipe Sipe, Suticollo, Cocamarca, Bella Vista, and Capinota. Tomatoes are brought in from Pojo and the mesothermic valleys of Santa Cruz. Potatoes come from the highlands around Morochata and Misicuni. Fruits come from the Chapare region. Grains are from El Paso and also from the Valle Alto. Cattle are usually from the area; dairy operators sell those animals in Quillacollo that are no longer suited for milk production.

The agricultural products traded in the Sacaba market come from surrounding communities such as Melga (potatoes, grains, strawberries), Colomi (potatoes, peas, haba), Quehuinal (potatoes), Tutimayu (barley, onions), Larati (potatoes, barley), Aguirre (potatoes, barley, haba), Santa Rita (strawberries), Palca (potatoes, barley), Temporal (wheat), Buena Vista, and Lava Lava (grains). Most of the commodities are sold locally. However, there are some buyers from Cochabamba who attend the Sunday Sacaba market.

2.2.1.4 Town Based Services to Agricultural Production

Most of the department-wide services to agricultural production are based in Cochabamba. The Ministerio de Asuntos Campesinos y Agropecuarios (MACA) and the Instituto Boliviano de Tecnología Agropecuaria (IBTA) run their extension services in agriculture, fruit crops, forestry, seed certification, and plant sanitation from their central offices in downtown Cochabamba as does the Corporación Regional de Desarrollo de Cochabamba (CORDECO) with its own projects. APL, the association of milk producers, and Fomento Lechero, a Planta Industrializadora de Leche (PIL)-APL joint effort, provide assistance to dairy farmers located in the milk producing areas of the department. Other programs, implemented by other agencies such as international cooperation organizations and NGOs, are also run from headquarters in Cochabamba.

In terms of facilities providing technical education in the field of agricultural production, the Universidad de San Simón has an agriculture department, offering agricultural engineering degrees. The university also runs a technical agriculture school, offering degrees at the technician level. Credit and financial services to agricultural production in Cochabamba are provided by specialized units of the 12 private commercial banks with offices in the city. The state-owned commercial bank, Banco del Estado, also offers financial services as do numerous savings and loan cooperatives, affiliated to the Federación Nacional de Cooperativas de Ahorro y Crédito (FENACRE). The state-owned Banco Agrícola de Bolivia, which in the past has offered specialized credit services mainly to small

farmers, has encountered a dramatic situation of insolvency, and its closing was recently announced by the government.

Transportation services for agricultural commodities and for passengers are provided by trucks, buses, trains and aircraft. Service is usually efficient. Cochabamba has a good communications system, provided by the Cooperativa Mixta de Teléfonos de Cochabamba (COMTECO), the Empresa Nacional de Telecomunicaciones (ENTEL), and the Empresa de Correos de Bolivia (ECOBOL). Numerous commercial radios and seven TV channels are received in the Cochabamba area.

Town-based services to agricultural production in Quillacollo are limited. Extension and technical assistance services to cattle raisers are provided by MACA through its specialized agency SENARB, which has its national headquarters in Quillacollo. The town is located in the "cinturón lechero" (milk belt) which surrounds PIL, a CORDECO-run milk processing facility. The province of Quillacollo has a cattle population of 22,427 and constitutes, according to official statistics, the third province in importance, after Campero and Ayopaya (INE, 1984). No facilities oriented to the provision of technical education in the field of agricultural production exist in Quillacollo.

The town has about 5 permanent establishments dedicated to the sale of agricultural inputs and tools. There are also a few businesses that lease machinery. Credit and other financial services are provided by agencies of Banco del Estado, a state-owned commercial bank and the private banks Big Beni, Santa Cruz, and Banco Popular del Peru. Three savings and loan cooperatives also offer credit services.

Transportation services for agricultural products are provided by privately-owned vehicles. Transportation for passengers is provided by numerous buses, taxis, and trufis (fixed route taxis) which serve the routes to Cochabamba, Vinto, Suticollo, Sipe Sipe, and other communities. Transportation for passengers is available almost 24 hours a day. In terms of communications, Quillacollo is integrated into the Cochabamba telephone service and also has access to ENTEL services.

Town-based services for agricultural production in Sacaba are essentially "non-existent". There are no public or private institutions offering extension services. No facilities oriented to the provision of technical education in the field of agricultural production exist. The only institution offering credit and financial services is the savings and loan cooperative Sacaba Ltda. with 500 members. There are no agencies of private or public banks. No permanent establishments dedicated to the sale/lease of agricultural inputs, tools, and/or machinery are found in Sacaba.

Transportation services for agricultural products are provided by privately-owned vehicles. Transportation for passengers is provided by taxis and trufis, owned by seven transport unions. There is essentially continuous bus and trufi service between Sacaba and Cochabamba from the early hours of the morning until the evening hours. In terms of communications, Sacaba is served by COMTECO, the Cochabamba Telephone Cooperative; service is poor with only 8 lines installed. Radios and TV transmissions from Cochabamba can easily be received in Sacaba.

2.2.1.5 Physical Infrastructure

2.2.1.5.1 Cochabamba

Basic Social Services

Water Supply

Cochabamba has a complicated and inefficient water supply system which consists mainly of pumping wells and a surface water reservoir serving different sectors. It is managed by SEMAPA, a municipal services company. It serves around 60 percent of the population with domestic metered connections. The quality of the water supplied is relatively good; there are some reports of contamination due to problems in the distribution system. There is a water treatment plant for the main system serving the central area.

The system needs to be improved and expanded because of the large unserved population and the considerable losses present in the distribution system. In this respect, SEMAPA has many projects and studies ongoing with the World Bank, Interamerican Development Bank, Japan International Cooperation Agency, GTZ, and others.

Most of the newly developed areas of the city do not have connections to the SEMAPA system. They are being served by private water cisterns.

Sewerage

Cochabamba has a sewerage system rehabilitated in the decade 1980-1990. The system covers 50 percent of the city and it is in good condition. It is run by SEMAPA and has a sewage treatment plant recently built in Alba Rancho.

The other half of the city does not have any sewerage system. There are projects and studies to expand and improve the sewerage system.

Electricity

Cochabamba is supplied with energy through the Empresa de Luz y Fuerza Eléctrica Cochabamba (ELFEC), which in turn buys the energy from the Empresa Nacional de Electricidad (ENDE). Up to 90 percent of the population has connections with meters and the service is good.

The street lighting system covers around 70 percent of the city. It is managed by the municipality with the resources for this service coming from the 12 percent charge included in the electric bill collected by ELFEC. It is in good condition, but needs improvement and expansion in the peripheral sectors of the city.

Streets and Rural Roads

The streets of Cochabamba are in poor condition. Only 36 percent of them have some sort of surfacing: 29.8 percent paved and 6.2 percent cobbled. The rest are dirt which constitutes an environmental problem due to the dust caused by intensive traffic. Expansion of the network of surfaced streets depends upon requests from neighborhood groups that must pay $\$1/m^2$ for cobbling and $\$6/m^2$ for asphalt.

The municipality does not have sufficient and adequate equipment or personnel to attend to the requirements of the city. It has plans to transfer this service to private companies.

At present, the municipality is constructing a new through traffic system with two loops—an inner loop for the city traffic and an outer loop for heavy vehicles.

Cochabamba has three main paved highways which connect it to the cities of Oruro, La Paz, and Santa Cruz. There are some sectors on these roads that are not paved, but which are currently being completed. These roads also connect the city with the city of Sucre and towns like Quillacollo, Sacaba, Punata, Cliza, Aiquile and the Chapare region.

There are cobbled roads connecting the city to most of the neighboring towns and communities like Tiquipaya. Most of the roads to the local production centers are dirt and connect to the main paved roads that reach the city.

Health and Sanitation

Cochabamba has a reasonably good health service system. The systems that depend on the central government (Ministry of Public Health) are supervised by the Unidad Sanitaria de Cochabamba (USC). The Hospital VIEDMA is the general hospital. It needs to be rehabilitated and expanded. Its services are very poor. The other hospitals are in better condition and provide adequate services. There are also other hospitals that belong to the social security health service network which are also in good condition.

Additionally, there are many private hospitals and clinics which provide adequate and sufficient service to the community.

The municipality has 10 new garbage trucks to serve the city. The service is provided two to three times a week for the different sectors of the city. This is not sufficient for the requirements of the population, especially since many of the peripheral areas are not served by the system. The garbage is deposited with no treatment in a dump located on the outskirts of the city, creating a health hazard for the many poor people who live in these areas. There are also a few private companies which collect the garbage from some residential areas and deposit it in the same dump.

There is a project ongoing with the FNDR to create a decentralized municipal enterprise to deal with the garbage and sanitation problems of the city.

The municipality contracts out the construction and management of public bathrooms around the city. These are in good condition but more are needed.

Education

A full range of educational institutions in Cochabamba provide adequate education. The public institutions face problems regarding budget, staff, and infrastructure. There are traditional private schools run mainly by religious organizations. Lately many small private schools have been established. They often, however, lack adequate instructional infrastructure.

There are various technical institutes for training in fields such as mechanics, motors, computers, dressmaking, cooking and others. There is a large public university (Universidad Mayor de San Simon), three private universities currently functioning and at least two more being planned. One of the newly-planned universities is being promoted by a private organization with funds from USAID.

Other Local Services

Markets

The Alcaldía Municipal runs the market system in the city. There are five large food markets and five smaller ones located around the city. Most of these are in good condition. The central market is located in the downtown area creating traffic and environmental problems associated with discarded foodstuff. There are plans to move it from its present location.

Additionally, two large general goods markets are located next to the downtown area which also cause traffic and environmental problems. There are also 14 area markets

located in the outer parts of the city. Currently, the municipality is studying the whole supply system for the city of Cochabamba. It intends to move the large markets to accessible areas near the new highway bypasses and build new, smaller markets in the various neighborhoods of the city.

A large peasant market is located in the southern end of the city with modern infrastructure and equipment. It was built by PDAR/USAID. It is currently not in use because of organizational problems.

Slaughterhouses

The municipality owns a slaughterhouse. At present, it is rented to the butcher's association. There are also many private slaughterhouses owned by food processors which provide most of the required services. The municipality has a project to build a new slaughterhouse. This proposal has been repeatedly rejected by the municipal council.

Warehouses and Granaries

Cochabamba has a large peasant market for agricultural goods with warehouses and granaries used partly by other governmental organizations. Many private companies have their own storage facilities. The municipality has buildings for the storage of various agricultural products and has plans to build more in the future.

Transportation Terminals

Good transportation service to and from the city of Cochabamba is available. There is an old airport in operation that provides adequate service. With a credit from the Italian government and additional funds from the central government, a new landing strip has just been built that will be able to handle any type of aircraft. The second phase of this projec. contemplates the construction of a new terminal.

CORDECO has just built a new bus terminal. It is a modern building that will provide adequate service to the city; it will be in operation starting September 1991.

A train terminal run by the Empresa Nacional de Ferrocarriles (ENFE) is in relatively good condition but needs some improvement. Train service is provided to the cities of Oruro and La Paz daily and to Aiquile once a week. This latter service is quite irregular.

Communication Systems

Cochabamba has a reasonable communications system. Telephone service is provided by the Cooperativa Mixta de Teléfonos de Cochabamba (COMTECO) for residential and public phones, connected with ENTEL for local, national, and international communications. There are not enough lines in the COMTECO system, but there are plans to install

new ones and expand to adjacent rural areas. Also, a new cellular system is being installed.

There is a communications building where ENTEL and the Empresa de Correos de Bolivia, ECOBOL, are located. It is in good condition. There are seven local TV channels, many radio stations, and two large newspapers.

Environmental Issues

The city suffers from at least four notable environmental problems: waste disposal, lack of sewage treatment, industrial waste, and dust. Garbage and sewage are commonly disposed of in the Río Rocha and the nearby Lake Alalay. There is no running water in the Río Rocha during most of the year and the lake has dried out because of the drought of 1990. The lake bed contains mud contaminated with sewage and organic matters coming from garbage and decaying vegetation. Also a drainage channel in the southern end of the city (next to the airport) receives sewage from a large tributary area. This is an open channel with no running water during most of the year, thereby creating a health hazard for the population.

Critical Urban Infrastructure Needs

The research team has identified the following critical needs for improvement of the physical infrastructure of Cochabamba:

- Expansion of the sewerage system in low-income areas;
- Improvement of the street network in low-income areas;
- Implementation of a city-wide garbage collection and treatment system, giving special emphasis to low-income areas;
- Relocation of the markets located in the central area.

2.2.1.5.2 Quillacollo

Basic Social Services

Water Supply

Quillacollo has a complicated water supply system which consists mainly of pumping and artesian wells serving different sectors of the city. It is managed by the municipality (Alcaldía Municipal). It serves around 40 percent of the population with domestic connections. The quality of the water supplied is bad; there are reports of contamination. There is no water treatment. The municipality charges Bs. 30 ($8.29) per year to the residential user.

The distribution system needs to be replaced and expanded because of losses through leakage and inadequate size of the pipes. The municipality does not have sufficient and

qualified personnel and equipment to manage the water supply system adequately. The formation of a cooperative is planned by the municipality in the near future to run the system.

A feasibility study has been completed for a new water supply and storm sewer system; the project is being considered by the Ministry of Planning.

Sewerage

Quillacollo has a sewerage system built by FSE in 1990. The system covers 40 percent of the town and it is in good condition. It is run by the local municipality. There are two Inhof treatment tanks.

The municipality requires a one time charge of Bs. 150 ($41.44) for every connection. There are no monthly charges. The municipality does not have sufficient and qualified personnel and equipment to manage the system properly.

The only other waste disposal systems in use are simple septic tanks and latrines, used by around 10 percent of the population.

Projects to expand and improve the sewerage system are being considered by FIS for financing.

Electricity

Quillacollo receives electricity from the interconnected system of the Cochabamba electric distribution company ELFEC. Ninety percent of the population has connections with meters; the service is good.

ELFEC has a local office for administrative work and some maintenance. Bills are prepared in the main office in Cochabamba; user payments are satisfactory. There are three categories of electric service with different rates: residential, commercial and industrial. A domestic user pays an average of 30 Bs. a month.

The street lighting system covers 70 percent of the town. It needs to be improved and expanded. ELFEC retains 12 percent from the electric rates for maintenance. Supposedly this money should be turned over to the municipality. In practice this does not occur and there is little maintenance in the system.

Streets and Rural Roads

The streets of Quillacollo are in poor condition. They are mainly dirt. About 30 percent of the streets are surfaced with cement blocks (adoquines) manufactured by the municipali-

ty. In street surfacing projects, the users (neighbors) cover 30 percent of the cost of the cement and the municipality covers the rest. Little maintenance is done by the municipality.

A paved road connects Quillacollo with the city of Cochabamba (12 kilometers). It is in good condition and it is part of the main road to La Paz. The same road connects the town with Vinto and Colcapirhua. Dirt roads connect Quillacollo to other nearby towns and communities like Tiquipaya, El Paso, and Bella Vista. Most of these roads need some improvement, but they are usable all year long. The farm to market roads generally need bridges to be passable in all seasons.

There is a dirt road to Santivañez which needs to be rehabilitated in order to facilitate and expand the commercial activity from this area.

Health and Sanitation

Quillacollo has a reasonably good health service system. A district hospital and a social security service hospital provide basic services to the population. There are also 15 private clinics for general medicine and special treatments.

The municipality has a garbage collection system with four dumptrucks; the service is provided daily. Six public bathrooms function at present and are managed by the municipality. More are needed.

Education

A full range of educational institutions in Quillacollo provide adequate education. There are 20 primary schools and 13 middle and high schools; these schools are public and function in 15 different facilities. There are also private schools at all levels. The instructional level is average and most of the schools need improvements in infrastructure, equipment, and supplies. More school buildings are needed to fulfill the requirements of the town and nearby communities since some buildings are used by two or even three "schools" each day.

There are 5 technical institutes for training in mechanics, computers and managerial skills.

Other Local Services

Markets

The Alcaldía Municipal runs the central market for agricultural goods. It was built more than 20 years ago and needs rehabilitation of most of the infrastructure. The market consists of an enclosed lot, most of which is covered and includes a finished concrete floor.

It can accommodate more than 400 vendors and their goods. The municipality contracts out the collection of the "sentaje" (a user fee for merchants using the market) but keeps control of maintenance and operations.

There are two other market areas for products such as grains, vegetables, potatoes, and others. These have small open sheds with concrete floors for marketing. There is no other infrastructure such as bathrooms and lights.

The municipality plans to expand the central market at a cost of $ 115,000, but even this project will not be enough to accommodate all the required stalls.

Slaughterhouses

The municipality owns and runs the town's slaughterhouse. It holds up to 25 head of cattle and processes an average of 8 head per day. There is no cooling system. There is no sewerage system. The infrastructure is in poor condition and there are no plans to improve it.

As in other towns, there is no charge for the slaughter of cattle because the municipality keeps the hides, which in turn represents an important source of municipal income.

Warehouses and Granaries

There are no suitable public warehouses or granaries to store agricultural goods in Quillacollo, only simple sheds owned by private individuals.

Transportation Terminals

There is good transportation service to and from Quillacollo. There is no bus terminal. There are buses, taxis, and trucks providing service to Cochabamba, and all other nearby towns. There is also local transportation service provided by taxis and small buses.

There is train service on the ENFE line Cochabamba-Oruro. The service is daily to both cities and it is widely used for cargo and passengers. There is a train terminal which is in good condition.

Communication Systems

The town has a reasonably good communications system. Telephone service is provided by COMTECO and ENTEL, through residential lines and public phone booths for local, national, and international communications. COMTECO has installed 1,200 lines and has plans to install more in the near future.

There is also an office of the Empresa de Correos de Bolivia, ECOBOL, the national mail service. Up to six television channels from the city of Cochabamba reach Quillacollo and there is one local channel. There are two local radio stations. Telegraph service is provided by the Dirección de Telecomunicaciones Rurales (DITER).

A project by COTAVAC for rural telephone service, including residential lines, has been planned, but it is not known when it may be operational.

Environmental Issues

The town suffers from three notable environmental problems: waste disposal, lack of sewage treatment, and flooding. Significant adverse environmental conditions are caused by garbage accumulation in peripheral areas of the town, solid and chemical waste from some industries and the lack of running water and sewage treatment for the sewerage system. The Río Rocha has flooded the southern part of town several times in the past; the stormwater channels that come down from the mountains create flooding problems in the northern part of town. There is also a problem with nearby irrigation channels which carry excess water in the rainy season. Some measures have been taken to protect the town from floods but these are not considered sufficient.

Critical Urban Infrastructure Needs

Critical needs for the improvement of the physical infrastructure of Quillacollo include:

- Rehabilitation and expansion of the water supply system;
- Expansion of the sewerage system;
- Improvement of the street network;
- Protection against floods;
- Rehabilitation and expansion of the central market and improvement of the open markets;
- Improvement of the slaughterhouse;
- Rehabilitation and expansion of the schools.

2.2.1.5.3 Sacaba

Basic Social Services

Water Supply

Sacaba has a water supply system built 25 years ago which is quite deteriorated, so much so that it might be described as inoperable. It is managed by the municipality (Alcaldía Municipal). It serves around 10 percent of the population with 500 domestic connections. It operates once every other day for the city's different sectors. The quality of the

water supplied is bad; there are reports of contamination. There is no water treatment. The municipality charges Bs. 5 per month for residential users. There are no meters. Drinking water is currently provided by cistern trucks.

The distribution system needs to be replaced and expanded because of the considerable water losses. The municipality does not have sufficient and qualified personnel and equipment to manage the water supply system adequately. The municipality has discussed the formation of a cooperative in the near future to run the system.

There is a study for a new water supply system; the project is being considered by the FNDR, FIS, and CORDECO. The cost is estimated at $1.2 million. The reservoir for this system has already been built with funds from FSE.

Sewerage

Sacaba has a sewerage system built five years ago. The system covers 15 percent of the town and is in average condition. There are around 600 connections; some houses are connected to the sewerage system but do not have any water. The system is run by the local municipality. There is no sewage treatment plant.

The municipality requires a one time charge of Bs. 180 ($50) for every connection. There is no monthly charge. New connections are not allowed at present because of the shortage of water. The municipality does not have sufficient and qualified personnel and equipment to manage the system properly.

The only other waste disposal systems in use are simple septic, used by around 10 percent of the population.

There is a project being considered by FIS for financing for a new sewerage system. The estimated cost is $800,000.

Electricity

Sacaba receives electricity from the interconnected system of the Cochabamba electric distribution company ELFEC. Ninety percent of the population has connections with meters and the service is good.

ELFEC has a local office for administrative work and some maintenance. Bills are prepared in the main office in Cochabamba; user payments are satisfactory. There are three user categories with different rates: residential, commercial and industrial. A domestic user pays an average of 30 Bs. a month.

The street lighting system covers 60 percent of the town and needs to be improved and expanded. ELFEC retains 12 percent of the collected electric rates for maintenance. Supposedly this money should be turned over to the municipality. In practice this does not occur and there is little maintenance in the system.

Streets and Rural Roads

The streets of Sacaba are in poor condition. They are mainly dirt. About 25 percent of the streets are surfaced with cement blocks (adoquines) manufactured by the municipality.

A paved road connects Sacaba with the city of Cochabamba (14 kilometers). It is in good condition and it is part of the main road to Santa Cruz. The same road connects the town with Melga. Dirt roads connect Sacaba to other nearby towns and communities like Larati, Curubamba, Palca, Temporal, Buena Vista and Lava Lava. Most of these roads need some improvement and are usable most of the year with some restrictions in the rainy season. The farm to market roads generally need bridges and drainage works to be passable in all seasons.

Health and Sanitation

Sacaba has a reasonably good health service system. There is a district hospital and a social security hospital which provide basic services to the population. There is a new private hospital built with a donation from a North American philanthropist, Salomon Klein. There are also 5 private clinics for general medicine and special treatments.

The municipality has a garbage collection system with a new garbage truck; the service is provided once a week. There are four public bathrooms functioning at present and managed by the municipality.

Education

A full range of educational institutions in Sacaba provide adequate educational services. There are 15 primary schools and 6 middle and high schools; these schools are public and function in 9 different facilities. There are also four private schools providing instruction at all levels. The service is average and most of the schools need improvements in infrastructure, equipment, and supplies. More educational establishments are needed to fulfill the requirements of the town and nearby communities.

There are three technical institutes for training in mechanics, dressmaking, and managerial skills. There are six projects to rehabilitate the public school system in Sacaba. All are being evaluated by FIS.

Other Local Services

Markets

The Alcaldía Municipal runs the central market for agricultural goods. It was built more than 10 years ago and is in good condition. The market consists of an enclosed lot, most of which is covered and includes a concrete floor. It can accommodate about 100 vendors and their goods; this is not enough to accommodate all the spaces required. The municipality contracts out the collection of the "sentaje" but keeps control of maintenance and operation.

Sacaba has two other market areas for various products such as grains, vegetables, potatoes, and others. These areas have small, open sheds with concrete floors. There is no other infrastructure such as bathrooms and lights.

The municipality plans to rehabilitate the central market's dining area.

Slaughterhouses

The municipality owns and runs the town's slaughterhouse which was built more than 20 years ago. It holds up to 40 head of cattle and can process an average of 100 head a week. There is no cooling system. There is no sewerage system. The infrastructure is in average condition and the roof needs immediate repair. There are no plans to improve it.

As in other towns, there is no charge for the slaughter of cattle because the municipality keeps the hides, which in turn represents an important source of municipal income.

Warehouses and Granaries

There are no warehouses or granaries to store agricultural goods in Sacaba.

Transportation Terminals

There is good transportation service to and from Sacaba. There is no bus terminal. There are buses, taxis, and trucks with service to Cochabamba and all other nearby towns. There is also local city-based transport with taxis and small buses.

There is an increasing number of passengers that go to Sacaba to take trucks and buses to the Chapare and Santa Cruz region because of the new road. This creates a problem because of the lack of a bus and truck terminal. At present, all the loading and unloading is done on the main road.

Communication Systems

The town has a reasonably good communications system. Telephone service is provided by COMTECO and ENTEL, through residential lines and public phone booths for local, national, and international communications. COMTECO has installed only 8 lines in the city, but has plans to install more in the near future.

There is also an office of the Empresa de Correos de Bolivia, ECOBOL, the national mail service. Up to six television channels from the city of Cochabamba reach Sacaba. There are two local radio stations. Telegraph service is provided by DITER.

There is a project planned by COTAVAC for rural telephone service which will include residential lines. It is not known when it may be operational.

Environmental Issues

The town suffers from one notable environmental problem: contamination due to a lack of sewage treatment. Significant adverse environmental conditions are caused by the lack of running water and an absence of sewage treatment for the sewerage system.

Critical Urban Infrastructure Needs

Critical needs for the improvement of the physical infrastructure of Sacaba include:

- New water supply and sewerage systems;
- Improvement of the street network;
- Construction of a bus terminal;
- Improvement of the slaughterhouse;
- Rehabilitation and expansion of the schools;
- Construction of a sports center.

2.2.2 Punata

2.2.2.1 Population and Migration

Punata is the largest town in the Valle Alto, and after the three towns that comprise the CMA, it is the largest town in the Department of Cochabamba. It is located in the eastern half of the Valle Alto and dominates a tributary area which includes the Valle Alto and much of the surrounding sierra. Its tributary area in the Valle Alto is characterized principally by rainfed agriculture, but presents significant prospects for increased agricultural production with improved management practices, increased cultivation of perennial crops (especially fruit trees), and irrigation. The Proyecto de Riego Punata, financed by the GTZ and now almost complete, will affect nearly 5,000 ha. in the vicinity

of Punata. This project can have a significant positive effect not only on rural residents immediately affected by the project but also the town of Punata.

The most recent estimates of Punata's population vary between 8,000 and 11,000. CIDRE (1985a:90) estimated the town's population in 1984 to be 7,973. CIPLADE (1987:Tomo II:A-10-2) estimated the town's population in 1986 to be about 11,000, while CIDRE (1990:9) estimated the town's population in 1990 to be about 9,000.

Specific and useful data on migration are difficult to find. Punata's size and position in the department's urban hierarchy suggest that it probably is a migratory destination of some significance for residents of the small towns and rural areas that surround it. It probably also serves as a springboard for out-migrants to Cochabamba, Santa Cruz, and other areas.

The data that are available concerning migration patterns in the Punata area refer not to the city itself, but to the area of influence of the Proyecto de Riego Punata. And these data are informative. A survey undertaken in 1986 (CIPLADE, 1987:Tomo I:52-53), revealed that nearly 21 percent of the agriculturalists within the project area migrated outside the region to work for periods varying between 4 days to one year. The principal destination was the Chapare (37 percent), followed by Argentina, Cochabamba, and Santa Cruz with 19, 11, and 10 percent respectively. Eighteen percent cited a variety of unspecified other destinations, while no data were obtained from 5 percent. Chapare migrants work as agricultural laborers, "pisadores", or on their own small plots. Migrants destined for Argentina, principally Buenos Aires, work largely in the construction industry.

The DIRECO data reported by Painter and Bedoya (1990:20) demonstrates the importance of the Province of Punata as a source of Chapare area farmers. Over 5 percent of the total DIRECO sample (1984-1989) reported the province as the place of origin (n=355).

2.2.2.2 Employment

Punata's employment structure represents somewhat of a mix between that of a small town and a commercial center. CIPLADE (1987:Tomo II:A-10-2) estimates that about 10 percent of the workforce is engaged in rural/agricultural pursuits, while the remaining 90 percent are engaged in urban based work. A count (n=238) and classification of commercial establishments undertaken in 1984 by CIDRE (1985a:82, 84-86) provides some idea of how non-farm employment in Punata is distributed, although it provides no specific information on the number of employees in specific categories. Small grocery stores (abarrotes) and prepared food sales dominate most commercial activity in the town, accounting for about one-third of all establishments. This is followed by the production and sale of chicha, representing 25 percent. The only other significant cate-

gories are services, 20 percent (broadly defined as including pharmacies, barbers, workshops, tailors, bookstores, etc.), and businesses providing consumer goods, 13 percent (again broadly defined as including clothing stores, shoes, electric goods, etc.). Less than 4 percent of the total is engaged in the sale of agricultural inputs or hardware/ construction materials. The remainder, 5 percent, are engaged in a variety of miscellaneous commercial activities—jewelry, entertainment, etc.

2.2.2.3 Agricultural Markets and Trade Flows

2.2.2.3.1 Market Size and Structure

Punata is the major regional market center for the Valle Alto and many surrounding areas (**Figure 2.3**). It is dominated by many small-scale vendors and wholesale traders. Almost 2,000 vendors were counted on the survey day (August 18). Twenty-two percent were selling vegetables, 15 percent prepared food, 15 percent potatoes and similar products (oca and papalisa), and 14 percent grains. The rest of the sites were selling groceries, spices, fruits, small animals, and other commodities. Specifics on the number and type of market sites in Punata are presented in **Table 2.2**.

The wholesale market in Punata can be estimated by the number of traders. Seventy-four sites were counted on the survey day. Fifty-four percent were buying potatoes, 11 percent buying grains, 19 percent selling vegetables, 12 percent selling fruits, and 4 percent selling chancaca, a sugar-cane product (**Table 2.4**).

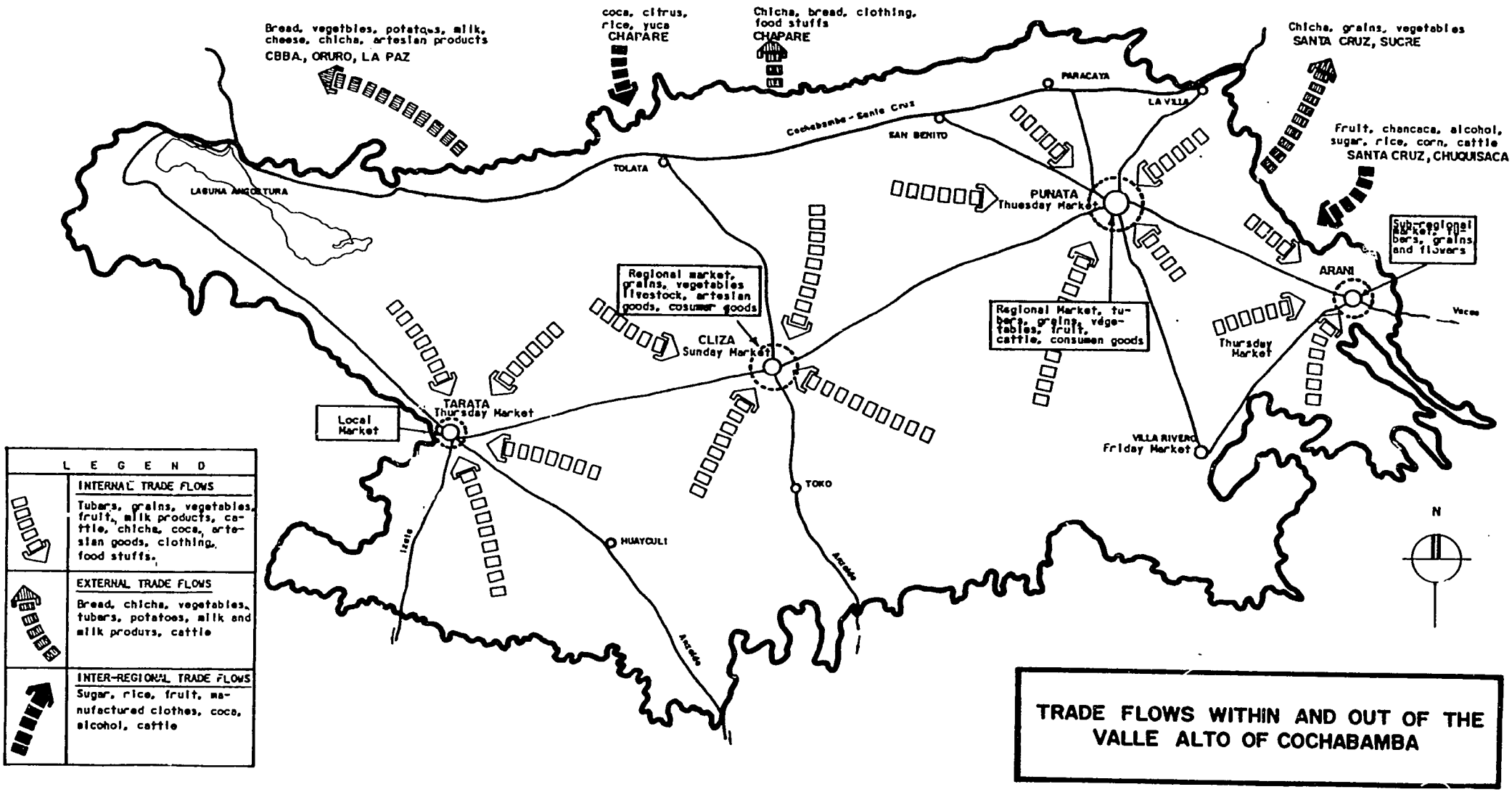
In the livestock market, which is located in a separate field along the town's main thoroughfare, 675 cattle, 446 pigs, 45 goats, 21 horses, and 20 donkeys were being traded (**Table 2.5**). The magnitude of the livestock market can also be appreciated by the fact that 106 trucks were parked in the field. About 80 percent of these had cargo capacities in excess of 5 tons. Sheep are traded in a separate market area. On the day of the survey 578 were being marketed.

The market for the agricultural products traded in Punata is divided among several distinct market areas. In addition to the central market there are several different plazas and fields usually specialized by types of commodities (livestock, potatoes, grains, vegetables, flour, meats, and coca). These specialized markets occur only on Tuesdays.

