

# Identification Of Requirements For The Community - Paraguay

Project on Rural Electrification

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### **Abbreviations:**

ANDE	National Electricity Administration
DGEEC	Statistics, Surveys and Census Agency
EAC	Community Associative Enterprise
INDI	Paraguayan Indigenous Institute
OLADE	Latin American Energy Organization
PRODECHACO	Project for Sustainable Development of the Chaco
UPS	Uninterrupted Power System
VMME	Vice-Ministry of Mining and Energy

## **Executive Summary:**

This report explains the methodologies applied and the main outcomes obtained in the assessment process, conducted in the indigenous settlement of La Patria in general and in the community of La Leona in particular, as well as proposed actions for this settlement under the OLADE rural energy project.

This assessment analyzed aspects involving the settlement's location, geographical features, access ways, legal status of land tenure, demographic data on residents, type and number of homes, existing community infrastructure, current social organization, relations of the settlement with the outside world, natural resources in the area, and economic activities carried out in the community. Finally, the community's main needs and possible actions to meet them were identified.

It is proposed to create a community associative enterprise (EAC) to lead and administer the process of implementing the different projects prioritized by community residents for funding with the seed capital that OLADE will make available for that purpose. The EAC's goals and possible organizational structure are described. However, the EAC will not receive OLADE funds directly, but from a trust through which OLADE will transfer the funds to a fiduciary firm. This mechanism is described according to current Paraguayan law.

The next chapter describes the three project profiles that were prioritized by La Leona residents: 1) setting up a production chain to process carob, producing flour and making baked goods using this wild product, 2) making a multi-use center for commercial, social and educational activities in the community of San Fernández and 3) building improved cookstoves for families in the settlement.

<sup>1</sup>  
The last chapter describes barriers that might affect successful project implementation. There are socio-cultural, educational and geographical barriers, which can probably be overcome largely by applying an appropriate strategy.



## 1. Introduction

This report is part of the preparatory process for the Sustainable Rural Energy Project in Paraguay led by the Latin American Energy Organization (OLADE) with support from the University of Calgary, Canada and the Canadian International Development Agency (CIDA) and working with the national counterpart of the Vice Ministry of Mining and Energy (VMME). This project has been implemented in four countries of Latin America, Guatemala, Haiti, Bolivia and Paraguay. It mainly targets indigenous peoples and women.

The previous stage of OLADE's Rural Energy Project analyzed different indicators, especially social and economic, to choose the indigenous settlement of La Patria (see report, "Analysis and Selection of Communities in Paraguay" by the same author). Since this community is rather large (1500 residents), it was recommended to focus the project on a single village and possibly continue with others until reaching a number of beneficiary families that would be reasonable in terms of the seed capital to be invested. Initially, the village of La Leona was chosen as project beneficiary, mainly because it is the largest and most central in the settlement.

This report aims to outline the needs identified by the village of La Leona and the priority lines of action to be implemented to address the most urgent needs, while following the guidelines set by OLADE under this project. However, in the course of designing the investment projects, the need emerged to extend actions to more than one village. The main reasons for adopting this strategy were:

- The population of La Leona and its current level of economic development are too low compared to the amount of seed capital available;
- needs and living conditions are quite similar throughout the settlement;
- internal conflicts might arise in the community if only one village were to benefit, out of jealousy and because it is a traditional indigenous value to solidarily share any wealthy within the community.

Because available time and resources are limited for this task, participatory identification of community needs was done only in La Leona. Being communities of the same ethnic group, living in the same geographical area, it can be assumed that the socio-economic conditions in the other villages of La Patria are similar enough to extrapolate the findings from needs identification in La Leona to the entire settlement. This was corroborated by comparing available statistics on all the villages and interviews with key persons.

The process of identification and systematization of community needs and design of production and social projects to address these needs sustainably was done from January to April 2006. For this purpose, an analysis process applied various different methodologies. The following chapters outline the details of the needs analysis process, findings from this analysis and profiles of investment projects identified and prioritized participatorily with the community.

For this work, the author received support from two specialists engaged for this purpose: Adalberto Martínez, specialist in indigenous affairs in the Bajo Chaco zone, and Gilda Peralta, specialist in gender. We must also acknowledge and express our appreciation for the logistical support provided by the National Electricity Administration (ANDE), which provided an off-road vehicle, driver and fuel for field visits.

## **2. Working methodology**

To achieve a complete enough range, grounded in objective information on the selected community and its needs, various working methods were applied:

- literature review
- individual interviews
- visits in the field
- participatory workshops with beneficiaries

### **2.1. Literature review**

The literature review gathered relevant knowledge about the culture and history of the Angaité ethnic group, their traditional customs, their community organizational system, their economy and key historical events involving their acculturation in recent times. Information available on Internet was complemented by ethnographic books published in Spanish and German on the process of Chaco ethnic group acculturation and its consequences (see attached bibliography).

Statistics were also analyzed from the 2002 indigenous census, mainly demographics and the economic activities of selected communities. Because census data are relatively recent, they were used directly without any updating, for project purposes.

### **2.2. Individual interviews**

Individual interviews with key informants are a major information source. In this context, key informants are those who know the beneficiary community well, but do not belong to it. Perhaps they are living or lived for some time there as civil servants (teachers, health-care providers, etc.), or with an institution providing outside assistance to the community (Governor's Office, municipality, INDI, emergency committee, NGOs, churches, etc.) currently or recently, or living nearby and dealing with the community (ranchers, employers, etc.). The informants interviewed were:

- Rubén Darío Giménez: Ministry of Public Health and Social Welfare, nurse currently working at the La Leona health post.
- Francisco Ramírez: indigenous teacher who worked in La Patria for nine years.
- Juan Fleitas: official of the Secretariat of Indigenous Affairs, Governor's Office of Presidente Hayes, chair of the ad hoc advisory commission to the OLADE project.
- Claudelino Rodas: official of the Chaco Regional Office of INDI located in the locality of Cruce de Pioneros.

### **2.3. Visits in the field**

Visits in the field are important to get a realistic picture of resources on hand in the community, by seeing the type and condition of homes, quality of soil, natural vegetation surrounding communities, crops and livestock, existing infrastructure (roads, water supply, education, health care, etc.), appearance of people living in the communities (physical condition, clothing and reactions to visits by outsiders), among other characteristics.

To take full advantage of a trip to such a remote place, field visits to the village of La Leona were combined with participatory workshops in the community. The team walked and drove around the community and surrounding areas. Photographs taken during the visit complement the documentation.

## **2.4. Participatory workshops with beneficiaries**

### 2.4.1. General aspects

Participatory workshops are indispensable to identify the community's current situation, needs and desires to improve the conditions, from the people's own viewpoint. Workshops held in La Leona involved the largest possible number of people living in the community, ensuring that males and females, youth, adults and elderly persons, leaders and constituents were equitably represented. For each workshop the consultant team prepared guidelines beforehand for the issues to be addressed.

A fundamental feature of participatory workshops is the language for discussion. To ensure that the consultant team and community understand each other, the language of the latter must be used. La Leona is an indigenous community of the Angaité ethnic group. 98.3% of the population of this community belongs to that ethnic group. However, only 42.3% of residents still speak their native tongue. 57.7% communicate in Guaraní, the most widespread language in Paraguay, especially in rural areas. Guaraní is native to the east of Paraguay, but it has spread as a lingua franca as well as Spanish throughout the Chaco, as this part of the country was colonized, swallowing the Angaité and other indigenous peoples of the Chaco that were not so numerous (see Section 3.8.1.).

Therefore, it was decided to use Guaraní, which practically everyone in the community and the consultant team understand. Workshops were led by Adalberto Martínez as an expert in inter-cultural communication who is knowledgeable about the indigenous cultures of the Bajo Chaco. All meetings were in the plenary mode. Women also took an active part in meetings, which surprised us somewhat, because in such meetings women are often hesitant to express themselves freely. This enabled us to glean information on issues from their viewpoint without having to form separate groups for women and men.

### 2.4.2. Commitments

According to OLADE guidelines, the main purpose of the initial contact with the beneficiary community is to elicit "commitments", i.e. the community's overall consent and agreement to participate in the project under the terms set by OLADE. However, the consultant team felt it would be preferable, to enable beneficiaries to better understand the project and its scope, not to limit this first visit to simply eliciting their consent. So, the first trip to the community of La Leona, on 17 January 2006, combined with what OLADE calls the "workshop for empowerment in energy topics", which would normally be done in a second visit. We feel this gave beneficiaries fuller grounds for consenting to the project.

The first workshop pursued the following main objectives:

- establish initial contact between the consultant team / VMME and the indigenous community;

- obtain a visual impression of the community and its surroundings;
- inform the community about project contents, objectives, mechanisms and scope;
- elicit the community's commitment to participate in the project under the established terms.



**Illustration 1: Consultant team meeting the community**



**Illustration 2: Participants in the first participatory workshop in La Leona**

There are no media whatsoever in the community, so it was not possible to give any prior notice of our arrival, but the people welcomed us openly and cordially anyway. After learning about our reason for visiting, community leader Maciel Recalde guided us through the village, while calling residents to gather for the meeting. A total of 45 adults and youth (both male and female), plus children with their mothers, met in the La Leona school. The leader officially opened the meeting, welcoming us to the community, and then gave the floor to the consultant team (Adalberto Martínez, Andrés González on behalf of VMME, and the author).

The meeting (conducted by Adalberto Martínez because of his mastery of the Guaraní language) explained the project's main features to the people in simple, understandable terms, emphasizing that the community will receive a reimbursable seed capital, to invest in their production and social structure, and that the investments

must include an energy component. Residents engaged in a lively discussion with the consultant team that cleared up all doubts that arose among beneficiaries. The workshop, in a very cordial, open atmosphere, concluded after 3½ hours, having met all its objectives. On behalf of the community, leader Maciel Recalde stated their commitment to participate in the project.

#### 2.4.3. Participatory assessment

On 2 February, the second trip to La Leona was made to hold a participatory assessment workshop with the community. The consultant team this time comprised Gilda Peralta, Adalberto Martínez, Andrés González and the author. Some 55 adults and youth, over half women, met in the school for the workshop, including Rubén Darío Giménez, the nurse from the La Leona health post.

At the beginning of the meeting, some residents asked for clarifications regarding the issues discussed in the first meeting, fundamentally the project implementation mechanisms and the seed capital, which was explained again in detail. Then the assessment was conducted by Adalberto Martínez, following the guidelines prepared by the consultant team. The following issues were discussed in the participatory mode:

- community relations with institutions and persons
- sources of employment and income
- family spending on products they use daily
- availability of implements for work and production
- analysis of main community problems and needs and possible solutions
- setting and prioritizing lines of action

La Leona residents once again took part actively, both men and women. They provided the necessary information without any hesitation. After five hours' discussion, the meeting came to an end.



