8.4 Initial environmental examination

Based on the various project proposals selected in the model areas, we studied the project outlines and locational environments (see Table 8.4.1), and examined the existence and level of negative impact on the environment if the projects were implemented. Since scoping was not carried out during the preliminary study this time, we studied the impact in terms of the burden the projects would place on the environment in the model areas, in accordance with the scoping checklist prepared by JICA. As a result, there is judged to be no possibility of serious impact being exerted on the environment in any of the projects. Therefore, no detailed study, forecast, or appraisal of results relating to direct environmental impact will be made (see Table 8.4.2).

Table 8.4.1 Locational environment chart for projects in model areas

Number and name of project	Developmental activity	Locational environment
1: Project for the efficient use of farmland	Dry field development, roads	Mountains, natural heritage
2: Project for the enhancement of settlement land	Drinking & irrigation water, education facilities, collection & shipment facilities	Mountains, natural heritage
3: Project for the enhancement of irrigation facilities in dry fields	Irrigation facilities	
4: Project for the demonstration of farmland conservation	Farmland conservation	Steeply sloping land
5: Project for the development of agriculture including consideration for the environment	Road improvement, deep wells, farmland improvement, farmland conservation, farm product processing facilities, environmental conservation, artificial insemination subcentre	Mountains, steeply sloping land, erosion, lakes, national park
6: Project for soil improvement and the promotion of cotton crops	Soil improvement, cotton seed production factory	Mountains, steeply sloping land, erosion, lakes, national park
7: Project for the development of fruit producing estates	Farmland improvement, farm roads, collection & shipment facilities, processing facilities	
8: Project for the promotion of suburban dairy farming	Grassland improvement, farm roads, artificial insemination subcentre, processing facilities	
9: Project for the improvement of adult education for farmers, etc.	Training centre, collective purchasing centre, drinking water facilities, roads	Wetlands
10: Project for the promotion of sericulture	Silkworm rearing rooms, cocoon collection and shipment centre	Wetlands
11: Project for the promotion of combined agriculture & livestock farming	Farmland improvement, grassland improvement, small irrigation, collection & shipment facilities, information centre, agricultural & livestock product processing facilities	Wild land, wetlands, inundated area
12: Project for the development of model rural areas for paddy field development	Paddy field development, irrigation, field access roads, rice polishing facilities	Wild land, wetlands, inundated area

Table 8.4.2 Initial environmental examination tables (local scoping checklist)

Level of impact in terms of environmental burden
A = serious impact
B = may have serious impact
C = no serious impact
D = unknown, or probably no serious impact

Project numbers and names
1: Project for the efficient use of farmland
2: Project for the enhancement of settlement land
3: Project for the enhancement of irrigation facilities in dry fields
4: Project for the demonstration of farmland conservation
5: Project for the development of agriculture including consideration for the environment
6: Project for soil improvement and the promotion of cotton crops
7: Project for the development of fruit producing estates
8: Project for the promotion of suburban dairy farming
9: Project for the improvement of adult education for farmers, etc.
10: Project for the promotion of sericulture
11: Project for the promotion of combined agriculture & livestock farming
12: Project for the development of model rural areas for paddy field development