2.2.2.3.2 Trade Flows

Most of the agricultural commodities traded in the Punata market come from surrounding communities such as Arani (potatoes, grains), Villa Rivero (wheat, corn, barley), Paracaya (vegetables, corn), La Villa (vegetables, fruits), San Benito (grains, fruits, vegetables), and others. Some commodities, such as livestock, come from outside the

Figure 2.3



TRADE FLOWS WITHIN AND OUT OF THE VALLE ALTO OF COCHABAMBA

region (Pasorapa and Vallegrande). Details on communities and products are shown in **Figures 2.4** and **2.5** and in **Table 2.8**. Commodities are brought to the fair by individual producers or by intermediaries who buy agricultural goods from smaller regional fairs (See also **Figure 2.3**).

The outward flow is controlled by wholesale intermediaries who take the commodities to the markets of Cochabamba, Santa Cruz, and La Paz. The main commodities exported from the region are potatoes, grains, vegetables, chicha, and livestock.

2.2.2.4 Town-Based Services to Agricultural Production

Town-based services to agricultural production in Punata are supported by several institutions. IBTA provides extension services through a full-time technician and also operates an experimental station in nearby San Benito, which does research on vegetables and fruit crops. MACA and GTZ are implementing an irrigation program for the entire region of the Valle Alto. The Cooperativa Integral de Servicios Cochabamba has its headquarters in Punata but offers services to more than 4,000 members in the other provinces of the Valle Alto, and even in the provinces of Mizque and Carrasco (CIDRE 1985: 134). The services provided by the cooperative are technical assistance, credit, agricultural inputs, and marketing. No facilities oriented to the provision of technical education in the field of agricultural production exist in Punata.

The town has about 10 permanent establishments dedicated to the sale of agricultural inputs, tools, and machinery. In addition, during the Tuesday market fair, there are a few street vendors selling agricultural inputs; five were counted on the day of the survey. Credit and other financial services are provided by agencies of Banco del Estado, Banco Mercantil, the Cooperative Integral de Servicios Cochabamba, and the savings and loan cooperative "San Jose" with about 4,000 members. Besides offering financial services, this cooperative works in the field of medical assistance and operates three commercial radios, one each in Punata, Arani, and Cliza (CIDRE 1985:139).

Transportation services for agricultural products are provided by privately-owned vehicles. An overall count of the trucks in Punata was not obtained, due to the size of the town and its market. However, considering that 106 trucks were counted just in the livestock market, this gives an idea of the magnitude of the Punata's truck fleet. Transportation for passengers is provided by numerous buses, taxis, and trufis (fixed route taxis) which serve the routes to Cochabamba, Arani, Cliza, Villa Rivero, Paracaya, and other communities. In terms of communications, Punata is served by agencies of ENTEL, DITER, and a local post office.

There are several urban-based cooperatives. In addition to the two mentioned above, there is an electric cooperative (Cooperativa de Electrificación Punata Ltda.) with almost

Figure 2.4

TRADE FLOWS INTO THE PUNATA MARKET

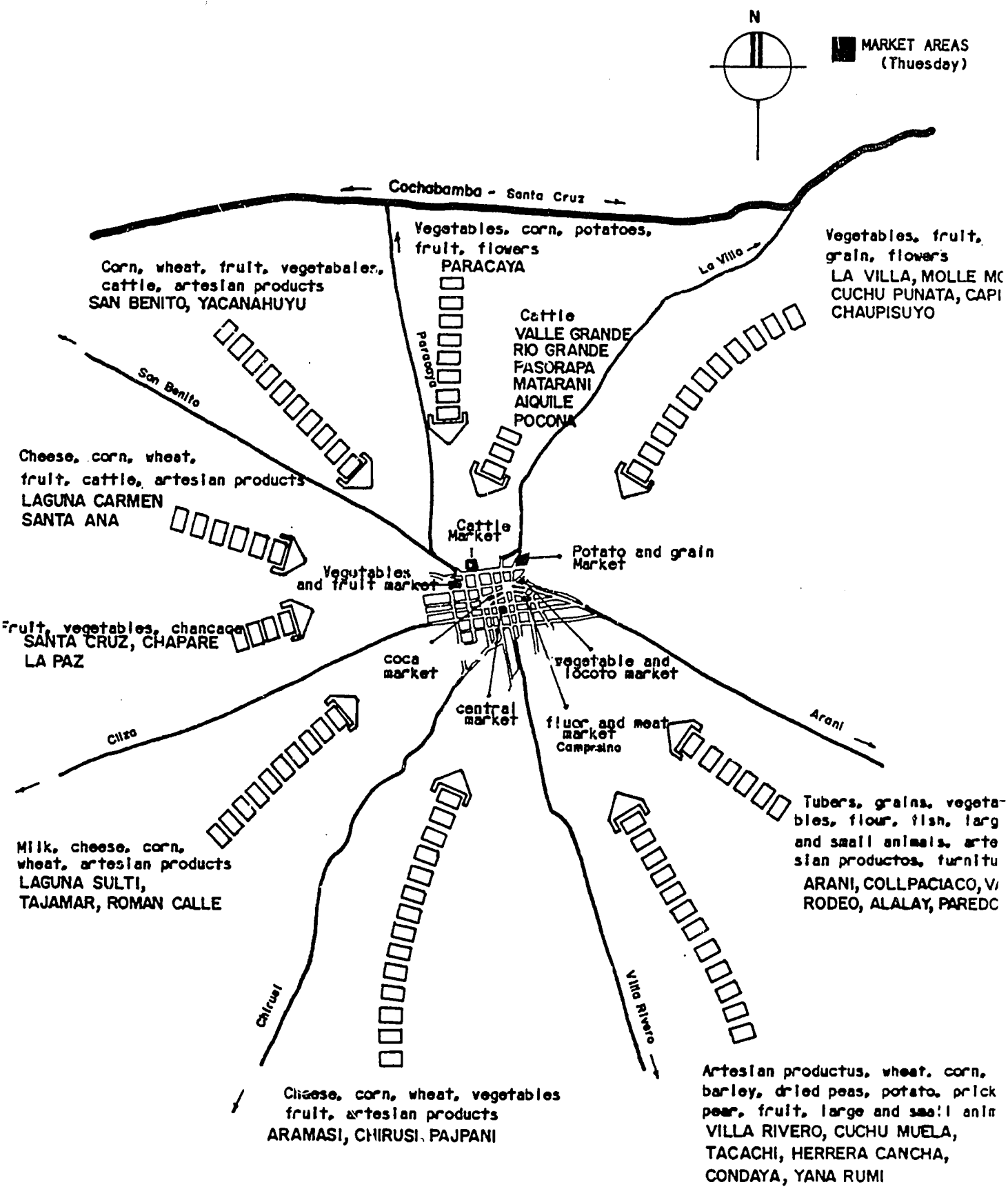


Figure 2.5

TRADE FLOWS FROM THE PUNATA MARKET

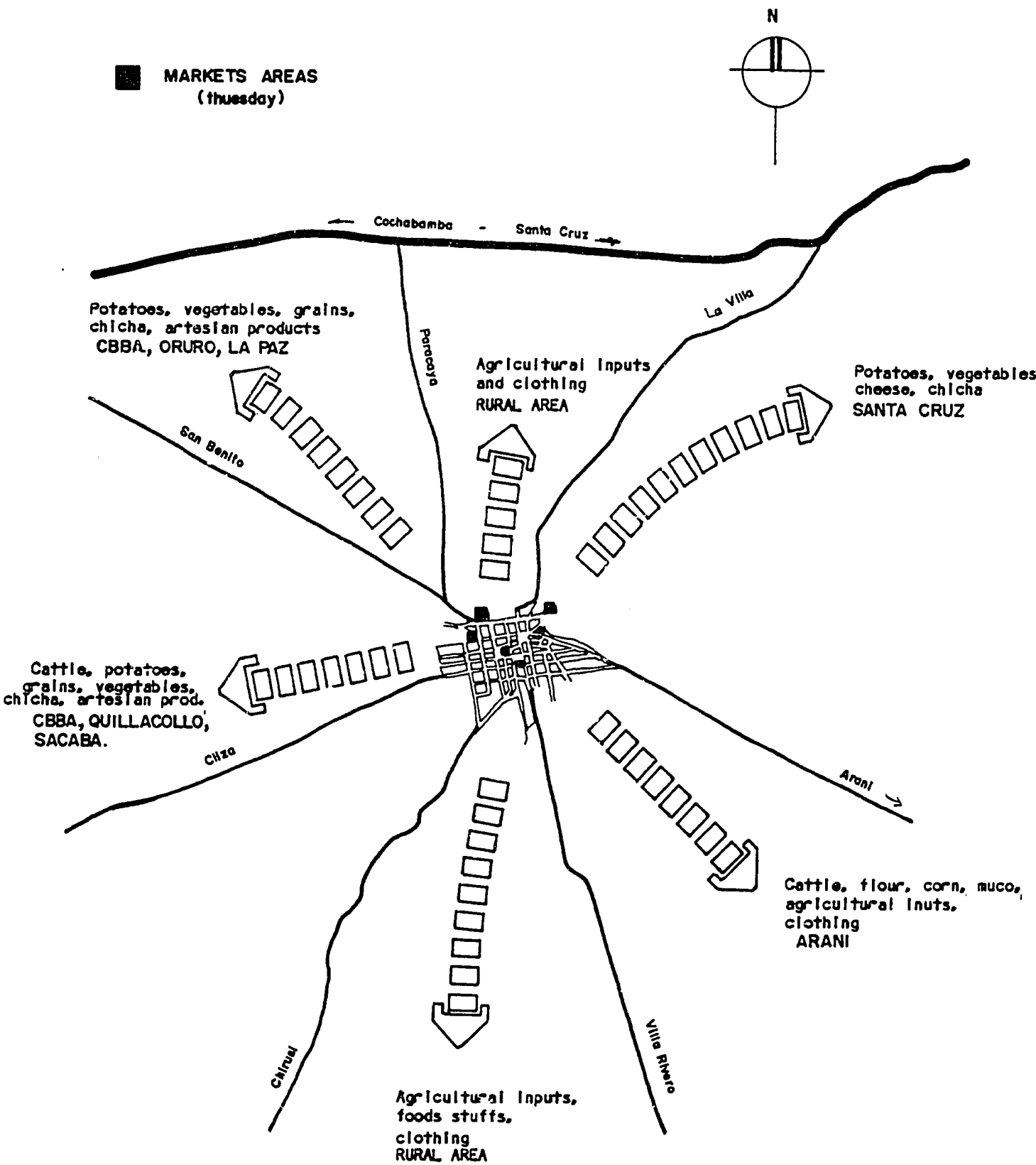


TABLE 2.8
FAIRS, PRODUCTS AND AREAS OF DOMINANT INFLUENCE FOR THE PUNATA MARKET

COMMUNITY FAIRS		MAIN PRODUCTS MARKETED	AREA OF DOMINANT INFLUENCE - COMMUNITIES
DAYS	COMMUNITIES		
MONDAY	PUENTE (Km. 105 highway Santa Cruz–Cochabamba) Lope Mendoza - One central market	Potato, chuño, papaliza, oca, wheat, barley, haba, corn, vegetables, cattle, prepared food, chicha, and miscellaneous manufactured goods.	Lope Mendoza, Totora, Pocona, Chihuchi, Monte Punco, Pojo, Sehuencas, Zapata Rancho, Copachuncho, Rodeo, Epizania, Chullcuncani, Siberia, Koari, Alquile, Punata and Cliza.
TUESDAY	PUNATA MARKETS - Livestock - Potato - Vegetables and locoto - Meats and flour (campesinos) - Central market - Coca - Ferias market - Firewood	Potato, papaliza, oca, chuño, dry haba, corn, wheat, barley,tarhui, vegetables, livestock (cattle, pigs, sheep. horses and donkeys), small animals (chickens, ducks, turkeys, guinea pigs, angora rabbits, squab, etc), firewood, flour, hardware/tools, agricultural inputs, bicycles, clothing, handicrafts, chicha, prepared foods (bread, soft drinks, meals), electronic equipment, coca, soap, cigarettes.	Arani, Punata, Tiraque, Cliza, Tarata, Villa Rivero, Paracaya, San Benito, Laguna Carmen, Pocoata, Puca Orkho, Aracacha, La Villa, Capilla, Tajamar, Laguna Sulti, Chinesi, Aramasi, Tacachi, Yana Rumi, Lope Mendoza, Pojo, Pocona, Vacas, Alalay, Paredones, Rodeo, Vinto Mayu. Ayopampa, Siberia, Valle Grande, Pasorapa, Alquile, Mizque, Tin-Tin, Sacabamba, Anzaldo, Sacabambilla, Quiroga, Puente Arce, Tuti Mayu, Santivañez, and Melga.
THURSDAY	SAN BENITO - One central market	Maize, wheat, potato, barley, vegetables, fruits, cattle and sheep meat.	San Benito, Mayca, Vla Rancho, Laguna Carmen, Laimiña, San Luis, and Punata.
FRIDAY	VILLA RIVERO - One market	Potato, wheat, maize, barley, vegetables and hand-made wool products.	Villa Rivero, Cuchumuela, Tacachi, Linde, Sallnas, and Namasi.

Source: PADCO team survey with assistance from Hipolito Cespedes, August 1991.

3,000 members, two telephone cooperatives (COMTECO from Cochabamba, and COTA-VAC—Cooperativa de Teléfonos Automáticos del Valle Alto Ltda., a local initiative with over 500 members), and the Cooperativa de Transporte 18 de Mayo, a transportation cooperative with over 1,000 members (CIDRE 1985:139).

In addition to the cooperative associations, described above, there are also other types of associations offering services to their members. The Asociación de Productores de Leche, a federation of milk producers, has an office in Punata as does the Asociación de Productores de Chicha, a chicha producers' association. Other urban-based organizations are the Juntas Vecinales (Neighborhood Councils) and the Clubes de Madres (Mothers' Clubs).

2.2.2.5 Physical Infrastructure

2.2.2.5.1 Basic Social Services

Water Supply

The town has a water supply system built in the 1950s and managed by the municipality (Alcaldía Municipal). It serves around 50 percent of the population with domestic connections. The supply lasts less than three hours a day; this is due mainly to the age and size of the system. The quality of the water supplied is bad, there are reports of contamination in some areas. There is no water treatment plant. There are around 2,000 connections including houses, businesses, and small industries. There are no public water fountains. The municipality charges Bs. 7 ($2) per month for residential service. It is not known how many people pay or are registered. The one-time connection fee is Bs. 50 ($14).

The system is supplemented with 6 wells, used particularly to serve residential areas on the outskirts of town. There are also two private water supply systems managed independently which cover less than 10 percent of the population.

The distribution system needs to be replaced because of significant water loss and the small diameter of the pipes. The municipality does not have sufficient and qualified personnel and equipment to manage the water supply system adequately. Four people do all the administrative and operational work for the water and sewer systems.

There is a project to build a water treatment plant and the study has been presented to Rotary International. Also, there are plans to drill additional wells. But, no comprehensive study to resolve the water supply problem of Punata has been undertaken.

Sewerage

Punata has a sewerage system built in 1970. The system covers 60 percent of the town. The system is run by the local municipality; it is not working properly due mainly to the lack of running water. There is no sewage treatment system.

The municipality requires a one time charge of Bs. 50 ($14) for every connection. There is a monthly charge of 5 Bs. The municipality does not have sufficient and qualified personnel and equipment to manage the system properly.

No other waste disposal systems are in common use among the population. Studies for a project to improve the system have been presented to FIS, but there is no news on the status of this request.

Electricity

The city's electric system was founded in 1969 with the cooperation of the Peace Corps and is managed by the Cooperativa de Electrificación de Punata. Eighty percent of the population has connections with meters and the service is good. The cooperative has 5,000 members, of which 3,700 are in the urban area; it has a total of 17 employees. The cooperative buys energy from the ELFEC network and manages its distribution, including the street lighting system. A charge of 10 percent on electric rates is supposedly set aside to cover the costs of street lighting.

The cooperative has plans to buy the electric service from ELFEC for the rest of the province of Punata.

Streets and Rural Roads

The streets of Punata are in poor condition. Only 25 percent of the roads are covered. They are surfaced mainly with cobblestones (empedrado) and cement blocks (adoquines). The municipality is improving and expanding the street network using cement blocks for which each property owner contributes 50 percent of the cement necessary to surface the section in front of its property. The municipality covers the other costs. There are no plans to do much work on street surfacing until the water supply and sewerage systems are rehabilitated.

A paved road connects Punata with the city of Cochabamba (45 kilometers). It is in good condition. Dirt roads connect Punata to other nearby communities and agricultural production centers like La Villa, Arani, Cliza, Tiraque, Tarata, Villa Rivero, and San Benito. Most of these roads are dirt. The road to Cliza has been recently cobbled by the SNC with funding from USAID/PDAR. The roads are generally good but need some improvement and bridge construction in some places.

Health and Sanitation
Punata has a district hospital which provides basic services. At present, the Unidad Sanitaria of Cochabamba, with financing from the GTZ, is implementing a project to improve and expand the health services in all of the Valle Alto region. Punata will be the main service center. Additionally, there are 7 private clinics for general medicine, and one which is fully equipped to perform most services.

Punata has a garbage collection system with dump trucks; the service is adequate and provided once or twice a week. Despite the existence of garbage collection, most of Punata's population disposes of its garbage in the nearby river. There are two functioning public bathrooms and four more are to be built in the open market areas.

Education
There are 13 primary schools, 4 middle, and 7 high schools; these schools are public and function in 10 buildings. There are also private schools serving all levels. The instruction provided is average but most of the schools need improvements in infrastructure, equipment, and supplies. More buildings to house educational establishments are needed to fulfill the requirements of the town and nearby communities.

2.2.2.5.2 Other Local Services

Markets
The Alcaldía Municipal runs the central market. It was built in 1950 and needs rehabilitation of most of its infrastructure. The market consists of an enclosed lot, much of which is covered and includes a concrete floor. It can accommodate more than 100 vendors and their goods. This is not nearly enough for the number of vendors, and many locate themselves in the adjacent streets to be able to sell their goods. The municipality contracts the collection of the "sentaje" but undertakes the maintenance itself.

There are six other market areas for different products such as grains, vegetables, potatoes, and others. Only one, the potato market, has an open shed with a concrete floor. There is no other infrastructure.

Slaughterhouses
The municipality owns and runs two slaughterhouses. The first one is very old and is practically in ruins. It is being used without any regard for safety or sanitation. It holds up to 15 head of cattle and an average of 4 head a day can be slaughtered. There is no cooling system, and the water supply is inadequate. A second slaughterhouse has been built recently but lacks most of the necessary equipment and installations.

As in other towns, there is no charge for the slaughter of cattle because the municipality keeps the hides, which in turn represents an important source of municipal income. The hides ("corambre") are sold to the highest bidder every 3 or 4 months.

Warehouses and Granaries
There are no warehouses or granaries to store and maintain agricultural goods in Punata.

Transportation Terminals
There is good transportation service to and from the town of Punata. There is no bus terminal. There are buses, taxis, and trucks providing service to Cochabamba, Cliza, Arani and other towns which provide connections to other towns and cities. At present, the "sindicatos de transportistas" (transportation unions) use the old train terminal. There is also a local taxi service. There was train service until 1975, when it was discontinued.

Communication Systems
The town has a reasonably good communications system. Telephone service is provided by ENTEL, the national telephone company, through public phone booths for local, national, and international communications. ENTEL has also installed 20 domestic lines which work through the main office in Punata. COMTECO, the telephone company of the city of Cochabamba, has installed 32 lines in Punata and they have plans to install more in the near future.

COTAVAC has a project underway to provide rural telephone service in the Valle Alto region. It should be in operation by the end of the current year 1991; the project was started five years ago.

There is also an office of the ECOBOL, the national mail service. Up to 3 television channels from the city of Cochabamba reach Punata, and there is also one local channel. There are five local radio stations. Telegraph service is provided by DITER.

2.2.2.5.3 Environmental Issues

The town suffers from three notable environmental problems: waste disposal, sewage, and flooding. Significant adverse environmental conditions are caused by garbage accumulation in peripheral areas of the town and the lack of running water for the sewerage system. Punata is surrounded by two rivers, the Río Huasa Mayu and the Río Morro, which have flooded the town several times in the past. No measures have been taken to protect the town from floods.

2.2.2.5.4 Critical Urban Infrastructure Needs

Critical needs for the improvement of the physical infrastructure of Punata include:

- Rehabilitation and expansion of the water supply and sewerage systems;
- Protection against floods;
- Rehabilitation and expansion of the central market and improvement of the open markets;
- Construction of the farm to market roads to Villa Rivero-Tacachi-Khuchu Muela.

2.2.3 Cliza

2.2.3.1 Population and Migration

Cliza is the second largest town in the Valle Alto, after Punata. It is the provincial capital of German Jordan province. The town is located between Punata and Tarata and is only 37 kilometers from the city of Cochabamba. It is an important regional market center, with influence over a significant area of the Valle Alto.

The population of the entire province was reported to be 25,603 in 1976 (INE, 1982). There are no official statistics of the town's population. However, according to municipal authorities, the population of Cliza can be estimated to be between 6,000 and 7,000.

Specific and useful data for migration flows are not available. It can be assumed that given the relative importance of the town, it probably is the migratory destination of some significance for residents of the small towns and rural areas that surround it. Some rural migrants probably use the town only as a stopover before moving to Cochabamba, Santa Cruz, and other areas.

Cliza does not seem to be an important source of migrants to the Chapare region. According to the DIRECO data reported by Painter and Bedoya (1990:20), less than 1 percent of the farmers in the sample reported German Jordan province as the place of origin (n=51).

2.2.3.2 Employment

Useful and reliable information on employment for the town of Cliza is difficult to find. Given the relative importance of the town, it can be estimated that its employment structure represents somewhat of a mix between that of a small town and a commercial center.

The town's commercial structure can be partially estimated by using the field count of permanent establishments selling agricultural and related products. The count of 319 sites showed that 27 percent were selling "abarrotes" (groceries), 16 percent were "chicherias", 12 percent were small artisan-level workshops, 11 percent were permanent fresh produce sellers, 8 percent were selling meat, and 7 percent were restaurants and similar establishments. The rest were selling hardware, clothing, furniture, and other products and services. Specifics on the number and distribution of establishments are shown in **Table 2.3.**

2.2.3.3 Agricultural Markets and Trade Flows

2.2.3.3.1 Market Size and Structure

Cliza is an important regional market center, with many small-scale vendors and some wholesale traders. Over 1,700 vendors were counted on the survey day (August 25). Twenty percent were selling vegetables, 16 percent grains, 15 percent prepared food, 8 percent potatoes and tubers (oca and papalisa), 8 percent artisan goods, and 7 percent meats. The rest of the sites were selling groceries, small animals, spices, fruits, and other commodities. Specifics on the number and type of market sites in Cliza are presented in **Table 2.2.**

The wholesale market in Cliza can be estimated by the number of traders. Thirty traders were counted on the survey day. The majority were grain buyers, 56 percent. Wheat and barley buyers were most numerous (n=11), followed by corn buyers (n=6). Another 20 percent were potato buyers, while the remainder were selling vegetables (20 percent) and chancaca (3 percent) (**Table 2.4**). In the livestock market, which is located in a separate field, 181 cattle, 56 pigs, 52 sheep, 30 donkeys, and 5 goats were being traded on the day of the survey (**Table 2.5**).

The market for the agricultural products traded in Cliza comprises several distinct areas: a central market and adjacent streets, a large grain market, a potato market, and a livestock market. Each has minimal infrastructure, with the exception of the livestock market, which has none. The market operates only on Sundays.

2.2.3.3.2 Trade Flows

Most of the agricultural commodities traded in the Cliza Sunday market come from surrounding communities such as San Isidro (potatoes, grains), Huayculi (wheat, corn, barley), Toko (corn, wheat, potatoes), Sacabamba (grains, potatoes, vegetables), Sunchu Pampa (potatoes, grains, vegetables) , and others. Some commodities, such as livestock, come from outside the region (Pasorapa and Vallegrande). Details on communities and products are shown in **Figures 2.6** and **2.7**, and in **Table 2.9**. The commodities

Figure 2.6

TRADE FLOWS INTO THE CLIZA MARKET

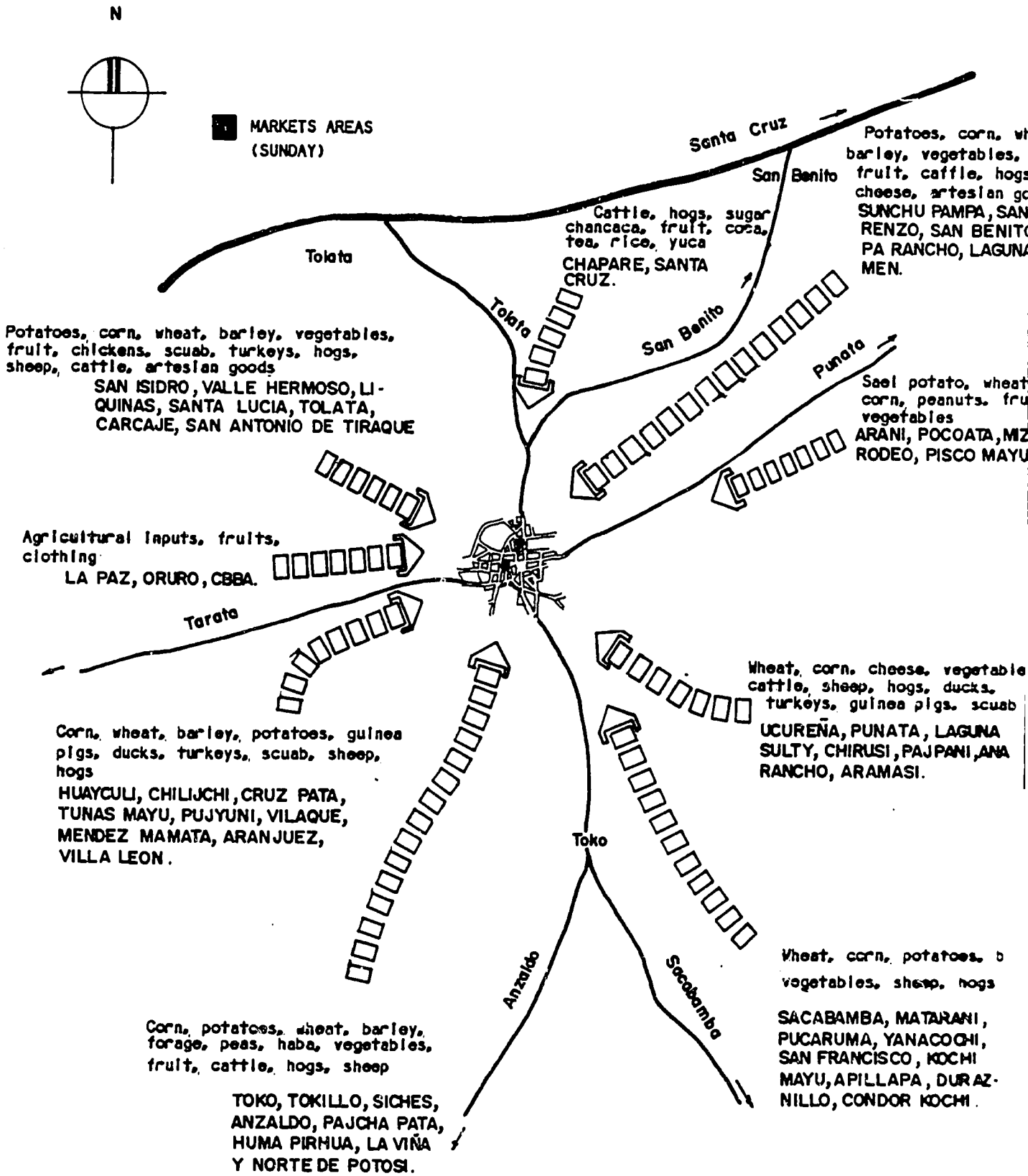


Figure 2.7

TRADE FLOWS FROM THE CLIZA MARKET

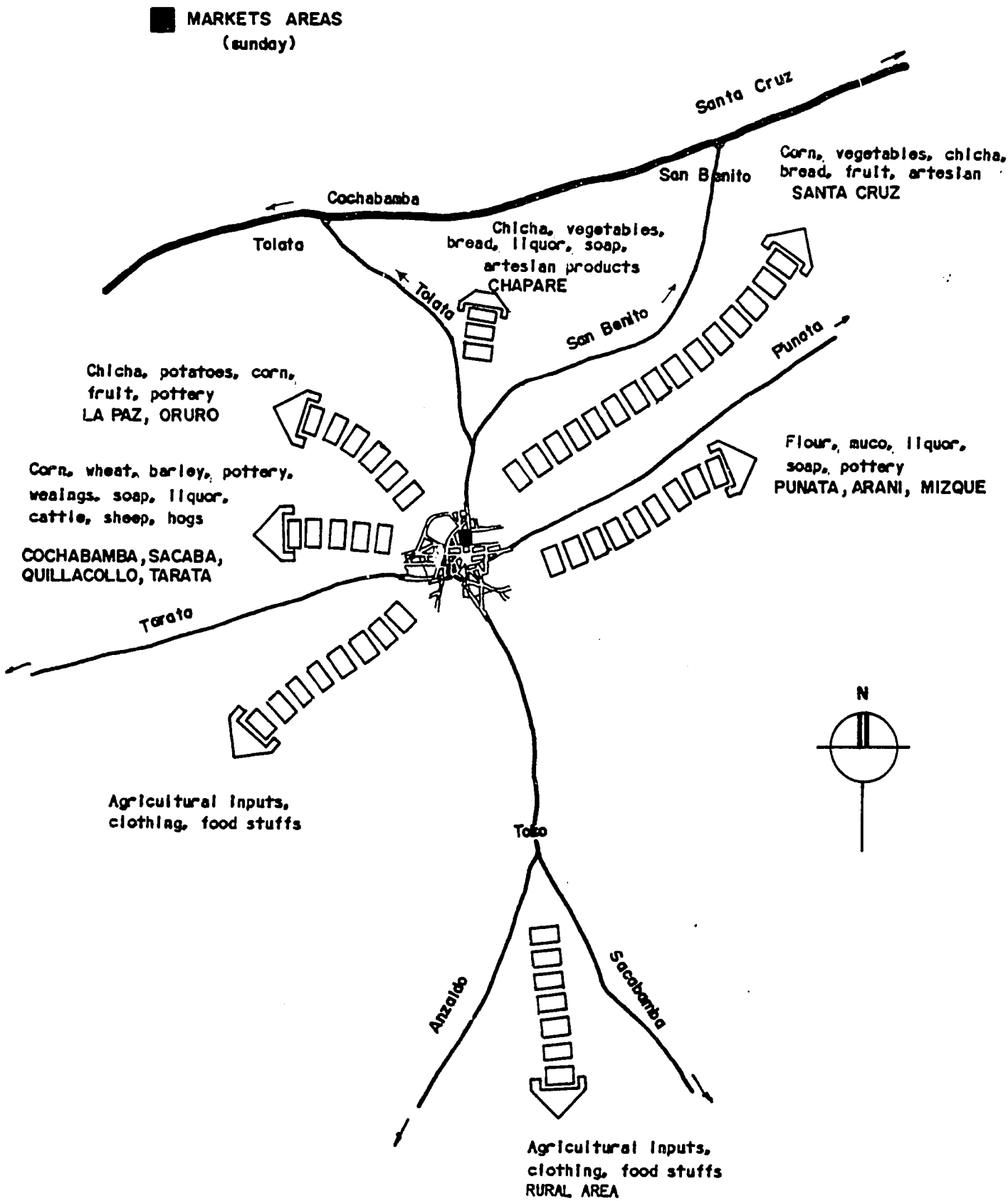


TABLE 2.9
FAIRS, PRODUCTS AND AREAS OF DOMINANT INFLUENCE FOR THE CLIZA MARKET

COMMUNITY FAIRS		MAIN PRODUCTS MARKETED	AREA OF DOMINANT INFLUENCE - COMMUNITIES
DAYS	COMMUNITIES		
FRIDAY	TOKO	Corn, wheat, and vegetables.	Toko, Tokillo, Siches, Pajpani, Huma Puhua, Cruz Pata.
SUNDAY	CLIZA	Wheat, corn, barley, peas, haba, vegetables, muko, soap, handicrafts, bread, fruit, chancaca, livestock (cattle, sheep, and pigs), small animals (chickens, rabbits, cloths, cattle meat, agricultural inputs, hardware, firewood, flour, and miscellaneous manufactured goods.	Cliza, Punata, Arani, San Isidro, Valle Hermoso, Liquinas, Santa Lucia, Tolata, Carcaje, San Antonio de Tiraque, Huayculi, Chilijchi, Cruz Pata, Tunas Mayu, Pujyuni, Vilaque, Mendez Mamata, Aranjuez, Villa Leon, Toko, Tokillo, Siches, Anzaldo, Pajcha Pata, Huma Pirhua, La Viña, Norte de Potosi, Ucureña, Laguna Sulty, Ana Rancho, Pajpani, Chirusi, Aramasi, Sacabamba, Matarani, Pucaruma, Yanacochi, Apillapa, Mizque, Rodeo, Pisco Mayu, Surumi Rancho, Sunchu Pampa, San Lorenzo, Laguna Carmen, and Tolata.

Source: PADCO team survey with assistance from Hipolito Cespedes, August 1991.

are brought to the fair by individual producers or by wholesale buyers who work the other smaller regional markets.

The outward flow is controlled by wholesale intermediaries who take the commodities to the markets of Cochabamba, Santa Cruz, and La Paz. The main commodities exported from the region are potatoes, grains, vegetables, chicha, and livestock.