**Illustration 3: Participants in the assessment workshop**

### 3. Assessment findings

#### 3.1. Location, geographical characteristics and access

The La Patria settlement, comprising 14 villages, is located in two Districts. On the west, two villages (Las Flores and La Paciencia) are in the District of Villa Hayes. Its larger area to the east, with the other 12 villages, is in the District of Puerto Pinasco. The settlement's geographical center is 101 km from the town of Puerto Pinasco, which is the center for that District, and 375 km from Villa Hayes, capital of the District of Villa Hayes. Both districts belong to the Department of Presidente Hayes.

The satellite photograph shows the La Patria zone and its approximate boundaries, 20 km long (east-west) and 13.5 km wide (north-south at the widest part). The geographical coordinates grid is also included in Illustration 4 for greater clarity.

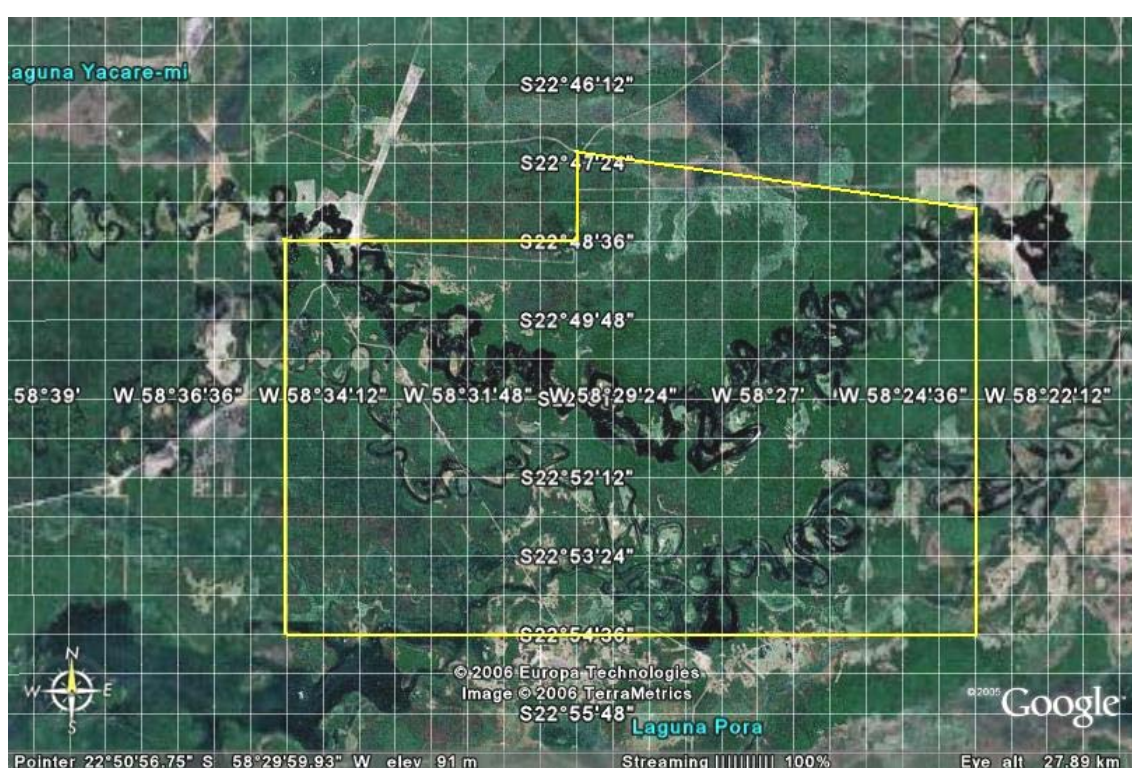
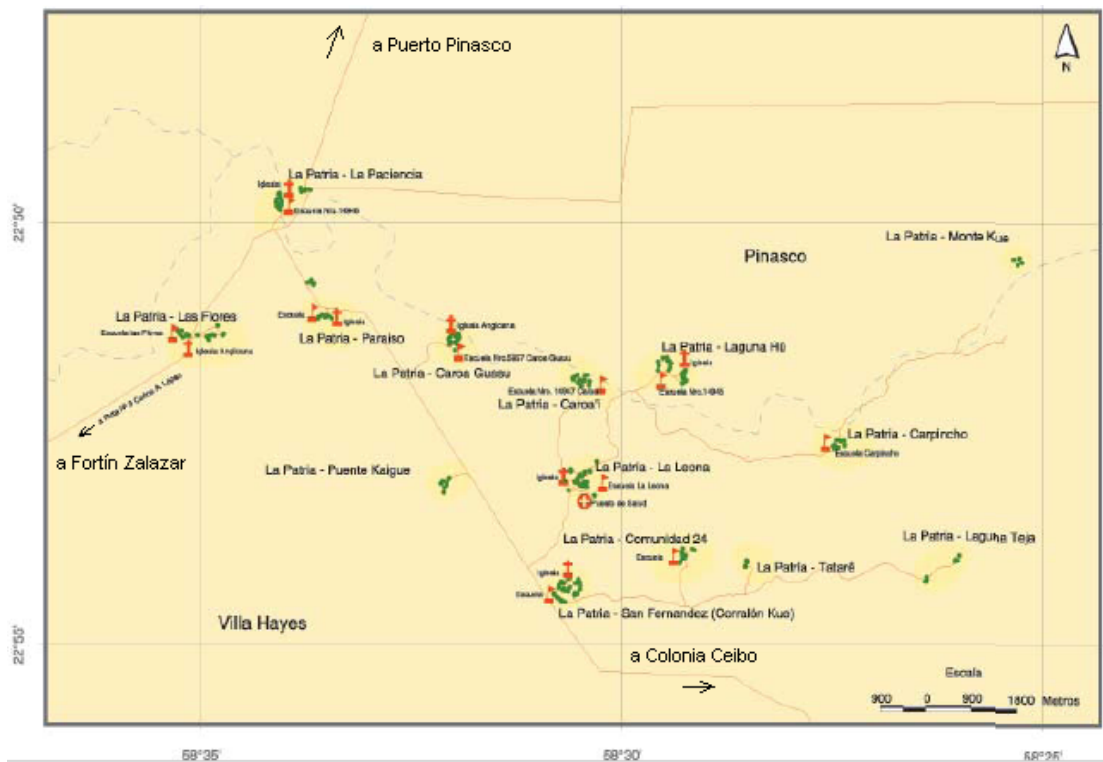


Illustration 4: Satellite photograph of the La Patria zone

The land is practically flat, crossed west-to-east by González River (to the north) and Paraguay River (to the south), which then come together and become tributaries of the main Paraguay River. Except for some small clearings for villages (lighter-colored in the photograph) the area is almost all covered by different kinds of woodlands. Along the rivers, there is floodplain forest (darker in color). The higher area is covered by Schinopsis forest (quebracho) and to the southwest the forest is xerophytic (living under drier conditions).

Access to the settlement of La Patria from Asunción, the capital of Paraguay, and from Villa Hayes, the department capital, is via National Highway N° 9 “Carlos Antonio López” (commonly referred to as the Trans-Chaco Route) as far as the locality of Fortín Zalazar (km 338), where one leaves the paved road eastward on a dirt road leading to Puerto Pinasco. At km 81 of that road is the first village of the area, called Las Flores

(see map in Illustration 5). Some 3 km from there, before reaching the village of La Paciencia, the road forks. The branch continuing straight leads to Puerto Pinasco and the branch running southeast leads to the settlement of Ceibo.



**Illustration 5: Map of La Patria**

*Source: DGEEC, Atlas of the Indigenous Communities in Paraguay*

The different villages are interconnected by roadways that are mostly not very usable, except for pedestrian or horse-/donkey-back traffic. The dirt road between Fortín Zalazar and Puerto Pinasco is maintained by the Ministry of Public Works and Communications (MOPC). In the dry season, it is generally in good, usable condition. The trip from Asunción to the entry point into La Patria (420 km) takes seven or eight hours. During the rainy season, however, the road is unusable and is closed.

The village of La Leona is quite centrally located among the other villages, so it was chosen when the health post was built for patients from the entire settlement. Under this project, it has been selected for that same central location and because it is the village with the largest population. La Leona is 9 km from the crossroads of La Paciencia and the branch to Ceibo settlement, and then another 2 km along an internal road going northwest and then north.

### **3.2. Land status**

La Patria comprises 14 villages, totaling 1500 inhabitants, mostly of the Angaité ethnic group. Each village is an independent community under a leader recognized by INDI. However, the settlement is a single piece of property (22,590 ha (farm nº 9889, roster nº 2752), purchased in 1982 by the Paraguayan Anglican Church to benefit the Angaité indigenous people, who at that time lived in scattered farms throughout the zone, working as day laborers without their own land. Then ownership was transferred to INDI, which turned it over as community property to the residents of La Patria.

### 3.3. Demographic data

According to the latest indigenous census in 2002, the total population of La Patria is 1500: 767 females and 733 males, in 14 villages. They live in a total of 245 dwellings. La Leona is the largest village, with a population of 233: 113 male and 120 female, in 26 dwelling units.

**Table 1: Population by sex and dwellings in La Patria by village**

Village	Males	Females	Population	Dwellings	People/ dwelling unit
Caroa Guasu	45	53	98	20	4.9
Caroa'i	68	53	121	29	4.2
Laguna Hû	80	76	156	24	6.5
Puente Kaigue	22	21	43	8	5.4
Comunidad 24	49	29	78	18	4.3
La Leona	113	120	233	26	9.0
Tatarê	11	17	28	2	14.0
San Fernández	107	107	214	34	6.3
Carpincho	61	55	116	14	8.3
Laguna Teja	23	27	50	8	6.3
Monte Kue	23	21	44	9	4.9
Paraíso	35	30	65	15	4.3
La Paciencia	59	65	124	28	4.4
Las Flores	52	78	130	19	6.8
<b>La Patria</b>	<b>733</b>	<b>767</b>	<b>1,500</b>	<b>245</b>	<b>6.1</b>

*Source: DGEEC, 2002 indigenous census*

Village size ranges from 28 (Tatarê) to 233 persons (La Leona). The average per village is 107 persons. In number of dwellings, the smallest village is also Tatarê with 2, but the largest is San Fernández with 34, followed by Caroa'i with 29. La Leona is in fourth place, with 26 dwellings. This reflects the highly variable ratio of persons per dwelling among the different villages, ranging from 4.2 to 14, with an average of 6.1. La Leona has nine persons per housing unit.

Analyzing data from Table 2, it is notable that almost half the population (46.4%) of La Patria is under age 15 and only 3.1% are older than 65. This reveals a high fertility rate and a relatively low life expectancy. The overall fertility rate among the Angaité people overall is 7.3 children per woman.