Project number	1	2	3	4	5	6	7	8	9	10	11	12
I Social environment												
1. Social life												
(1) Inhabitants' lives												
1 Planned move of domicile	C	C	C	C	C	C	C	C	C	C	C	C
2 Involuntary move of domicile	C	C	C	C	C	C	C	C	C	C	C	C
3 Changes in lifestyle	C	C	C	C	D	C	C	C	C	C	D	D
4 Discord between inhabitants	D	C	C	C	D	C	D	C	C	C	D	D
5 Indigenous people, ethnic minorities, nomadic peoples	C	C	C	C	C	C	C	C	C	C	C	C
6 Others	—	—	—	—	—	—	—	—	—	—	—	—
(2) Population problems												
1 Population increase	C	C	C	C	C	C	D	C	C	C	C	C
2 Sudden changes in population profile	C	C	C	C	C	C	C	C	C	C	C	C
3 Others	—	—	—	—	—	—	—	—	—	—	—	—
(3) Economic activities by inhabitants												
1 Shift in foundation for economic activity	C	C	C	C	C	C	C	C	C	D	D	D
2 Changes in economic activity, unemployment	C	C	C	C	C	C	C	C	C	C	C	C
3 Expansion of income disparity	D	D	C	C	C	C	D	C	C	D	C	C
4 Others	—	—	—	—	—	—	—	—	—	—	—	—
(4) Systems and practices												
1 Re-adjustment of water rights and fishing rights	C	C	B	C	C	C	C	C	C	C	C	B
2 Organization and other changes in social structure	B	C	C	C	D	D	C	C	C	D	D	C
3 Reforms to existing systems and practices	B	C	C	C	C	C	C	C	C	B	C	C
4 Others	—	—	—	—	—	—	—	—	—	—	—	—

2. Health and hygiene

1	Increased use of agrochemicals	C	C	D	C	C	D	C	C	C	C	C	B
2	Occurrence of endemic diseases	C	C	C	C	C	C	C	C	C	C	C	C
3	Spread of contagious diseases	C	C	C	C	C	C	C	C	C	C	C	C
4	Residual toxicity (accumulation of agrochemicals etc.)	C	C	D	C	C	D	C	C	C	C	C	B
5	Increase in waste and excrement	C	C	C	C	D	C	C	C	C	C	C	C
6	Others	—	—	—	—	—	—	—	—	—	—	—	—

3. Historical sites, cultural heritage, landscapes

1	Damage or destruction of historical sites, cultural heritage	C	C	C	C	C	C	C	C	C	C	C	C
2	Loss of precious landscapes	C	C	C	C	C	C	C	C	C	C	C	C
3	Underground resources	C	C	C	C	C	C	C	C	C	C	C	C
4	Others	—	—	—	—	—	—	—	—	—	—	—	—

II Natural environment

4. Areas with precious wildlife and ecology

1	Changes in vegetation	D	C	C	C	D	C	C	C	C	C	C	B
2	Precious species, unique flora and fauna	D	C	C	C	C	C	C	C	C	C	C	C
3	Diversity of wildlife species	D	C	C	C	C	C	C	C	C	C	C	C
4	Incursion & proliferation of harmful species	C	C	C	C	C	C	C	C	C	C	C	C
5	Reduction of wetlands and peat bogs	C	C	C	C	D	C	C	C	C	C	D	B
6	Reduction of tropical rain forests and wild land	C	C	C	C	C	C	C	C	C	C	C	B
7	Destruction of mangrove forests	—	—	—	—	—	—	—	—	—	—	—	—
8	Destruction of coral reefs	—	—	—	—	—	—	—	—	—	—	—	—
9	Others	—	—	—	—	—	—	—	—	—	—	—	—

5. Soil and land

(1) Soil

1	Soil erosion	D	C	D	C	D	C	C	C	C	C	C	C
2	Soil salinification	C	C	C	C	C	C	C	C	C	C	C	D
3	Decrease in soil fertility	D	C	D	C	C	C	C	C	C	C	C	D
4	Soil pollution	D	C	C	C	C	C	C	C	C	C	C	D
5	Others	—	—	—	—	—	—	—	—	—	—	—	—

(2) Land

1	Devastation of land (including desertification)	C	C	C	C	C	C	C	C	C	C	C	C
2	Devastation of hinterland (woodland, grassland)	C	C	C	C	C	C	C	C	C	C	C	C
3	Ground subsidence	C	C	C	C	C	C	C	C	C	C	C	C
4	Others	—	—	—	—	—	—	—	—	—	—	—	—