2.2.3.4 Town Based Services to Agricultural Production

Town based services to agricultural production in Cliza are limited. There is no agency of IBTA providing extension services, even though that institution operates an experimental station in nearby San Benito. No facilities exist that are oriented to the provision of technical education in the field of agricultural production.

The town has only one permanent establishment dedicated to the sale of agricultural inputs, tools, and machinery. However, during the Sunday market, there are a few street vendors selling agricultural inputs; three were counted on the day of the survey. Credit and financial services are provided by the savings and loan cooperative "Nuevo Horizonte". No agencies of public or private banks exist in Cliza.

Transportation services for agricultural products are provided by privately-owned vehicles. On the day of the survey, 144 trucks were counted: 50 pick-ups, 41 small trucks (60-80 qq.), 31 medium-sized trucks (100-200 qq.), and 22 large trucks (over 220 qq.). (One quintal (qq) equals 100 pounds.) Transportation for passengers is provided by numerous buses, taxis, and trufis (fixed route taxis) which serve the routes to Cochabamba, Arani, Villa Rivero, Paracaya, and other communities. In terms of communications, Cliza is served by agencies of ENTEL, DITER, and a local post office.

2.2.3.5 Physical Infrastructure

2.2.3.5.1 Basic Social Services

Water Supply

The town has a water supply system built more than 20 years ago. It draws water from the Río Ayoma and is supplemented with a recently drilled well. The system is managed by the municipality (Alcaldía Municipal). It serves around 70 percent of the population with domestic connections. The daily supply lasts less than three hours. This is due to the current drought and the age of the system. The quality of the water supplied is unknown; there is no testing. There is no water treatment plant. There are around 1,200 connections including houses, businesses, and small industries. There are no public water fountains. The municipality charges Bs. 5 ($1.50) per month for the residential category, 10 and 15

Bs. for the commercial, and 20 Bs. for the industrial category. The record with respect to the collection of water rates, and even the number of connections, is not known.

The distribution system needs to be replaced because of considerable water losses and the inadequate diameter of the pipes comprising the distribution system. The municipality does not have sufficient and qualified personnel and equipment to manage the system adequately. Only three people work in the department of water supply and sewerage. The distribution main was recently improved with financing from USAID.

Sewerage

Cliza has a sewerage system built by FSE in 1989. The system covers 80 percent of the town and it is in good condition. The system is run by the local municipality; it is not working properly mainly due to the lack of running water. There is no sewage treatment system and the discharge goes directly to the nearby river bed polluting the area.

The municipality requires a one time charge of Bs. 100 ($28) for every connection. There are no monthly charges. The municipality does not have sufficient and qualified personnel and equipment to manage the system properly.

Due to the fact that the sewerage system does not function properly, 40 percent of the population use other waste disposal systems such as simple septic tanks.

Electricity

Cliza receives electricity from the interconnected system of the Cochabamba electric distribution company ELFEC. Ninety percent of the population has connections with meters and the service is good. ELFEC has a local office for administrative work and some maintenance. Bills are prepared in the main office in Cochabamba and user payments are satisfactory. There are three categories of electric service with different rates: residential, commercial and industrial. A residential connection pays an average of 25 Bs. a month. The street lighting system covers 50 percent of the town, and needs to be improved and expanded. ELFEC retains 12 percent of the electric rates for maintenance. Supposedly this money should be turned over to the municipality. In practice, this does not occur.

Streets and Rural Roads

The streets of Cliza are in good condition. They are mainly cobbled roads (empedrado) and cover about 80 percent of the town. Much of this work was done with funds from USAID/CARITAS. The municipality has plans to construct curbs and sidewalks. No maintenance is done on the streets.

A paved road connects Cliza with the city of Cochabamba (37 kilometers). It is in good condition. Dirt roads connect Cliza to other nearby communities and agricultural produc-

tion centers like Anzaldo and Toco. The roads to Cliza and Tarata have been recently cobbled by the SNC with funding from USAID/PDAR. The roads are generally good but need some improvement. The farm to market roads generally need bridges in order to be usable year round.

Health and Sanitation
Cliza has a district hospital which provides basic services to the population. The Unidad Sanitaria of Cochabamba, with financing from the GTZ, is implementing a project to improve and expand the health services in all of the Valle Alto region, including Cliza. There are also private clinics for general medicine.

Cliza has a garbage collection system with two dump-trucks; the service is provided once to twice a week. Each user is charged 1 Bs. a month. There are three public bathrooms. These are managed by the municipality which charges a small fee of Bs. 0.20 for their use.

Education
There are 7 primary schools, 2 middle schools, and 1 high school; these schools are public and function in 5 buildings. There are also three private schools with all instructional levels. The instruction is adequate but most of the schools need improvements in infrastructure, equipment, and supplies. More educational buildings are needed to fulfill the requirements of the town and nearby communities.

2.2.3.5.2 Other Local Services

Markets
The Alcaldía Municipal runs the central market. It was built in 1907 and needs rehabilitation of most of the infrastructure. The market consists of an enclosed lot, most of which is covered and includes a concrete floor. It can accommodate more than 200 vendors and their goods. This is not nearly enough for the number of vendors, and many must place their stalls in the streets to be able to sell. The municipality contracts the collection of the "sentaje" but keeps control of the market's maintenance.

There are two other market areas for different products such as grains, vegetables, and potatoes. The grain market has three open sheds with concrete floors. The potato market also contains an open shed. There is no other infrastructure.

Slaughterhouses
The municipality owns and runs the town's slaughterhouse. It holds up to 40 head of cattle and about 10 head are processed a day. There is no cooling system and the water supply is inadequate. There is no connection to the sewerage system, the water used in

the slaughtering process goes to an open channel. The infrastructure is in adequate condition, but could be improved. As in other towns, there is no charge for the slaughter of cattle because the municipality keeps the hides, which in turn represents an important source of municipal income.

Warehouses and Granaries
There are granaries to store agricultural goods in Cliza built by MACA in 1977 and administered by the Ministry of Industry. They are not used because the reduced production caused by the current drought can be managed in the markets.

Transportation Terminals
There is good transportation service to and from the town of Cliza. There is a bus terminal being built by the transportation unions. It is in use despite the fact that it is not yet finished. There are buses, taxis, and trucks providing very frequent service to Cochabamba, Punata, and other towns. Trucks serve the nearby local communities. There is train service on the ENFE line Cochabamba–Aiquile. The service is once a week and it is widely used for cargo and passengers. The train terminal is in poor condition. There is an airfield in Santa Lucía that is used by the Air Force. There is no public service.

Communication Systems
The town has a reasonably good communications system. Telephone service is provided by ENTEL, the national telephone company, through public phone booths for local, national, and international communications. ENTEL has installed 30 domestic phones which work through the main office. There is also an office of the ECOBOL, the national mail service. Up to five television channels from the city of Cochabamba reach Cliza. There are two local radio stations. Telegraph service is provided by DITER.

COTAVAC has been implementing a rural telephone service project which includes residential lines. It should be in operation by the end of the current year 1991. The project was started five years ago and there is skepticism about its eventual completion. COMTECO also has plans to install lines in the Valle Alto region including Cliza.

2.2.3.5.3 Environmental Issues

The town suffers from three notable environmental problems: waste disposal, sewage, and flooding. Significant adverse environmental conditions are caused by garbage accumulation in peripheral areas of the town, and the lack of running water and sewage treatment for the sewerage system. Cliza is located on the Río Cliza which has flooded the town several times in the past. There is also a problem with irrigation channels which carry excess water in the rainy season flooding nearby houses. No measures have been taken to protect the town from floods.

2.2.3.5.4 Critical Urban Infrastructure Needs

Critical needs for the improvement of the physical infrastructure of Cliza include:

- Rehabilitation and expansion of the water supply system;
- Sewage treatment plant;
- Protection against floods;
- Rehabilitation and expansion of the central market and improvement of the open markets;
- Improvement of the slaughterhouse;
- Rehabilitation and expansion of the schools;
- Farm to market roads to Toco, Sacabamba and Anzaldo.

2.2.4 Aiquile

2.2.4.1 Population and Migration

Aiquile is a medium-sized town located strategically along the main highway between Sucre, Santa Cruz, and Cochabamba. It also represents the largest town and the most significant central place in the Distrito Sur. It is linked economically to Mizque, Omereque, Pasorapa, and Rakray-Pampa; and it has good road connections to Mizque and improving road conditions with Omereque and Pasorapa. It is situated in a narrow valley and adjacent to a somewhat larger valley to the north along the road to Totora. Both valleys present only modest potential for further agricultural development in part because of their size, but principally because of the lack of adequate additional water supplies.

Population estimates for the town of Aiquile vary significantly, but the two most reasonable range from about 4,000 to approximately 6,000 (DAI 1990; Multiconsult/Consultores Galindo 1989b). The most reliable of these estimates is probably 6,000. This figure was based on the results of a survey of 503 homes conducted in 1989 by INE personnel under contract for a private consulting group.

As is the case for other secondary towns in Cochabamba Department, data on migratory patterns is essentially non-existent. Only general or anecdotal data are available, and these provide little information for informed policy development. Nevertheless, due to Aiquile's dominant position in the central place hierarchy of the Distrito Sur and its importance as an educational center for the region, it is reasonable to assume that it does serve as at least an initial migration destination for residents of the rural region and small towns tributary to it. Projections for electricity demand to the year 2000 suggest that the town's population will increase at only about 1.5 percent annually to about 7,000 (Multi-

consult/Consultores Galindo 1989b: 7). This rate suggests that most of the natural population increase and tributary area in-migration to the town will be offset by out-migration to larger population centers, probably Cochabamba and Santa Cruz, and perhaps Sucre. Estimates of migration from Campero Province, for which Aiquile is the capital, to the Chapare region are limited and somewhat contradictory. The PDAR study conducted in 1987 and cited by Rasnake and Painter (1989) suggests that as many as one in three household heads migrates to the Chapare in one form or another. But as Rasnake and Painter have noted, the survey design has serious flaws and the data may not be very useful. An extremely different picture is portrayed by the DIRECO Chapare farmer survey data reported by Painter and Bedoya (1990:20). Of over 7,000 farmers who were interviewed, only 51 reported their province of origin as Campero.

2.2.4.2 Employment

The most recent and useful data on the employment characteristics of Aiquile are provided by an 1989 INE survey produced under contract for Multiconsult/Consultores Galindo (1989b:6). Slightly over 500 houses were surveyed in the town. Despite the size of the town, agricultural occupations are important—20 percent reported raising cattle and 13 percent are agriculturalists. Teachers comprise a significant proportion of the sample, 14 percent, followed by those engaged in commerce, 10 percent. Drivers, artisans, and carpenters/construction workers account for 6.5, 4.9, and 4.2 percent of all occupations respectively. The remaining 27 percent fall into a broad range of occupations ranging from office workers and mechanics, to hotel and restaurant workers. One suspects however that these data are seriously flawed and that only the occupation of male household heads was considered. There is no category in the data reported for homemaker ("ama de casa"), and occupations which are normally dominated by women report extremely low numbers. For instance, only three individuals reported the sale of groceries ("abarrotes") and only three reported restaurant work as their occupations. Even a brief survey of the town reveals the relatively large number of establishments selling groceries (75) and selling prepared food (38) or drink (chicha) (84) (**Table 2.3**).

The production by artisans of small string instruments, "charangos", has been a specialty of Aiquile for a long time. Production satisfies both a national and reportedly an international market—German buyers apparently come directly to Aiquile to purchase these instruments. The head of the local association of "charango" makers reports it has a membership of 50 individuals.

2.2.4.3 Agricultural Markets and Trade Flows

2.2.4.3.1 Market Size and Structure

Aiquile represents a medium-sized provincial market center, dominated by small-scale vendors and some wholesale trade. Almost 500 vendors were counted on the survey day (August 18). Thirty percent were selling vegetables, 14 percent prepared food, 12 percent fruits, and 9 percent spices. The rest were selling handicrafts, groceries, potatoes, grains, and other commodities. Another measure of the market's relative size can be estimated by the number of trucks found in the streets on the weekly market day. Fifty-six trucks were counted on the survey day. If this number is subtracted from the number of trucks reported to be owned by local residents (Gray, 1990:16), which is 18, it can be concluded that 38 trucks found in the market came from other regions. Specifics on the number and type of market sites in Aiquile are presented in **Table 2.2**.

The wholesale market in Aiquile is comparatively small. Only 9 sites selling vegetables and three grain wholesale buyers were observed (**Table 2.4**). In the livestock market, located in a different area, 100 cattle, 20 pigs, and 9 horses were being traded (**Table 2.5**). Municipal authorities report that at this time of the year sales are low and about 60 cattle will be sold on any given market day. Between December and April this number more than doubles to between 120 and 150 per market day.

The market for the agricultural products traded in Aiquile is divided into sections. There is a general open area, a covered potato area, a section serving prepared food, a section with fixed sites and public bathrooms, and another for the sale of meat and prepared food. The market operates only on Sundays. Producer/sellers begin to arrive early in the morning and reach their maximum number around noon. In the market, producers are met by consumers and intermediaries at the wholesale and retail levels.

2.2.4.3.2 Trade Flows

Agricultural commodities traded in the Aiquile market come from the following production areas: Rakay Pampa (potatoes, wheat, barley), Santa Ana (corn, wheat, barley), Puente Arze (corn, grains, potatoes, fruits), Calamina (corn, wheat, barley), Mizque (onions, peanuts, corn), Omereque (tomatoes and fruits), and others. Details on communities and products are shown in **Figures 2.8** and **2.9**, in **Table 2.10**, and in Gray (1990:6).

The outward flow is controlled by wholesale intermediaries who take the commodities to the markets of Cliza, Punata, Cochabamba, Sucre, and Santa Cruz. The main products traded in this manner are maize, wheat, potatoes, onions, peanuts, and fruits (guayaba, chirimoya, and palta).

Figure 2.8

TRADE FLOWS INTO THE AIQUILE MARKET

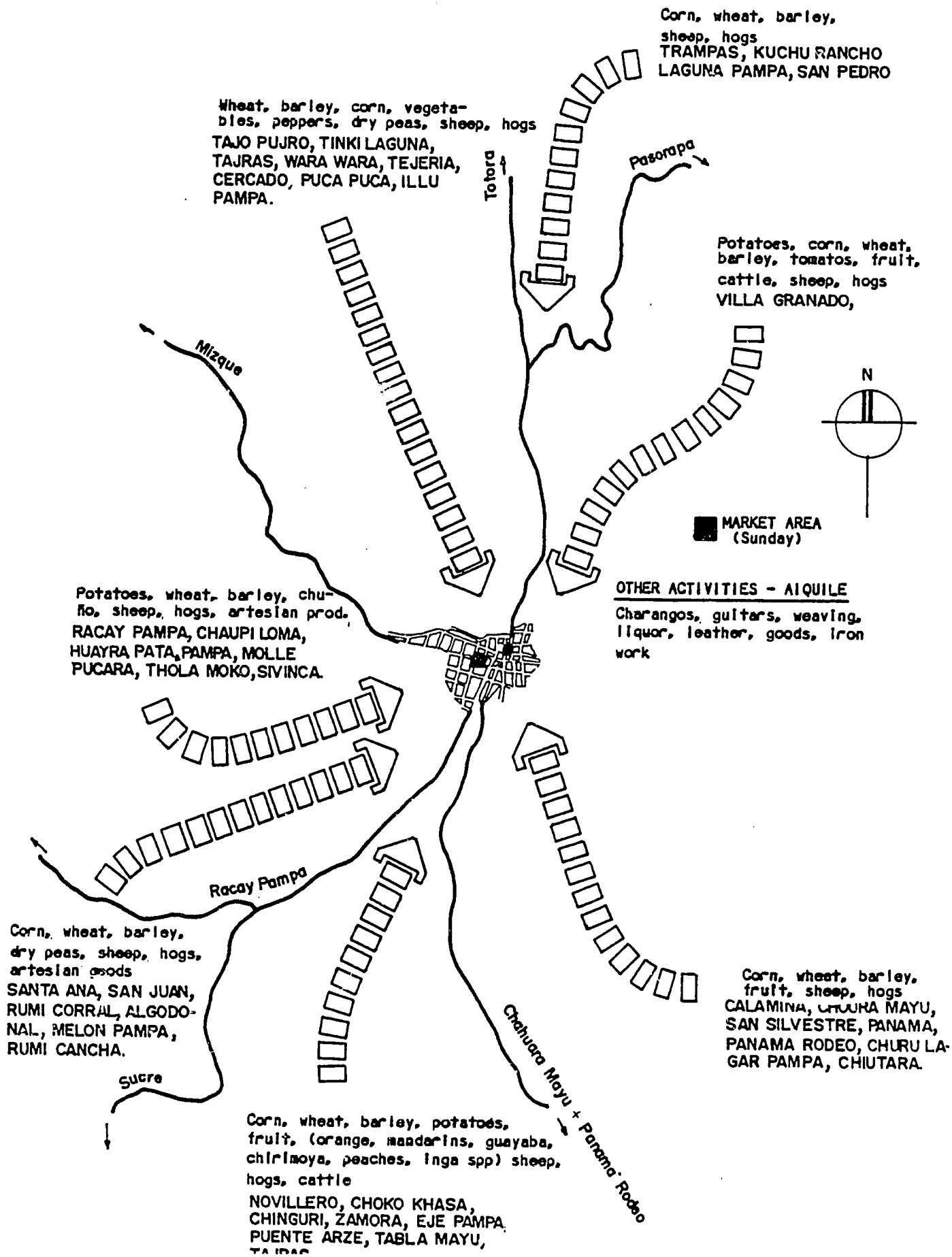


Figure 2.9

TRADE FLOWS FROM THE AIQUILE MARKET

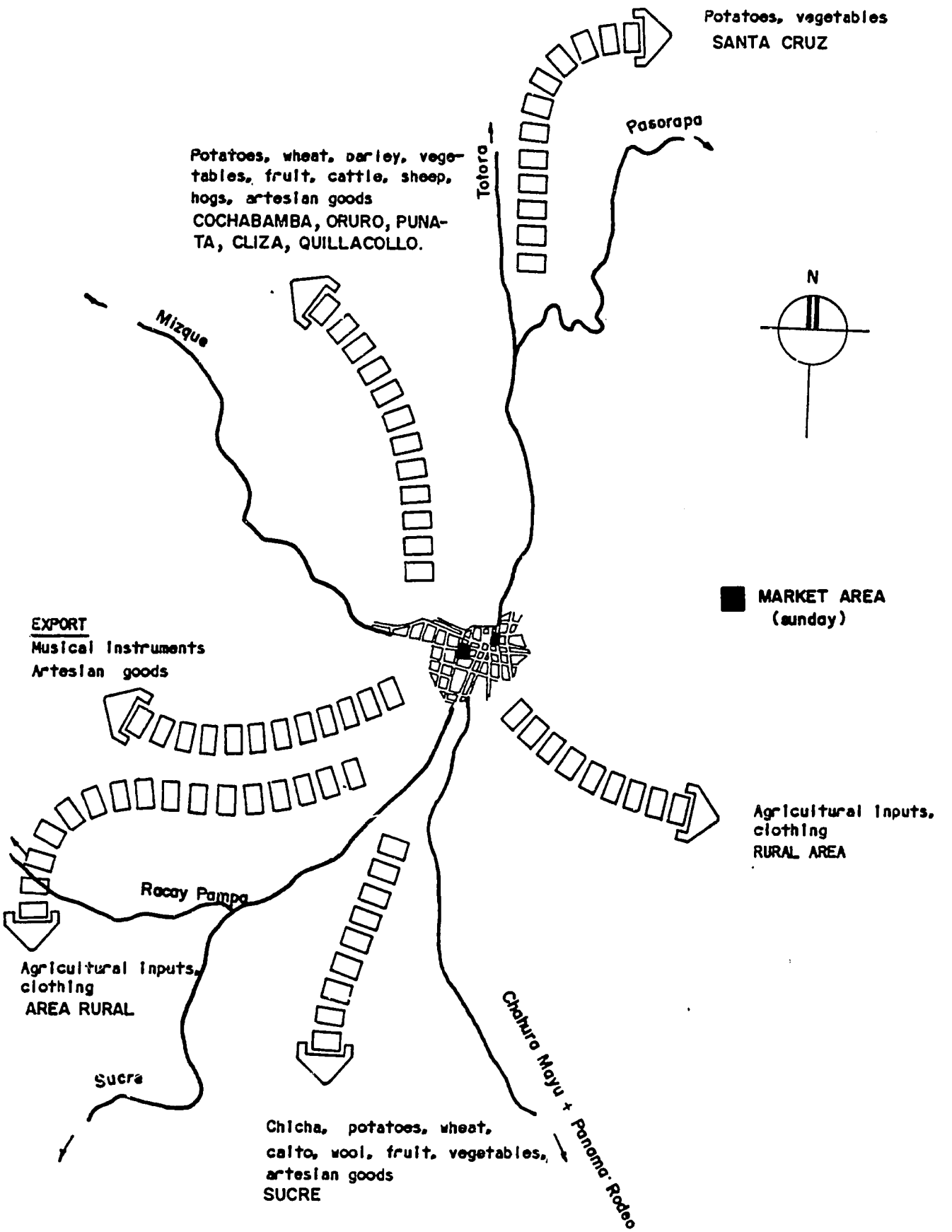


TABLE 2.10
FAIRS, PRODUCTS AND AREAS OF DOMINANT INFLUENCE FOR THE AIQUILE MARKET

COMMUNITY FAIRS		MAIN PRODUCTS MARKETED	AREA OF DOMINANT INFLUENCE - COMMUNITIES
DAYS	COMMUNITIES		
SUNDAY	AIQUILE	Potato, wheat, barley, fruits, agricultural inputs, vegetables, prepared foods, spices, and livestock (cattle, pigs, sheep, and horses).	Aiquile, Santa Ana, Calamina, Racoj Pampa, Laguna, Rodeo, Pasocopa, Villa Granado, Peña Colorada, Novillero, Lagarpampa, Omereque, Mizque, Puente Arce, Tipa Jara, Chaco Mayu, Huayaba Pampa, Huayca Pata, Mizque Pampa, Tipa Pampa, Ovejeria, San Juan, Ruml Cancha, and Molle Pucara.
MONDAY	MIZQUE	Potato, onions, carrots, peanuts, maize, fruits (citrus), and groceries.	Mizque, Ayuchama, Tucma, Julpe, San Pedro, Yungullas, Lampasillos, and Aiquile (rescatistas and street vendors).
WEDNESDAY	RAKAY PAMPA	Potato, wheat, barley, handicrafts, sheep, and pigs.	Rakay Pampa, Chaupi Loma, Huayra Pata, Pampas, Molle Pucara, Thola Moko, Sevinca, Mizque, and Alquile (rescatistas).
FRIDAY	VILLA GRANADO PUENTE ARZE	Potato, maize, wheat, tomato, barley, livestock (cattle, sheep and pigs), fruits, sugar cane, peanuts, and chancaca.	Villa Granado, Peña Colorada, Omereque, Eje Pampa, Zamora, Chinguri, Thajras, Peña Colorada, and Omereque.
SATURDAY	QUIROGA Y RODEO COLAMINA	Potato, maize, wheat, peas, barley, fruits, peanuts, and vegetables.	Quiroga, Zamora, Novillero, Eje Pampa, Chiguro, Calamina, Chahuara Mayu, Panama, and Rodeo.

Source: PADCO team survey with assistance from Hipolito Cespedes, August 1991.

2.2.4.4 Town Based Services to Agricultural Production

Town based services to agricultural production in Aiquile are provided by an IBTA office, staffed with one full-time technician, by SENARB, and by the USAID-financed PDAR. IBTA also runs a project called PRODEVI, with PDAR financing. No technical education in the field of agricultural production is provided in Aiquile.

The town does have at least one permanent well-stocked establishment dedicated to the sale of agricultural inputs and tools (Agropecuaria El Surco). In addition, during the Sunday market fair, there are a few street vendors selling agricultural inputs; two were counted on the day of the survey.

For credit services, Aiquile has an agency of Banco del Estado, a state-owned commercial bank and the savings and loan cooperative San Pedro Ltda., which currently has 780 members. Transportation services for agricultural products are provided by privately-owned vehicles. There are about 30 trucks providing service to Cochabamba, Sucre, and Santa Cruz. Transportation for passengers is provided by three commercial bus lines, which operate 5 vehicles serving the route to Cochabamba. The town is also connected to Cochabamba by railroad once a week. There is also a local airport with limited capacity for small private or charter aircraft; there are no scheduled flights. In terms of communications, Aiquile is served by agencies of DITER and a local post office.

There are several non-governmental organizations working in Aiquile. Cooperazione Internacionale, an Italian NGO, is very active in infrastructure construction—roads, hospitals, and water systems. Radio Esperanza, also with Italian financing, operates a radio and local TV channel. Other NGOs active in Aiquile are Caritas, Care, and Vision Mundial.

2.2.4.5 Physical Infrastructure

2.2.4.5.1 Basic Social Services

Water Supply

The town has a water supply system built in 1965 by USAID. It is quite deteriorated and it provides for only about 40 percent of the population during the dry season. This situation lasts for about 6 months. The houses served get water once every 3 days for only 3 hours. The quality of the water is bad (contaminated); there is no water treatment plant. The distribution system is not working properly and there are considerable losses of water. There are 1,400 connections including houses, businesses, and small industries covering 80 percent of the town. There are 2 public water fountains. The municipality charges Bs. 1 per month for domestic connections, Bs. 2 for commercial, Bs. 4 for small

industries, and Bs. 6 for larger industries. It is estimated that more than 50 percent of the users do not regularly pay their bills.

Cooperazione Internacionale from Italy is conducting a study to identify a new source for the water supply system. It is estimated that actual construction can begin in February 1992 and the system can be operational the same year. There are plans to drill one or two wells to supplement surface water supplies.

PDAR has offered to finance (with funding from USAID) the new distribution system ($500,000). PDAR requires that the Italian organization's project be finished and the wells drilled so that a minimum of 12 liters per second are available before it begins work on the distribution system.

Sewerage

Aiquile has a sewerage system built in 1965 at the same time as the water supply system (USAID); it is also quite deteriorated. The system covers about 20 percent of the town. Practically speaking, it is not working because of the lack of running water and the age of the system. It is run by the local municipality. There is no additional charge for the sewerage. Maintenance is done by the Water and Sewerage Department of the municipality. The only other waste disposal systems in use are latrines and simple septic systems. These are used by only a small proportion of the population (less than 20 percent); most do not use any sewerage system at all. The municipality does not have sufficient and qualified personnel and equipment to manage the system properly.

PDAR has planned a project to rehabilitate and expand the sewerage system at a cost of $600,000. The realization of this project is pending the construction of the new water supply system with a guaranteed discharge of 12 l/s.

Electricity

The town of Aiquile has its own power generation plant, recently rehabilitated and expanded by PDAR/USAID. The plant consists of three diesel generators. The system covers about 70 percent of the town and provides for street lighting. There are 720 connections with meters and the service is 6 hours a day. The rate is 5 Bs. for a minimum use of 8 KWH; every additional KWH costs 1 Bs. The new system has experienced some problems which are causing complaints from the users (spiking). Reportedly, the system is being adjusted so that it will function properly. It is run by the municipality.

The street lighting system has also been recently improved by PDAR/USAID. One boliviano extra will be charged in September 1991 to maintain the system. The municipality has 4 people to manage and maintain the water, sewerage, and electricity systems. None is a qualified technician.

PDAR has plans to finance the connection of Aiquile's electric network to the Corani system in Cochabamba through the Rural Electrification Project. This project is expected to be under way by the year 1993 at a cost of $1,500,000 for Aiquile and Mizque combined.

Streets and Rural Roads

The streets of Aiquile are in poor condition. They are principally compacted dirt roads and only 10 percent of them are cobbled; there are no plans to improve them until the water supply and sewerage system are finished and operational.

There are two main roads which connect Aiquile with the city of Cochabamba and a third road to the city of Sucre. The route Aiquile-Mizque-Cochabamba (190 kilometers) has been recently improved by the SNC with funding from PDAR/USAID. It is an all-weather dirt road to Punata and from there it is paved to Cochabamba. The trip takes 4 to 5 hours. The construction of two bridges is about to begin, allowing the dependable use of the road all year long.

The route Aiquile-Epizana-Cochabamba (230 kilometers) has been the traditional main road. It is an all-weather dirt road to Epizana and then it is paved to Cochabamba. This trip takes also between 4 and 5 hours. The road to the city of Sucre is unpaved but passable all year long and well maintained. It is Cochabamba's principal connection to southern Bolivia.

Dirt roads connect Aiquile to other nearby communities and agricultural production centers like Saipina, Pasorapa, and Novillero. Most of these are not all-weather roads and often are not passable during the rainy season. They warrant improvement.

Health and Sanitation

Aiquile has a district hospital which provides basic services. This hospital was rehabilitated and expanded by Cooperazione Internacionale of Italy in 1989 and it is run by the Unidad Sanitaria of Cochabamba. Cooperazione Internacionale also built a new hospital named Bertol, which opened in 1990. It is operated jointly with the hospital of the Unidad Sanitaria. Both these hospitals provide adequate service to the community. Additionally, there are 3 private clinics.

The municipality collects garbage with a single dump truck. The service is provided 3 days a week to every sector of the town. The truck is old and needs to be replaced.

There are three public bathrooms but they need improvement and maintenance.

Education
There are 6 primary, 2 middle, and 2 high schools in Aiquile serving about 3,300 students; these schools are public. There are no private schools. The quality of the education is below average and most of the schools need improvements in infrastructure, equipment, and supplies. More schools are also needed, since the 10 existing "schools" function in 5 buildings. In many Bolivian towns and cities, each school building may be home to 2 or even 3 "schools"—that is, the building will be used in 2 or 3 daily shifts by totally distinct groups of pupils and teachers.

There are no technical schools or institutes.

2.2.4.5.2 Other Local Services

Markets
The Alcaldía Municipal has one central market where it is possible to find some agricultural goods, clothing, and electronic equipment. This market is near the main plaza and needs to be rehabilitated and expanded.

Agricultural goods are sold mainly in the "mercado seccional", which is located on the outskirts of town and consists of several covered areas. On Sundays, many marketers are located in the streets around this market because of the limited covered space available. About one block away from this market is the grain market held in an open field on the north side of town along the road to Totora. There is also an animal market located in another open field. It has no infrastructure except some primitive corrals. The municipality has plans to build another covered area in the "mercado seccional" and additional bathrooms.

Slaughterhouses
The municipality owns and runs the town's only slaughterhouse. It processes up to 4 head of cattle a day; there is no cooling system. The infrastructure is in good condition and it is located next to the animal market area. There is no charge for the slaughter of cattle because the municipality keeps the hides. These are sold and are an important source of municipal income.

Warehouses and Granaries
There are no warehouses or granaries to store agricultural goods.

Transportation Terminals
Transportation terminal infrastructure in Aiquile is limited. There is no bus terminal. There are 3 companies with 5 buses providing service to Cochabamba. There is also some public transportation to Mizque. There is train service once a week to Cochabamba and a ter-

minal with basic facilities such as offices, warehouses, and bathrooms. An air field near Aiquile is used mainly for official visits from Cochabamba. There is no public service. Considerable traffic passes through Aiquile because it is a traditional stopover for vehicles going between the cities of Cochabamba, Sucre, and Santa Cruz.

Communication Systems
Communications from Aiquile are not easy. There is no telephone service. There is an office of the ECOBOL, the national mail service, one local private TV channel, and one radio station. Telegraph service is provided by DITER. There is a project to provide rural telephone service under way with ENTEL. It should be operational in 1993.

2.2.4.5.3 Environmental Issues

There are significant adverse environmental conditions caused by garbage accumulation in peripheral areas of the town and the lack of running water for the sewerage system. The river that goes through the town serves as a collector of garbage and sewage, becoming a source of contamination for the town. This river does not have running water during most of the dry season (6 months).

2.2.4.5.4 Critical Urban Infrastructure Needs

Critical needs identified by the research team for the improvement of the physical infrastructure of Aiquile include:

- Rehabilitation of the water supply and sewerage systems;
- Improvement of the street network;
- Improvement of the central and open air markets;
- Construction of farm to market roads from Aiquile to Molinero and Alalay;
- Construction of a bus terminal;
- Expansion and improvement of the electricity system.

2.2.5 Arani

2.2.5.1 Population and Migration

Arani is a small provincial capital for the province of the same name located in the Valle Alto of Cochabamba. The town is located about 10 kilometers from Punata on the road to Mizque and Aiquile. Even though the town achieved importance during colonial and early republic times, its importance has declined considerably. The area of influence of Arani is now comparatively small and basically local.

The population of the entire province was reported to be 38,170 in 1976 (INE, 1982). There are no official statistics of the town's population. However, according to municipal

authorities, the population of Arani can be estimated to be around 5,000. This figure, however, seems too large, and a figure of 3,000 to 3,500 seems more reasonable.

Specific and useful data for migration flows are not available. It can be assumed that given the ready accessibility of the town to Punata and Cochabamba, most of the migrants have probably moved to these cities.

Arani seems to be an important source of migrants to the Chapare region. According to the DIRECO data reported by Painter and Bedoya (1990:20), 7 percent of the farmers in the sample reported the province as their place of origin (n=484).

2.2.5.2 Employment

There are no statistics offering reliable information on employment for the town of Arani. Considering Arani's location and relative size as a market town, it can be estimated that agriculture plays a very important role in income generation even among the town's resident families. Principal non-farm occupations probably include public servants, teachers, and merchants. A field count of permanent commercial establishments selling agricultural and related goods shows that of the 134 sites counted, 51 percent were "chicherias", 21 percent were selling "abarrotes" (groceries), and 10 percent were restaurants and similar establishments. The rest were small artisan-level workshops, bakeries, small grain mills, and sellers of miscellaneous manufactured goods (**Table 2.3**).