In La Leona the demographic data are quite similar. Only the adult population in the age group from 30 to 64 has a significantly higher percentage (4% more) than the average for La Patria.

Compared to the overall indigenous population of Paraguay (Table 4) the percentages are quite similar (47.1%, 2.6%, fertility rate 6.3). However, comparing with the Paraguayan general public, the situation is rather different. Only 37.1% of the national population is under 15, but 4.9% are over 65, and the fertility rate is only 3.8. These differences are also reflected in the significantly different population growth rates between the indigenous and general population. On the average, from 1982 to 2002 they rose by 2.7% and 3.9%, respectively.

**Table 3: Population and distribution by age groups and by sex in La Patria**



Age group	Both sexes		Males		Females	
0 – 4	282	18.8%	122	16.6%	160	20.9%
5 – 14	414	27.6%	220	30.0%	194	25.3%
15 – 29	360	24.0%	163	22.2%	197	25.7%
30 – 64	398	26.5%	203	27.7%	195	25.4%
65 and over	46	3.1%	25	3.4%	21	2.7%
<b>Total</b>	<b>1500</b>	<b>100.0%</b>	<b>733</b>	<b>100.0%</b>	<b>767</b>	<b>100.0%</b>

Source: DGEEC, 2002 indigenous census

Table 4: Population and distribution by age groups and by sex in La Leona

Age group	Both sexes		Males		Females	
0 – 4	38	16.3%	15	11.3%	23	19.2%
5 – 14	65	27.9%	36	31.9%	29	24.2%
15 – 29	51	21.9%	20	17.7%	31	25.8%
30 – 64	71	30.5%	37	32.7%	34	28.3%
65 and over	8	3.4%	5	4.4%	3	2.5%
<b>Total</b>	<b>233</b>	<b>100.0%</b>	<b>113</b>	<b>100.0%</b>	<b>120</b>	<b>100.0%</b>

Source: DGEEC, 2002 indigenous census

Table 5: Population and distribution by age groups, comparing the indigenous population with Paraguay in general

Age group	Total indigenous people		Total Population	
0 – 4	15,210	17.5%	607,301	11.8%
5 – 14	25,834	29.6%	1,308,008	25.3%
15 – 29	22,315	25.6%	1,409,118	27.3%
30 – 64	21,510	24.7%	1,585,381	30.7%
65 and over	2,230	2.6%	253,390	4.9%
<b>Total</b>	<b>87,099</b>	<b>100.0%</b>	<b>5,163,198</b>	<b>100.0%</b>

Source: DGEEC, 2002 indigenous census

### 3.4. Dwellings

La Patria's 14 villages have a total of 245 housing units. The number of persons per dwelling averages 6.1. The community of La Leona has a total of 26 dwellings occupied by an average of nine persons each. Dwellings are distributed in a more or less circular area, with a diameter of about 800 m (see illustration 6). Most houses are grouped together, with two to four homes comprising a family group, but others are isolated. Groups and isolated houses are 50 to 200 meters apart from each other.



**Illustration 6: Distribution of dwellings in La Leona**

*Source: DGEEC, Atlas of the Indigenous Communities in Paraguay*

Almost all dwellings are quite precarious, built (as is common in the Chaco region) of logs from the karanda'y palm, which is quite abundant there (see illustrations 7 and 8). Most houses are single-roomed, used mainly for sleeping and for getting in out of the weather. In good weather, people spend most of the time outdoors. To make the walls, palm logs are lined up vertically, one next to the other, cut to length but not otherwise shaped. The natural irregularities of the logs leave spaces in the walls, so the wind and dust can pass through the cracks between logs.



**Illustration 7: Typical dwelling in La Leona tree**



**Illustration 1: karanda'y palm tree**

To cover the roof, logs are split down the middle lengthwise and then hollowed out to form a sort of long, semi-circular tiles, which are nested as grooves and caps just like Spanish-type clay tiles. Any leaks or gaps in the house are often covered by tarpaulins or plastic sheeting, to protect the inside against rain and cold drafts. Floors are normally simply packed earth without other covering.

Most families cook next to the home, in the open air and right on the ground, without any infrastructure or improvement that might better tap the fire's energy or make the cooking activity more comfortable.

### **3.5. Infrastructure**

#### **3.5.1. School**

This is a single classroom for some 50 students, teaching the early grades of elementary school. Its structure is quite precarious, made traditionally of palm logs, but the roof is tin sheeting, which makes it possible to collect rainwater in a cistern to one side. The floor is a single layer of smooth cement. There are wooden school desks for the students and a table in the front for the teacher, with a chalkboard.



**Illustration 10: School of La Leona**

#### **3.5.2. Health post**

The health post of La Leona serves the people of the entire settlement of La Patria and neighboring farming areas. It is, by far, the best construction and the best equipped in the entire community. It was built of baked bricks and has a tin roof. It was built and outfitted about three years ago under the PRODECHACO project. It has several rooms (doctor's office, delivery room, admission room, pharmacy, kitchen, and bathrooms). It has an 8.5 kW diesel-driven generator group to supply electricity for the post (lighting, fans, refrigerator, autoclave, etc.). However, a couple of years ago the generator quit working when a storm tore the roof off its shed, and its connecting cables. Since then, this relatively insignificant damage has not been fixed. There are two nurses assigned by the Ministry of Public Health and Social Welfare, who alternate shifts to provide round-the-clock service.



**Illustration 11: Health post in La Leona**



**Illustration 12: Generator shed**



**Illustration 2: diesel generator**



**Illustration 15: Inside the health post: pharmacy (left) and doctor's office (right)**

**3.5.3. Running water system**

Last year, the National Environmental Health Agency (SENASA) with World Bank (IBRD Project) funding, installed a running water system in the community, which solved their problems of water supply. The system consists of an Australian tank, which is filled with water pumped from a jetty dam in the river, by a wind-driven pump. From the tank, the water is distributed by a network of piping to the different parts of the

community. As a complement, several community sheds were also built for clothes washing and personal hygiene.



**Illustration 16: Australian tank and windmill**



**Illustration 17: Laundry shed**

### **3.6. Social organization and dealings with outsiders**

#### **3.6.1. Social organization**

The community's social organization has a leader, who is chosen by consensus on the basis of local customs and their social, cultural, and ancestral religious practices, strongly based on family units, inter-family and neighborly relationships. The leader is also the community's official representative for the outside world and for this purpose has recognition from government authorities under an INDI resolution.

This leader gathers community aspirations and discusses them within the community and elsewhere to attempt to satisfy them, maintaining an autonomous relationship at the individual and collective level regarding other communities and ethnic groups.

The socio-political nature of the Angaité people is based on territorial co-residence (neighbors nearby). This type of relationship represents for each community in particular the essence of community political power. So the actions taken by the leader, both in the community and elsewhere, are grounded in consensus. The community's natural leader has the power to delegate functions in matters in which he is not in a position to pursue them personally. This arises when the activity involved requires special capacity that some community member has. This is usually a man or woman who is known as an organizer, chosen for their skill, knowledge, spiritual power, etc.

Each village in La Patria has an officially recognized leader, but there is no formal organizational structure at the settlement level. When there are issues shared by several villages, the different leaders and counselors get together as they see fit.

#### **3.6.2. Dealings with outsiders**

Relations between La Patria and the outside world are dominated by institutions that provide or once provided some sort of support for the community or with whom they have economic dealings. The former category includes the following institutions:

Institution	Function	Status
INDI	sporadic donation of groceries	ongoing
MSPyBS	nurses' salary, medicines	ongoing
SENASA	installed the running water system	concluded
MEC	teachers' salary, school desks	ongoing
CEN	sporadic donation of groceries	ongoing
Governor's office & PRODECHACO	built health post and cisterns, beekeeping equipment, HF radio	concluded
Tierra Viva	legal advisory support regarding land issues	ongoing
Anglican Church	land purchase	concluded

Economic relations involve nearby farms, which are the main employer for local residents (as laborers) and roving peddlers, whom they buy from and sell to (see Section 3.8.3.).

### 3.7. Natural resources

#### 3.7.1. Introduction

The Angaité people in La Patria have numerous natural resources, mostly untapped or very un-intensively utilized. Most involve the forest covering most of the land. The woods harbor a vast variety of wild plants and animals. There are also two relatively sizable watercourses crossing through their area. The soil is mostly suited for farming, although ranching, with manmade pastures, is the main primary production activity for local farms.

#### 3.7.2. Energy resources

La Patria is not connected to the national grid of ANDE. The closest point that is on the electrical grid is Puerto Pinasco, some 100 km away. However, there is a major reserve of fuelwood in the local forests. The sun shines almost year round as well. The annual average overall radiation on a horizontal surface is 4.80 kWh/(m<sup>2</sup> day), which is 76.7% of full sunlight on a clear day. Monthly averages are shown in the following table:

**Table 6: Overall solar radiation on a horizontal surface in kWh/(m<sup>2</sup> day)**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly average over 10 years	6.01	5.73	5.08	4.25	3.44	3.29	3.55	4.01	4.51	5.37	6.19	6.25

*Source: NASA, Surface Meteorology and Solar Energy*

Other energy natural resources are not significant. Because the land is so flat, the two main watercourses, González and Paraguay Rivers, have a low flow rate, especially during long droughts, when they may even dry up completely. Their water level depends on rainfall in the watershed itself and the level of the larger Paraguay River, which the smaller tributaries join.

The wind is also an energy resource worth tapping. The following tables quantify this resource. These NASA data reflect satellite measurements. Average speed at 10 m above the ground varies little during the course of the year, ranging from 3.39 to 4.26 m/s. The annual average is 3.73 m/s.

**Table 7: Monthly average wind speed at 10 m above the ground for terrain similar to airports in m/s**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average
Monthly average over 10 years	3.39	3.40	3.40	3.68	3.64	3.79	4.16	3.89	4.26	3.95	3.80	3.48	3.73

*Source: NASA, Surface Meteorology and Solar Energy*

**Table 8: Average monthly percentage of the time that the wind speed at 50 m above ground is within the range indicated, in %**

Month / m/s	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average
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0 – 2	17	17	20	17	16	15	12	14	11	14	14	16	15
3 - 6	72	72	67	64	69	65	57	65	55	59	65	70	65
7 - 10	11	11	13	19	15	20	31	21	33	26	21	14	20
11 - 14	0	0	0	0	0	0	0	0	0	0	0	0	0
15 - 18	0	0	0	0	0	0	0	0	0	0	0	0	0
19 - 25	0	0	0	0	0	0	0	0	0	0	0	0	0

*Source: NASA, Surface Meteorology and Solar Energy*

For land measurements, one must turn to data from the nearest weather station, at Puerto La Victoria, 85 km straight NE, which has figures for a height of 5 m. The wind speeds measured there are even lower, ranging from 1.5 to 1.8 m/s with an annual average of 1.7 m/s.