6. Hydrology, water quality etc.

(1) Hydrology

1 Changes in state of surface water flow	C	C	C	C	D	C	C	C	C	C	D	B
2 Changes in state of groundwater flow and water level	C	C	D	C	C	C	C	C	C	C	D	B
3 Occurrence of inundation, flooding	C	C	C	C	C	C	C	C	C	C	C	C
4 Sediment deposits	C	C	B	C	C	C	C	C	C	C	C	C
5 Collapse of river beds	C	C	C	C	C	C	C	C	C	C	C	C
6 Navigation	C	C	C	C	C	C	C	C	C	C	C	C
7 Others	C	C	C	C	C	C	C	C	C	C	C	C

(2) Water quality, water temperature

1 Water quality pollution and reduction	C	C	C	C	C	C	C	C	C	C	C	C
2 Change to high nutrient content	C	C	C	C	C	C	C	C	C	C	C	C
3 Incursion of salt water	—	—	—	—	—	—	—	—	—	—	—	—
4 Changes in water temperature	C	C	C	C	C	C	C	C	C	C	C	C
5 Others	—	—	—	—	—	—	—	—	—	—	—	—

7. Atmosphere

1 Atmospheric pollution	C	C	C	C	C	C	C	C	C	C	C	C
2 Others	—	—	—	—	—	—	—	—	—	—	—	—

*: Totals for level of impact in terms of environmental burden

A: Serious impact	0	0	0	0	0	0	0	0	0	0	0	0
B: May have serious impact	2	0	2	0	0	0	0	0	0	1	0	8
C: No serious impact	33	44	37	44	38	41	41	44	44	40	37	30
D: Unknown, or probably no serious impact	9	0	5	0	6	3	3	0	0	3	7	6

8.5 Project appraisal

8.5.1 Prerequisites

1) Prerequisites for financial analysis

(1) Actual interest rates

All commodity prices fluctuate year on year, and interest rates on loans from financial institutions also fluctuate in line with them. However, it is difficult to forecast price inflation or fluctuations in loan interest between the beginning and the end of a project. Thus, when appraising the projects, the rate of price fluctuation will be assumed to be the same for all commodities, meaning that price fluctuation will be ignored. In doing so, since the actual interest rates (nominal interest rates) on loans from financial institutions take account of price inflation, for our appraisal we need to use actual interest rates not taking account of price inflation. Rates of change in consumer prices and exchange rates between 1992 and 1995 are shown below (see Table 8.5.1.1).

Table 8.5.1.1 Trends in consumer prices and exchange rates (compared to previous year)

Year	1992	1993	1994	1995	Average
Consumer prices (%)	15.2	18.2	20.6	13.4	16.9
Exchange rate (Gs/US$)	18.1	15.7	3.2	1.5	

Source: Boletin Estadistico, Banco Central del Paraguay, 1995

Interest rates on loans from three financial institutions that offer loans to small-scale farmers are as follows.

① National Development Bank (BNF): 24-28% (long-term), 27-28% (short-term)

② Rural Development Fund (FDC): 25-30% via IFI

③ Smallholder Credit Agency (CAH): 23% (both long- and short-term)

In interview research with these institutions, we were told that interest rates had hardly changed over the last few years, irrespective of fluctuations in consumer prices. Since it is difficult to forecast fluctuations in the consumer price index, the average rate of change in the consumer price index over the last four years will be used in order to calculate actual interest. Meanwhile, when doing so, the BNF loan interest rate (the middle rate of the three financial institutions) will be adopted as the interest rate on loans.

Actual interest: long-term 26-16.9 ≒ 9%, short-term 28-16.9 ≒ 11%

Moreover, when appraising projects, short-term funds (farm management funds) will be accounted as costs in annual farm management. The feasibility of

implementing projects will be judged according to whether or not the financial internal return ratio (FIRR) for the project exceeds the actual long-term interest, calculated as above (9%).