2.2.5.3 Agricultural Markets and Trade Flows

2.2.5.3.1 Market Size and Structure

Arani represents a medium-sized provincial market center, dominated by small-scale vendors and some wholesale trade. Almost 500 vendors were counted on the survey day (August 15). Twenty four percent were selling vegetables, 20 percent prepared food, 14 percent grains, and 12 percent potatoes and similar products (oca and papalisa). The rest of the sites were selling groceries, fresh meat, spices, fruits, and other commodities. Specifics on the number and type of market sites in Arani are presented in **Table 2.2**.

A modest wholesale market exists in Arani. Its relative size can be estimated by the number of trucks loading or unloading specific products. Five potato trucks, 2 grain trucks, and 9 fruit trucks were counted (**Table 2.4**). The potato and grain trucks had a capacity between 200 and 300 qq. and were being loaded with these products by wholesale buyers. The 9 fruit trucks were smaller (60-100 qq.) and were selling oranges, bananas, and chancaca to individual marketers and small scale retailers.

In the livestock market, which is located in a different field about 2 blocks east of the main market, 101 sheep and 30 pigs were being traded (**Table 2.5**). No cattle were being traded on the day of the survey.

The market for the agricultural products traded in Arani is located in a large field with three large open sheds and one small one. About half of all producer/sellers were located under these shelters, with the remainder in the open air. The market operates only on Thursdays. Producer/sellers begin to arrive early in the morning and reach their maximum number around noon. In the market, producers are met by consumers and intermediaries at the wholesale, retail, and barter levels.

2.2.5.3.2 Trade Flows

Most of the agricultural commodities traded in the Arani market come from surrounding communities such as Rodeo (potatoes, grains), Vacas (potatoes, grains), Collpaciaco (potatoes, grains, small livestock), Villa Rivero (vegetables, grains), La Villa (vegetables), and others. Details on communities and products are shown in **Figures 2.10** and **2.11**, and in **Table 2.11**. The commodities are brought to the fair by individual producers.

The outward flow is controlled by wholesale intermediaries who take the commodities to the markets of Cliza, Punata, Cochabamba, and Santa Cruz. The main products traded in this manner are potatoes and grains.

2.2.5.4 Town Based Services to Agricultural Production

There are few town based services to agricultural production in Arani. There is an extension agency of IBTA staffed with one full-time technician. No facilities exist, however, for the provision of technical education in the field of agricultural production.

The town does not have a permanent establishment dedicated to the sale of agricultural inputs or the sale/lease of agricultural tools and machinery. However, during the Thursday market, there are a few street vendors selling agricultural inputs; three were counted on the day of the survey. No branches of public or private banks or any other credit institution are based in Arani.

Transportation services for agricultural products are provided by privately-owned vehicles. The overall count of trucks for the Arani market on the survey date showed a fleet of 61 medium to high-capacity trucks and 28 light trucks. Transportation for passengers is provided by trucks and buses which serve the routes to Punata and Cochabamba. Five buses were counted during the peak hours of the market. In terms of communications, Arani is served by agencies of ENTEL with only public phone booths, DITER, and a local post office.

Figure 2.10

TRADE FLOWS INTO THE ARANI MARKET

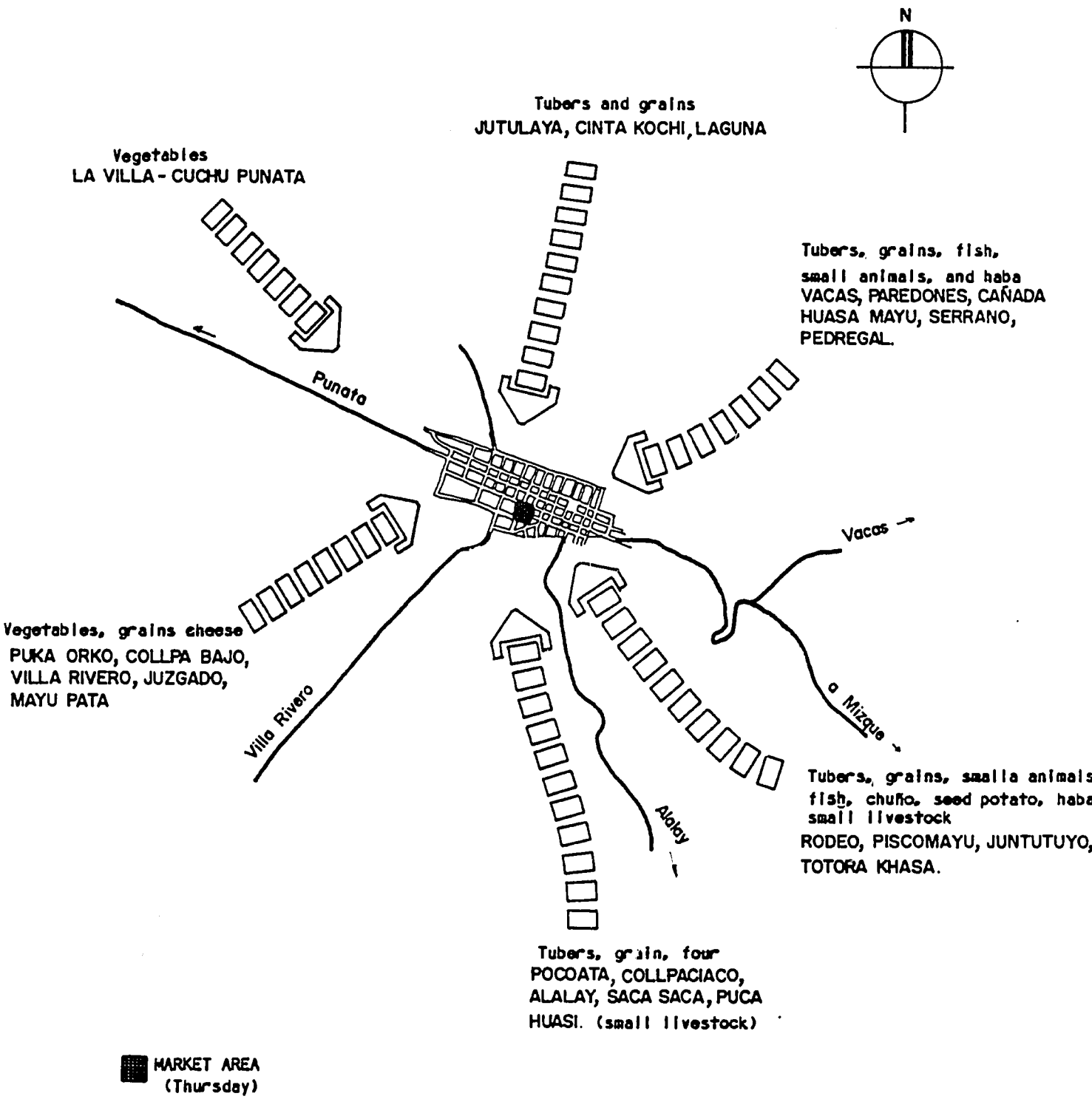


Figure 2.11

TRADE FLOWS FROM THE ARANI MARKET

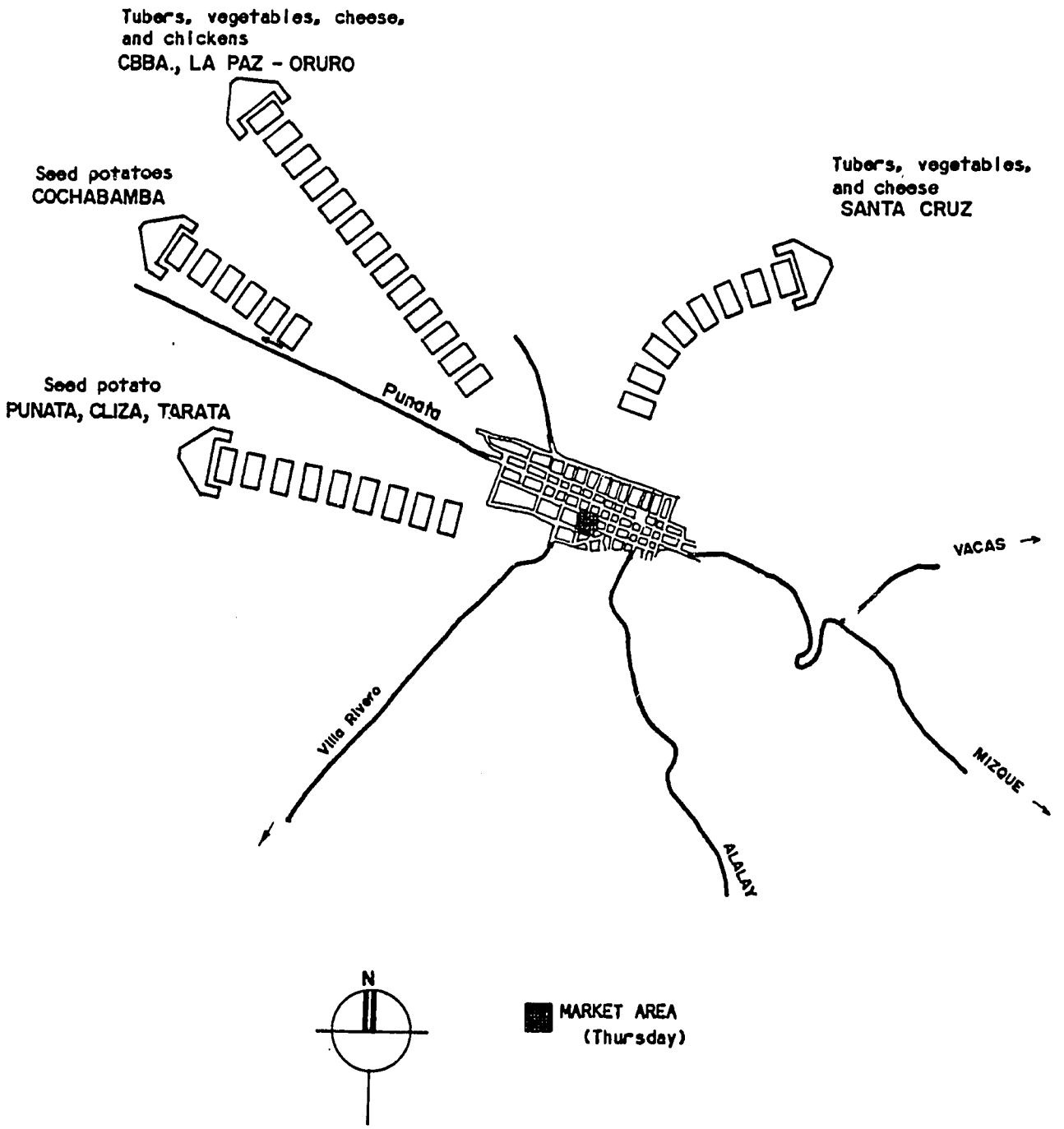


TABLE 2.11
FAIRS, PRODUCTS AND AREAS OF DOMINANT INFLUENCE FOR THE ARANI MARKET

COMMUNITY FAIRS		MAIN PRODUCTS MARKETED	AREA OF DOMINANT INFLUENCE - COMMUNITIES
DAYS	COMMUNITIES		
MONDAY	RODEO	Potato, chuño, papaliza, oca, wheat, barley, haba, peanuts, corn, agricultural inputs.	Rodeo, Juntiluyo, Puyu Puyu, Risco Moya, Totora, Kasa, Laquiña, Vacas, Carabamba, Misukani, and Mizque.
MONDAY	ALALAY	Potato, papaliza, oca, wheat, barley, peas, and sheep.	Alalay, Laguna, Convento Pampa, Herrera Cancha, Ayapampa, Pajcha, Cuchallas, Yana Rumi, and Puca Huasi.
WEDNESDAY	CAÑADAS	Potato, wheat, barley, oca, papaliza, chuño, fish.	Cañada Grande, Cañada, Vacas, Pedregal, Jatum Mayu, Huaynillo, and Serrano.
THURSDAY	ARANI	Potato, papaliza, oca, wheat, maize, barley, dry peas, vegetables, flour, fish, livestock (sheep, pigs, rabbits), miscellaneous manufactured goods, agricultural inputs, cloths, and rubber tire sandals.	Arani, Collpaciaco, Pocoata, Alalay Rodeo, Vacas, Paredones, Serrano, Pedregal, Hucha Pata, Saca-Saca, Puca Huasi, Cotachilla, Puca Orkho, Juzgado, Tambillo, Villa Evita, Arallica, Sasca, Villa Barrientos, Chiriguani, Santa Lucia, Villa Rivero, Punata, La Villa, Cinta Khochi, Laguna, Collpa Baja, Pajcha, Colca Linde, and Cochabamba.
FRIDAY	PAREDONES	Potato, oca, papaliza, wheat, barley, haba, sheep and pigs.	Vacas, Paredones, Pajcha, Totora, Pampa, Cañadas, Ovejeria, Pilahuilu, Huasarani, Yana Tuna, Totora Mayu, and Kuliku.
SUNDAY	YACU PARTICOJ	Potato, chuño, barley, wheat.	Totora Pampa, Yucupartikoj, and Huaycha Loma.

Source: PADCO team survey with assistance from Hipolito Cespedes, August 1991.

There are no urban-based agricultural cooperatives. The only cooperatives found were COAPAA (Cooperativa de Agua Potable y Alcantarillado), which serves the town in the areas of potable water and sewerage systems, and FOTRAMA and Las Imillas, which promote and facilitate the production and export of hand-made wool products.

The only non-governmental organization working in the town of Arani is ASAR/AMER-INDIA, which also promotes and facilitates production and sale of hand-made wool products, as do Kayhuasi and Casa Fisher, two privately-owned commercial enterprises.

2.2.5.5 Physical Infrastructure

2.2.5.5.1 Basic Social Services

Water Supply

The town has a water supply system built in 1980 by CORPAGUAS and managed by the Cooperativa de Agua Potable y Alcantarillado, COAPAA. It serves around 80 percent of the population with domestic connections. At present, the supply lasts about three hours a day. This is due mainly to the seasonal availability of water, the type of system, and inadequate storage capacity. The quality of the water supplied is bad; there is no water treatment.

The cooperative has 791 registered members with about 750 of them having connections, including houses, businesses, and small industries. There are also two public water fountains. There is a one time charge of Bs. 100 for the right to a connection. Additionally, there is a charge of Bs. 2 ($0.75) per month for houses and Bs. 3 for businesses and small industries. It is estimated that only 50 percent of the users pay their bills regularly. There are about 100 requests to be admitted to the cooperative but these are not being processed because the system cannot support any more connections.

The distribution system needs to be replaced because of considerable water losses. The cooperative does not have sufficient and qualified personnel and equipment to manage the water supply system adequately. It only has one administrative officer and one technician.

In addition, the municipality operates its own water supply system, independently from the cooperative. This system serves about 30 percent of the population concentrated in the center of town. Some houses are connected to the two separate systems. The service is bad, despite the fact that the source of the water is better in quality than the cooperative system. It needs improvements in the distribution system.

Sewerage

The town of Arani has a sewerage system built in 1988 by the National Social Emergency Fund (Fondo Social de Emergencia). Even though the system covers most of the streets, there are domestic connections in only about 10 percent of the homes. The system is run by the cooperative COAPAA; it is not working properly due mainly to the lack of running water. It does not have a treatment plant. The residents have stated that it was not constructed properly and that it has many faulty parts. The discharge goes to the nearby Río Pocoata. The cooperative charges Bs. 100 ($28) for the right to a connection. Currently there are no monthly charges. Connections are added as the requests are made. Only 55 of the 750 members with water connections have been connected to the sewerage system. The only other waste disposal systems in use are latrines and simple septic systems. These are used by only a small proportion of the population; most do not use any sewerage system. The cooperative does not have sufficient and qualified personnel and equipment to manage the system properly.

Electricity

The town of Arani receives electricity from the interconnected system of the Cochabamba electric distribution company ELFEC. About 70 percent of the population has connections with meters and the service is good. ELFEC has a local office for administrative work and some maintenance. Bills are prepared in the main office in Cochabamba; and user payments are usually on time. There are 3 categories of electric service with different rates: residential, commercial and industrial.

The street lighting system is poor and needs to be improved and expanded. ELFEC does not have plans to do that in the near future. The charge for street lighting is included in the electric bill and represents 12 percent of the net use of collections.

Streets and Roads

The streets of Arani are in poor condition. They consist mainly (70 percent) of cobbled roads (empedrado), which date from 5 to 10 years ago. The municipality is improving and expanding the street network using the same method; the streets in the main plaza are being covered with cement blocks (adoquines).

One main road connects Arani with the city of Cochabamba (56 kilometers). The road is in good condition and consists of 45 kilometers that are paved and 11 kilometers that are dirt. The dirt section is being cobbled by the SNC with financing from USAID. This main road continues east with no surfacing, but generally passable in all seasons, to Rodeo, Mizque, Aiquile, with connections to either Santa Cruz or Sucre.

Dirt roads connect Arani to other nearby communities and agricultural production centers like Punata, Villa Rivero, Vacas, Pocoata, and Colla Sicaco. The roads are adequate, but

need some improvement. Other roads to the communities of Lagunas, Cinta Khorchi, and Jutulaya Kumu Kewiña are necessary to facilitate and increase the commercial activity from these areas.

Health and Sanitation
Arani has a district hospital that provides basic services. The Unidad Sanitaria of Cochabamba, with financing from GTZ, is implementing a project to improve and expand the health services in all of the Valle Alto region, including Arani. The current service is good. Additionally, there are two private clinics providing certain medical services.

Arani does not have a garbage collecting system and there are public bathrooms only in the central market. Public bathrooms are needed in the open market areas.

Education
Arani has 4 primary schools, 2 middle schools, and 1 high school, which are public. There is one private school with middle and high school levels. The instructional quality is adequate. However, most of the schools need improvements in infrastructure, equipment, and supplies. Space allocated for school buildings is inadequate for the town's students.

2.2.5.5.2 Other Local Services

Markets
The Alcaldía Municipal runs the markets for agricultural goods. The central market is located in the main plaza, in the same building as the municipality. It consists of an enclosed area with a concrete floor and a small covered area. It contains about 100 stalls. The municipality is improving the market area; there are public bathrooms.

There is also a large open market. It consists of three open sheds and a vacant field. There is no other infrastructure such as offices, bathrooms, or lighting. Arani has an animal market area with no infrastructure.

Slaughterhouses
The municipality owns and runs the only slaughterhouse. It holds up to 5 head and can process up to 20 head per week. There is no cooling system and it lacks an adequate water supply. The municipality is considering improving the infrastructure with the addition of processing tables and new equipment, a storage room for hides, and a control room.

There is no charge for the slaughter of cattle because the municipality keeps the hides, which in turn become the most important source of income for this municipality. These are sold to the leather industry.

Warehouses and Granaries
There are no warehouses or granaries to store agricultural goods.

Transportation Terminals
There is no bus terminal. There are buses and trucks daily to Punata and Cochabamba, connecting with other towns and cities. Currently, the transportation companies are using the old train terminal as a bus station.

Train service on the ENFE line connecting Cochabamba-Aiquile was discontinued in 1975. The terminal which is used by the transportation organizations is quite deteriorated; there are no public bathrooms.

Communication Systems
The town has modest communication infrastructure. Telephone service is provided by ENTEL, the national telephone company, through public phone booths for local, national, and international communications. There is also an office of the Empresa Nacional de Correos, the national mail service.

One television channel from the city of Cochabamba is received. There are two local radio stations. Telegraph service is provided by DITER. COTAVAC, through its rural telephone service, has plans to install residential phone lines in Arani. These may be in operation by the end of the current year, 1991.

Additionally, the local municipality has asked COMTECO, the telephone company serving the city of Cochabamba, to install a public phone booth; installation is projected for the near future.

2.2.5.5.3 Environmental Issues

Adverse environmental conditions are caused by garbage accumulation in peripheral areas of the town and the lack of running water for the sewerage system. The absence of a treatment plant in the sewerage system also contributes to pollution of the environment in the area where the collector ends. Another problem is the erosion of the town's dirt access roads by ephemeral streams during the rainy season. Arani is situated beside two rivers, the Río Pocoata and the Rio Wiscana, which have flooded the town several times in the past. No measures have been taken to protect the town from floods.

2.2.5.5.4 Critical Urban Infrastructure Needs

Critical needs for the improvement of the physical infrastructure of Arani are:

- Rehabilitation of the water supply and sewerage system;
- Protection against floods;
- Improvement of the urban street network (cobbled roads and lighting).

2.2.6 Mizque

2.2.6.1 Population and Migration

Mizque is a small provincial capital for the province of the same name located in the Distrito Sur of Cochabamba. It is situated in a small but comparatively well watered valley with a sub-tropical climate, adequate soils, and the clear potential for some future agricultural development and intensification. Despite its relative isolation and small size the town has experienced some population growth in the last 20 years. In 1976 the town supported a population of 1,484, while an estimated ten years later by CIDRE (1987:146-148) placed the population at about 1,800. Its current population may be somewhat more than this number. A potable water system which has just been installed with USAID/PDAR funding reports 400 house connections, representing over 90 percent of the population. Assuming an average of five persons per household, this suggests that the current population may number approximately 2,000.

Solid data on the effects of immigration and emigration on Mizque's population numbers are simply non-existent. All that can be said is based on hearsay and informed speculation. The town's mayor and CEDEAGRO personnel who have worked in the region for almost ten years suggest that the town has been a minor migration focus for residents of the Valle Alto, especially from around Cliza, for some 20 years. These individuals also refer to permanent migration of the town's residents to Cochabamba. The extent to which the town and/or province contributes to either short or long-term migration to the Chapare is not at all clear either. A PDAR study conducted in 1987 of 400 smallholders in the Distrito Sur and Tarata suggested that 1 in 3 went to work in the Chapare region (as reported by Rasnake and Painter 1989:47-48). The study apparently suffered from significant design flaws as no differentiation was made between temporary, seasonal, or permanent migrants. In any case it is probably reasonable to assume at least a small amount of town-based emigration especially by young males to the Chapare. On the other hand, the DIRECO data (Painter and Bedoya, 1990:20) which reports on farmer interviews between 1985 and 1989, indicates 131 farmers reported the province of Mizque as their place of origin. Some of these may have been town-based farmers, but the number is probably not significant.

2.2.6.2 Employment

A sample survey of 153 families conducted in 1989 by INE personnel for the feasibility study for Mizque's new electric system provides useful detail on employment among the town's residents (Multiconsult/Consultores Galindo 1989b:5). Even among the town's resident families, agriculture plays an important role in income generation. Almost half of all the families own agricultural lands, the majority of these with irrigation. Commercial activities account for the largest single family-based employment category, with 31 percent. This is followed by agriculture with 23 percent. Twenty-eight percent report various occupations including bakers, chicha brewers, and public servants. A mix of occupations account for a small percentage of the remaining families—3 percent raise livestock, 6 percent are teachers, 6 percent are transport drivers (and most are owners), and 3 percent are artisans. Many families, 40 percent, reported multiple occupations; many of these probably included agriculture as one component. However, as is the case with the data reported for Aiquile (Multiconsult/Consultores Galindo 1989a), these survey data apparently only included household heads, probably males, and do not factor in women's contribution to the work force. Homemaker was not included as a job category and the number of those reporting occupations in traditionally female dominated areas—"abarrotes" and restaurant type activities—is very small.

2.2.6.3 Agricultural Markets and Trade Flows

2.2.6.3.1 Market Size and Structure

Mizque is a small provincial market center, characterized by a few small-scale vendors. On the survey day (August 26), 135 vendors were counted. Twenty-five percent were selling potatoes, 18 percent groceries, 12 percent vegetables, 11 percent prepared food, and 9 percent spices. The rest of the sites were selling artisan goods, fruits, coca, agricultural inputs, meats, and dairy products. Specifics on the number and type of market sites in Mizque are presented in **Table 2.2**. No wholesale trade was observed on the day of the survey.

The retailing market for the agricultural products traded in Mizque is located in the streets adjacent to the main plaza and operates only on Mondays. There is also an open field on the south side of town where livestock sales occur. On the day of the survey, 44 donkeys, 20 cattle, 20 sheep, 14 goats, and 10 pigs were being traded (**Table 2.5**).

2.2.6.3.2 Trade Flows

Most of the agricultural commodities traded in the Mizque market come from nearby communities such as Tucma (wheat, peanuts, fruits), Ituchi (potatoes, peanuts, garlic), Laka Tambo (corn, wheat, barley), Jucumal, (potatoes, grains, fruits), Pajcha Pata (potatoes, grains, vegetables, peanuts), and others. Details on communities and products

are shown in **Figures 2.12** and **2.13** and in **Table 2.12**. The commodities are brought to the fair by individual producers.

The outward flow is controlled by local intermediaries who take the commodities to the markets of Cliza, Punata, Arani, Aiquile, Rodeo, Santa Cruz, and Cochabamba. The main products traded outside the local area are potatoes, onions, garlic, fruits (chirimoya and palta), and peanuts.

2.2.6.4 Town Based Services to Agricultural Production

Town based services to agricultural production in Mizque are provided by an agency of IBTA, staffed with 5 full-time technicians. Additionally, IBTA operates the nearby experimental station of Mayra. The USAID-financed PDAR also offers extension services through PRODESUR (Proyecto de Desarrollo del Sur) and finances the research project CEDIR (Centro para el Desarrollo e Investigación Regional), which continues the work previously done by PROCIPLA. CEDIR has an office on the outskirts of Mizque.

CEDEAGRO (Centro de Desarrollo Agropecuario), a Cochabamba-based NGO, is involved in a wide variety of projects designed to improve agricultural productivity. These include an apiculture project, rural potable water projects, irrigation infrastructure, and assisting the municipality in building a new central market. There are no facilities oriented to the provision of technical education in the field of agricultural production.

The town does not have a permanent establishment dedicated to the sale of agricultural inputs or the sale/lease of agricultural tools and machinery. However, during the Monday market, there were a few street vendors selling agricultural inputs; four were counted on the day of the survey. No agencies of public or private banks are based in Mizque. There was an agency of the Bolivian Agricultural Bank, which was recently closed. The savings and loan cooperative "Señor de Burgos" offers some limited financial services.

Transportation services for agricultural products are provided by privately-owned vehicles. Estimates indicate that the town has a fleet of 22 trucks (Gray, 1990). Transportation for passengers is provided by 2 commercial bus lines, which operate 6 vehicles serving the routes to Aiquile and Cochabamba every other day. In terms of communications, Mizque is served by agencies of DITER, a local post office, and private short-wave radios operated by CEDEADRO and PDAR.

Figure 2.12

TRADE FLOWS INTO THE MIZQUE MARKET

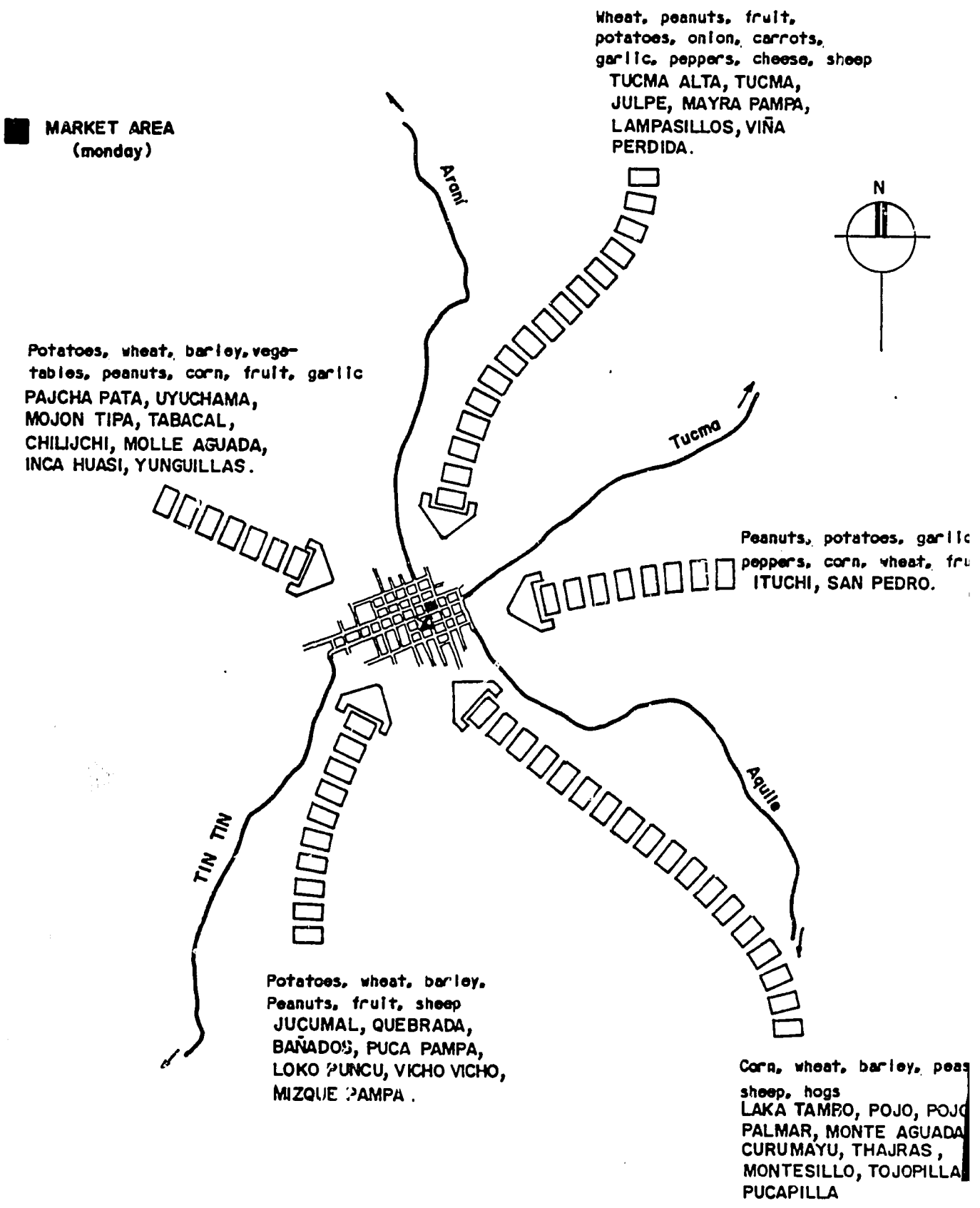


Figure 2.13

TRADE FLOWS FROM THE MIZQUE MARKET

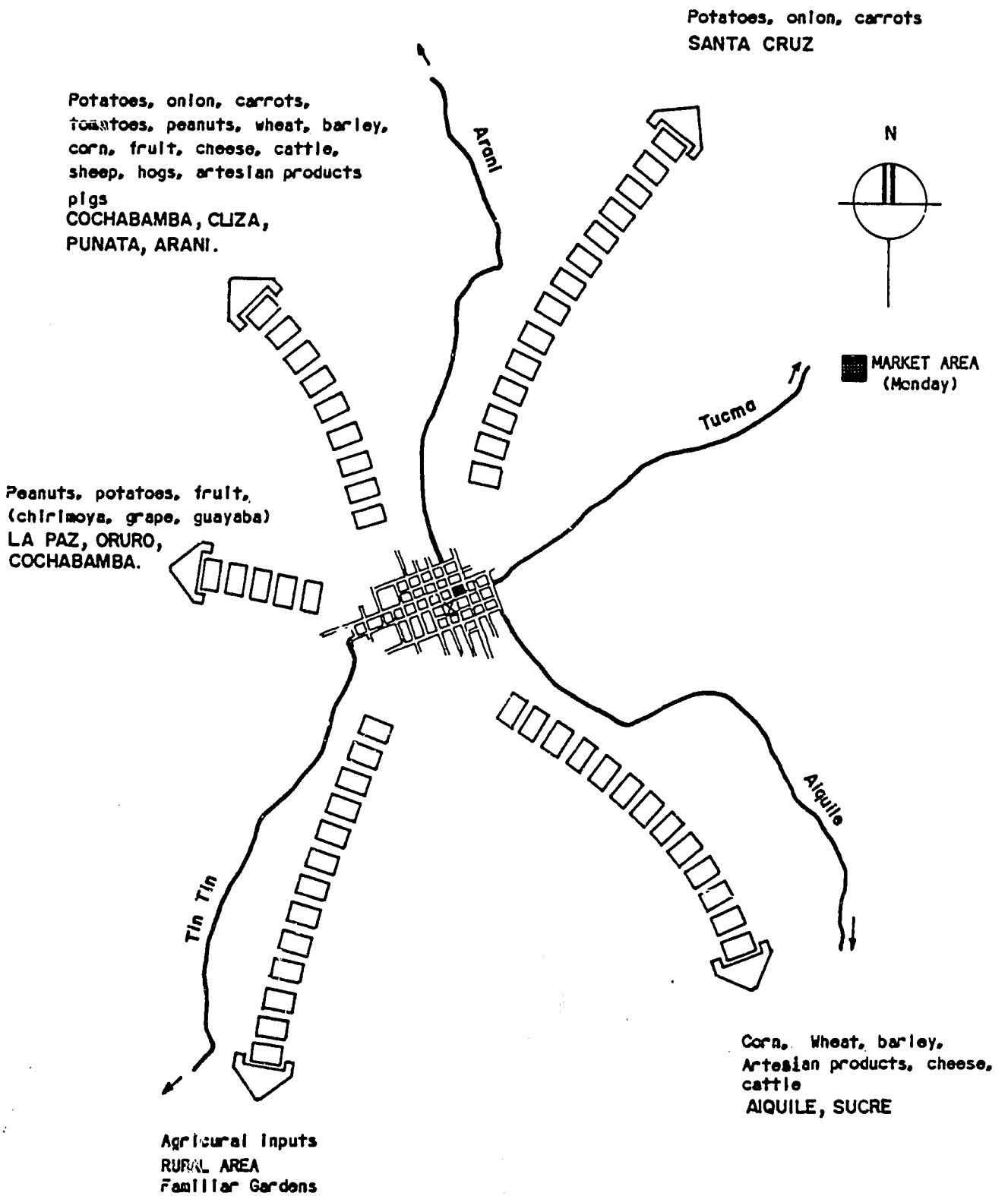


TABLE 2.12
FAIRS, PRODUCTS AND AREAS OF DOMINANT INFLUENCE FOR THE MIZQUE MARKET

COMMUNITY FAIRS		MAIN PRODUCTS MARKETED	AREA OF DOMINANT INFLUENCE - COMMUNITIES
DAYS	COMMUNITIES		
SUNDAY	RACOJ PAMPA	Potato, papaliza, chuño, wheat, maize, barley, sheep, and pigs.	Racaj Pampa, Laguna, Mizque, Pampa Hauyra Pata, Santiago, Khochi, Tipa Pampa, Rumi Corrai, Lagunitas, and Huayaba Pampa.
MONDAY	KURI CAPILLA	Potato, wheat, barley, tarhui, and sheep.	Kuri, Sombrerito, Totora Pampa, Pajcha, Arani, and Punata (potato and grain rescatistas)
MONDAY (Changed day of fair a year and a half ago)	MIZQUE	Potato, onions, carrots, peanuts, maize, fruits (guayaba, grapes, chirimoyas, and citrus), groceries, cattle, sheep, pigs, agricultural inputs.	Mizque, Pajcha Pata, Uyuchama, Mo-Tipa, Tabacal, Chilijchi, Molle Aguado, Inca Huasi, Yunguillitas, Tucma Alta, Tucma, Julpe, Mayca, Pampa, Lampasillos, Viña Perdida, San Pedro, Pojo Palmar, Aguada, Montesillo, Bañadas, Puca Pampa, and Mizque Pampa.
MONDAY	RODEO	Barter of maize, onions, peanuts, camote, fruits with potatoes and seed potato (attended by campesino producers).	Rodeo, Pisco Mayu, Vacas, Cochabamba, Mizque, Tucma, Lampasillos, Arani, and Punata (rescatistas).