**Table 9: Monthly average wind speed at 5 m above the ground at Puerto La Victoria in m/s**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average
Monthly average	1.9	1.6	1.5	1.8	1.7	1.7	1.8	1.7	1.8	1.8	1.7	1.5	1.7

*Source: INTN, Wind resources in Paraguay*

### 3.7.3. Forest resources

The Chaco rain forest offers a large amount and diversity of natural products from its plants and animals, which the indigenous have used traditionally. The most commonly used include:

- a) plant products:
  - timber for construction
  - fuel wood
  - food plants (carob pods, prickly pears, heart of palm, etc.)
  - medicinal herbs
  - plants for handicrafts (karanda'y leaves, karaguatá, tacuara, etc.)
- b) animal products:
  - wild game for food (carpincho, wild pig, armadillo, crocodile, fish, etc.)
  - honey for food and for sale
  - feathers, claws, pelts, bones, etc. for handicrafts

## **3.8. Economic activities and trade relations**

### 3.8.1. Historical and general aspects

Before being forced into contact with missionaries and colonists, mainly around the late 19th century, the indigenous of the Chaco region lived in small family groups as nomads in the jungle, migrating according to a seasonal cycle around extensive territories gathering the food and water they needed to live. Their traditional economy then was based on gathering wild products, hunting and fishing, but also cultivating some crops in small family food gardens (manioc, squash, corn, yams, etc.) during the rainy season. When obliged to abandon their traditional way of life due to progressive colonization of the Chaco region, which took away most of their ancestral lands, the



indigenous had to join in the market economy in order to survive. Initially, they traded animal pelts and wild honey for manufactured goods and then worked as unskilled laborers in the logging, farming, ranching and industrial sectors as they began developing in the Chaco.

Alongside colonization, missionaries arrived, both Catholic and Protestant (inter alia New Tribes Mission, Anglican Church), with the aim of grouping the “savage” indigenous into missions, to better control them to “civilize” them and convert them to Christianity, supplanting their traditional lifestyle. The most serious consequences of this process were that indigenous became totally dependent on food and other staples as handouts, losing much of their culture, in some cases even their language. Attempts by missionaries and then government agencies and NGOs to convert the Chaco indigenous into sedentary, self-sufficient, self-reliant small farmers have largely failed. Among many reasons, they have always been patronized, little has been invested in training and their own culture has been ignored.

For the Angaités and other indigenous peoples in the eastern Chaco region, the colonization process was directly related to development of the tannin industry starting about 1885. To finance commitments to the winners of the Triple-Alliance War, the Paraguayan government sold most of its State-owned land to private investors, mostly foreigners. In this land privatization process, much of the eastern Chaco was purchased for insignificant prices by a few tannin extraction companies, which acquired huge properties along the Paraguay River. Just the Carlos Casado Company (owned by Argentines) purchased about 5.6 million hectares, the equivalent of almost one fourth of the present-day Paraguayan Chaco.

Before synthetic chemicals were developed, tannin was the main input for tanning leather. Tannin was extracted from the wood of the Schinopsis tree, rich in tannin and at the time very abundant in the area. As Schinopsis wood was logged, the indigenous people living there were driven off their land. To survive they had to work as loggers or in the factories, under slave labor conditions. In the mid-20th century, as the raw material was depleted and demand for tannin waned, these companies began to fold, further impacting the people of the area, both indigenous and non-indigenous, as they lost even these miserable jobs. The consequences are evident to this day.

Beginning in the 1960s, several indigenous advocacy organizations arose in Paraguay to work for indigenous rights. They tried to get secure land tenure for them and to promote legislation to recognize and protect their cultural identity. As a result of these struggles, in 1981 the “Statutes of Indigenous Communities” (Law 904/81) was enacted, which introduced for the first time the principle of guaranteeing indigenous peoples’ collective ownership of land. At the same time, a government agency was created to be responsible for indigenous affairs, the Paraguayan Indigenous Institute (INDI). Great headway has been made in the last 25 years in this process of secure land tenure for indigenous communities, but much remains to be done. Many communities recognized by INDI live on land that does not yet belong to them legally.

In most cases, the quantity and/or quality of land granted to indigenous people are not enough to ensure their livelihoods, if they continue their traditional lifestyle as hunter-gatherers. Therefore they are forced to change their livelihood, changing forever into farmers and ranchers, or working elsewhere as laborers. However, their work in the primary sector largely yields only paltry, temporary earnings, insufficient to support their families at a decent level.

### 3.8.2. Current economic system

At present, the economy of Angaité indigenous in La Patria, like most native peoples of Paraguay and especially in the Chaco, is extremely precarious, combining their traditional system and dependence on the market economy like colonists. A third element is emergency aid they receive sporadically from governmental and non-governmental agencies, but also from private parties who want to help, in the form of groceries, clothing and other basic goods.

Economic activities are rooted in hunting, fishing, gathering wild products (e.g. carob pods, prickly pears, heart of palm and wild honey) and handicrafts, as well as temporary work as hired hands on neighboring cattle ranches.

They also have precarious traditional crops in small food gardens around their homes, such as manioc, yams, beans, corn, squash and watermelon. Such agricultural activity began just two years ago in La Leona, although conditions are favorable for farming, with highly fertile soil, free of contamination and diseases, and sufficient rainfall during the summer. However, they have practically no livestock to produce meat, aside from the donkeys they use for transportation.

At present, the main activities generating income to buy household staples are occasional labor at neighboring ranches (clearing brush, working fences, logging, etc.) However, such work is generally paid far below the legal minimum (equivalent to US\$ 2.60 a day or US\$ 44-52 a month). They are so vulnerable that they are shamelessly exploited. The current minimum legal wage is US\$ 214 a month.

Other sources of income are to sell and/or barter honey they gather or produce, logs, pelts, game meat and crafts. Several of these extraction activities harm the environment, because they are pursued unsustainably, both because of natives' lack of knowledge, and because unscrupulous buyers pay such scanty prices.

The activities and sectors in which economically active people are working, there are detailed data for each village in La Patria, from the 2002 indigenous census (see Table 9). However, data are not gender-disaggregated. The activity rate reflects the percentage of the working-age population (10 - 64 years), who state that they are economically active. It is notable that this percentage varies widely from one village to the next. The lowest figure is in Caroa'i (33.3%) and the highest in Paraíso (95.5%) which seems unrealistic. This item was probably not interpreted properly in all cases. In the village of La Leona the activity rate is 68.0%, slightly lower than for the La Patria area overall (72.0%).

**Table 10: Years of schooling and occupation in La Patria**

Village	Years of schooling	Activity rate	Farming	Logging	Beekeeping	Crafts	Others
Caroa Guasu	1.2	93.5%	89.7%	3.4%	5.2%	-	-
Caroa'i	0.9	33.3%	95.7%	-	4.3%	-	-
Laguna Hû	1.0	60.2%	67.4%	23.3%	-	-	4.7%
Puente Kaigüe*	0.8	50.0%	93.3%	6.7%	-	-	-
Comunidad 24	1.2	76.9%	53.8%	17.9%	10.3%	12.8%	-
La Leona	1.0	68.0%	81.4%	10.3%	2.4%	-	1.0%
Tatarê*	0.7	43.8%	57.1%	14.3%	14.3%	14.3%	-
S. Fernández	1.0	87.4%	52.5%	24.6%	4.2%	8.5%	-
Carpincho	0.5	81.6%	65.6%**	18.0%	4.9%	-	-
Laguna Teja*	0.8	76.7%	36.4%	26.7%	9.1%	18.2%	-

Monte Kue*	0.4	75.9%	77.3%	22.7%	-	-	-
Paraíso*	0.3	95.5%	100.0%	-	-	-	-
La Paciencia	1.0	71.6%	42.9%	6.3%	47.6%	3.2%	-
Las Flores	1.1	71.4%	51.7%***	22.4%	19.0%	-	-
<b>La Patria</b>	<b>0.9</b>	<b>72.0%</b>	<b>66.3%</b>	<b>14.7%</b>	<b>9.3%</b>	<b>3.3%</b>	-

\* villages without schools

Source: DGEEC and the author

\*\* includes 3.3% cattle-raising

\*\*\* includes 3.4% cattle-raising

In almost all villages, most economically active declarants say they are farmers. However, percentages vary considerably, from 36.4% in Laguna Teja to 100% in Paraíso. The average for La Patria is 66.3%. The second-most common occupation for indigenous people of La Patria is “agricultural laborer” or “logger”, which entail work by males outside their communities, mainly on neighboring farms, to earn cash to support their families. A large percentage state that they are beekeepers (average 9.3%). La Paciencia is by far the highest in the area, with 47.6% beekeepers. Other villages range from 0 to 14.3%. Two types of beekeeping are practiced, traditional (extracting wild honey) and modern (with hives and domestic bees).

Crafts, mainly done by females, play a relatively insignificant role. Only 3.3% of economically active people in La Patria are engaged in crafts activities. However, three villages have over 10% craftspersons: Comunidad 24, Tatarê and Laguna Teja. All three are relatively small villages. The most common crafts involve wool, cotton, karaguata fibers and palm leaves.

### 3.8.3. Trade

Another factor worsening their economic situation is their exploitation when isolated indigenous people attempt to engage in trade. To acquire groceries and other daily staple goods, they often depend on roving peddlers (“*macateros*”) who regularly drive into the remotest areas, selling their products at exorbitant prices or bartering their wares for local products such as dry game meat, cheese the natives have received as payment for working on ranches, wild pelts, miscellaneous animals captured as pets, and crafts. The peddlers barter as harshly as when selling for cash, taking advantage of their customers’ absolute dependence. For example, the following table gives some prices for basic staples as commonly paid by people in La Patria, compared to a supermarket in Asunción, for comparable quality and the lowest-priced brand, generally those sold in bulk:

**Table 11: comparison of food prices**

Product	Peddler price	Supermarket price	Difference in %
Wheat flour	5.000 G/kg	1.750 G/kg	286
Dry crackers	5.000 G/kg	2.250 G/kg	222
Rice	4.000 G/kg	1.900 G/kg	210
Noodles	5.000 G/kg	2.300 G/kg	217
Vegetable oil	8.000 G/l	5.600 G/l	143
Sugar	6.000 G/kg	3.400 G/kg	176
Yerba mate	8.000 G/kg	3.000 G/kg	267

### 3.8.4. Income and Expenses

Most economic activities by residents of La Patria to earn income are subject to seasonal cycles. Work as laborers on neighboring farms is mostly from January through April. Extracting and selling honey is from September to April. So, the first three months of the year offer the best opportunities for indigenous families to earn income. Working 80 days a year on a farm earns some US\$ 210.