(2) Interest on loans from international financial institutions

If we compare rates of change in the consumer price index and the foreign exchange rate, over the last three years the exchange rate has increased at a slower rate than the consumer price index. When taking out US dollar loans at times such as this, the possibility arises that the interest rate could be higher in real terms when the loan is repaid. However, on the premise that the foreign exchange rate will improve in future (i.e. will move in line with price fluctuation; in other words, when taking out loans from international financial institutions, nominal interest will equal actual interest), a rate of 7% (the standard rate on loans for agricultural projects in Paraguay) will be adopted for loans from international institutions.

(3) Prices of agricultural and livestock produce

The prices of agricultural and livestock produce will be categorized according to three types: export crops, crops for domestic sale, and self-sufficiency crops.

a) Export crops

For farm produce that has a track record of export, we have used the average price taken from statistical data over the past three years. For farm produce that has no record of exports, or for which the volumes handled are so small that there are no statistical data, prices are calculated as follows. There are two possible export routes from Paraguay: ① transport overland to the port of Paranaguá, Paraguay's international port located in Brazil, and export from there; and ② re-load in the port at Buenos Aires in Argentina and export from there. In this Programme it is assumed that exports of farm produce will be made from Paranaguá Port. Thus, when deciding the prices of farm produce that has no track record of export, the CIF price for imported produce in Brazil (which can be taken as the representative price, since the volume of trade handled is large) will be taken as the FOB price in Paraguay (see CUADRO A 8.5.1.2 to 17).

b) Crops for domestic sale

Since crops for domestic sale are designed to substitute imports, the sale price of imported commodities in the central wholesale market will be taken as the wholesale price for domestic produce.

c) Self-sufficiency crops

Crops for self-sufficiency will use prices announced by the Department of Commercial Agriculture of the Ministry of Agriculture and Livestock (Boletin Informativo, MAG, 1994).

2) Prerequisites for economic analysis

(1) Occasional capital expenditure

Since Paraguay relies on loans from abroad for most of its capital, 7% (the interest rate on loans from international financial institutions mentioned above) will be adopted for occasional capital expenditure in Paraguay. Thus, from a national point of view, the appropriateness of implementing a particular project will be judged according to whether or not the economic internal return ratio (EIRR) exceeds 7%.

(2) Traded commodities

A gap has arisen between the level of domestic prices and that of international prices, on account of import tariffs and other factors. Since economic appraisal should be made at price levels on international markets, we will work out the conversion factor (CF) shown in equation (A) for each product on the basis of import and export statistics in Paraguay, and will adjust prices accordingly. For traded commodities that account for a small proportion of the total we will work out the conversion factor for all trade (standard conversion factor, SCF) and adjust prices accordingly (see CUADRO A 8.5.1.1).

$$CF = \frac{M+X}{M(1+t)+X(1+s+tx)} \qquad \text{(A)}$$

where M = total import value, X = total export value, t = import tariff rate, s = export subsidy rate, and tx = export tariff rate.

(3) Non-traded commodities

a) Labour

Broadly speaking, labour can be divided into home labour and employed labour, and the latter further subdivided into skilled and unskilled labour. In economic analysis, home labour is taken as an item of balance of transfer account and is not included in calculations. As for employed labour, skilled labour will be evaluated using the wages of workers in financial analysis multiplied by the standard conversion coefficient, since the skilled labour market in Paraguay is functioning adequately and is in a state of full competition. Unskilled labour, owing to unemployment and the resulting lack of full competition, is evaluated using the wages of workers in financial analysis multiplied by the employment ratio and the standard conversion coefficient. For now, although the state of unemployment is expected to differ from area to area, a uniform rate of 30% (= 1 - employment ratio) will be adopted for the unemployment ratio.

b) Land

If the price of land accounts for a small proportion of the project costs, it will be evaluated using the price adopted in financial analysis. For land whose price takes up a large proportion of the project, evaluation of the price will be based on current

land productivity, on the assumption that the present situation would continue in perpetuity unless this project were implemented.