Source: PADCO team survey with assistance from Hipolito Cespedes, August 1991.

2.2.6.5 Physical Infrastructure

2.2.6.5.1 Basic Social Services

Water Supply
The town has a water supply system that is being rehabilitated and expanded with funding from USAID through PDAR. The system will serve 80 percent of the population with 80 l/person/day, 24 hours per day. It includes a water treatment tank for chlorination. It began service in September 1991.

There are about 500 metered connections including houses, businesses, and small industries. There are no public water fountains. The municipality will run the system and charge Bs. 0.30 per m^3 for a minimum of 12 m^3 for domestic connections, and 0.35 Bs. for every additional m^3. It is estimated that 4 people will work in the new water and sewerage department which is being created to run the system.

Sewerage
Mizque has a sewerage system built in 1988 by the National Social Emergency Fund (Fondo Social de Emergencia, FSE). The system covers about 30 percent of the town; there are only 30 domestic connections. The system is run by the local municipality. It is not working properly due mainly to the lack of running water and to faulty parts. It has an Inhof treatment tank. The municipality requires a one time charge of Bs. 25 ($7) for every connection. At the moment there are no monthly charges, but it is anticipated that these will be included in future water bills. The municipality does not have sufficient and qualified personnel and equipment to manage the system properly.

The only other waste disposal systems in use are latrines and simple septic systems. These are used by only a small proportion of the population (less than 15 percent); most do not use any sewerage system.

Electricity
Mizque has a power generation plant, which was recently rehabilitated and expanded by PDAR/USAID. The plant consists of two diesel generators. The system covers about 60 percent of the town and also provides for street lighting. The served population has meters and pays $80 for the right to a connection. The payments may be made in monthly installments. The service charge is 1 Bs./kwh for the residential category of electric service. The system is being adjusted so that it will function properly. There have been some problems with fluctuating power surges which have caused damage to electronic equipment and complaints from the users. The system is run by the Cooperativa de Elec-

trificación de Mizque. The street lighting system is funded by the municipality which pays 100 Bs. a month for maintenance.

A separate electrification project is under way for the town of Mizque. This is a mini-hydro-power generation plant on the Río Tucma that is being constructed by a local investor. The project is well advanced according to reports from the town's mayor who recently visited the site. It will be operational at the end of the year. It is not clear how it will be integrated with the existing system.

Additionally, PDAR has plans to finance the interconnection of Mizque's electric network with the Corani system in Cochabamba through the Rural Electrification Project. This project is expected to be under way by 1993.

Streets and Rural Roads

The streets of Mizque are in poor condition. They consist of compacted dirt. There are no plans to improve them until the water supply system is finished and operational.

There are two main roads which connect Mizque with the city of Cochabamba (146 kilometers) and the neighboring town of Aiquile (40 kilometers) respectively. The road to Cochabamba is in good condition and consists of paved and dirt sections of 45 and 101 kilometers, respectively. The road to Aiquile is of dirt construction. This route has been recently improved by the SNC with financing from USAID through PDAR. A new bridge over the Río Mizque on the road to Aiquile has just been constructed under the same program. Bids for the construction of two additional bridges have been solicited for the Río Lampasillos and the Río Kuri. Both of these bridges will be located between Mizque and Cochabamba.

There is a project under study for the construction of a bridge over the Río Taucarpillo in the town of Mizque. The construction of this bridge is important because currently traffic is prevented from leaving or entering the town during the rainy season.

Dirt roads which are only seasonably passable connect Mizque to other nearby communities and agricultural production centers like Rakay Pampa and Tin-Tin. The road to Tin-Tin is being improved by the SNC. Farm roads needed are Rakay Pampa–Molinero and Tin-Tin–Vila Vila–Alalay.

Health and Sanitation

Mizque has a district hospital which provides basic services. This hospital was recently built by the Fondo Social de Emergencia (1988) and it is run by the Unidad Sanitaria of Cochabamba. It is not providing adequate service mainly because it lacks personnel and

drugs, even though the infrastructure and equipment are sufficient. It also lacks an ambulance. Two private clinics are run by religious missions.

Mizque does not have a garbage collection system and there is only one public bathroom in the market.

Education
Mizque has 3 primary schools and 1 middle and high school, which are public. The service is adequate, but most of the schools need improvements in infrastructure, equipment, and supplies. The residents have expressed the opinion that the educational system should be modified to meet the demand for technicians in the areas of agriculture and mechanics.

2.2.6.5.2 Other Local Services

Markets
The Alcaldía Municipal is rehabilitating and expanding the local market with support from CEDEAGRO, PDAR, and the local residents. The new market will hold up to 90 covered stalls. It was slated for completion in September 1991.

There is also an animal market and a potato market in an open field on the south end of town. A small, open shed is the only infrastructure.

Slaughterhouses
The municipality owns and runs the only slaughterhouse. It processes up to 8 head of cattle a week. There is no cooling system and it lacks an adequate water supply. The infrastructure is quite deteriorated and there are no plans to improve it. There is no charge for the slaughter of cattle because the municipality keeps the hides, which are sold annually and represent an important source of municipal income.

Warehouses and Granaries
There are no warehouses or granaries to store agricultural goods.

Transportation Terminals
Transportation infrastructure is minimal. There is no bus terminal. There are 6 buses and 15 trucks which travel regularly to Cochabamba. There is also some public transportation to Aiquile, which provides connections to other towns and cities. There is an air field near Mizque which is used mainly for official visits from Cochabamba. There is no public service.

There is also train service on the ENFE line Aiquile-Cochabamba. The train station is located three kilometers away from the town. It provides irregular service to its users.

Communication Systems

Communication infrastructure is also minimal. There is no telephone service. There is an office of the Empresa de Correos de Bolivia, ECOBOL, the national mail service, and one local TV channel owned by CEDEAGRO. There is one local radio station. Telegraph service is provided by DITER, the Dirección de Telecomunicaciones Rurales. There is a project for rural communications under way with ENTEL, the national communications company. It should be operational by 1993.

2.2.6.5.3 Environmental Issues

Mizque's environmental problems are similar to those of other towns in the Cochabamba region; namely garbage collection, waste disposal, and flooding. Significant adverse environmental conditions are caused by garbage accumulation in peripheral areas of the town and the lack of running water for the sewerage system. The sewage treatment tank is not functioning properly because the people in charge do not know how to operate it. Mizque is surrounded by two rivers, the Río Taucarpillo and the Rio Uyuchama, which have flooded the town several times in the past. No measures have been taken to protect the town from floods.

2.2.6.5.4 Critical Urban Infrastructure Needs

Critical needs for the improvement of the physical infrastructure of Mizque include:

- A new slaughterhouse;
- Construction of an agricultural goods market;
- Protection against floods;
- Improvement of the urban streets network (cobbled roads);
- Construction of the Río Taucarpillo bridge;
- Construction of the farm to market roads from Mizque to Molinero and Alalay.

2.2.7 Tarata

2.2.7.1 Population and Migration

Tarata is a provincial capital of Esteban Arze Province. It is a small town on the western end of the Valle Alto located about a 30 minute drive from the outskirts of Cochabamba. Its area of influence is small—strictly local—and its importance appears to have declined considerably in recent years. This decline, in all likelihood, will continue. Indeed its population in 1976 is reported to have been 2,700, while a population estimate in 1984

pegged the number at about 2,400 (CIDRE 1985b:85-87). This suggests an annual population decrease of -1.5 percent.

Significant and continued out-migration has surely contributed to this population decline. Given the ready accessibility of the town to Cochabamba, much of this migration has undoubtedly been to that city. Other migratory destinations undoubtedly figure in this picture, and the Chapare may figure prominently. The PDAR study reported by Rasnake and Painter (1989:47-48) suggests that one in three household heads from a sample drawn from the area around Tarata and the Distrito Sur migrated to the Chapare on some basis—temporary, semi-permanent, or permanent. Another perspective on possible migration to the Chapare can be gained by comparing the DIRECO data on Chapare farmer origins reported by Painter and Bedoya (1990:20) with population data for Esteban Arze Province. The DIRECO data identify nearly 200 farmers reporting the province as their place of origin. Estimates for the province in 1984 suggest a total population of about 30,000. If an average family has five members, one might assume some 6,000 families in the province. The 200 families represented by the household heads interviewed in the Chapare thus might represent 3.3 percent of all families in the province. Although the DIRECO data base does not represent a complete universe of Chapare residents, it is based on 7,000 farmer interviews and could represent anywhere from one-third to one-fourth of the region's families. Assuming the smaller number and adjusting the percentage of families from Esteban Arze accordingly, a figure around 13 percent is obtained. This is still far less than the data suggest by PDAR's study.

2.2.7.2 Employment

As with other rural towns, useful and reliable information on employment is not available. However, considering Tarata's relative position in the structure of the Valle Alto, it can be safely estimated that agriculture plays a major role in income generation, even among the town's resident families.

One measure of the town's capacity to generate non-farm employment is its permanent commercial structure. A field count of permanent establishments dedicated to the sale of agricultural and related products showed that of the 71 sites counted, 27 percent were "chicherias", 24 percent were selling "abarrotes" (groceries), 14 percent were restaurants and similar establishments, and 10 percent were small artisan-level workshops. The rest were selling clothing, meats and related products, furniture, and miscellaneous manufactured products. Specifics on the number and type of establishments are shown on **Table 2.3**.

2.2.7.3 Agricultural Markets and Trade Flows

2.2.7.3.1 Market Size and Structure

Tarata is a small provincial market center, whose area of influence is strictly local. It is dominated by a few small-scale vendors and very little wholesale trade. Ninety-six vendors were counted on the survey day (August 15). Twenty-six percent were selling vegetables, 22 percent prepared food, 17 percent potatoes, and 8 percent spices. The rest of the sites were selling groceries, fresh meat, fruits, grains, and other commodities. The detailed distribution of the Tarata market sites can be seen in **Table 2.2**.

Wholesale trade is very limited in Tarata. Only four wholesale grain buyers were observed on the survey day (**Table 2.4**). Only one truck, a pick up, was evident on the day of the survey and the wholesaler appeared to have accumulated more than 500 pounds of grain. The wholesalers take their grains to Cliza and Punata for resale.

The market for the agricultural products traded in Tarata is located in a small enclosed plaza with some covered areas and public bathrooms. It operates only on Thursdays. Producer/sellers begin to arrive in the mid-morning and reach their maximum number around noon. In the market, producers are met by consumers, and all sales appeared to be at the retail level. The wholesale grain market is conducted on the south end of the town in an open field. There is no livestock market in Tarata.

2.2.7.3.2 Trade Flows

Most of the agricultural commodities traded in the Tarata market come from surrounding communities such as Huerta Mayu (potatoes, grains), Villa Mercedes (potatoes, grains), Villa Rosario (potatoes, grains), Sacabamba, (potatoes, grains, vegetables), Anzaldo (potatoes, grains), and others. Details on communities and products are shown in **Figures 2.14** and **2.15**, and in **Table 2.13**. The commodities are brought to the fair by individual producers. There is very little outward flow. A few wholesale intermediaries take some commodities, mainly grains, to the markets of Cliza and Punata.

2.2.7.4 Town Based Services to Agricultural Production

Town based services to agricultural production are limited. No public or private agricultural extension services exist. There is a Technical Agricultural Institute, which depends on the Ministry of Agriculture and offers degrees at the mid-technician level.

The town does not have a permanent establishment dedicated to the sale of agricultural inputs or the sale/lease of agricultural tools and machinery. Nor were any periodic marketers observed selling such inputs on the day of the market survey. No agencies of public or private banks or any other credit institution are based in Tarata.

Figure 2.14

TRADE FLOWS INTO THE TARATA MARKET

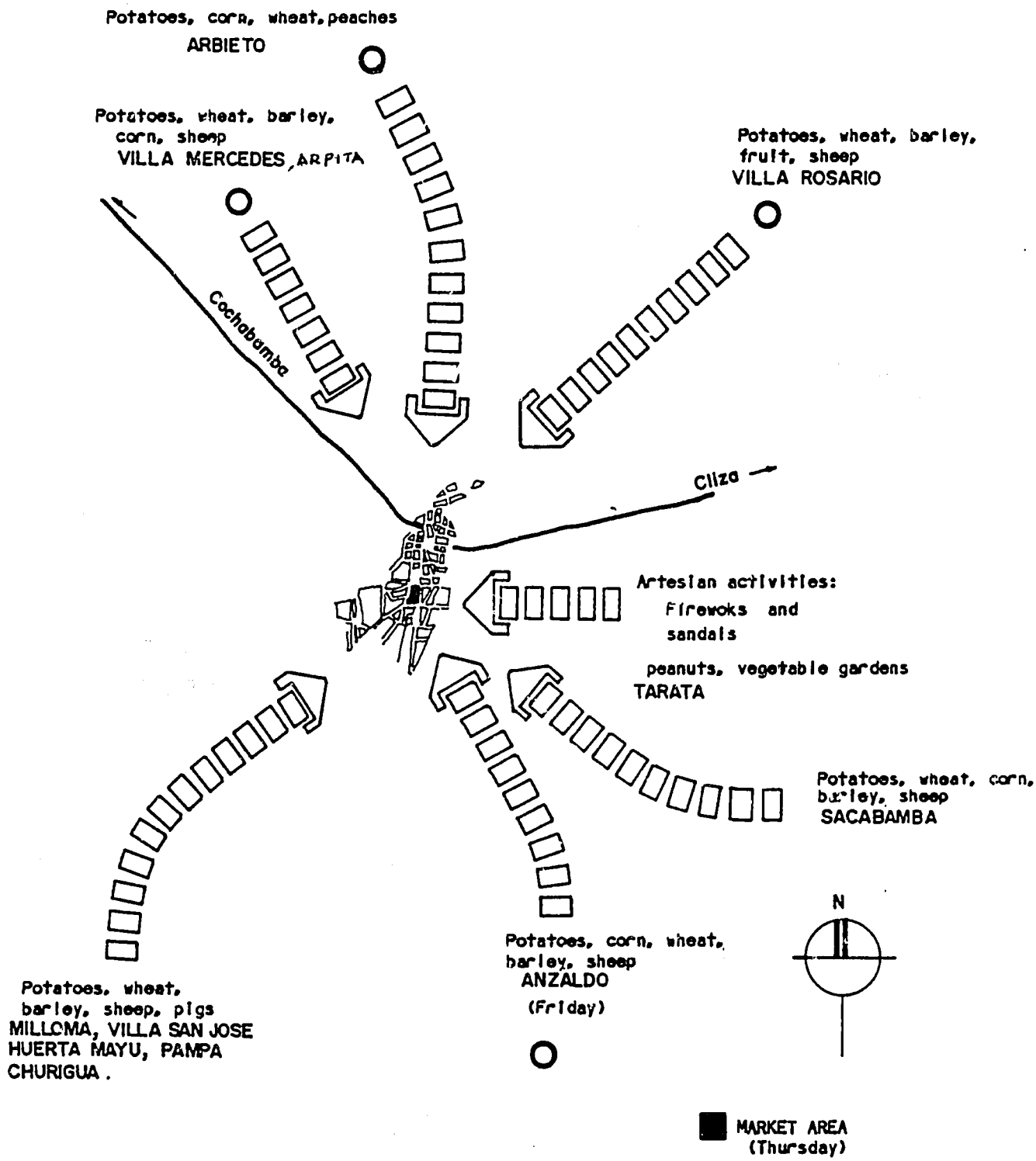


Figure 2.15

TRADE FLOWS FROM THE TARATA MARKET

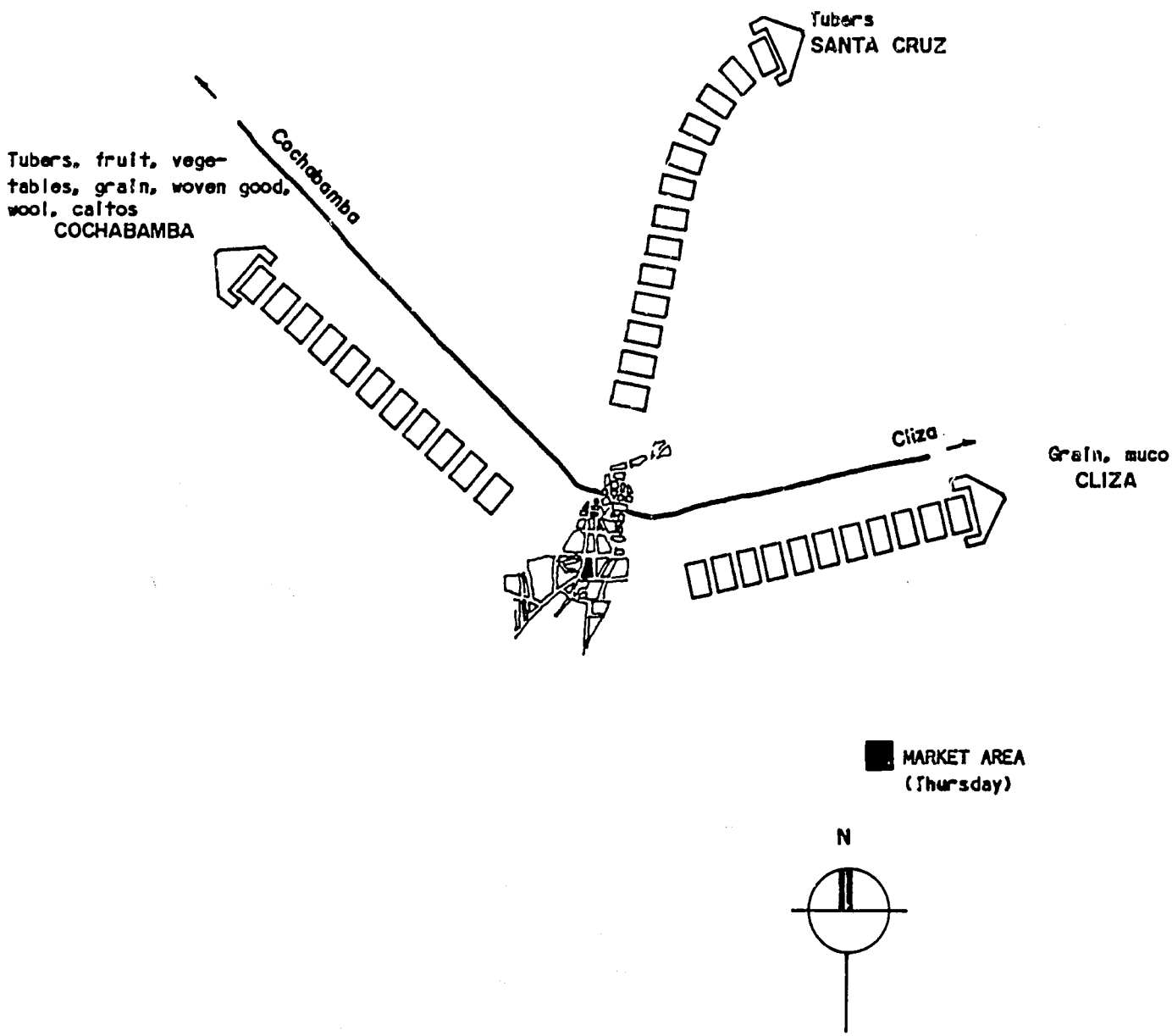


TABLE 2.13
FAIRS, PRODUCTS AND AREAS OF DOMINANT INFLUENCE FOR THE TARATA MARKET

COMMUNITY FAIRS		MAIN PRODUCTS MARKETED	AREA OF DOMINANT INFLUENCE - COMMUNITIES
DAYS	COMMUNITIES		
THURS-DAY	TARATA	Potato, wheat, barley, fruit, livestock (pigs and sheep), vegetables, small animals (squab, chickens), handicrafts (principally firecrackers).	Tarata, Villa Mercedes, Villa Rosario, Milloma, Villa San Jose, Huerta Mayu, Pampa Chirigua, Huayculi, Chillijchi, Mendez Mamata, Arbieto, and Tiataco.
THURS-DAY	SACABAMBA	Potato, wheat, maize, barley, vegetables, livestock (sheep and pigs), and handicrafts.	Sacabamba, Matarani, Juska Rumi, Cueva Pampa, Kekoma, Duraznillo, Yanacochi Mayu, and Estancia Palca.
FRIDAY	ANZALDO	Potato, wheat, maize, barley, vegetables, sheep wool and skin, livestock (sheep and pigs).	Anzaldo, Chilcani, Quiria, Huma Pirhua, La Viña, Puca Pampa, Turaska, Tara Kuchu, Muña Mayu, Chapini, and Yana Orko.

Source: PADCO team survey with assistance from Hipolito Cespedes, August 1991.

Transportation services for agricultural products are provided by privately-owned vehicles. Transportation for passengers is provided by trucks and buses which serve the routes to Cliza, Punata, and Cochabamba. In terms of communications, Tarata is served by agencies of ENTEL, with only public phone booths, DITER, a local post office, and a local AM radio called Radio Mejillones. Radios from other towns and up to five TV channels from Cochabamba can also be received.

There are no urban-based agricultural cooperatives. The only non-governmental organizations working in Tarata are ASAR/AMERINDIA which promotes and facilitates the production and export of hand-made wool products and CIDRE (Centro de Investigación y Desarrollo Regional), a Cochabamba-based NGO. It is currently working in the Laka Laka Multiple Project, which is financed by CIDA (Canadian International Development Agency). The project is designed to increase the water supply to Tarata and provide irrigation to the surrounding areas. There is also a committee called CODERTA (Comité de Desarrollo Rural de Tarata), which is a local initiative designed to promote rural development in the region. Casa Fisher, a privately-owned commercial enterprise, also works in the production of hand-made wool products.

2.2.7.5 Physical Infrastructure

2.2.7.5.1 Basic Social Services

Water Supply

The town has a water supply system built in the 1940s and managed by the municipality (Alcaldía Municipal). It serves around 50 percent of the population with domestic connections. At the moment, the supply lasts less than an hour once every day or two; this is due mainly to drought and age of the system. The quality of the water supplied is good; there is no water treatment plant. There are around 600 connections including houses, businesses, and small industries. There are also 3 public water fountains. The municipality charges Bs. 2 ($0.75) per month for domestic service, Bs. 3 for businesses, and Bs. 5 for industries. It is estimated that only 50 percent of the users pay their bills regularly.

CORDECO built a new water supply system in 1986. It is not in operation due to the lack of equipment and institutional problems. Another project under construction is the Laka Laka Multiple Purpose Project, which includes a component of water supply for the town of Tarata. This project will be finished in 1992. It is being financed by the Canadian Government through CIDRE. Neither of these projects include storage tanks, water treatment, nor distribution mains required to meet the town's need for a truly effective water system.

The distribution system needs to be replaced urgently because of the considerable loss of water. The municipality does not have sufficient and qualified personnel and equipment to manage the water supply system adequately.

Sewerage

The town of Tarata has a sewerage system built in 1988 by the National Social Emergency Fund (Fondo Social de Emergencia, FSE). Even though the system covers most of the streets, there are domestic connections to only about 20 percent of all homes. The system is run by the municipality; it is not working properly due mainly to the lack of running water; it has an Inhof treatment tank.

The municipality requires a one time charge of Bs. 75 ($21) for every connection. At the moment there are no monthly charges.

The only other waste disposal systems in use are latrines and simple septic systems. These are used by only a small proportion of the population (less than 10 percent); most do not use any sewerage system.

The municipality does not have sufficient and qualified personnel and equipment to manage the system properly. At the moment CIDRE is providing some technical assistance.

Electricity

The town of Tarata receives electricity from the interconnected system of the Cochabamba electric distribution company ELFEC. Eighty to 90 percent of the population has connections with meters and the service is good.

ELFEC has a local office for administrative work and some maintenance. Bills are prepared in the main office in Cochabamba; user payments are adequate. There are 3 categories of electric service with different rates: residential, commercial and industrial.

The street lighting system is poor and needs to be improved and expanded. ELFEC does not have plans to do that in the near future. The operational costs are covered by a charge which is equivalent to 12 percent of the electric rate.

Streets and Rural Roads

The streets of Tarata are in poor condition. They consist mainly (70 percent) of cobbled streets (empedrado) which date from 10 to 20 years ago. The municipality is improving and expanding the street network using the same paving technique. Every resident is assessed 1.50 Bs./m^2 ($0.50) for half the surface in front of its property; the municipality covers the cost of the other half.

Two main roads connect Tarata with the city of Cochabamba (30 kilometers) and the neighboring town of Cliza (11 kilometers). The road to the city from Cochabamba is in good condition and consists of paved and cobbled sections of 17 and 13 kilometers, respectively. The road to Cliza is cobbled also. This cobbled road was built recently by the National Road Service (Servicio Nacional de Caminos) with financing from USAID.

Dirt roads connect Tarata to other nearby communities and agricultural production centers like Anzaldo, Izata, Arbieto, and Huerta Mayu. The only road which has had some improvement is the road to Anzaldo, which CORDECO has worked on. Other roads are generally bad and need improvement. A road from Huerta Mayu to Pampa Churigua needs to be built to facilitate and increase the commercial activity from that area.

Health and Sanitation
Tarata has a District Hospital which provides basic services. At the moment, the Unidad Sanitaria of Cochabamba, with financing from the GTZ, is implementing a project to improve and expand the health services in all of the Valle Alto region, including Tarata.

Tarata does not have a garbage collection system and there is only one public bathroom. Public bathrooms are needed in the main plaza to serve the many tourists that come to the town.

Education
A full range of educational institutions are present in Tarata. There are 4 primary schools, 3 middle schools, and 2 high schools, all of which are public. There is one private school with middle and high school levels. The service is adequate, while most of the schools need improvements in infrastructure, equipment, and supplies. The town has also three technical institutes: the Instituto Técnico Agropecuario (Agriculture), the Instituto Técnico Musical (Music), and the Instituto Técnico de Educación Física (Physical Education). These are all public institutions.

2.2.7.5.2 Other Local Services

Markets
The Alcaldía Municipal runs the only market for agricultural goods. The market consists of an enclosed lot, a small part of which is covered, including a concrete floor. It can accommodate up to 100 vendors and their goods. At the moment, the municipality is improving the market area. It receives income of about 75 Bs. a week ($21) from the sellers in its charges of "sentaje". There is also a small grain market located in an open field, from which the municipality gets about 12 Bs. ($3.50) a week.

Slaughterhouses
The municipality owns and runs the only slaughterhouse. It holds up to 10 head of cattle and can process up to 5 head per day. There is no cooling system and the water supply is inadequate. It receives about 15 Bs. a week ($4) from the slaughter of pigs and sheep. The municipality is improving the infrastructure with the income it gets from this service. There is no charge for the slaughter of cattle because the municipality keeps the hides, which in turn represents its most important source of income. The hides are sold to the leather industry in Cochabamba, generating an income of $450 a month.

Warehouses and Granaries
There are no warehouses or granaries to store and maintain agricultural goods in the town of Tarata.

Transportation Terminals
There is no bus terminal. There is bus and trucks service for Cochabamba and Cliza which provide connections to other towns and cities. They are parked in the main plaza.

There is also train service on the ENFE line connecting Cochabamba - Aiquile, which runs once a week, although irregularly. There is a station that holds up to 50 persons; there are no public bathrooms. This service is not used for public or cargo transportation to any significant degree.

Communication Systems
The town has a reasonably good communications system. Telephone service is provided by ENTEL, the national telephone company, with public phone booths for local, national, and international communications. There is also an office of the Empresa de Correos de Bolivia, ECOBOL, the national mail service. Up to 5 television channels from the city of Cochabamba reach Tarata. There is one local radio station. Telegraph service is provided by DITER, the Dirección de Telecomunicaciones Rurales. A COTEVAC project for rural telephone service includes the installation of residential phones for Tarata. It should be in operation by the end of the current year, 1991.

2.2.7.5.3 Environmental Issues

The town suffers from two notable environmental problems: waste disposal and flooding. Significant adverse environmental conditions are caused by garbage accumulation in peripheral areas of the town and the lack of running water for the sewerage system. Tarata is surrounded by two rivers, the Río Calicante and the Río Seco, which have flooded several times in the past. No measures have been taken to protect the town from floods.

2.2.7.5.4 Critical Urban Infrastructure Needs

Critical needs for the improvement of the physical infrastructure of Tarata include:

- Rehabilitation and expansion of the water supply system;
- Rehabilitation of historic national monuments;
- Protection against floods;
- Improvement of the urban streets network (cobbled roads);
- Improved farm to market roads especially the Huerta Mayu-Pampa Churigua road.

Street Cobbling in Tarata

3 RECOMMENDATIONS

The analysis of the urban hierarchy of the nine settlements conducted for this study provides a framework for identifying those centers which play important roles as market towns and have the potential to develop into significant secondary cities. These market towns have the potential to provide enhanced urban-based services for the large rural populations within their tributary regions as well as to develop important private sector activities related to agro-industrial processing, small scale manufacturing of consumer goods, and services which will generate off-farm employment for both men and women.

Using USAID's urban functions in rural development methodology and primary and secondary data gathered from a wide range of sources, the key market towns were identified from the nine settlements in the study group. The CMA, comprising Cochabamba, Quillacollo, and Sacaba, was discounted as a "market town or market towns" because of its

clear standing as a major urban center on a national level—i.e., it is clearly an urban center of emerging metropolitan proportions.

Indeed, it is important to underscore that while the Cochabamba Metropolitan Area (CMA) is omitted from the analysis in these recommendations because it is not a "market town", the CMA plays a pivotal role in the social and economic development of Cochabamba Department and in several adjacent departments. It is one of the three major urban centers in the country, and as such must play an important role in the development of any serious alternative development strategy which seeks to develop alternative employment sources and stem migration to the Chapare region.

3.1 IDENTIFICATION OF KEY MARKET TOWNS

The principal variables used in the establishment of the key market towns include:

- the number of permanent commercial establishments (being defined as broadly related to agriculture);
- the number of periodic marketers on the town's principal market day;
- the number of wholesale buyers and sellers present on the principal market day;
- the number of livestock offered for sale on the principal market day;
- the estimated population of the town.

These data are summarized comparing Punata, Cliza, Aiquile, Arani, Mizque, and Tarata in **Table 3.1**.

TABLE 3.1
ECONOMIC ACTIVITY IN PROVINCIAL CENTERS OF THE VALLE ALTO AND DISTRITO SUR OF THE DEPARTMENT OF COCHABAMBA, 1991

	Permanent Establishments* (Agriculturally Related)	Periodic Marketers* (Market Day)	Wholesale Marketers* (Buyers and Sellers)	Livestock Market* (All animals for sale)	Estimated Population
Punata	626	1,845	74	1,735	8-11,000
Cliza	319	1,707	30	324	6- 7,000
Aiquile	286	467	12	129	6,000
Arani	134	491	15	135	3,500
Mizque	98	135	0	108	2,000
Tarata	71	96	4	0	2,400

*Based on field surveys by PADCO team, August 1991.

Analysis of this table demonstrates the clear dominance of Punata as the principal market town among the towns studied. It has the largest population, four times the volume of livestock sales and about twice the number of permanent commercial establishments and wholesale marketers as its nearest competitor (Cliza). It also has about 10 percent more periodic marketers on its market day than Cliza.