A five-member family is estimated to spend the equivalent of US\$ 17 a month or US\$ 204 a year, buying from the peddlers. The months they spend the most is during Autumn and Winter (March to July) when people get colds most often, especially children, and year-end, for Christmas and New Year festivities.

## 3.9. ***Needs identified and possible solutions***

### 3.9.1. Introduction

The participatory workshop with residents of La Leona revealed a series of needs that they mentioned and then ranked as the most important. Then a discussion process identified potential solutions for each need. The next phase attempted to eliminate the least important, grouping the most similar needs, to reduce them to five. They were priority-ranked by voting on the needs and their respective solutions. The following table summarizes these results:

<b>Problem</b>	<b>Possible solution</b>
Lack of income	Create community sources of employment
Lack of economic production	Set up a community bakery to use local raw material
Lack of means of transportation to market products	Purchase an appropriate-technology community-owned means of transport
Lack of production-related technical training	Implement a program of training courses
Lack of tools and infrastructure (deposit)	Purchase tools and build a multi-use warehouse
Lack of media	Get back the HF radio, which had been sent for repair
Lack of ambulance service	Ask health authorities to provide an ambulance for the zone
Lack of suitable infrastructure for family cooking	Construct family and/or community kitchens with roofs
Lack of market for crafts products	Implement community management of marketing
Lack of food	Implement community management of seeds for self-supply crops

Some of the needs were explained in greater detail:

### 3.9.2. Lack of family and community economic income

This situation gets worse and worse, apparently because no alternative income generation mechanisms have been seriously implemented. The youth, females, children and the elderly are hardest hit because of their culturally manifested family

dependence, whereas adult males can still survive by working outside the community for wages or at least food. This reality may reach an unsustainably desperate point if the necessary measures are not taken to mitigate it, incorporating technical training strategies to help and encourage agricultural production and technologies and knowledge about taking advantage of available natural resources that are so abundant in the area, incorporating intermediate production technology to reverse the food shortage for families in the indigenous community.

### 3.9.3. Unavailability of foods

The community currently produces very little food by farming or livestock raising. The main source of food is still Nature (gathering, hunting and fishing) and outside suppliers (peddlers and/or public / private agencies' donations of food, clothing or medicine). Not having a farming culture, families are seriously hindered in providing food within the community. Consequently, under-nutrition increases, especially among children and the elderly.

This lack of production can be caused by a lack of the necessary seeds for the local climate, because traditional crops are highly dependent and susceptible to the climate and agricultural conditions of the Chaco. There may also be a lack of training for farming and utilization of crops, such as for storing harvests in ways that prevent losses. The possibility of more intensive agricultural production is also hindered by the lack of such basic tools as: hoe, plow, machete, shovel, pickaxe, wheelbarrow, chain saw, etc. and the physical facilities to store harvests.

In the late 19th century, when systematic colonization of the Chaco region began, Anglican missionaries attempted to impose a pattern of socio-cultural-religious reorientation, with livelihoods based on farming and ranching, and re-education in Christian values regarding the work ethic, with workshop-schools and social security. These efforts got nowhere, because the new system, imposed at a time of culture shock with the "civilized" world, made the Angaité natives fear extermination and loss of their cultural identity.

So then the idea would be to build sustainable livelihoods in the community for decent survival, with production grounded in ancestral knowledge and strategies so that the families involved can be sure the outputs and organizational arrangements based on their cultural lore will not curtail families' individual or collective freedom or autonomy. So, any production intervention proposed in the community must be grounded in their own socio-cultural knowledge and patterns, if the undertakings are to be effectively incorporated for community purposes.

### 3.9.4. Unfair trade relations

Almost all indigenous people, like vulnerable societies in general, constantly experience unfair trade relations, affected by a lack of information, pettiness or protective puritanism, or a lack of opportunities for organizing trade or building trust in the community to purchase jointly, seeking community benefits.

They generally have trouble pricing their products for sale and don't negotiate prices when buying. Their distance from urban centers is also a major factor, raising their transport costs and making it difficult to store products suitably until they can be

marketed. Under these conditions, middlemen always win, both when they purchase fresh or partly-processed products and when they sell merchandise to the community.

In the absence of a bold production and marketing scheme for community development, prioritizing training and providing employment for local indigenous people in La Patria, they will simply continue working for unfair pay, keeping the community dependant on these unjust trade relations, preventing them from growing or developing economically as a human group with the capability of seeking their own destinies, observing their own cultural patterns.

## **4. Creating an indigenous associative community enterprise in La Patria**

### **4.1. *The enterprise's overall aim***

To support sustainable community development for food security with renewable energy and a market vision based on strengthening ethno-cultural identity, building individual and collective capacities and skills and tapping natural resources without harming the environment, in order to enhance and increase community standards of living.

### **4.2. *The enterprise's development objectives***

1. To incorporate intermediate production technology to manufacture food products for commercial purposes and self-supply, using traditional fruits from carob and other agricultural practices such as manioc and yams to make flour.
2. To support the community's process of strengthening their ethno-cultural identity and organizational structure, focusing on the associative small enterprise to reach markets and generate economic income and community assets.
3. To develop and transfer technical knowledge conducive to building capacities and developing individual and collective skills, to successfully take advantage of the goods and technologies incorporated into the community for the benefit of families, sustainably and with the capacity to replicate the experience in other indigenous communities.

### **4.3. *Enterprise design approach***

The approach to designing the community associative enterprise (EAC) is based on the following principles:

1. Developing production and commercial management on an associative basis, taking advantage of alternative opportunities that the OLADE Rural Energy project will incorporate into the beneficiary indigenous settlement overall and in each particular community.
2. Tapping pre-existing knowledge and practices in the community and incorporating new production technologies and marketable products based on natural food resources present and recognized as sufficient in the settlement and surroundings.
3. Positioning the community associative enterprise to manage different production units and social projects, able to generate products, lead the local market and conduct the socio-community development of the indigenous population.

### **4.4. *Intervention strategy to develop the enterprise***

To develop the community associative enterprise, the following strategy will be applied:

1. Innovating traditional grassroots community organization in a community associative enterprise (EAC) for business management with a legal structure and build the commercial tools, implementing new decision-making mechanisms and adapting items to market demands, without neglecting the people's ethno-cultural behaviors or patterns.
2. Orienting and increasing mechanisms to tap marketable items on the basis of business planning and implementation and building strategic marketing and distribution alliances for marketable products.
3. Establishing, expanding and improving the network of trade linkages among communities, producers, enterprises and consumers on the basis of handling information and market knowledge efficiently in both quantity and quality.

This approach means that the EAC will develop its commercial strategies to achieve the planned success and will also comprise a valid, accessible, profitable, sustainable economic strategy for the indigenous communities involved and the general public. It also calls for transforming the traditional organizational arrangements and changing organizational paradigms from gathering to production for market, to make associative management and agricultural production efficient.

#### **4.5. Vision, Mission and Values of the Enterprise**

##### 4.5.1. Vision

To become an indigenous organization with a community and social business approach able to utilize resources sustainably, process products, market them and expand in the area to generate income and increase employment, improving infrastructure and community and family services, on the basis of family capacity and desire to get ahead on the basis of the community associative enterprise with cultural identity.

##### 4.5.2. Mission

The EAC of La Patria becomes a center for production, trade, learning, recovery of ethno-cultural activities and public showcasing as an expression and valuing of identity.

##### 4.5.3. Values

The EAC manages its business on the basis of the following foundations:

- Individual and collective trust among partners involved and able to establish reciprocal controls over shared goods and services;
- Cooperative management in its solidary dimension for concrete action in initiatives geared toward achieving the enterprise's socio-economic goals, without losing sight of market challenges and demands;
- Mutual respect as a guideline for business conduct, in both formal and informal relationships.



## **4.6. Organizational aspects**

### **4.6.1. Introduction**

In Paraguay there are basically two community organizational models that are legally recognized for groups of people who want to come together voluntarily to pursue joint activities for production purposes. One is the producers' committee, a type of civil-society partnership, and the other is the cooperative. Producers' committees often become cooperatives, once they are strong enough and have met the legal requirements and arranged for recognition as cooperatives by the National Institute of Cooperatives (INCOOP). This process of recognizing a cooperative is much more demanding than for a producers' committee.

Most projects to support small producers in Paraguay use the committee to organize beneficiaries, usually involving only 5 to 20 persons living in a single community. Most producers' committees form as a restricted-capacity association, regulated by the civil code of laws (see Section 2.2.). Many also get recognized by a government entity's resolution (e.g. the municipality where they are headquartered, the governor's office of their department or the Ministry of Agriculture and Livestock). Such recognitions are actually optional, but can be demanded in certain cases by donors as a prerequisite to fund committees. Several committees in a zone may in turn organize as a second-tier producers' federation.

Taking this into account, we recommend starting the EAC in La Patria as a restricted-capacity civil association. This does not mean that it cannot become a cooperative later, as it evolves. In La Patria there is some experience with community organization. For example, there is a craftspeople committee and a beekeepers committee.

### **4.6.2. Legal provisions**

Legal provisions regarding civil associations in the Civil Code (Law N° 1183/85) under Title II "On Legal Entities" of Book I, Chapter 2, Articles 102 - 117 regulate the so-called "Recognized Associations of Public Utility". Chapter 3, Articles 118 - 123 refers to the so-called "Recognized Associations of Restricted Capacity". A civil association cannot be for-profit, but must aim for the common welfare. The persons who wish to constitute an association express this desire through by-laws that are formalized as a public document.

Associations of public utility require authorization from the Executive Branch of the government (presidential decree) to operate legally. However, restricted-capacity associations can operate without such an authorization, by simply registering with the public register of corporate bodies. They have the following rights:

- a) to receive their associates' dues and contributions;
- b) to acquire, by purchase or donation, real and chattel property as required to accomplish their purposes;
- c) to borrow money with or without collateral in order to make the above purchases;
- d) to receive funds granted as subsidies by the State.