(4) The Bruno ratio

In import substitution or export promotion projects, the Bruno ratio (BR) is used as one means of working out how great a contribution the project would make to acquiring or saving foreign currency. Since this ratio calculates how much domestic currency is used (or invested) to earn (or save) an amount of foreign currency, the calculated figure is compared to the foreign exchange rate. The method of calculation is as follows.

$$BR = \frac{\text{Current value of domestic commodities (currency) used}}{\text{Current value of foreign currency produced (saved).}}$$

When the BR is less than the foreign exchange rate, implementing the project becomes an effective means of acquiring (saving) foreign currency, and is more efficient than directly exchanging domestic currency into foreign currency.

8.5.2 Project appraisal

The results of analysis are as shown in Tables 8.5.2.1 to 2.

1) Project for the efficient use of farmland (Zone 1)

Detailed analysis results are shown in CUADRO A 8.5.2.1 to 8.

(1) Financial analysis

The FIRR for the project as a whole will be high at 43.4%, and project implementation will be feasible. However, for this project, ① contracts will be hard to draw up without mediation from the public mediation agency in issues such as land lease, and ② as the initial cost is fairly high the project costs cannot be secured without guarantees from the public mediation agency. Therefore, it will be appropriate for the public mediation agency to bear all project costs and for farmers then to pay back their own shares. In doing so, the FIRR of the public mediation agency will not be aimed at making a profit even after shares of payment are levied; in other words it will be set at 10%, close to the appraisal standard. If so, the increase in income per farm due to cultivating soybean crops should be Gs 13,310,000 in stable years (after complete repayment of shares for infrastructure improvement).

(2) Economic analysis

The EIRR of the project as a whole will be a high 74.1%. Thus there is significance in pursuing this project from a national point of view.

(3) Other analysis

a) Bruno ratio

One of the objectives of this project is to promote exports of soybeans. At the planning stage the foreign exchange rate was Gs 1,970 to the US dollar, while, if this project is implemented, the BR will be 1,092. Thus the project will be effective in terms of acquiring foreign currency.

b) Social considerations

By increasing the incomes of beneficiary small-scale farmers, the increased income can be diverted to areas such as children's education and the introduction of subsistence infrastructure (e.g. water supply and electricity). Thus educational standards will rise and, in turn, the range of vocational options will broaden, while other benefits such as stabilized law and order and a reduced labour load for women are also envisaged.

c) Others

Since this project will be mediated by a public agency, there is no danger of problems such as breach of contract or exploitation. Meanwhile, by stimulating transportation, processing, and other related industries, new employment opportunities are expected to be created locally. Converting pasture land where extensive farming is practiced into soybean fields will result in increased land productivity, this in turn will lead to more effective use of the land, and the project will be worth pursuing even from a national point of view.

2) Project for the enhancement of settlement land (Zone 1)

Detailed analysis results are shown in CUADRO A 8.5.2.9 to 15.

(1) Financial analysis

The FIRR for the project as a whole will be high at 27.2%, and project implementation will be feasible.

a) Cooperative (excluding mango collection & shipment facilities)

The cooperative will be responsible for the construction of drinking and irrigation water facilities, introducing transportation equipment, and building education facilities, and will have the costs of these repaid by farmers in the form of shares of payment. In view of its nature, the cooperative is not obliged to make great profits, and the actual shares of payment have been set so that an FIRR of about 10.5% will be sufficient to allow stable management. However, since the initial investment is large, long-term finance will be required. In this case, an agricultural income of around Gs 5.1 million is anticipated even after farmers have paid their stipulated shares of payments.

b) Farmers

The increased income for farmers starting mango cultivation should be 3.7 million annually once the business has stabilized (after the fifth year). However,

since the initial investments for mango cultivation are high and no profit is anticipated in the early stages (first 4 years), long-term finance will be needed.

c) Mango collection & shipment facilities

The FIRR for mango collection & shipment facilities run by the cooperative will be a high 13.5%, making project implementation feasible.

(2) Economic analysis

Since the EIRR of the project as a whole will be a high 30.3%, there is significance in pursuing this project from a national point of view.