Cliza stands out as the second most important market town among those studied. The number of periodic marketers present on its market day, over 1,700, identifies it as an important central place for the population of the surrounding region. The size of its wholesale market, livestock market, and the number of permanent commercial establishments rank it second only to Punata and confirm its significance as a key market center.

Aiquile and Arani both rank about equal on several of the measures of economic and commercial significance. There is insignificant variation between the two on the number of periodic marketers, the number of wholesale marketers, and the size of the livestock market.

But, Aiquile does have nearly double the number of permanent commercial establishments when compared to Arani—286 and 134 respectively. This statistic and the dominant position of Aiquile in the Distrito Sur and by comparison Arani's relatively insignificant role in the economic system of the Valle Alto, lead to the ranking of Aiquile as a considerably more important market town than Arani.

Mizque and Tarata rank lowest among the towns studied here. Neither represents a marketing center of any significance. None of the comparative measures used here suggest that these towns have any importance beyond the immediate local area as marketing or commercial centers (**Table 3.1**).

In summary, this analysis suggests that three of the urban centers studied clearly are "key market towns." These are, in rank order, Punata, Cliza, and Aiquile.

The inclusion of both Punata and Cliza in this listing is somewhat problematic since these two towns are located only about 10 kilometers from each other and both are located generally in the center of the Valle Alto. While in this exercise we have considered these two centers independently and will make our recommendations for physical infrastructure for them independently, a reasonable argument could be made that they really should be considered as a single unit. Although the two towns are still separated and physically distinct, in-filling is already occurring along the road between them. This process may be accelerated by the recent cobbling of that road. The towns might reasonably be considered as possible "sister-cities" 10 to 20 years hence.

The following recommendations which focus only on Punata, Cliza, and Aiquile are not intended to suggest that these are the only towns that have serious needs for the improvement of urban physical infrastructure. Indeed, almost every single town examined has truly urgent needs for improvements in potable water and sewerage (**Figure 3.1**) as well as other types of infrastructure. However, it is felt that by focusing primarily on the towns selected here the investment benefits will produce the greatest benefit for the most people as well as produce the largest possible multiplier effects within their rural hinterlands.

3.2 PHYSICAL INFRASTRUCTURE

Three criteria are used to select and prioritize the recommendations for urban physical infrastructure in the three key market towns identified above. These are:

1) **Infrastructure investments that will contribute directly or indirectly to immediate productivity increases.**

   Such increases would be accomplished through improved access to farms and markets and improved marketing infrastructure (i.e., improvement of farm to market roads, including bridge building and cobbling when appropriate, and improved marketing infrastructure).

2) **Investments which contribute to improving the basic health and welfare of residents of market towns.**

   These investments would be focused specifically on improved and expanded water supply, sewage systems, and sewage treatment facilities.

3) **Investments that improve the basic urban environment and could generate significant local employment opportunities.**

   Such investments would focus primarily on street cobbling and in some instances river channelization for flood control.

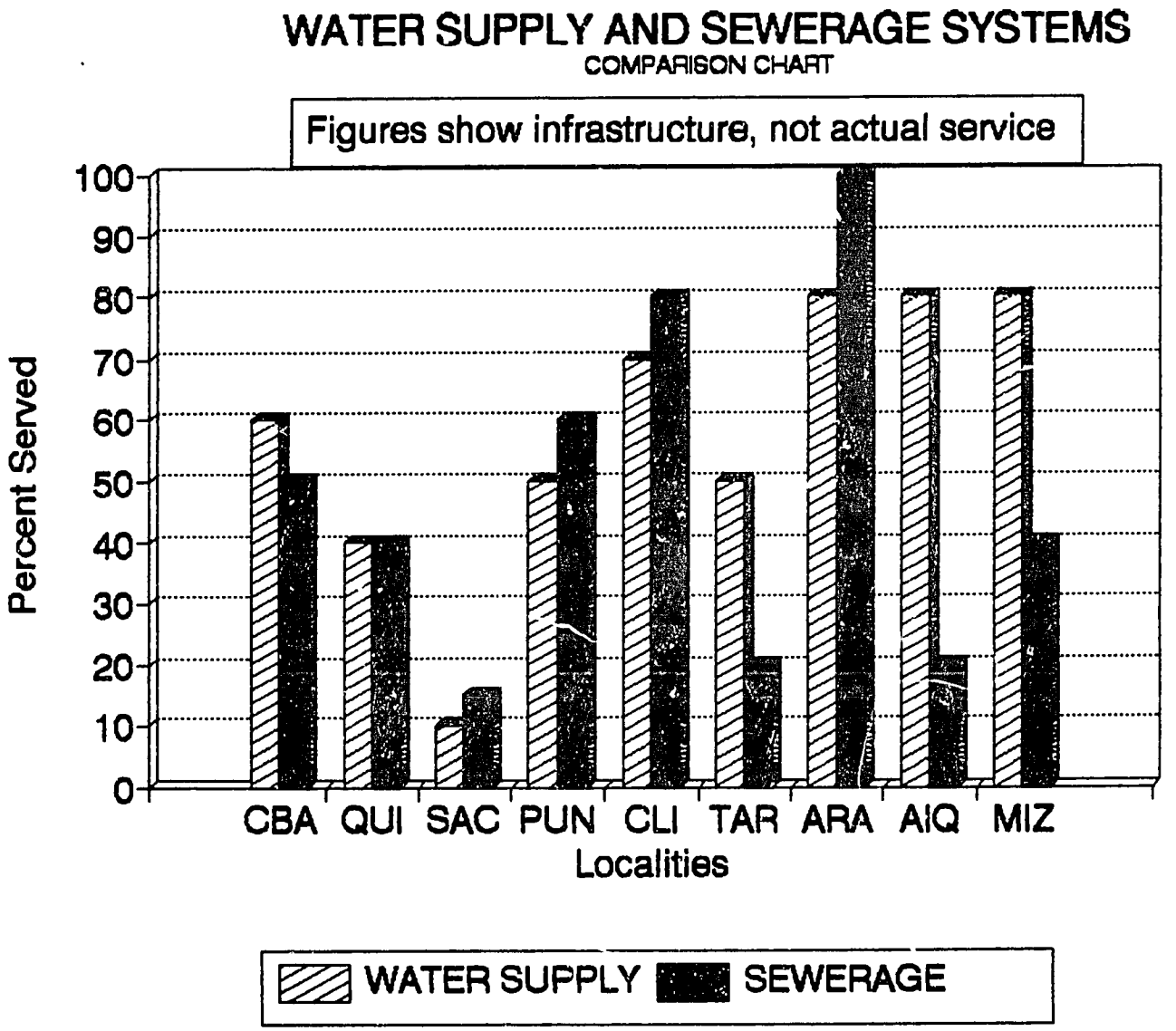
3.2.1 Punata

As the most important market town in the department of Cochabamba and the one with the greatest potential for economic growth, Punata requires the largest and most comprehensive investment in physical infrastructure.

Investment in improving and cobbling critical farm to market roads will increase the connectivity of the local transport network and dynamize marketing of farm produce in Punata.

Key roads which should be slated for improvement are the road segments Punata–Villa Rivero, Villa Rivero–Tacachi, and Tacachi–Khuchu Muela. The construction of these road

Figure 3.1


WATER SUPPLY AND SEWERAGE SYSTEMS
COMPARISON CHART
Figures show infrastructure, not actual service
Percent Served
100
90
80
70
60
50
40
30
20
10
0
CBA
QUI
SAC
PUN
CLI
TAR
ARA
AIQ
MIZ
Localities
WATER SUPPLY
SEWERAGE

segments total somewhere between 12 and 15 kilometers. A number of bridges would also need to be included in the road segments. In accordance with current Bolivian government policy, the improvement and cobbling of these roads would have to be done under aegis of the SNC who would be responsible for letting the bids, supervision of contractors, and theoretically the roads subsequent maintenance.

Investment in construction of additional marketing infrastructure is an important need in Punata.

For a town in which the weekly market is of major regional importance, marketing infrastructure is amazingly deficient. Only one of the city's market areas, the potato market, benefits from an open shed with a concrete floor. Similar opensheds should be constructed on at least two of the other market sites—the vegetable market and the campesino grain and meat market. The construction and maintenance of such facilities should be left to the local municipal government.

The most critical public infrastructure needs in Punata are potable water and sewerage.

The city currently owns and operates these systems. They barely provide inadequate service to half the town's population and are incomplete and need repair and expansion. A new potable water and sewerage system must contemplate a continuous water supply for the town both daily and seasonally, a water treatment facility, metered service, and at least a first stage treatment facility for raw sewerage. Furthermore, the administration and maintenance for the completed systems demands dramatic improvements. The planning and construction of these systems must be undertaken by an agency with considerable experience in such matters, but sadly there are few competent candidates. The best possibilities include CORDECO or CORPAGUAS. The administration of such a system might logically remain with the municipal government, but its administrative track record is not particularly good. Indeed, it seems that the system's operation is not self-supporting and it is subsidized by the municipality's general tax revenues. Some informed observers argue for the establishment of a user's cooperative, while others believe the establishment of an independent and semi-autonomous water and sewer department within the municipality would be a better alternative.

Investment in street cobbling will improve the urban environment and provide immediate employment opportunities for local residents.

Only a modest proportion of Punata's streets are surfaced in any way, about 25 percent. Once a suitable potable water and sewer system has been installed, then the cobbling of the street network should be a top priority. The municipal government, which already has experience in constructing city streets and taxing each property owner for these improvements, should oversee the construction of this sort of work. About 30 percent of

the costs could be borne by property owners as has been the case in the past, while the remainder would come from market town development funds.

3.2.2 Cliza

Improvement and possible cobbling of some farm to market roads which serve the Cliza regional market, represent an important need.

Cliza's periodic market services a large rural population and a significant wholesale trade in grains is done throughout the year in this town. Road connections to smaller settlements and production centers should be improved and in some cases cobbled. Some bridges would also have to be constructed. High priority routes include Cliza–Toco, Toco–Anzaldo, and Toco–Sacabamba. As is the case for Punata, in accordance with current Bolivian government policy, the improvement and cobbling of these roads would have to be done under aegis of the SNC who would be responsible for letting the bids, supervision of contractors, and theoretically the roads' subsequent maintenance.

The most urgent public infrastructure need in Cliza is the provision of potable water in terms of quality, quantity, and distribution.

At present, none of these three minimum criteria is adequately met. Again as in the case of Punata, any new or improved system must contemplate the provision of a continuous water supply both daily and seasonally, a water treatment facility, and metered service. While a domestic sewerage evacuation system has recently been installed in the town, and apparently is adequate, it cannot function satisfactorily until a dependable water supply is available. It does however lack a primary treatment facility and such a project should be included in any comprehensive potable water investment package considered for the town. The planning, contracting process, and supervision of the construction of a potable water system and a primary sewerage treatment facility would have to be overseen by a department or national level agency like CORDECO or CORPAGUAS. Unfortunately, these agencies often have serious problems in effectively completing their responsibilities in towns like Cliza.

Again, as in the case of Punata, the present water and sewerage systems are administered by the municipal government. And indeed, the administration of the proposed "new and improved" systems might logically remain with the municipal government, but its administrative track record is not particularly good. Indeed, it seems that the system's operation is not self-supporting and it is subsidized from the municipality's general tax revenues. Some informed observers argue for the establishment of a user's cooperative, while others believe the establishment of an independent and semi-autonomous water and sewer department within the municipality would be a better alternative.

3.2.3 Aiquile

Investment in Aiquile should be focused on completing those infrastructure projects either initiated or planned by PDAR/USAID's regional development program for the Distrito Sur—potable water, sanitary sewer, and connection to the regional electric network.

Aiquile has benefitted considerably from infrastructure investments made over the last two years by PDAR/USAID. These have included the improvement of the Arani-Mizque-Aiquile road, the construction of key bridges over the Mizque and Omereque Rivers, a minor road by-pass improving transit through the town, and rehabilitation of its electrical system. Indeed, several other projects which are slated to be executed by PDAR/USAID in the next year or so promise additional improvements in the urban infrastructure and the regional road network—a potable water and sewer system, the connection of the town's electric system to the regional grid, and road and bridge improvements on the road to Santa Cruz via Pasorapa and Siapana.

Several additional infrastructure projects might be considered, street cobbling in the urban area and a farm to market access road from Aiquile to Alalay. Another consideration would be some kind of transportation infrastructure (a bus terminal) to provide more efficient and sanitary service to the large number of buses and trucks carrying passengers which pass through the town each night going to or from Santa Cruz and Sucre. At the least a public bathroom complex should be built.

But in point of fact, most of Aiquile's most critical infrastructure needs have been or are being taken care of. Perhaps the most important issues in the case of Aiquile are those relating to administration and maintenance of basic public services—potable water, sewerage, and electric service—who, how, and for how much.

3.3 TECHNICAL ASSISTANCE

Basic public services in Bolivian towns are provided by a dizzying array of organizations ranging from state-owned or mixed ownership national level organizations, to municipal governments, cooperatives, and privately held companies (**Table 3.2**). Such a line-up is complicated by the fact that in many cases the law is not at all clear on who may or may not have responsibility for the operation of services at a particular level. Indeed, in the small sample of cities examined here, a diverse range of organizations and operational situations were encountered. Overlapping or competing services may also be provided within the same jurisdiction. In Arani for instance there are two distinct potable water systems—the municipality owns and operates one and a cooperative owns and operates the other. Many residents in Arani receive service from both systems. In Quillacollo and Punata there are municipal potable water systems but since the service is so poor,

TABLE 3.2
INSTITUTIONAL PROVIDERS OF PUBLIC SERVICES IN CITIES AND TOWNS IN THE DEPARTMENT OF COCHABAMBA*

City	Services						
	Water	Sewer	Electricity	Urban Roads	Rural Roads	Phone	Telegraph
Cochabamba	SEMAPA	SEMAPA/ Alcaldía	ELFEC	Alcaldía	SNC/ CORDECO	COMTECO	ENTEL
Quillacollo	Alcaldía	Alcaldía	ELFEC	Alcaldía/ CORDECO	SNC/ CORDECO	COMTECO/ COTEVALL	ENTEL/ DITER
Sacaba	Alcaldía	Alcaldía	ELFEC	Alcaldía/ CORDECO	SNC/ CORDECO	COMTECO/ COTEVALL	ENTEL/ DITER
Punata	Alcaldía	Alcaldía	Cooperativa	Alcaldía	SNC/ CORDECO	COMTECO/ ENTEL/ COTAVAC	ENTEL/ DITER
Cliza	Alcaldía	Alcaldía	ELFEC	Alcaldía	SNC/ CORDECO	COMTECO/ ENTEL/ COTAVAC	ENTEL/ DITER
Arani	Alcaldía	Alcaldía	ELFEC	Alcaldía	SNC/ CORDECO	ENTEL/ COTAVAC	ENTEL/ DITER
Tarata	Alcaldía	Alcaldía	ELFEC	Alcaldía	SNC/ CORDECO	ENTEL/ COTAVAC	ENTEL/ DITER
Aiquile	Alcaldía	Alcaldía	Alcaldía	Alcaldía	SNC/ CORDECO	ENTEL	DITER
Mizque	Alcaldía	Alcaldía	Cooperativa	Alcaldía	SNC/ CORDECO	–	DITER

*Based on field surveys by PADCO team, August 1991.

groups of individuals have financed the drilling of their own wells and have established small independent systems. In Cochabamba where the water system and service are also poor, but in this case operated by SEMAPA, private operators provide water to marginal areas in cistern trucks and the wealthy drill wells for their own personal supply.

Other urban public services provision is somewhat more rational, but the operative word is somewhat. In Punata for instance there are two or three (depending on how you count) institutions providing telephone service, a budding cooperative, a private company (COMTECO), and the state owned company, ENTEL. In Mizque the town's electric service (a generator for six hours a night) is operated by an urban-based cooperative, while a competing cooperative headed by a local trouble maker or philanthropist (depending on your perspective) is now completing a small hydroelectric system on the Rio Tucma which

proposes to supply the town and surrounding rural area with a steady and cheaper source of electricity than can be provided by the generator system.

Despite the relative disorder and variety in the provision of public services, municipal governments are typically responsible for the provision of many of these services. Among those services municipal governments most often provide, or attempt to provide, are potable water, sewerage, public markets, slaughterhouses, garbage collection, and the construction and maintenance of urban streets. In one case the municipality operates the electric system. In almost all cases, except perhaps in the operation of markets and slaughterhouses, these services are of poor quality and may be provided more in the breach than in reality.

This inability to provide quality service stems from several factors. Not the least of which is the legal system. The national municipal law does not clearly assign or empower local governments to provide specific public services, but rather provides vague statements about its role in attending to public needs (Bolivia, 1985). Local governments are also strapped for even the most minimal operating funds—Cochabamba has an annual budget of about $10,000,000, Quillacollo about $1,000,000, Sacaba about $350,000, Punata about $280,000, Cliza about $150,000, and on it goes with the declining size of the municipality. It is ironic that the tax reform law implemented in 1986 (Ley #843, Bolivia, 1986), that has had such salutary effects on the Bolivian economy in general is frequently cited by municipal officials as a disaster for local governments. It eliminated (by centralizing its collection and use) one of the most important sources of local revenue for Cochabamba's municipalities, the tax on the production of chicha, and apparently reduced significantly (to the point of elimination) income municipal governments received from local property taxes. Quillacollo's municipal government has mounted a legal challenge to the loss of the chicha tax, and its receipts are being held in an escrow account pending the outcome to the challenge. Other local governments have simply refused to turn over the receipts and simply operate as before. Aside from the department capital, Cochabamba, most municipal governments receive no transfer payments from the central government whatsoever. The deficiencies in the provision of public services reflect in part this neglect or lack of interest by the central government.

Local governments also suffer from a lack of administrative organization and qualified personnel. These factors also mitigate against the adequate and efficient provision of public services. The charges levied by municipalities for the provision of specific public services do not reflect the true costs (service and recurring costs). As such the provision of many of these services is subsidized by general tax revenues further limiting the municipal government's ability to fulfill its role in the local arena.

User cooperatives also are service providers in some localities—potable water in Arani, electricity in Mizque and Punata, and a telephone cooperative which is being formed in Punata. The results of this approach vary from very good to poor, and the electric cooperatives provide useful examples. In Punata the cooperative is efficient and well run and has operated for well over 20 years, while in Mizque the local mayor reports the urban electric cooperative is on the border of collapse and its operation and administration may have to be assumed by the municipality if things do not improve soon.

When any investments occur in the improvement, expansion, or creation of urban physical infrastructure—intensive and long-term technical assistance must be provided to those institutions (municipalities, cooperatives, etc.) that are to take charge of these services.

In the rush to "move the pipeline" or to actually construct something on the ground that can be inaugurated, many such projects are completed with little thought or effort to insure their long-term institutional and administrative viability. Indeed, in the sample of cities and towns examined here, several have been recipients of USAID financed urban services projects in the past—Aiquile's water system constructed in 1965, Sacaba's water system from the same period, and Quillacollo's sewer system (SENDU/USAID) in the late 1970s. Sadly, none of these systems is functioning very well—either administratively or technically. The one notable exception to this general pattern is the electric cooperative in Punata, which is well run and provides good service. It was initiated with the assistance of the Peace Corps in the late 1960s. Fortunately, PDAR/USAID in Cochabamba is aware of these potential problems as they may relate to the provision of electric service in Mizque and Aiquile and has just signed a contract with a consulting firm to provide technical assistance in the management of these systems. However, as a general rule such assistance should begin before or at least at the same time as the actual construction work on the project begins.

3.3.1 Proposed Scope of a Technical Assistance Program for Local Governments and Municipal Service Providers

A department-wide program is proposed for Cochabamba. It would focus primarily on the key market towns identified for productive and social infrastructure investments, but also would include all other municipalities and public service providers in the urban centers of the department, ranging from Cochabamba to the small urban centers of the Chapare.

The key market towns would be the focus of intensive and continued TA including municipal services management, revenue generation issues (taxation, user fees, betterment levies), technical operation of public services, urban and municipal planning, and local government and public finance and accounting.

Other cities and towns would benefit from short-term TA in the technical areas identified above as well as participation in short courses, training activities, and long-term follow-up.

3.3.2 Institutional Alternatives for Delivery of Technical Assistance to Municipal Governments and Public Service Providers

Probably, the most realistic approach to the provision of technical assistance to support those organizations providing urban physical infrastructure and services is to work with those organizations which are already currently providing or attempting to provide these services—principally municipal governments and cooperatives. This approach obviates the need to attempt any kind of national level legal or administrative reform which might necessitate the creation of new institutions to manage these services. Furthermore, working with municipal governments and cooperatives insures a direct and responsive link to local people and reinforces democratic institutions and processes. The following sections offer a brief summary of several different institutional vehicles, with their respective pros and cons, for the delivery of a technical assistance program.

A national government agency—(i.e., PDAR or CORDECO)

Pros—

- institutional structure supporting outreach and interaction with local communities exists or has existed in some form;
- mechanisms are in place which allow these organizations to enter into technical assistance and other agreements with bi-lateral and multi-lateral agencies;
- such institutions also have experience implementing cooperative agreements;
- a TA program implemented through such an agency would have the potential to contribute toward the development of long-term institutional capacity—especially in a permanent organization like CORDECO.

Cons—

- these organizations are often very political; they may be unwilling or ineffective in implementing programs and projects in municipalities not held by the party in power at any given time;
- often are remote and unresponsive to needs of local agencies or governments; perhaps typified by the frequent arrogance of central government officials;
- often a lack of interest in working in the field (i.e., leaving the capital city for any reason);
- possibilities for corruption/misuse of funds etc. are high.

Local government agency with regional outreach potential (i.e., Municipality of Cochabamba)

Pros—

- solid knowledge of municipal problems, the legal framework for local governments, and possible solutions to municipal problems;
- interested and experienced staff, especially in key mid-level positions with daily involvement in municipal operations;
- long-term interest and commitment to solving urban and municipal problems;
- institution building capacity for long-term development.

Cons—

- TA activities to provincial municipalities beyond legal mandate of a departmental municipality;
- difficulties in structuring a direct TA cooperative agreement between a local government and a bi-lateral agency;
- no formal previous experience providing TA to local governments, no administrative structure or personnel in place.

Non-governmental organizations (NGOs)—(i.e., CIDRE or CERES)

Pros—

- may not be overtly political;
- committed and interested staffs often are characteristic of such organizations;
- typically understand the importance of local action, initiatives, and organizations in promoting development;
- there are many NGOs in Cochabamba.

Cons—

- few if any NGOs in the Cochabamba area currently have an interest and/or technical competence in local government development or strengthening;
- structuring of a direct relationship with a bi-lateral governmental agency may not be possible;
- some NGOs are highly politicized with specific political agendas.

Independent TA group—expatriate and nationals

Pros—

- independence from overt political influence and control of everyday activities (i.e., micro-management for political ends minimized);

- possible to secure individuals with a high level of practical and technical competence in the areas of concern;
- rapid start-up possible.

Cons—

- the administrative relationship of such a group to the central government is difficult to envision;
- no long-term institution building in government agencies which might provide continuing assistance to local governments and service providers after the direct TA project ends.

Peace Corp volunteer participation would be very useful in a variety of contexts (i.e., working with service cooperatives and municipal service units) regardless of the precise implementation mechanism selected.

3.3.3 Proposed Institutional Home for Technical Assistance Delivery

Of the alternatives reviewed above, a hybrid approach is proposed. A technical assistance program to municipalities and public service cooperatives should be sited in an institution which is sympathetic to the problems faced by these institutions and has some institutional expertise. The departmental Municipality of Cochabamba represents the institution most likely to fulfill these requirements. This would require the establishment of a municipal technical assistance office within the Municipality of Cochabamba with external financing, such as from USAID. Such an office would require staffing by local professionals as well as staffing by a technical assistance team of national and international experts.

3.3.4 Personnel Needs for Technical Assistance Program for Local Governments Capacity Building

3.3.4.1 Long-Term Personnel

a) **Municipal Services Management Specialist**—(36 months)—with expertise and responsibilities in organization structure, operations and management of public services, budgeting and pricing structures for public services including operations costs, recurrent costs, and capital fund development.

b) **Local Government Fiscal Specialist**—(36 months)—with expertise in local taxation, user fees, and betterment levies. Key skills required in structuring and implementation of such revenue generation techniques.

c) **Urban/Municipal Planner**—(36 months)—with expertise in infrastructure needs, priorities, siting; local government planning and the art of the possible; GIS; experience in providing liaison with levels of government.

3.3.4.2 Short-Term Personnel

a) **Potable water systems, technical operations** (12 months—divided into perhaps three or four short-term assignments)—to provide assistance and instruction in water treatment procedures, system operation and periodic maintenance, etc.

b) **Local government finance and accounting** (12 months—again divided into perhaps three or four short-term assignments)—to provide assistance to local governments in improving basic accounting procedures, to assist in the implementation of computerizing of local accounting activities in the larger market towns (Punata, Cliza, and Aiquile) and to work in conjunction with municipal management specialist and local government fiscal specialist.

c) **Service cooperative (organization/operations) specialist** (12 months again perhaps divided into three or four short-term assignments)—to focus on assisting and strengthening existing service cooperatives and to identify other opportunities where locally based service cooperatives could be established.

ANNEX 1

Forms and Questionnaires for Urban Functional and Physical Inventories—Cities of the Valles Altos and the Distrito Sur

C.D.I.- Cba.
Fera.: CUORENZA

G U I A de la I N D U S T R I A
Por : RUBRO ACTIVIDAD

SISTEMA CUOTAS
Pagina: 1
Emitido: 01/07/9

COD.	R O T U L O	GRUPO	CIIU	REPRESENTANTE	TELEFONOS	CASILL	DIRECCION	OBSERVACION
	Rubro: ALIMENTOS							
258	ABDI S.R.L.	C	3112	LIC.J.CARLOS ARUSOCH T.	40313	575	AV.B.GALINDO KM 6.5	
65	ALIMENTOS VIGOR	C	3112	Sr.LAUREANO ROJAS A.	49290 60722	1093	Av.HEROINAS 534	
66	ALIMENTOS ALFA LTDA.	C	3112	Sr.RENE MOUTON	0 32505	370	Carr.SACABA Km7.5	
71	BARQUILLOS EL CONDOR	C	3117	Sr.ZACARIAS SAAVEDRA L.	28216 43921	2292	c.REZA 42	
16	CIA.MOLINER.BOLIVIANA SA	A	3116	Sr.CARLOS MARTINEZ	24705 21410	16	c.VELARDE 1530	
252	CIARAVE LTDA	A	3116	RAUL RIVERA HINOJOSA	31135 31137	2445	PACATA BAJA S/N	
86	COREPAN SRL.	C	3121	Lic.RENE CARDENAS P.	33546 31404	4731	Carr.SACABA Km5	
89	COMP.INDUSTRIAL FRIGOR	C	3121	Sr.JHONNY VARGAS V.	22138	876	Plaza 6 de Agosto	
31	CORONILLA LTDA.	B	3117	Sr.GUILLERMO WILLE L.	33502 32592	1513	Carr.SACABA Km4	
19	DILLMAN S.R.L.	A	3111	Ing.ROBERTO PEÑA R.	60971 60979	169	Av.B.GALINDO Km10.5	
99	DULCES TILA	C	3119	Ing.ROGER HUMEREZ O.	23902		My.ROCHA 355	
236	EMPAL LTDA.	C	3112	Sr. FERNANDO RIVERO A.	33566 43677	935	ANGOSTURA Km12	
38	FABRICA SAN NICOLA	B	3117	Sra.EDITH vda.deMANICONE	60111 21948	1865	c.25 DE MAYO 822	
39	FIDEOS EL CONDOR	B	3117	Sr. DEVO VICENTE DE COL	45077 49965	611	c.GRAL.ACHA 756	
120	FIDEOS EL CARMEN	C	3117	Sra.CARMEN ROSA QUIROGA	40718 44156		Av.REPUBLICA	
121	FIDEOS EL PAGADOR	C	3117	Lic.EUSEBIO ESPEJO C.	33025 23073	2590	c.E.ARCE 309	
122	FIDEOS MONTERREY	C	3117	Sr. ERWIN RIVERA A.	33407	656	Av.B.GALINO Km4.5	
123	FIDEOS QUILLACOLLO	C	3117	Sr. VITALIANO PINTO P.	60821	3959	c.LANZA 1069	
124	FIDEOS SAN VICENTE	I	3117	Sr. JOSE VITALIANO PINTO	60252 60821	2253	c.Sn.MARTIN	
125	FIDEVITA SRL.	C	3117	Sr. FRANZ TAVERA AMELLER	29813 27770	1677	Av.REPUBLICA 1156	
40	FYSAL LTDA.	B	3111	Sr. MIGUEL CARMONA M.	41943 43034	3892	Av.B.GALINDO Km10	
42	HAAS LTDA.	I	3111	Sr. JOSE HAAS S.	41781 25837	1201	c.BOLIVAR 439	
127	HELADERIA KIVON	C	3112	Sra. JULIETA MURIEL ZABA	49953		Av.HEROINAS	
46	ILA LTDA.	B	3112	LIC.JUAN CLAUDIO LECHIN	31772 33506	143	Carr.SACABA Km5.5	
13	IMBA LTDA.	A	3116	Sr. HERNAN RIVERA F.	41840 41407	656	Av.B.GALINDO Km4.5	
257	INAVI S.R.L.	A	3116	SR.ABRAHAM KROCHEK A.	22192 32893		C.CALAMA 379	
237	INBEAL	C	3121	Sr. OSCAR MALDONADO O.	40971	1894	c.ALIHUATA 1110	
135	INCONA LTDA.	C	3119	Sr. JORGE DAJBURA	46761 22881	3427	c.BOLIVAR 515	
8	INDUST.ACEITE FINO SA	A	3115	Ing.JORGE RADA A.	60103 60296	543	Av.B.GALINDO Km10.5	
49	INDUST.DEL VALLE SRL	B	3113	Sr.EDUARDO VASQUEZ CH.	40200 41042	510	Av.B.GALINDO Km7	
145	INDUST.HIELO SRL.	C	3121	Ing.OSVALDO QUIROGA G.	49018	405	c.FALSURI 123	
141	INDUST.LUZ	C	3119	Sr. FERNANDO ARAMBURO R.	46950		Av.ATAHUALLPA 2381	
199	INDUST.MOYAN	C	3121	Lic.OSWALDO RIVAS L.	45694		c.Fco.VIEDMA 1017	
234	INDUST.TECNAL	C	3112	Sr. JOSE P.GROSSBERGER Z	48873	4728	Av.B.GALINDO Km7	
150	INPATA LTDA.	C	3117	Sr. RUBEN FLORES ROJAS	29821 28837	2652	c.Sn.MARTIN	
177	MOLINOS EL TRIGAL	C	3115	Sra.DORA vda.de CORIA	21121		c.TOTORA 279	
23	MOLINOS SAN LUIS	A	3116	Sra.YOLANDA E.de RIVERA	22901 24282	562	c.J.Fco.VELARDE 1426	
176	MOLINOS SAN SEBASTIAN	C	3116	Sr. JUAN MURILLO C.	22577	594	Av.AROMA 520	
255	P . I . L . - CORDECO	A	3112	LIC.OSVALDO GARCIA P.	60165	757	AV.B.GALINDO KM 10	
183	PELADORA SAN MIGUEL	C	3121	Sr. UBALDO PRADO CLAROS	27227		c.ANTEZANA 998	
254	SAN LUIS S.R.L.	B	3121	ROBERTO ALCOCER F.	32883	1541	KM 5 C.SACABA	
26	SOC.MOLINERA COCHABAMBA	A	3116	Lic.JOSE LUIS VEDIA	44670 42852	1852	Cam.Ant.QUILL Km4.5	
260	SUPERSAM S.R.L.	C	3116	ING.SAMUEL HAFER HOLZER	24271	2519	PLZA TIRAQUE	
206	TAURO LTDA.	C	3117	Sr. GERARDO DOMINGUEZ G.	31471	2744	Carr.SACABA Km2	
207	TEA ROOM ZURICH	C	3117	Sra. Ma.LUISA de LANZ	27541	2088	Av.SAN MARTIN 143	
208	TECNUTRIN	C	3122	Sra.SONIA PRADO TERAN	33761	3746	c.POL TERRAZAS 366	