Associations are governed by their by-laws and the above legal provisions of the Civil Code. By-laws must contain the name of the association; its purposes, endowment and address, as well as norms about operation and administration; rights and obligations of

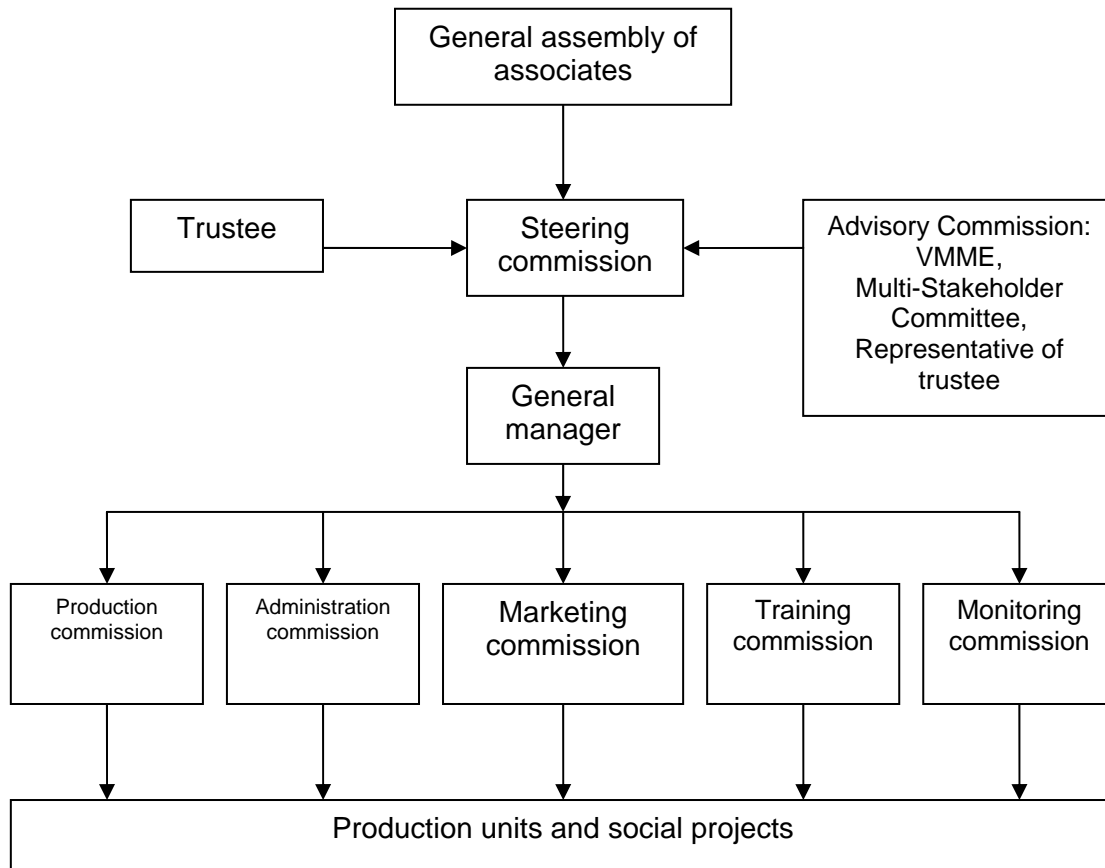
associates and conditions for admitting them. By-laws shall also contain norms about terminating the entity and disposing of its properties. Its top authority is the general assembly. The association's leadership, one or more members, will be designated by the assembly, which may remove them and also appoint representatives and revoke mandates that are authorized by the by-laws for specific purposes.

Since the enactment of Law N° 2421/04 on "Administrative Re-ordering and Fiscal Improvement", amending several parts of Law N° 125/91, non-profit associations have become taxpayers, too, and consequently must register with the General Roster of Taxpayers (RUC) under the Ministry of Finance and keep accounting according to current norms. Since this past January 1st, when the revision of the part referring to Value-Added Tax (VAT) in the above Law went into effect, associations have had to pay not only VAT on purchasing goods and services, but also to withhold VAT when billing for the sale of taxable goods and services. A sworn declaration must be submitted to the Ministry of Finance every month, containing relevant data on purchases and sales, proven by legal invoices for the corresponding month, even if there have been no transactions. The most important provisions referring specifically to non-profit associations in this revised Law N° 125/91 are in Articles 79 ff. e) and 83 ff. 4a).

However, being an entity formed by indigenous people, the Constitution, in Article 67, exempting natives from all manner of public charges, including taxes, will override the above requirements.

#### 4.6.3. Organizational structure

The organizational structure proposed for the community associative enterprise (EAC) is shown in the following organizational chart. Responsibilities at each level of the EAC will be governed first of all by its by-laws and secondly by its internal operating regulations. The proposed structure is as follows:



**Illustration 18: organizational chart of the EAC**

### General Assembly

This is the EAC's top authority. It comprises all persons associated with the EAC and in good standing to attend according to the by-laws. As is common in a civil association, the assembly must elect the members of the steering commission and annually approve or reject its report and balance sheet, presented to the assembly. It also has the power of amending by-laws by a majority of those voting members in good standing. The assembly is convened according to the by-laws, at least once a year.

### Steering Commission

This is the executive and administrative body of the EAC, responsible for enforcing and abiding by the by-laws and resolutions of the General Assembly, calling its meetings, preparing EAC work plans, administering its endowment, preparing the annual budget and reports on activities performed and financial statements for the EAC in order to then submit them for the General Assembly's consideration. It can also prepare operating regulations for the EAC and its production units, and create or dissolve commissions according to the EAC's needs. It can decide about specific investment projects and coordinate activities of different natures according to the EAC's purposes.

The Steering Commission will have the following officers: President, Vice President, Treasurer, Secretary, Member I, Member II, Member III and an internal Inspector, who has no vote but may speak in Steering Commission meetings. If necessary and by the

decision of the Steering Commission, Members shall perform the duties of any absent officers other than the President until the next General Assembly elections. The by-laws must attempt to assure equitable representation of women and of different communities comprising La Patria on the Steering Commission.

#### Advisory Commission

The Steering Commission shall be supported and supervised by an Advisory Commission comprising the VMME, a delegate of the Multi-Stakeholders Committee created in December 2005 and a representative of the financial institution acting as trustee of this capital. Other governmental or private entities may also belong, according to needs and opportunities. This commission will be supported by a consultant team engaged by OLADE/VMME to implement the EAC and develop the first investment projects funded by the seed capital and for training. In the phase of setting up the project and beginning the operating phase, it will play a prominent role in administering the EAC, but will phase itself out progressively, to eventually leave all activities under the Enterprise's responsibility.

#### Trustee

The Trustee's main role is to administer funds contributed by the OLADE Rural Energy program and any other supporting agencies. Disbursements to the EAC as the beneficiary of the trust shall be made according to a plan and procedures established in regulations agreed to by both parties. Similarly, economic contributions from OLADE/UC/CIDA to the trust shall be made according to a disbursement timetable, based on the project implementation schedule. In choosing and supervising the trustee firm, the VMME will play a weighty role.

#### General Manager

The General Manager is a person chosen by the community, responsible for the tasks of coordinating and administering the EAC. His or her main role will be to coordinate Working Commissions, so they each perform their functions and obtain expected results in production units and social projects, monitoring quality in activities and products. Being a position of much responsibility and a full-time job, it should be adequately remunerated, according to the community's standards for income, including a component linked to the EAC's economic performance. In the first phase, the project's General Manager will receive training and intensive mentoring to properly perform his/her functions.

#### Working Commissions

The item of Working Commissions is proposed as an inclusive, participatory management instrument to enable community members to take advantage of their own specific knowledge and skills. They are created according to different areas of activities that the EAC will pursue, not only for production, but also including social aspects such as health, education, gender, environment, etc. Each working commission is responsible for a specific area. It is proposed to form the following commissions from the start:

- Production Commission
- Administration Commission
- Marketing Commission
- Education Commission
- Monitoring Commission

Each Working Commission will have its own framework of responsibilities and obligations set forth in its internal regulations prepared by the EAC Steering Commission, with the Working Commission's own active participation. They will be coordinated by the Steering Commission and the General Manager. They will also take part in joint management of all production units and social projects that the EAC undertakes, according to their specialties.

#### Production units and social projects

Each Production Unit (UP) or Social Project (PS) will have its own organizational structure, reporting directly to the EAC organizational structure. For each UP and PS to operate quickly and effectively, this structure must be as simple as possible, but without concentrating decision-making in a single person. As a possible model, we suggest, then, for each UP and PS to be headed by a Steering Commission comprising 3-5 persons, depending on how important each undertaking is. These people will be appointed by the EAC Steering Commission.

#### **4.7. The trust**

The EAC will receive, under OLADE's Rural Energy program, a seed capital of \$US 60,000 to invest in the community in order to generate income and improve people's quality of life. This fund will be administered by a trustee appointed by OLADE.

In Paraguay fiduciary businesses are basically regulated by Law N° 921/96. They do two different kinds of business, transferring ownership of entrusted goods (the trust) and without such transfer (fiduciary charge). The Central Bank of Paraguay has the authority to regulate and supervise fiduciary firms.

In a fiduciary transaction, the following parties are involved:

- the appointer or creator of the trust: is the individual or corporate body transferring the property to the trustee
- the trustee: is the individual or corporate body administering the entrusted property according to the creator's instructions
- the beneficiary of the trust: is the individual or corporate body receiving the property from the entrusted property.

The transfer is formalized by a transaction between living persons or as a will and testament. According to the type of property entrusted, certain specific rules must be respected. To entrust chattel property with a transfer of ownership, e.g. money, no special formality is required, but only a simple written private contract between the parties, by physically delivering the entrusted material. The fiduciary transaction is also valid when the beneficiary does not yet exist when it is created, as long as such existence is possible and will happen during the trust's period of validity, so its instructions can be fully performed.

Only banks, financial firms and fiduciary companies especially authorized by the Central Bank of Paraguay can be trustees. The Central Bank may demand additional capital deposit to guarantee that the trust will be properly handled and administered. The trustee is liable under civil law for damages to the creator or beneficiary of the trust through lack of diligence or care in fulfilling the trust.

Fiduciary transactions and operations are exempt from Value Added Tax.

Fiduciary services are also VAT-exempt, including the remuneration paid to the trustee for management services. Any lawsuits deriving from fiduciary transactions are under the jurisdiction of civil / commercial judges, according to the trustee's domicile.

To determine the trustee and terms of reference for the trust, VMME will play a decisive role. Since this is a social project, directly involving the Paraguayan Government, it is recommended for the trustee to be a governmental financial institution, e.g. the National Development Bank (BNF) or the Agricultural Empowerment Loan Bank (CAH). However, neither of these institutions has branches in the Chaco region.

## **5. Proposed project profiles**

### **5.1. Introduction**

The participatory assessment in the community of La Leona and analysis of local potential have led to three high-priority project proposals, to operate under the community associative enterprise's management. The three projects will help improve not only the beneficiary communities' income, but also to meet a much more fundamental need, namely the lack of healthful foods at a fair price in the community; they will encourage trade, social, cultural and educational activities and improve quality of life, especially for females.

These projects are:

1. Production chain to utilize carob
2. Multi-use center for trade fairs, social, ethno-cultural and educational activities
3. Installation of improved cookstoves for families.

### **5.2. Production chain to utilize carob**

#### 5.2.1. Objectives

- To improve income for families involved in the production chain to utilize carob.
- To improve food security, independence and quality for the people of La Patria and surrounding areas.
- To tap abundant natural resources and those traditionally consumed, with a market orientation.
- To introduce new technologies and knowledge in an indigenous community that is almost completely abandoned, to undertake a process of economic and social development in accordance with their ancestral culture.
- To strengthen community organizational structure by creating a community associative enterprise to manage the productive project.

#### 5.2.2. Rationale

Carob is a natural product, traditionally consumed by the indigenous in the Chaco and other semi-arid regions of South America. The fruit is in the form of a pod in two species of *prosopis* (leguminous trees). Although very abundant, carob is hardly consumed except during harvest season, which is October to January in the Chaco zone. The lack of technology and knowledge to process this product to conserve it leaves this immeasurable potential untapped. Carob flour is highly nutritious. It is rich in protein and carbohydrates, fiber, mineral and vitamins.

Baked goods that the indigenous currently buy from roving peddlers cost much more than their original cost (see Chapter 3.8.3.). These dry crackers are made of white wheat flour, made in far-away localities, and are not very nutritious in the first place.

### 5.2.3. Technical proposal

The production chain is divided into three main production components, integrated into a single production unit:

- gathering and pre-drying of carob fruits and other products to produce flour (manioc, yam, corn) in four gathering and pre-drying centers
- drying and grinding the pre-dried products in a central area
- preparing baked goods, using locally produced flours, at a central site.

Carob is traditionally gathered by women and children. The four gathering and pre-drying centers, strategically distributed through the area, will collect the pods and sun-dry them on a hard-surfaced drying court (160 m<sup>2</sup>). The dried pods will be stored in a semi-open 40 m<sup>2</sup> warehouse build of palm logs with a tin roof in case of rain. Once they are dry enough, they will be bagged and taken by a donkey-drawn cart to the drying and grinding center to be set up in the village of La Leona.

The drying and grinding center will have an enclosed warehouse (75 m<sup>2</sup>) build of palm logs with a tin roof. It will house the hammer mill and both finished products and pods ready to process. Nearby, a fountain-type dryer will have two air heating systems, by a solar collector and a firewood-burning boiler, to be used according to the weather at the time of drying. The mill will transform the totally dried products into flour, which will be stored in plastic drums with a tightly-fitting lid.

Much of the locally produced flour will be used to make baked goods in a bakery to be set up in the village of La Leona near the drying and grinding center. For this purpose, an enclosed building (40 m<sup>2</sup>) will be built of palm logs and a tin roof. To keep the indoors area cleaner, the walls will be plastered inside. The bakery equipment will involve the following main items:

- 1 mixer / kneader for 50 kg of flour with an electric, three-phase 1 HP motor
- 1 medium finisher with an electric, three-phase 1 HP motor
- 2 wood-burning ovens (low-consumption design) for 9 trays
- 1 wood work table 3 m<sup>2</sup>
- 2 carts for 18 trays each made of sheet iron, 0.5 m<sup>2</sup>

Facilities are planned for the following production capacity:

- 4 gathering and pre-drying centers: 250 kg/day dry weight each
- drying and milling center: 1000 kg/day dry weight
- bakery: 500 kg/day

The production chain will provide work for 14-20 persons depending on the level of production. At the beginning, each gathering and pre-drying center will have two workers during the 4-6 months harvest period. The drying and milling center will have three workers approximately nine months a year. The bakery will have three workers, too, but year round. Later, the gathering and pre-drying centers may require another worker each, as may the drying and milling center and the bakery.

### 5.2.4. Energy aspects

The different production centers will have the following energy supplies:

- the diesel generator at the health post in La Leona will be used to produce the electricity for the mill motors, the bakery's electrical equipment and the health post's sterilization autoclave;



- the diesel generator will be complemented by a UPS system so the health post, drying and milling center and bakery will have continual electricity for their low-power electrical fixtures and appliances (lighting, refrigeration, fans, etc.), even if the generator group is not operating;
- the bakery will have two firewood ovens with high energy efficiency;
- the drying and milling center will be equipped with a combined dryer using solar energy on sunny days and firewood at night and during cloudy days;
- pre-drying centers will each have a lighting source via a solar lamp and a photovoltaic panel to be able to handle products in the evening as well.

#### 5.2.5. Organizational aspects

This production unit will be managed by a 5-member Steering Commission: one community representative from La Leona and one representative of each of the 4 communities where each gathering and pre-drying center will be set up (La Paciencia, Caroa'i, Carpincho, Comunidad 24).

#### 5.2.6. Activities for implementation

The main activities during the initial project phase will be:

- Creating the production unit steering commission;
- Training steering commission members in administration;
- Building and setting up four gathering / pre-drying centers for carob and other local products;
- Technical training for workers on gathering and pre-drying;
- Building and installing a drying and milling center for carob and other local products in the community of La Leona;
- Technical training for workers on drying, milling and storing carob and other local products;
- Building and setting up a bakery in the community of La Leona;
- Technical training for workers in making baked goods;
- Technical training in maintaining the machinery installed;
- Technical assistance during the initial phase of production unit operation.

#### 5.2.7. Economic aspects

The investments to be made in the production chain, and their approximate costs, are outlined below:

**Table 12: summary of investments**

Item	amt.	cost		contribution	
		unit	total	local	project
Gathering and pre-drying center	4	2,262	9,048	2,190	6,858

Drying and milling center	1	8,739	8,739	803	8,024
Bakery	1	10,441	10,441	614	9,827
Electrification system	1	4,928	4,928	211	4,717
Communication system	1	1,700	1,700	0	1,700
Office equipment	1	500	500	0	500
<b>Total</b>			<b>35,356</b>	<b>3,818</b>	<b>31,538</b>

In addition to the above investments, to operate the UP for the first months will require operating capital of US\$ 10,000, mainly to purchase raw material during the harvest period in order to make flour and to finance other operating expenses, until sale of baked goods is continual. Physical investments financed by seed capital and working capital make a total of US\$ 41,538. Shortly after ending the harvest, working capital may be completely paid back before ending the first year of production unit operation.

Production unit income will be generated by selling baked goods in and around the community and carob flour on local, regional and national markets. Selling prices will be significantly lower than current prices for comparable products (crackers and white wheat flour) sold by roving peddlers in the area. This will save families money on their food bills and also provide more nutritious food than wheat-based products. Sales forecasts, after an initial phase with progressive increases, will rise according to the scenario for baked goods from 8,000 to 12,000 kg/month and for carob flour from 4,000 to 8,000 kg/month. According to these forecasts the production unit will repay the total investment in its physical structure in two years' time, after one year of grace. Starting the fourth year, profits will be significant and may be invested in other community projects to improve quality of life for local indigenous residents.

#### 5.2.8. Market

The market for carob products is local first of all, La Patria's 1500 inhabitants and neighboring farms (with an estimated population of another 200 persons) for a total of some 300 families. This market already exists. Once local production undercuts the peddlers, they will lose their sales of similar wheat-based products.

Considering that each family eats 1 kg/day of baked goods and ½ kg/day of flour, the total monthly consumption would be 9,000 kg and 4,500 kg respectively, well within the range of production outlined in the preceding chapter. Each family will spend G. 150,000 a month (US\$ 26.30). Most indigenous families in La Patria have at least one member working elsewhere, as a laborer on a farm, which yields the cash to purchase groceries and other staples. Another significant source of income is sales of honey.

To avoid depending exclusively on the local market, more distant markets will be approached, especially with carob flour, which could be sold in other indigenous communities of the region, especially outside carob harvest season. Once production has been consolidated, products could even be exported, e.g. to Europe, seeking ecological product market niches, especially if produced by indigenous people. An additional possibility, especially for the European market, is to get fair trade certification.

### **5.3. Multi-use center for trade fairs, social, ethno-cultural and educational activities**

#### 5.3.1. Objectives

- To generate business opportunities to sell, promote and buy local, regional and national products, to generate work and income and community goods produced by women in and around the settlement.
- To strengthen community business identity through ethno-cultural training, practice and expressions for the purpose of developing markets.
- To create a forum for socio-cultural exchange and educational activities for adults and youth of La Patria and surrounding areas.

#### 5.3.2. Rationale

La Patria does not have community spaces for business and social activities. The only places currently available, where residents meet for social activities, are schools after classes and churches. One of the few shopping places is a store at km 80 of the road from Fortín Zalazar near the community of Las Flores, but it belongs to someone who is not from La Patria.

This situation makes residents practically entirely dependent on peddlers and their exorbitant prices. This can be broken up only if there is a local business place in the community. This place will also reinforce all the settlement's production initiatives, beginning with the carob, as well as those already being produced, such as honey and crafts. If this little shopping place, where people will come continually from the settlement itself and from neighboring farms, is designed as a multi-use center, it can also be a place for social activities, such as parties or work meetings of the community associative enterprise leadership, for adult / youth training courses under the OLADE project and others to be held later.

#### 5.3.3. Technical proposal

As a site for the multi-use center, the community of San Fernández is suggested, because it is at a crossroads from several other communities and on the main road joining the Trans-Chaco Route with Ceibo settlement and Puerto Pinasco. The center will be a partially open and partially enclosed building with a total area of 126 m<sup>2</sup>. It will be built of palm logs with tin sheet roofing and a hard, smooth cement floor. The open part will be used, as is common, for example, in municipal markets, to set up vendors' stalls, with the enclosed part as a depot, meeting room and training classroom.

#### 5.3.4. Energy aspects

For the multi-use center to be attractive for all activities proposed, it must have electricity. For this purpose, a photovoltaic solar system is proposed, to provide lighting for the building, but also sound and audiovisual equipment for festive and training activities. An array of solar panels will have a peak power of 180 W, a load regulator, a

bank of 12 V batteries (500.Ah) and a 300 W current converter. It should generate an average of 700 Wh/day.

### 5.3.5. Organizational aspects

This productive unit's steering commission will comprise five women, preferably from San Fernández and/or one of the neighboring communities.

### 5.3.6. Activities for implementation

The main activities during the initial project phase will be:

- Creating the production unit steering commission;
- Training steering commission members in administration;
- Building and outfitting the multi-use center;
- Technical assistance during the initial phase of production unit operation.

### 5.3.7. Economic aspects

The investments to be made in this production unit, and their approximate costs, are outlined below:

**Table 13: summary of investments**

Item	amt.	cost		contribution	
		unit	total	local	project
126 m <sup>2</sup> building	overall	-	4,592	1,095	3,497
Electrification system	overall	-	2,970	0	2,970
Inside equipment	overall	-	1,116	0	1,116
<b>Total</b>			<b>8,678</b>	<b>1,095</b>	<b>7,583</b>

This production unit's income will be generated by charging a percentage on sales of products and services in the multi-use center. Considering a monthly volume of sales of about US\$ 1,500, equivalent to US\$ 1 per inhabitant of La Patria, the percentage charged for using the area will be 10%, yielding a monthly income of US\$ 150. This would amortize the OLADE project's capital investment over about three years.