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COD.	R O T U L O	GRUPO	CIIU	REPRESENTANTE	TELEFONOS	CASILL	DIRECCION	OBSERVACIO
	Rubro: ALIMENTOS							
262	ZETA S.R.L	C	3121	FERNANDO ZABALAGA E.	46884 49776	1320	PZA.CONSTTUCION 0856	
	47 Industrias en RUBRO : ALIMENTOS . Grupo A : 9 . Grupo B: 7 Grupo C: 29							
	Rubro: BEBIDAS							
20	EMBOTELLADORA TUNARI	B	3134	LIC.SERAFIN FERNANDEZ	43981 43136	557	c.Zenon Salinas 1158	
103	EMBOTELLADORA LA CABANA	C	3134	Sr. CARLOS E.DE LA TORRE	22108 24918	66	Av.OQUENDO 255	
21	LA CASCADA	A	3134	Sr. CARLOS OTERO	43699	1552	Quill.anto.Km5	
6	MALTERIA LINDE S.A.	A	3133	Sr. ARMANDO CAMPANA	40245 47610	494	c.JUAN de la ROSA	
55	PRODUCTOS ORIENTAL	A	3134	LIC.MARIO MACHICADO R.	31809 32618	3359	Carr.SACABA Km7.5	
57	SALVIETTI SRL.	B	3134	Sr. JOAQUIN VIZCARRA LL	60135	4429	Av.B.GALINDO Km9.5	
24	SEASA	A	3113	Sr. FERNANDO QUIROGA	43537	352	Av.UYUNI 1171	
4	TAQUIÑA S.A.	A	3133	Lic.LUIS LOZADA	41564 47610	494	Of. AYACUCHO 642	
7	VASCAL S.A.	A	3134	Ing.LUIS GALLEGUILLOS	60170 60552	809	Av.B.GALINDO Km10	
	9 Industrias en RUBRO : BEBIDAS . Grupo A : 6 . Grupo B: 2 Grupo C: 1							
	Rubro: CAUCHO							
28	BANDAG LTDA.	C	3559	Lic.GUILLERMO URQUIETA F	33507	75	Carr.SACABA Km3.5	
169	MAGOBOL	C	3559	Sr. ENRIQUE BACKHAUS	23477 28700	710	Av.HEROINAS 755	
194	RECAUBOL MENDEZ LTDA.	C	3559	Dr. JORGE MENDEZ QUIROGA	51045	2972	c.BAPTISTA 446	
	3 Industrias en RUBRO : CAUCHO . Grupo A : 0 . Grupo B: 0 Grupo C: 3							
	Rubro: CONFECCIONES							
59	A.S.A.R. AMERINDIA	C	3220	Sra.PATRICIA SANCHEZ E.	25468 28386	1714	AvBARRIENTOS 2339	
64	ALFOMBRAS ATLANTIDA	C	3211	Sra.CECILIA ROJAS U.	25058		c.COLOMBIA 449	
70	ATLANTIC LTDA.	C	3220	Sr.FREDDY VALDIVIEZO Z.	28599	1622	Av.AROMA 402	
77	CAMISERIA NATIONAL	C	3220	Sra.SARA LICHTENFIELD	21726	1279	c.MAMIRAYA 3145	
114	FABRICA CALCETINES YUTA	C	3213	Sr. YEN FOO CHANG WANG	44295	2447	Av.B.GALINDO Km8.5	
117	FABRICA SOMBREROS SRL.	C	3220	Sr. CARLOS ALISS HASBUN	28454	4202	c.SUCRE 335	
111	FASONBOL	C	3220	Sr. ALFREDO ALISS HASBUN	24543	157	c.SUCRE 335	
162	LIBERTY S.A.	C	3211	Sr. JOSE P.ASBUN KATTAN	23239	982	Av.BARRIENTOS 2079	
181	NELLA-JUANI BRANTES	C	3220	Sr. JUAN BRANTES	27583	4058	c.ESPAÑA-Av.ROCHA	
182	PECORELLA S.O.S.	C	3220	Lic. JERRY BUSTILLOS M.	41901 29704	1091	Carr.TIQUIPAYA Km1	
200	SANDTEX	C	3211	Sr. EDUARDO SATT	21196	286	c.SUCRE 323	
12	SENDTEX LTDA.	A	3211	Sr. ALEX SENDER AIZENCAN	40287 41967	1058	Av.B.GALINDO km6.5	
58	TEXTICA SRL.	B	3211	Sr. RICARDO VISCARRA M.	60181 60322	3079	Av.B.GALINDO Km10.5	
210	TEXTILES MAVI	C	3220	Sra.EVELYN S.de CANDIA	42741	4554	Gral.GALINDO 1469	
211	TRENZABOL	C	3211	Sr. JUAN SABJA DABDUB	40119	409	c.E.ARCE 546	
	15 Industrias en RUBRO : CONFECCIONES . Grupo A : 1 . Grupo B: 1 Grupo C: 13							

COD.	R O T U L O	GRUPO	CIIU	REPRESENTANTE	TELEFONOS	CASILL	DIRECCION	OBSERVACION
	Rubro: CUERO							
75	CALZADOS EDU SRL.	C	3240	Sr.EDWIN ESPINOZA U.	45597 40987	3501	B.GALINDO Km2.5	
92	CREMMER SHOES	C	3240	Sr.CARLOS CREMMER T.	43486 43276	95	Av.Pando 1143	
95	CURMA LTDA.	C	3231	Sr. NILO GUARAGUAPA G.	28635 26025	2558	c.JUNIN 599	
256	CURT.FRCA.CALZ.GAMBOA	C	3240	TEODOCIA BALTA DE GAMBOA	25732		AV.MANCO KAPAC 516	
17	CURTBRE.ALLIGATOR	A	3231	Sr. DANIEL MILICOVSKY S.	21627 21270	209	Av.SILES 1256	
96	CURTBRE.AMERICA	C	3231	Sr. LUIS PEREZ ALBORTA	41756	4246	Av.B.GALINDO Km 5	
32	CURTBRE.HERCULES	B	3231	Sr. THOMAS WEISS ROHR	22284 27572	620	Av.M. KAPAC 542	
251	CURTBRE.MARIN	C	3231	Sr.GERMAN MARIN R.	26743	4415	c.J.AZURDUY 555	
97	CURTBRE.NACIONAL	C	3231	Sr. LUIS VALENZUELA	21966	232	27 de Agosto 537	
18	CURTBRE.TOMMY	B	3231	Sr. THOMAS KHEY	24737 28053	1243	Av.M. KAPAC 592	
98	CURTBRE.TAURO	C	3231	Lic.FERNANDO ANTEZANA	24267 26421	778	Av.Manco Kapac 646	
264	FCA.CALZADS VENADO LTDA.	C	3240	JUAN PONCE BALDERRAMA	27165	477	L.CABRERA 0441	
47	INBOCA LTDA.	B	3240	Sr. STANISLAUS POLASEK	23723	4149	c.25 de MAYO 466	
216	MABOL SRL.	C	3233	Sr. DARKO FRANULIC M.	24313	1066	c.HAMIRAYA 264	
171	MALETERIA RIVERO	C	3233	Sr. VICENTE RIVERO Z.	27271	1874	c.E.ARCE 667	
1	MANACO	A	3240	ING.CARLOS BUSTAMANTE N.	60123 60120	513	Carr.QUILL Km15	
266	PIELBO S.R.L	C	3231	SR.HERNAN VARGAS TARDIO	60971	1738	PZA.ROSENDO PENA	
	17 Industrias en RUBRO : CUERO . Grupo A : 2 . Grupo B: 3 Grupo C: 12							
	Rubro: MADERA							
68	ASERRADERO MARQUADT	I	3311	Sr.FRANCISCO MARQUADT H.	47908	1756	Av.R.URQUIDI 370	
72	BARRACA SAN MARTIN	C	3320	Sr.ERACLIO CHAVEZ M.	41519 40898	1666	B.GALINDO Km2.5	
78	CARPINTERIA MODULAR	I	3320	Sr.MANUEL FERNANDEZ F.	29978	3880	c.TUMUSLA 273	
106	EMPRESA VILLA TUNARI	C	3311	Sr.IVO DOBRONIC ETEROVIC	32607	885	Carr.SACABA Km5.5	
128	IBEMA EXIMPORT SRL.	C	3320	ING.ALBERTO MURIEL R.	51199 45704	272	c.Sn.MARTIN 162	
130	IMPA	C	3311	Sr. ISAIAS BURGOS O.	45792 32427	2714	Carr.SACABA Km4.5	
153	JACARANDA Y CIA	C	3320	Sr. MARCELO VASQUEZ CH.	40377	510	Av.B.GALINDO Km6.5	
261	MADERAS TRATADAS S.A.	C	3560	ING.JAIME VARGAS CORDOVA	43149 25190	394	VILLA KENNEDY	
138	MADERERA LINER	C	3032	Sr. ERNESTO GUZMAN C.	33771 31303	763	Carr.SACABA Km6.5	
166	MADERMANN	C	3320	Sr. DEMETRIO RIOS GOMEZ	29746 27130	1087	Av.SILES 1530	
179	MUEBLERIA V.MURIEL	C	3320	SR.VICTOR MURIEL.	44879 24961	2085	c.25 DE MAYO 111	
245	MUEBLES ARTE	C	3320	Sr. FREDDY FERNANDEZ F.	29839	719	c. JUANA AZURDUY 865	
180	MUEBLES DIVANA LTDA.	C	3320	Sra.BEATRIZ ARMIJO RUIZ	26497 47563	1633	c.N.AGUIRRE 325	
218	PLASEMA	C	3560	Sr. RAMIRO PEÑA PRADA	44070		Av.B.GALINDO Km2.5	
205	TALLER EL ARCA LTDA.	C	3320	Sr. EDUARDO MAC LEAN V.	41582 48303	427	c.BOLIVAR 347	
	15 Industrias en RUBRO : MADERA . Grupo A : 0 . Grupo B: 0 Grupo C: 13							
	Rubro: METALICO							
248	AUTOMOTORES TOKIO	C	3819	Sr.EDWARD LOPEZ LAFUENTE	24670	3116	Av.J.AZURDUY 200	
14	CABLEBOL S.A.	A	3833	Sr.HANS ZEHL	47116 21001	394	c.BAPTISTA 154	
74	CALMECA	C	3819	Sr.EDMUNDO FUENTES R.	27117	4537	Av.6 AGOSTO 984	
243	CICBA SRL	C	3813	Sr. ARTURO URZAGASTE	49189		Carr.SACABA Km.3	

COD.	R O T U L O	GRUPO	CIIU	REPRESENTANTE	TELEFONOS	CASILL	DIRECCION	OBSERVACION
	Rubro: METALICO							
84	CIMMET S.A.	C	3710	Sr.BRIAN MAC CONNELL	42715 25050	1641	Carr.SCZ. Km7.5	
30	CINA LTDA.	B	3819	Ing.JAIME IRIARTE A.	46774 44934	1943	B.GALINDO Km5.5	
85	CINDUS LTDA.	C	3812	Sr.EMILIO ASCARRUNZ	25858 27533	1304	Calama esq.Junin 170	
35	ENABOLCO LTDA.	C	3813	FEDERICO DIEZ de MEDINA	22783 60744	1999	Av.B.GALINDO Km11.5	
235	ENAUTO	A	3384	My.DIM. JUAN M.ROSALES.	44387	2975	Av.EJERCITO No.13	
9	FABE S.A.	A	3819	Sr. TOMAS CENICEROS C.	42111 41674	1103	Camino a TAQUIÑA	
109	FANAREAL	I	3819	Sr. RAMON CALLE YAPITA	60939	4674	Av.B.GALINDO Km13	
50	FEMCO ARTERO Y CIA.	B	3819	Lic.PABLO ARTERO P.	49078 49256	1830	c.Gral.ACHA 548	
196	FILAN SIDERURGICA	C	3813	Ing.ROBERTO CHAVEZ SOTO	33562	4178	Carr.SCZ Km9	
134	IMSA	C	3710	Sr. RIGOBERTO PUEYO	33818	3109	c.GRAL.ACHA 548	
136	INDAL LTDA.	C	3819	Sr. VLADIMIR DUSNETZOW	23675	1607	c.J.de la CRUZ 1722	
146	INDUST.MACA LTDA.	B	3819	Sr. LUIS SANTIVAÑEZ T.	41009 48118	3336	Av.B.GALINDO Km7	
147	INDUST.RAVI SRL.	B	3819	Sr. JAIME FRISCHMANN	24338	872	Av.AROMA 1208	
148	INDUST.SICO	C	3819	Sr. PAULUS JOSEF BAKKER	31582	530	Carr.SACABA Km3	
149	INELQUI LTDA.	C	3812	Sr. ROBERTO POL C.	32428 23622		c.GRAL ACHA 241	
152	IRBA LTDA.	C	3812	Sr. ROBERTO IRIARTE A.	33524 24190	1690	Carr.SACABA Km4	
154	LA METALURGICA	C	3819	Sr. JAVIER MAIDA G.	23275	36	c.25 de MAYO 434	
259	LA NACIONAL IND.COEMRCIO	C	3819	JOSE LUIS PEREZ	60819 29207	520	QUILLACOLLO	
165	MADELSSA S.A.	C	3839	ING.MARCO SAIVE	0 26460	3541	c.Gral.ACHA 468	
168	MAFUQUI	C	3710	Sr. MARIO ENCINAS	60487 60302	2024	Carr.QUILL Km15	
53	METAL LEON LTDA.	B	3844	Lic.JOSE CANDIA A.	42385 42741	2015	c.L.GALINDO 1469	
174	METAL MECANICA HILCO	C	3813	Sr. FELIX ARNEZ CUELLAR	33292 31196	631	Av.ODUENDO 575	
219	METAL MECANICA MOFAR	B	3813	Sr. ERNESTO MORALES LARR	48756		Av.AMERICA(SARCO)	
263	METALURGICA LACHA	C	3710	LUIS HUMBERTO DE ACHA AS	45067	4868	S/C	
240	PERFILTEC S.R.L.	C	3710	Lic.EDMUNDO DIEZ DE MEDI	60003	3080	Av.B.GALINDO Km.11.5	
187	PRO-AGRO LTDA.	C	3710	Sr. ALFREDO PRADO TERAN	60345 33631	1778	c.POL TERRAZAS 362	
195	RECTIFICADORA COCHABAMBA	C	3710	Sr. OSLANDO RODRIGUEZ T.	42051	2559	c.ACRE 1727	
215	TALLER ARTESNAL SAN.ELOY	C	3819	Sr. JOSE ROCABADO G.	49687		c.S.RODRIGO 17	
214	WILDA REVOLLO Y CIA.	C	3812	Sr. WILFREDO REVOLLO	33822	1303	Carr.SACABA Km10	

33 Industrias en RUBRO : METALICO . Grupo A : 3 . Grupo B: 6 Grupo C: 23

Rubro: MIN. NO-METLCS.

73	CALERAS COCHABAMBA-CALCO	C	3692	Sr.OSCAR ANDRADE B.	48426		PAROTANI Km8	
265	CERAMICA ZIL	C	3610	FERNANDO POSTIGO GAMEZ	48571	1943	COLCAPIRHUA S/N.	
82	CIMCO LTDA.	C	3691	Sr.JAIME LAREDO	33759 33762	1236	PAPA PAULO 1161	
2	COBOCE	A	3692	Ing.JAIME MENDEZ	24696 29924	2244	Av.Sn MARTIN 558	
15	COBOCE-CERAMIL Ltda.	A	3691	Ing.MARIO BELLIDO	41532 47663	2842	B.GALINDO Km6.5	
87	COMACO	B	3699	Sr.PETER GSCHWIND PLUESS	43703 42441	439	M.de Aguirre 1140	
5	DURALIT S.A.	A	3699	Lic.RUDDY RIVERA D.	41113 45116	1791	Av.B.GALINDO Km7.5	
36	EXAMAR LTDA.	B	3699	Sr. ALBERTO RICO V.	32439 32440	2581	Carr.SACABA Km.3	
253	FABOCE - CORDECO	A	3691	ING.HERNAN AYALA P.	33547 33548	2440	CARR.SACABA KM.9.5	
246	FIBROLIT SRL	C	3699	Sr. RICARDO PEDREGAL H.	31440	2828	carr.SACABA Km4	
170	MAJOBOL	C	3699	Sr. JUAN RAFAEL JORDAN	43049 40054		c.A.GARCIA 1128	
173	MANUFACTURAS OTAZAR	C	3699	Sr. OTAZAR STEJSKAL M.	46841	2100	c.COLOMBIA 465	

COD.	R O T U L O	GRUPO	CIIU	REPRESENTANTE	TELEFONOS	CASILL	DIRECCION	OBSERVACION
	Rubro: MIN. NO-METLCS.							
247	PIEDRAS Y DECORACIONES	C	3699	Sr.RAUL SALAZAR A.	24363	12	c.TUMUSLA 260	
202	SICOBOL LTDA.	C	3699	Lic.WILFREDO VEGA GOMEZ	21862	767	Av.Independencia2042	
203	SIMSA	C	3691	Sr. PEDRO SCHIAVI CALVI	27223	1170	c.J.Ma.CABRERA 490	
204	SULOZA	C	3610	Sr. EDDO VRESALOVIC B.	49678	224	c.Gral ACHA 589	
213	URKUPIÑA TRIGO LTDA.	C	3699	Sr. JOSE TRIGO TERCEROS	43853 23480		Av.HEROINAS 656	
	17 Industrias en RUBRO : MIN. NO-METLCS . Grupo A : 4 . Grupo B: 2 Grupo C: 11							
	Rubro: PAPEL							
74	EDITORA COBOCE OPINION	B	3420	Dr. EDWIN TAPIA F.	29519 25652	287	Gral.Acha 0252	
100	EDITORIAL SERRANO LTDA.	C	3420	Sr. DANTE SERRANO HERRAS	33971 31936		c.Castel Quiroga1887	
101	EDITORIAL AMERICA	C	3420	Sr. LEOVIGILDO OVANDO C.	24540	434	c.SANJIVANEZ 201	
102	EDITORIAL UNIVERSO	C	3420	SR.NICOLAS ETEROVIC	28029 27595	139	Ed. LOS TIEMPOS	
37	FABOLSA LTDA.	C	3412	LIC.CARLOS CANEDO	26847 33554	139	Ed.LOS TIEMPOS	
250	FANACUR	C	3411	Sr. WINSTON ESTREMADOIRO	50911	1976	c.ANTEZANA S-0153	
131	IMPRENTA COCHABAMBA	C	3420	Sr. ALFREDO HOFF CASTRO	24154	460	c.Gral.ACHA 297	
132	IMPRENTA VALDEZ	C	3420	SR.FELIX VALDEZ C.	22764		c.BAPTISTA 118	
133	IMPRESIONES POLIGRAF	C	3420	Sr. JUAN RIVERA SANCHEZ	27366 31994	3881	c.HAMIRAYA 274	
48	INDESA	B	3412	Ing. MIGUEL FEISER S.	41128	2947	Cap.V.USTARIZ Km8	
52	LAURO Y CIA.	B	3420	Sr. LAUREANO ROJAS A.	49290 51171	1092	Av.HEROINAS 534	
22	LOS TIEMPOS	A	3420	Sr. GONZALO CANELAS	28517 21585	525	Ed.LOS TIEMPOS	
	12 Industrias en RUBRO : PAPEL . Grupo A : 1 . Grupo B: 3 Grupo C: 8							
	Rubro: PLASTICO							
249	BOPEPLAST	C	3560	Sr.VICTOR M.CLAVERA O.	31795 33802	1112	Carr.SACABA Km.5	
88	COMANDINA LTDA.	C	3559	Sr.AUGUSTO DEL CASTILLO	44470		Av.Ramon Rivero	
93	CRISTAL PLAST SRL.	C	3559	Sr. JOSE GUILLEN V.	46160	3270	c.25 de Mayo 893	
119	FIBERPLAST LTDA.	C	3549	Lic.JUAN CLAROS VARGAS	23652	79	Av.HEROINAS 854	
143	INDUST.ESTRELLA	C	3560	Ing.JAIME QUILLA T.	40333 23766	2435	Av.Sn.MARTIN 801	
144	INDUST.FOI	C	3560	Sra.FRUCTUOSA QUILLA	28077 24439		Av.REPUBLICA 1038	
242	NICOLPLAS	C	3560	Sr. JOSE M.TORRICO V.	27710	4381	c. M.PROTASIO L 544	
184	PLASBOL	C	3560	Sr. JUSTINIANO QUISBERT	25469 41349	1051	c.ECUADOR 249	
54	PLASTICOS MIF LTDA.	C	3560	Sr. MARIO ARAVIEC	33905	3331	Carr.SACABA Km6	
195	PLASTIFORTE LTDA.	C	3560	Sr. HECTOR HEREDIA P.	45193	2025	Can.Anto.QUILL.Km4	
186	PLASTIGAMA	C	3560	Sr. JOSE ANTONIO SALCEDO	33809	3474	Carr.SACABA Km4.5	
197	ROTAPLAST LTDA.	B	3560	Lic.ANGEL VALDA	40184	3559	Av.B.GALINDO Km4.8	
	12 Industrias en RUBRO : PLASTICO . Grupo A : 0 . Grupo B: 1 Grupo C: 11							
	Rubro: QUIMICOS							
60	AGEA SRL.	C	3511	Sr.TITO PERO ARAGON	44727	3143	Av.IRIGOYEN	
67	ARGEBOL LTDA.	C	3522	Sr.ORLANDO PRUDENCIO V.	49209	2459	c.TUMUSLA 291	

COD.	R O T U L O	GRUPO	CIIU	REPRESENTANTE	TELEFONOS	CASILL	DIRECCION	OBSERVACION
	Rubro: QUIMICOS							
33	DERIVADOS LTDA.	B	3419	Dra.ELIA VILLENA N.	60297	3278	Av.B.GALINDO Km10.5	
107	FABRICA AERBOL	C	3523	Sr. JOHN PAUL LUCES	25857	639	Av.HEROINAS 139	
110	FANASAM LTDA.	C	3529	SR.ALFONSO QUIROGA S.C.	27538 25127	2247	c.ESPAÑA 301	
10	FANEXA S.A.M.	A	3511	MY.DIM.JUAN CARLOS SOLIS	32915 32817	4145	Av.EJERCITO 13	
41	GASONA LTDA.	A	3511	Sr. ABRAHAN MROCHEY	47533 40711	1851	Av.HEROINAS 262	
129	ICOBA LTDA.	C	3523	Sr. ALFREDO CHIARELLA	24980 27083	43	s.SANTIVAÑEZ 142	
142	INDUST.DALIAH	C	3522	Sr. CARLOS ASEURA S.	27873	1443	c.L.CABRERA 355	
140	INDUST.QUIMICA ALVAREZ	C	3115	Sr.MARIO ALVAREZ RAMOS	24316 60301	1643	c.JUNIN 279	
151	INQUIFISCH SRL.	C	3523	Ing.FERNANDO FISCHER R.	33653 21680	112	c.URUGUAY 653	
51	KATTAN Y CIA. LTDA.	B	3511	Sr. VICTOR KATTAN S.	23344	3311	c.MEXICO 145	
155	LABORATORIO EL ROSARIO	C	3522	Dr. MIGUEL TORRICO S.	33846 33709	3666	Av.HEROINAS 1064	
156	LABORATORIOS GAMBOA LTDA	C	3522	Dra. OLINDA GAMBOA A.	21521	62	c.SUCRE 463	
157	LABORATORIOS FARCOS	C	3522	Sr. ORLANDO PRUDENCIO V.	49209	3458	c.TUMUSLA 291	
158	LABORATORIOS FITOBOL	C	3522	Sr. FREDDY PANIAGUA	24471	1499	c.GRAL.ACHA 271	
159	LABORATORIOS IFARBO	C	3522	Dr. WALTER J.ALVAREZ	26001	4437	c.LANZA 998	
160	LABORATORIOS MALENA	C	3522	DR.PIERO YAÑEZ	24257 23057	4003	c.PACCIERI 611	
238	LABORATORIOS STAR	C	3522	Dr. JULIO PASTOR B.	47402 48401	6127	Av.FEDUCTO 12	
161	LAVINCO SRL.	C	3523	SR.OSCAR HUGO ROMERO B.	32601	3243	Carr.SACABA Km4.5	
239	PROSIL LTDA.	C	3511	Sr. JORGE AGREDA C.	60759	2414	c.COCHABAMBA 313 OLL	
11	QUIMBOL S.A.	A	3523	SR. JACOBO LICHTENFELD	60105 60354	508	Av.B.GALINDO Km10.5	
25	SIGMA LTDA.	A	3522	Dr. JOSE VALVERDE	60229 60363	400	Av.B.GALINDO Km10	
	23 Industrias en RUBRO : QUIMICOS . Grupo A : 3 . Grupo B: 2 Grupo C: 17							
	Rubro: VIDRIO							
220	CRISTALCO SRL	C	3620	Sr. EDGAR GARCIA	21727		Tel.21727	
94	CRISTEMLO	C	3620	Sr. LUIS SANTIVAÑEZ T.	41909	3336	B.Galindo Km7	
27	VIDRIO LUX LTDA.	A	3620	Sra.ANA MARIA DE CUELLAR	25709 28919	2954	Carr.Sta.CRUZ Km3	
	3 Industrias en RUBRO : VIDRIO . Grupo A : 1 . Grupo B: 0 Grupo C: 2							
	Rubro: VARIAS							
83	CIMEC INGENIEROS LTDA.	C	3839	Sr.EDUARDO RUIZ ORTIZ	31119	3344	Carr.SACABA Km.3	
3	ELFEC S.A.M.	A	3101	Ing.ORLANDO ROCABADO C.	49543 49321	89	Av.HEROINAS 682	
116	FABRICA INSTRMNTS.GAMBOA	C	3902	Sr. RENE GAMBOA SORIA	28630	2361	Av.M. KAPAC 541	
126	FOTO ESTUDIO BROADWAY	C	3852	Sr. RICARDO SALAMA S.	22701	798	c.COLOMBIA 283	
45	HOTEL COCHABAMBA S.A.	B	3909	ING. GONZALO MENDIZABAL	43524 43300	500	Plaza UBALDO ANZE	
190	PROSEIMPE SRL.	C	3909	Sr. LUIS A.VELTZE M.	21340	104	Av.Sn.MARTIN 149	
201	SERCOM INGENIERIA	C	3909	ING.JAVIER GUZMAN R.	47492	2688	Plaza RECOLETA	
217	SERPETROL LTDA.	C	3839	Sr. FERNANDO VIRREIRA M.	27776		Av.ROCHA 355	
244	SOMAFEX SRL	C	3610	Sr. ALFONSO R.GUARDIA B.	1 1	1	Av. BARBA PADILLA	
241	URUTIBEHETY CIA.	C	3920	Sr. JORGE ALVAREZ C.	43777		PZA.CONSTITUCION	

COD.	R O T U L O	GRUPO	CIIU	REPRESENTANTE	TELEFONOS	CASILL	DIRECCION	OBSERVACION

Rubro: VARIAS

10 Industrias en RUBRO : VARIAS . Grupo A : 1 . Grupo B: 1 Grupo C: 8

216 Industrias en Total al : 01/07/91

CAC Asoc.

PADCO: ESTUDIO VALLE ALTO
DETERMINACION CANTIDAD Y FLUJO DE GANADO

Centro Poblado:

Entrevistador:

Fecha:

GANADO	CANTIDAD EN FERIA	ORIGEN		DESTINO		OBSERVACIONES
		DE DONDE	QUIEN	A DONDE	QUIEN	
Vacuno adulto						
Vacuno ternero						
Porcino						
Ovino						
Bueyes						
Burros						
Mulas						
Caballos						
Otros						

PADCO: ESTUDIO VALLE ALTO
DETERMINACION FLUJO DE PRODUCTOS AGRICOLOS

Centro Poblado:

Entrevistador:

Fecha:

PRO-DUCTO	ORIGEN		DESTINO		OBSERVACIONES
	DE DONDE TRAEN	QUIEN TRAE	A DONDE LLEVAN	QUIEN LLEVA	

PADCO
AGOSTO, 1991

INVENTARIO DE CENTROS POBLADOS DE LOS VALLES ALTOS DE COCHABAMBA

CONTEO DE PUESTOS DE VENTA PERMANENTE (PRODUCTOS AGROPECUARIOS)

Lugar:	Sitio:
Hora de empezar la hoja:	Hora de terminar la hoja:
Encuestador:	Día: Fecha:

	MENUDEO	MAYOREO
1. Panaderías		
2. Carnicerías		
3. Productos agropecuarios		
- Hortalizas		
- Frutas		
- Tubérculos		
- Granos		
- Productos lácteos		
- Carnes, grasas, etc.		
- Coca		
- Forrajes		
4. Insumos agropecuarios		
5. Comedores, restaurantes, pensiones, bares, cafes, etc.		
6. Vestimentas artesanales		
7. Muebles artesanales		
8. Otros productos artesanales		

PADCO
AGOSTO, 1991

INVENTARIO DE CENTROS POBLADOS DE LOS VALLES ALTOS DE COCHABAMBA
ENCUESTA DE MERCADOS: CONTEO DE PUESTOS DE FERIA

Lugar: Sitio:
Hora de empezar la hoja: Hora de terminar la hoja:
Encuestador: Día: Fecha:

PRODUCTO	MENUDEO	MAYOREO
1. Frutas		
2. Hortalizas		
3. Granos (secos, no molidos)		
4. Tubérculos, papa		
5. Otros tubérculos		
6. Productos lacteos frescos		
7. Carnes, grasas, menudencias pieles		
8. Granos molidos		
9. Coca		
10. Alimentos preparados (comidas, panes, jugos, etc)		
11. Forrajes		
12. Animales menores		
13. Productos artesanales		
14. Insumos agropecuarios		

PADCO
AGOSTO, 1991

INVENTARIO DE CENTROS POBLADOS DE LOS VALLES ALTOS DE COCHABAMBA

SERVICIOS A LA PRODUCCION, PROCESAMIENTO Y MERCADEO AGRICOLA

(FUNCIONES)

Encuestador:
Fecha:

INSTITUCIONES

- Centros e Institutos de Capacitación Técnico-Agropecuaria

- MACA/IBTA

- Cooperativas

- Bancos

-Instituciones Privadas (ONG's, etc.)

INSUMOS

- Venta de insumos y herramientas agropecuarias

- Venta combustibles (kerosene, diesel, gasolina, aceites)

- Venta de materiales de construcción y herramientas de ferreterías.

SERVICIOS

- Talleres mecánicos

- Alquiler maquinaria agropecuaria

- Transporte

AGROINDUSTRIA **CASERO** **SEMI-INDUSTRIAL**

- Tejidos
- Molinos
- Chicha
- Quesos
- Cueros
- Velas
- Muebles
- Productos de barro
- Sombreros
- Ollas de cobre
- Otros

LISTA ENTREVISTADOS

N O M B R E	**CARGO/OCUPACION**
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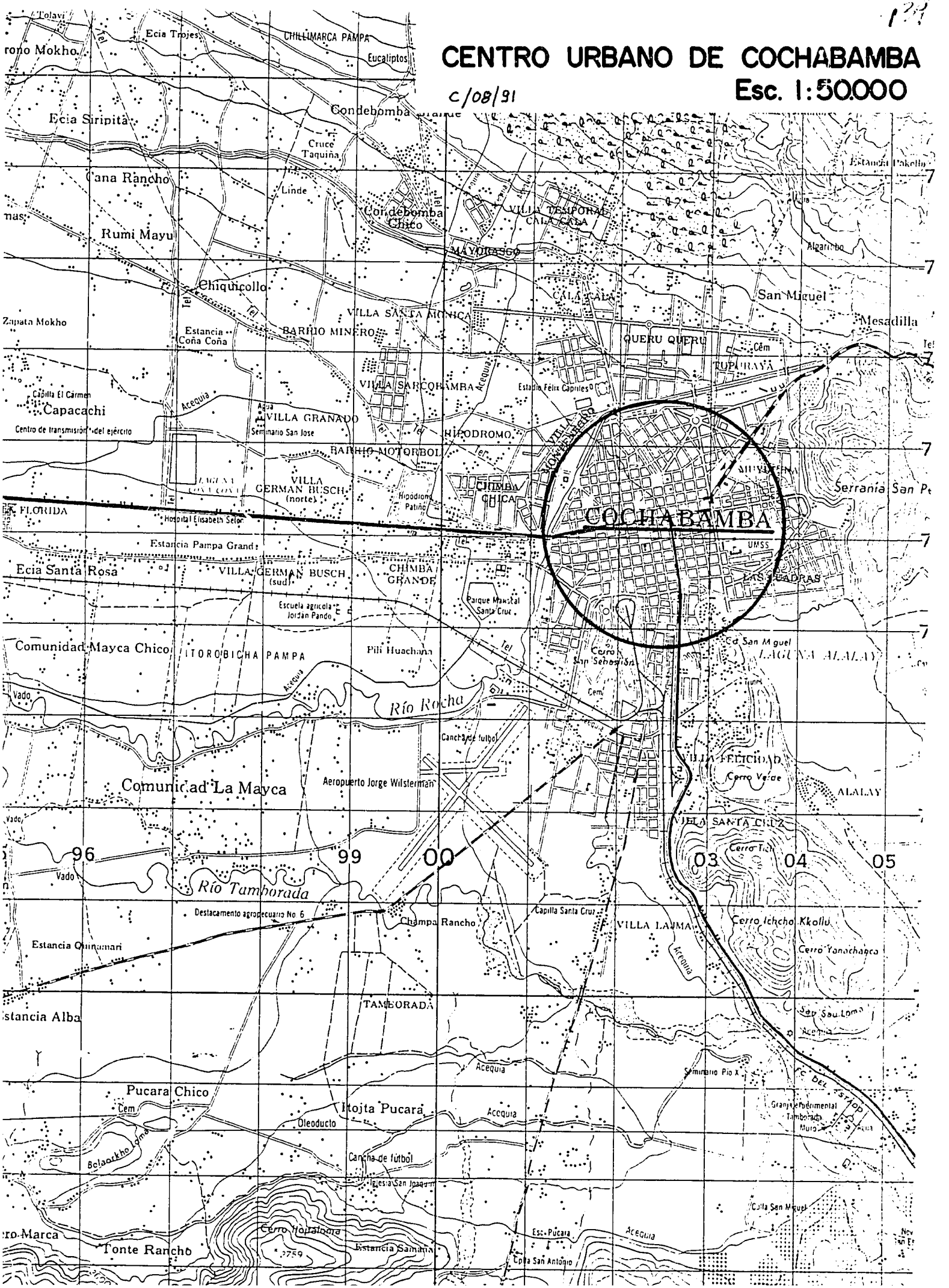
ANNEX 2

Individual Maps of Cities Studied in the Valles Altos and the Distrito Sur

CENTRO URBANO DE COCHABAMBA

c/08/91

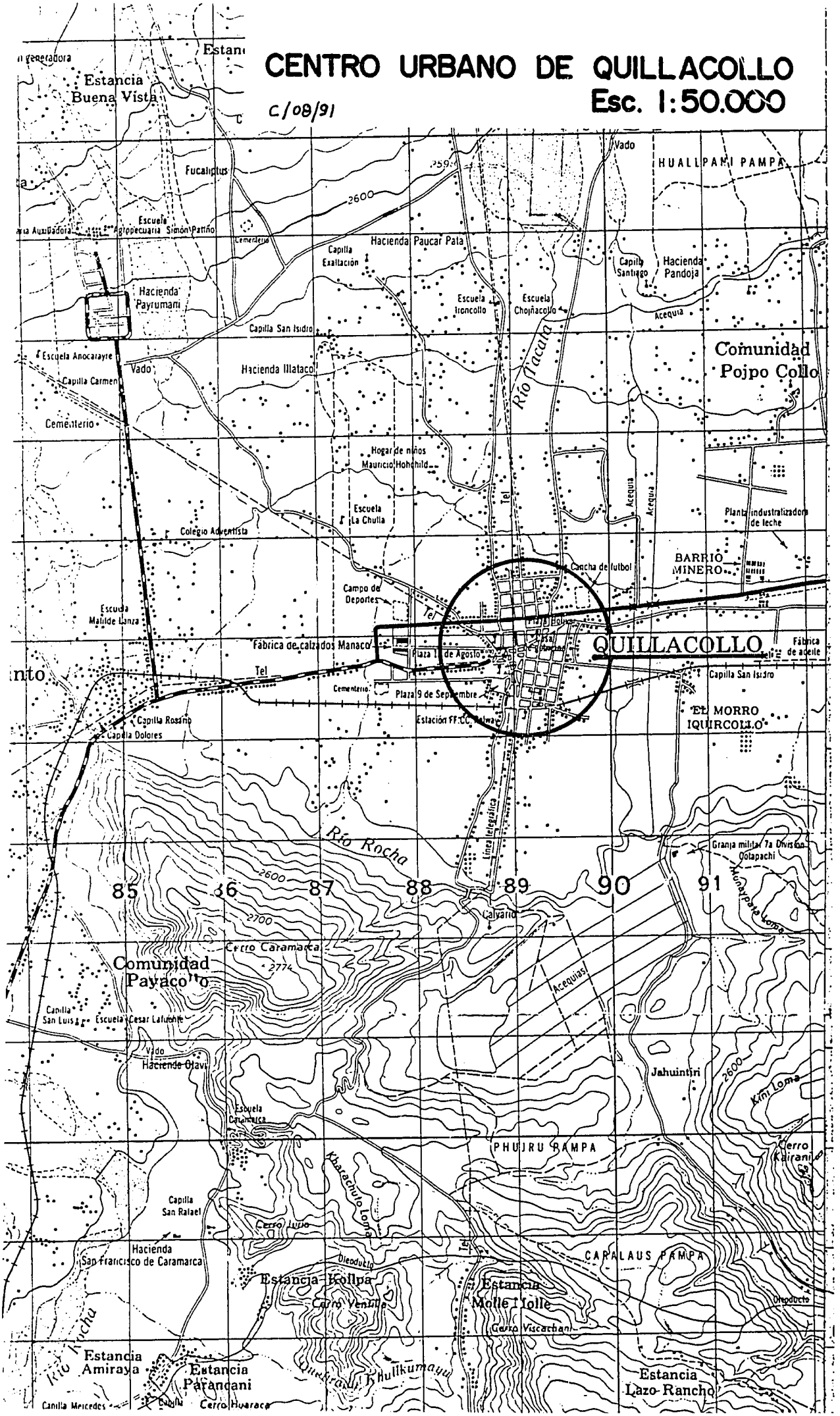
Esc. 1:50.000



CENTRO URBANO DE QUILLACOLLO

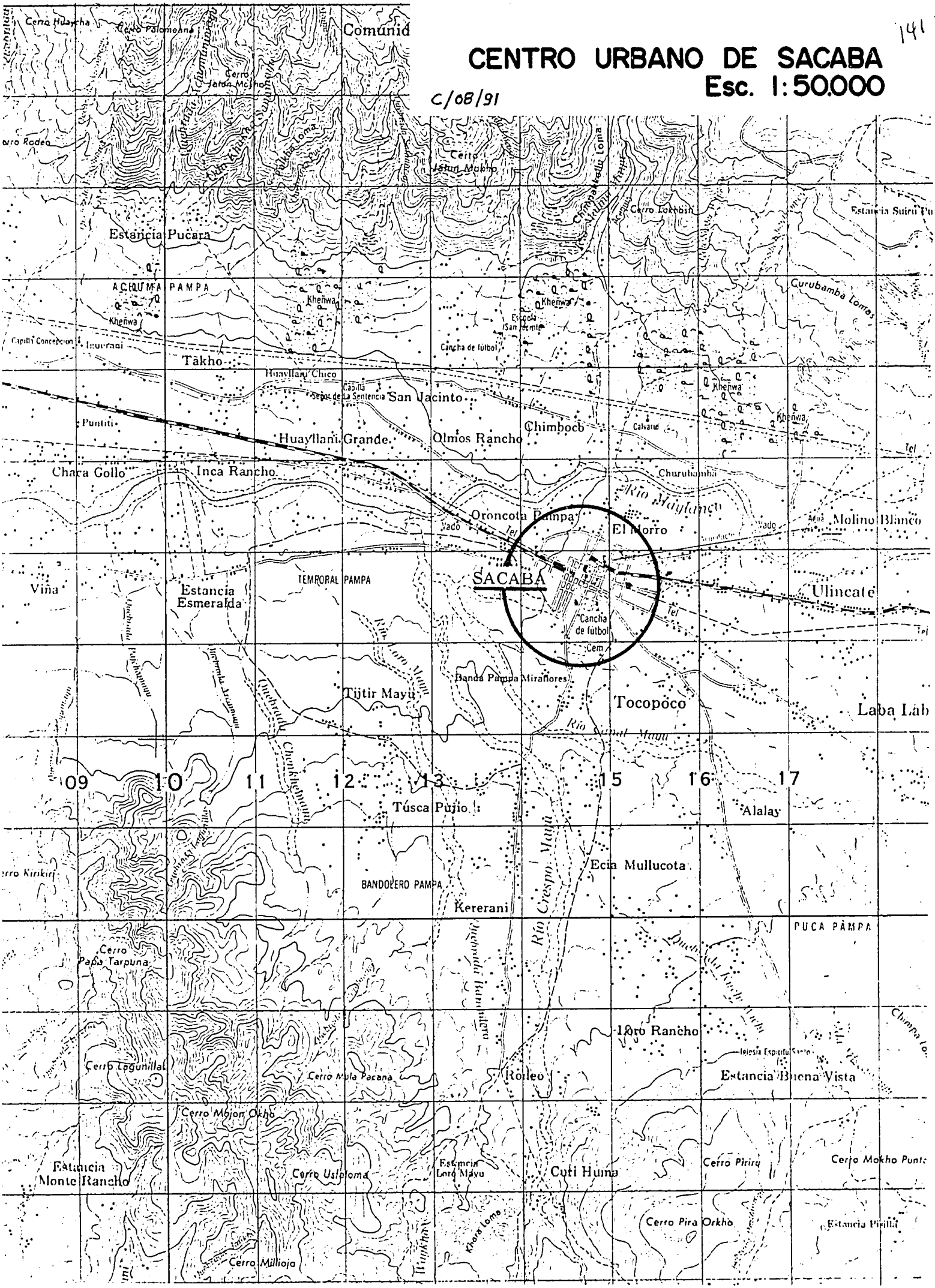
C/08/91

Esc. 1:50.000



CENTRO URBANO DE SACABA
Esc. 1:50.000

C/08/91



CENTRO URBANO DE PUNATA

C/08/91

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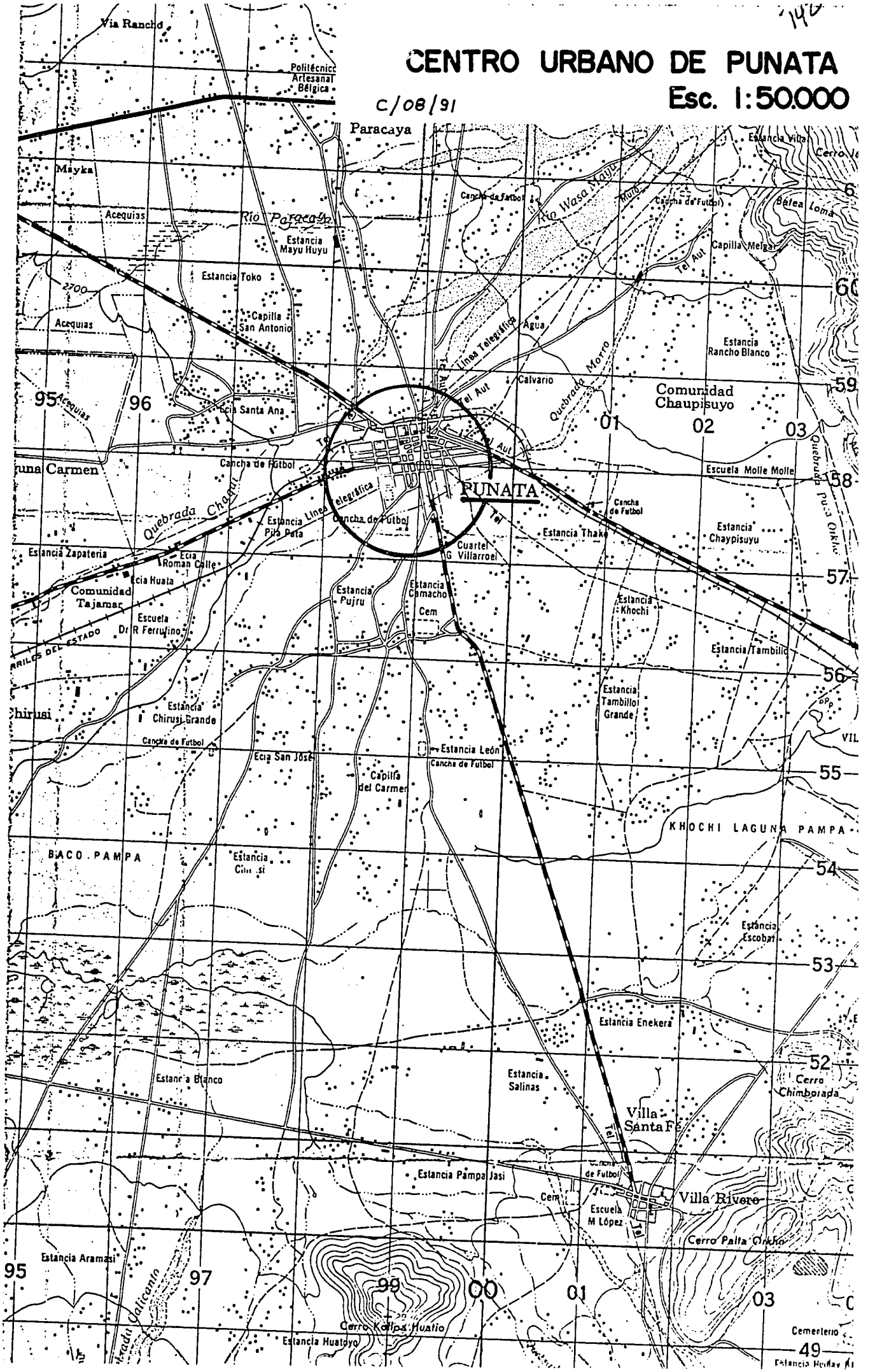
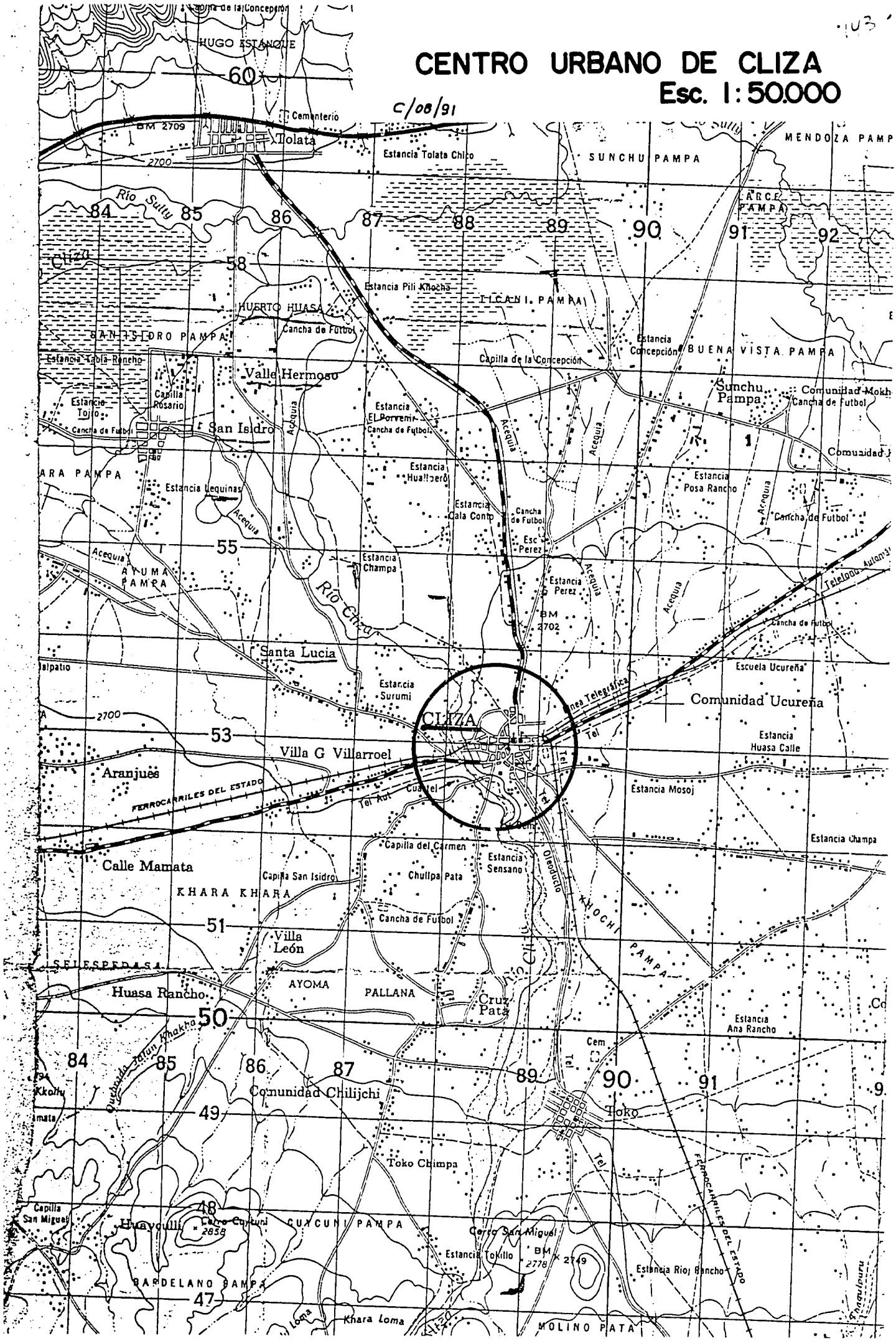


CENTRO URBANO DE CLIZA

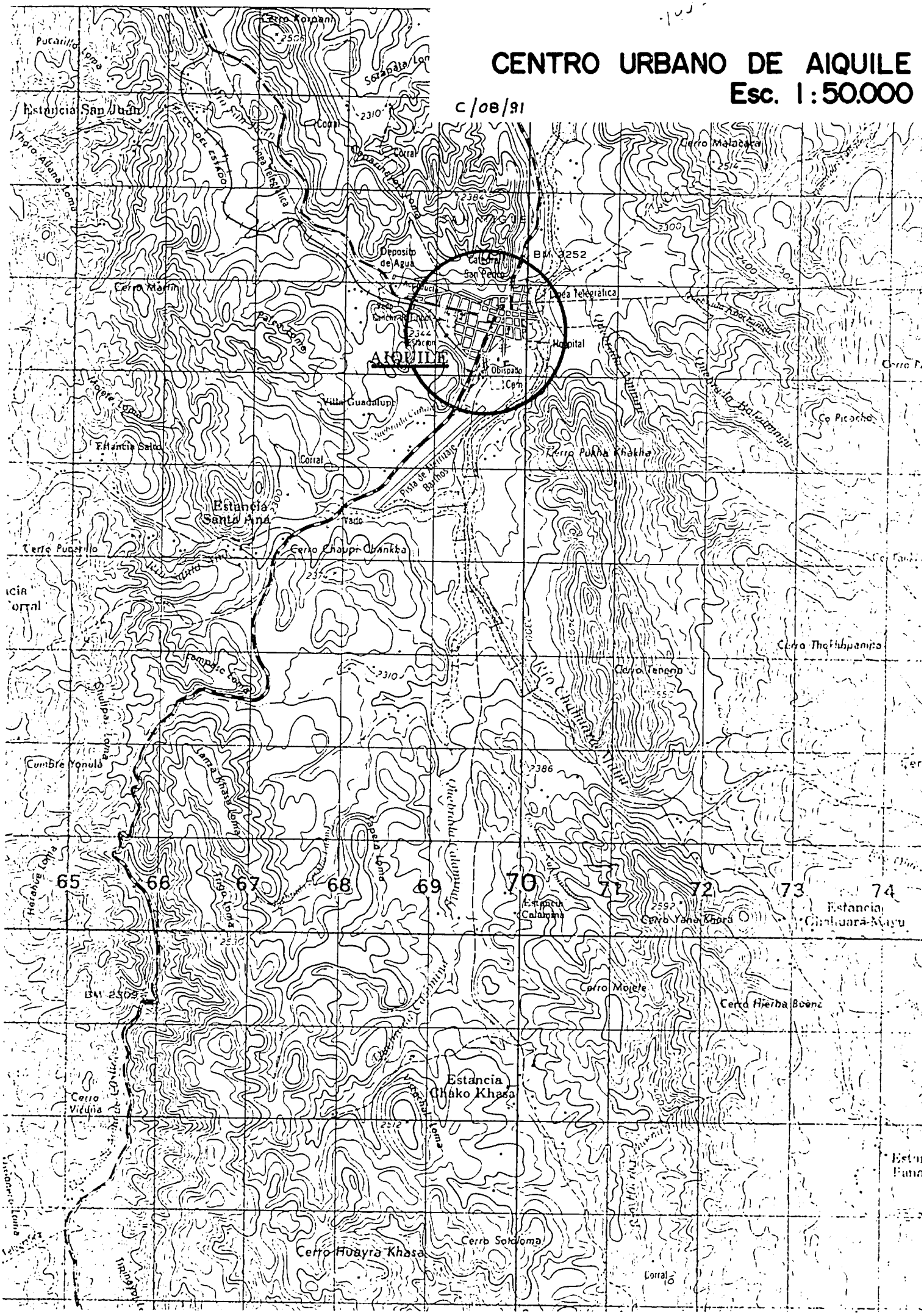
Esc. 1:50.000

C/08/91



CENTRO URBANO DE AIQUILE
Esc. 1:50.000

C/08/91



CENTRO URBANO DE ARANI

C/08/91

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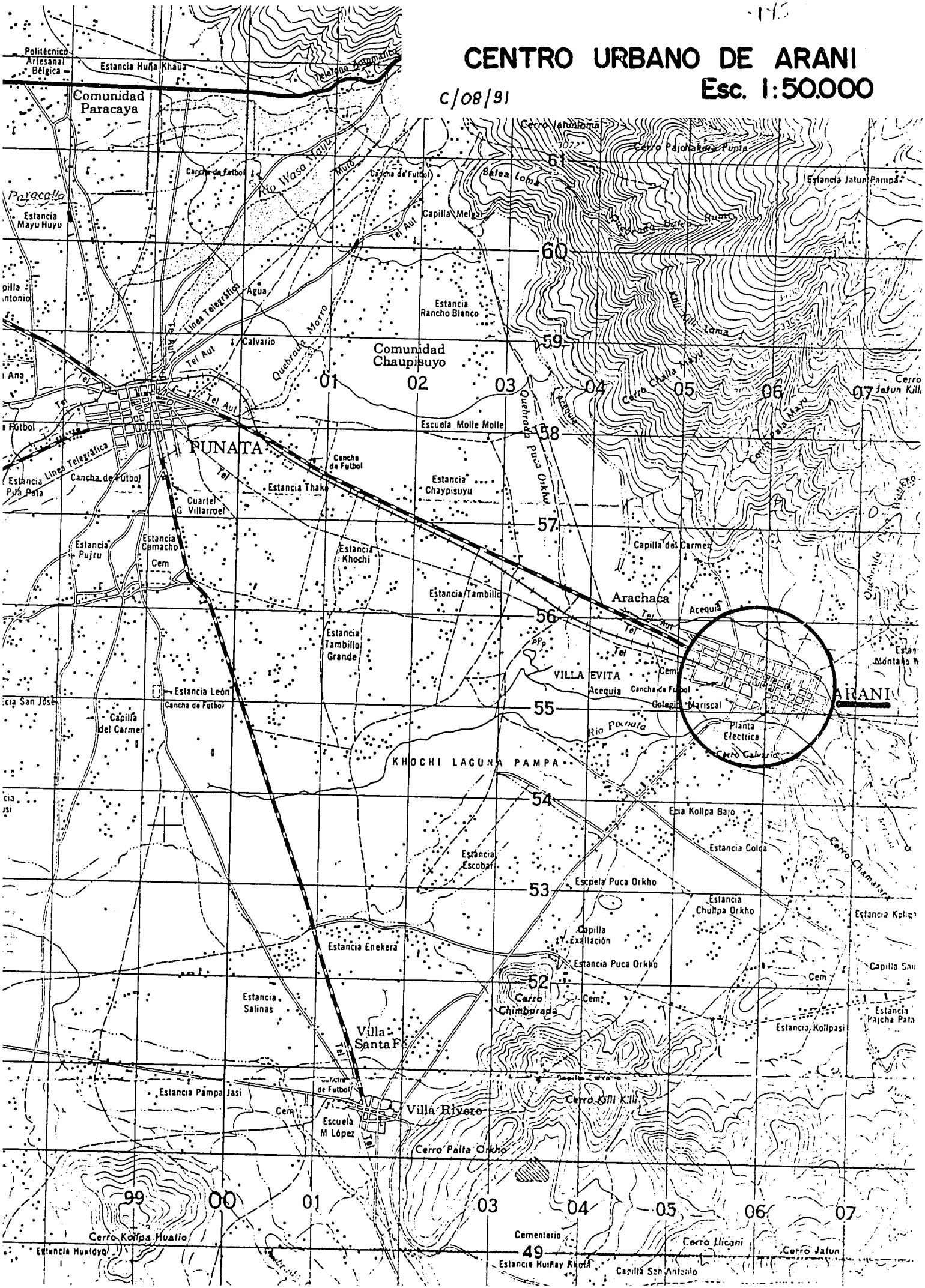
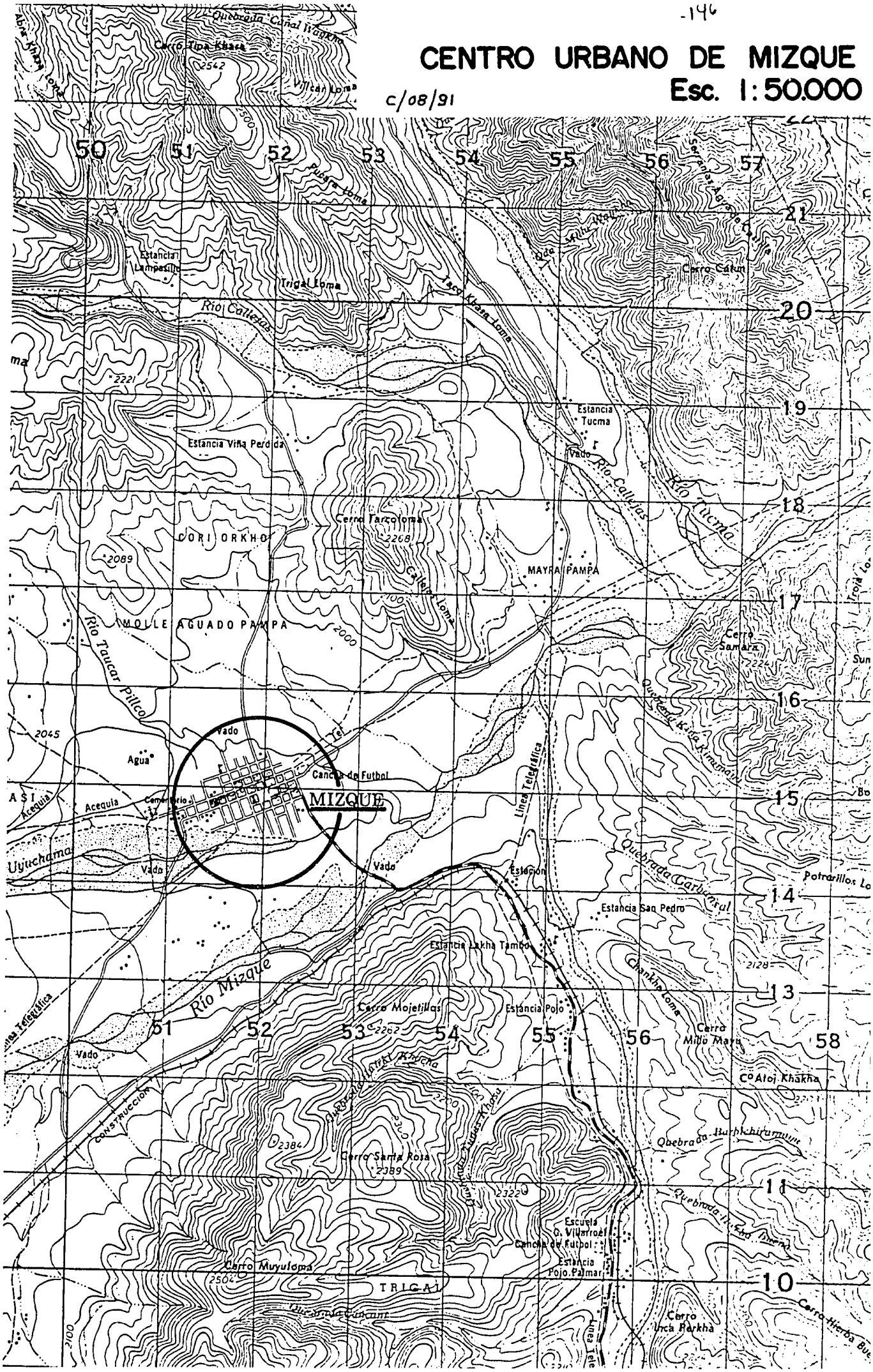


CENTRO URBANO DE MIZQUE

Esc. 1:50.000

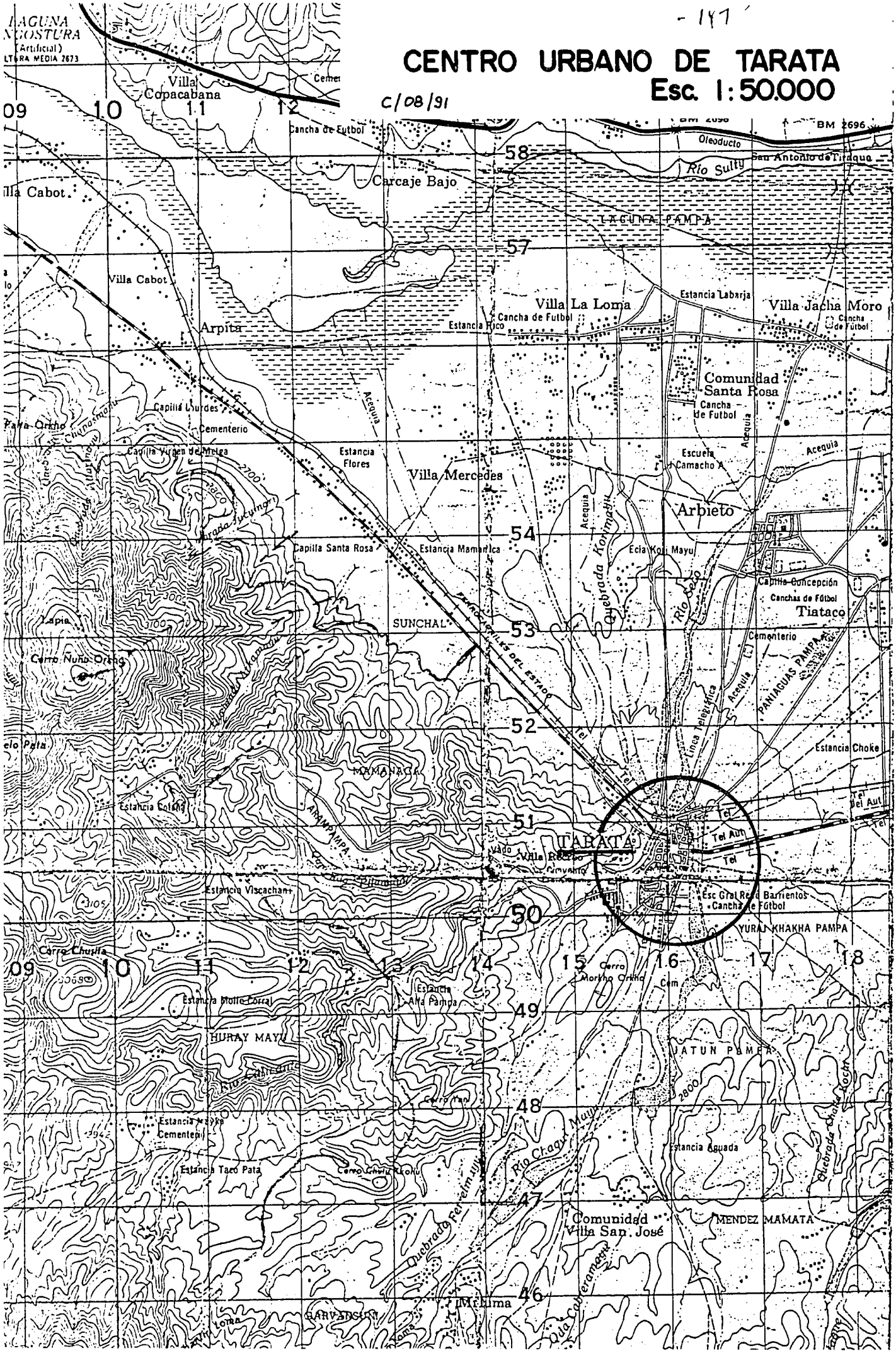
c/08/91



CENTRO URBANO DE TARATA

Esc. 1:50.000

C/08/91



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INTERVIEWS

Name	Institution/Position
La Paz	
Charles Hash	USAID/Deputy Chief ARD
Lawrence L. Odle	USAID/Project Development Office
Luis F. Moreno	USAID/Coordinator PL480-III
Cochabamba	
Federico D. de Medina	CORDECO/President
Israel Beltran	Manager of Planning
Luis Arteaga	Director of Planning
Edmundo Garafulic	Director of International Cooperation
Hipolito Cespedes	Director of Rural Development
Marion Ford	USAID/Chief Cochabamba Office
Ney Lopez	USAID/Credit Advisor
Gerald Fisher	USAID/High Valleys Coordinator
Jose Decker	PDAR/Executive Director
James Graham	Chief of Party/Development Associates Inc.
Jorge Canedo	Alcaldía Municipal/Chief Technical Officer
Elizabeth Quiroga	Alcaldía Municipal/Director of Planning
Carlos Quitón	ASAR/General Manager
Juan Demeure	DESEC/President
Quillacollo	
Hector Cartagena	Alcaldía Municipal/Mayor
Rolando Rios	Alcaldía Municipal/Director Urban Develop.
Edmundo Salguero	Alcaldía Municipal/Regulations
Jose Maldonado	Alcaldía Municipal/Auditing
Luis Torrejón	Alcaldía Municipal/Water Supply & Sewerage
Humberto García	Alcaldía Municipal/Finance Director
Emigdio Cáceres	Consejo Municipal/President
Sacaba	
Walter Heredia S.	Alcaldía Municipal/Mayor
Silvio Villazon	Alcaldía Municipal/Chief Technical Officer
Antonio Vargas	Alcaldía Municipal/Director Urban Development

Punata

Jose Arnez	Alcaldía Municipal/Mayor
Gonzalo Quinteros	Alcaldía Municipal/Chief Technical Officer
Pedro Salazar	Alcaldía Municipal/Water Supply & Sewerage
Marlene de Fuentes	Alcaldía Municipal/Taxes
Hernán Gonzales	Cooperativa Eléctrica/General Manager

Cliza

Hector Flores	Alcaldía Municipal/Mayor
Waldo Torrico	Alcaldía Municipal/Chief Technical Officer
Victor Castro	Consejo Municipal/President
Rufino Vargas	Consejo Municipal/Council Member
Carlos Guillén	Consejo Municipal/Council Member
Walter Arias	Consejo Municipal/Council Member

Arani

Oscar Lopez A.	Alcaldía Municipal/Mayor
Henry Lopez Claros	Alcaldía Municipal/Urban Development
Jose Camacho	Alcaldía Municipal/Treasurer

Tarata

Mario Ortuño Saenz	Alcaldía Municipal/Mayor
Sandra Butrón	Alcaldía Municipal/Secretary
Carlos Amurrio	Comité Cívico/Vice-President

Aiquile

Miguel Lopez	Alcaldía Municipal/Mayor
Franklin Roman	Consejo Municipal/President

Mizque

Orlando Soriano	Alcaldía Municipal/Mayor
Elsa Acuña Salazar	Alcaldía Municipal/Administrative Officer
Martha Aydee García	CEDEAGRO/Executive Director