Of course it is very difficult to estimate sales in such a market without prior market research. However, we are sure that once the center is set up, if properly managed, it will probably start with very low volume but, as it becomes better known in the zone, more and more people will be attracted and sales will increase.

## **5.4. Installation of improved cookstoves for families.**

### 5.4.1. Objectives

To improve quality of life for women in the indigenous community by setting up improved cookstoves, yielding the following effects:

- considerably reduced fuelwood consumption
- decreased air pollution from smoke issued by the stove
- a more comfortable position for the cook
- less danger of burns for small children accompanying cooks
- a cleaner setting, protected from the weather

### 5.4.2. Rationale

Women in La Patria usually cook on an open fire on the ground, with the pot on three stones outdoors without any protection. Firewood used as fuel is brought from the forest near the community, where there are plenty of fallen trees and dry branches. So, the problem with the traditional way of cooking is not firewood consumption itself, although hauling wood is hard work, done by women, but worse are the aspects of the potential hazards of an open fire for family members' health, i.e. breathing in smoke during cooking and accidental burns, common for small children playing near the fire.

### 5.4.3. Technical proposal

This proposal for improved cookstoves will raise the hearth level and provide a simple roof overhead, to protect persons cooking from the weather. One improved cookstove is planned per household group, which may in some cases include several neighboring dwellings, according to the way people cook at present.

To build the hearth, locally available clay will be mixed with a small percentage of washed sand and cement to increase its mechanical strength. Bricks made of this mixture will be sun-dried. The hearth will be a rectangular platform about 50 cm high, to raise the fire off the floor level. On this platform, the hearth will be made, with a long combustion chamber having a front opening, covered with a cast-iron plate with two burners, each with a cover and rings to adapt the opening diameter to the pot size. A galvanized sheet steel smokestack with a cap will remove fumes to above the roof height. Inside the combustion chamber, a cast iron grill will provide for sufficient separation between firewood and ash. As an option, a small oven can be incorporated. The roof, about 2 x 3 m, will be built of palm logs, using the same technique as for home building.

To promote improved cookstoves, each gather and pre-drying center for flour production will have a pilot model, built to give demonstrations, when women come to deliver their products. Installations in homes will be done when requested by women, once they are convinced that the cookstoves will be useful. Installation will be done with active participation by family members, who will provide the local raw material and do the work under directions by a person from their community, trained for this purpose.

#### 5.4.4. Energy aspects

The most outstanding feature in energy aspects of improved cookstoves is the reduction in fuelwood consumption, which may be as much as 50% less compared to an open fire. Moreover, the wood fire is not only to cook for the indigenous people, but provides lighting at night and heat when it is cold. There are no other low-cost alternatives for lighting and heating, and improved cookstoves are usable only for cooking.

#### 5.4.5. Organizational aspects

This project's steering commission will comprise five women from different villages in the area. Each community will train several volunteer women to promote improved cookstoves and direct their construction in homes that want one.

#### 5.4.6. Activities for implementation

The main activities during the initial project phase will be:

- Creation of the project's steering commission;
- Training steering commission members in administration;
- Building demonstration stoves at the four gathering and pre-drying centers for carob and other local products and the drying and milling center;
- Training promoters in building improved cookstoves for each community in La Patria
- Building improved cookstoves in households upon their request.

#### 5.4.7. Economic aspects

Investments in this project depend mainly on the number of improved cookstoves to be made, because the unit cost is relatively low. A cost of some US\$ 113 would include the stove itself and a roof above it to protect the cook from the weather (the sun and the rain). However, a relatively high part of the cost can be contributed by beneficiaries, in wood and labor to build the roof, and in clay and work to build the stove. Basically, the metal parts for the stove (plate, grill, smokestack), some cement and skilled labor would have to be funded by the EAC, at a cost of about US\$ 52 each. The most costly part is the cast-iron plate, costing about US\$ 25.

In La Patria there are currently 245 dwellings. Considering an average of one stove for every two homes, a total of 122 stoves will be required, for a total cost of US\$ 13,816, of which users' total contribution will be US\$ 7,459.

Repayment for improved cookstoves will be easy to finance. For example, suppliers bringing raw material to produce flour at the closest gathering and pre-drying center can be automatically debited from their accounts. Considering that each kg of fresh products (carob, manioc, yams, corn) delivered would be subject to 25% withholding = US\$ 0.018 and each family delivers, over five months' harvest, an average of 20 kg/day of products, the improved stove could be totally paid for in that time.

## 5.5. Summary of investments

Total investments to benefit La Patria, funded by seed credit from OLADE, can be broken down as follows:

**Table 14: summary of investments**

Project	Cost	Contribution	
		Local	Project
Carob production chain	US\$ 45,356*	\$US 3,818	\$US 41,538*
Multi-use center in San Fernández	\$US 8,678	\$US 1,095	\$US 7,583
Improved cookstoves (122 stoves)	\$US 13,816	\$US 7,459	\$US 6,357
<b>Total</b>	<b>\$US 67,850</b>	<b>\$US 12,372</b>	<b>\$US 55,478</b>
Available	-	-	\$US 60,000
Balance	-	-	\$US 4,522

\*Includes US\$ 10,000 working capital for the first year's operations.

Total financing by seed capital will be US\$ 55,478. The balance, US\$ 4,522, will be used to cover unforeseen expenses not covered by budgets for the three projects. The timetable for investments is first conditioned on the carob harvest period, which begins in late October. To take full advantage of the EAC and construction of gathering and pre-drying facilities, they should be set up insofar as possible no later than this November. Taking this condition into account, the following schedule is proposed:

**Illustration 19: tentative implementation timetable**

Activity	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
Set up community enterprise												
Set up office												
Install communication system												
Install electrification system												
Build gathering centers												
Build drying and milling center												
Build bakery												
Build multi-use center												
Install improved cookstoves												

As the next element of the production unit, the drying and milling center will be built, to start operating in January 2007. There is greater flexibility for the bakery's implementation, because it does not depend directly on harvest time. The bakery is planned to be operational by March 2007. The multi-use center will be built during March and April 2007 and the improved cookstoves by May 2007 at a rate of about 25 monthly.

## 5.6. Possible alliances with other projects

Improving agricultural production, currently quite precarious in terms of the area cultivated by each family, would be perfectly complementary for the project to utilize carob pods to produce baked goods. Traditional foods such as yams, manioc and corn,

ground into meal, can be used as raw materials for baked goods instead of the carob flour or combined with it.

INDI plans to implement, this next growing season beginning in October, in several Chaco indigenous communities, including La Patria, a project to improve agricultural production, including provision of tools, seeds, and technical assistance. So it would be helpful to work together with this project, so it can expand the assortment of products available for the OLADE project, each according to its specific production period.



## **6. Barriers to successful project implementation**

Successful project implementation in La Patria will depend on a series of barriers that could make it difficult. It is fundamental for the implementation strategy to examine these barriers of different natures in detail. They include, mainly, socio-cultural, educational and geographical barriers.

### **6.1. *Socio-cultural barriers***

Socio-cultural barriers, because project beneficiaries are indigenous, are probably the most difficult to overcome. The Angaité people, like most indigenous people in the Chaco region, were forced to give up their traditional way of life as nomadic hunter-gatherers just 100 years ago. However, “civilized” life, which they had to adopt in order to survive, as unskilled laborers in colonizers’ companies or receiving sporadic donations by governmental or private institutions, has not been enough for most to live decently. Such conditions of exploitation and abandonment prevented them from developing skills for sustainable self-reliance in productive activities on their land, which was partially returned to them, after colonizers seized all their land.

Additionally, many values of the “civilized” world, which have driven its economic progress, are alien to the Chaco indigenous culture, e.g. saving for a rainy day, planning ahead, getting organized and doing individual planning to get ahead. Nature has always given them everything the needed to live. For that reason, indigenous people currently work only enough to make the money they need to cover their most immediate needs. Normally they don’t care about a steady job, or responsibilities, or personal initiative. Rather, they are used to their traditional value of sharing with solidarity among their family group or clan, sharing all their food and other staples.

### **6.2. *Educational barriers***

Educational barriers are directly related to the degree of formal education that beneficiaries have received. Although most villages have a school, average years of schooling for people over age 10 in the settlement is only 0.9 year, ranging (in different villages) from 0.3 to 1.2 years. Moreover, the quality of instruction in indigenous schools is generally much lower than the national average. This means that most people are illiterate. In La Patria no specific data are available, but the Angaité nationwide (of which La Patria accounts for 36% have an illiteracy rate for adults over age 15 of 53.4% and average only 1.4 year of studies.

### **6.3. *Geographical barriers***

Under geographical barriers the greatest is La Patria’s isolation. It is about 50 km from the nearest locality with a relatively sizable population, Colonia Ceibo, some 100 km from the district’s center (Puerto Pinasco) and over 420 km from the national capital, Asunción. There is practically no public transportation. Further, the access road is usable only when it does not rain. This evidently makes it hard to get to the community and get back out during the rainy season (October to April). Since rain often falls very locally (small showers) especially in summer, road conditions may vary greatly from one place to another along the way. During critical periods, then a network of information sources will have to be dense enough to be able to find out the road’s

actual conditions. With no media in the zone, this is hard to do. The best way to communicate is HF radio, which makes it possible to communicate with the farms in the area and the indigenous community as well. Isolation is not only a barrier during project implementation, but also during their operation. Hauling raw materials and transporting finished products to market outside La Patria is difficult for this reason.

#### **6.4.        *Dependence***

The three projects to be implemented in La Patria under OLADE's Rural Energy program will attempt to take maximum advantage of local resources, not only during implementation but also during the operational phase. However, some resources must be brought in from elsewhere, which makes the community dependent on their suppliers. The main items are fuel for the electrical generator and some ingredients for baked goods, such as wheat flour, vegetable shortening and yeast. Because of their geographical isolation and difficulties with access to the community, this dependence will have a greater impact.

#### **6.5.        *Possible strategies to overcome existing barriers***

As already mentioned, socio-cultural barriers will probably be the most difficult to overcome. Detailed knowledge of beneficiaries' culture will be needed, with close support and assistance from people responsible for project implementation and monitoring. Moreover, enough time and effort must be devoted to training beneficiaries, maintaining an equitable relationship with them. Paternalism must be avoided. The indigenous people have been accustomed to handouts since the Chaco region was colonized. They must be given enough time to build their own self-confidence and trust in their own capacities.

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