(3) Other analysis

a) Creation of employment

The mango collection & shipment facilities are expected to create employment for a total of 1,800 people per year (starting from the fourth year after construction). Additionally, in the mango harvesting season (about 3 months), the creation of employment for a total of 11,800 harvest labourers is anticipated.

b) Education

By constructing educational facilities, schooling opportunities for children will increase, educational standards will rise, and, in turn, the range of professional options will broaden.

c) Female labour

By introducing a supply of drinking and irrigation water, women and children will be freed from time-consuming water drawing labour, enabling them to lead richer lives.

d) Others

If farmers settle permanently on the settlement land, this will lead to a decrease in landless farmers and, in turn, to a greater stability of life in the surrounding area.

3) Project for the enhancement of irrigation facilities in dry fields (Zone 2)

Detailed analysis results are shown in CUADRO A 8.5.2.16 to 29.

(1) Financial analysis

When implementing projects for the various estates, the FIRR will be smaller in estates where the investment is large but the number of beneficiary farms (cultivation area) is small. In particular, the FIRR for the Calle 6 estate will be 3.0%. This is because the cost of introducing electricity into this estate will be greater than in other estates. Since electricity by nature has a large public element, the project cannot be implemented in this estate unless some public allowance (e.g. subsidies) is introduced to start a supply of electricity. Moreover, if the project is implemented for the whole area and the beneficiaries share the costs equally, the FIRR will be a high 31.5% and project implementation will be feasible. Thus it will be of significance to study the methods of implementation.

(2) Economic analysis

Since the EIRR of the project as a whole will be a high 41.8%, there is significance in pursuing this project from a national point of view. Meanwhile, if only direct profit is accounted as profit, the EIRR in the Calle 6 estate will be a low 5.6% and the optimum distribution of resources will not be achieved. However, the anticipated spin-offs of implementing the project include an improvement in educational standards and a reduction in the time needed for water-fetching labour. Thus the implementation of the project is to be desired.

(3) Other analysis

a) Creation of employment

Implementing the project should create employment for a total of 4,634 workers per year, mainly for vegetable harvesting.

b) Bruno ratio

One of the objectives of this project is to substitute imports of vegetables. At the planning stage the foreign exchange rate was Gs 1,970 to the US dollar, while, if this project is implemented, the BR will be 1,622. Thus the project will be effective in terms of saving foreign currency.

c) Others

① Consumer activity by beneficiaries (due to their increased incomes) will also stimulate economic activity in the surrounding area.

② By providing water for irrigation, water-fetching labour will be eliminated.

4) Project for the demonstration of farmland conservation (Zone 2)

Detailed analysis results are shown in CUADRO A 8.5.2.30.

(1) Financial analysis

Since this is a demonstration project, no financial appraisal will be made.

(2) Economic analysis

If, on completion of the demonstration project, its effects can be spread to surrounding regions where soil deterioration is in progress, the EIRR will be a high 23.6%. Thus, from the point of view of retention of the national land and the effective deployment of land, the promotion of this project is to be desired.

(3) Other analysis

① By implementing the demonstration project in this area, the importance of farmland conservation will be recognized by the inhabitants (farmers), making it possible to develop sustainable agriculture.

② If this project is implemented and farmland conservation is achieved, unproductive land (farmland) can be abandoned, increases in landless farmers and urban slum dwellers can be prevented, and this could also lead to greater stability in the national way of life.

5) Project for the development of agriculture including consideration for the environment (Zone 3)

Detailed analysis results are shown in CUADRO A 8.5.2.31 to 41.

(1) Financial analysis

Excluding the cost of measures for environmental conservation, the FIRR for the project as a whole will be a high 32.5% and project implementation will be feasible.

a) Farmers

(a) Expansion of dairy farming business

For both Types 1 and 2, the FIRR will exceed the appraisal standards and project implementation will be feasible. But since it will take a number of years for the number of dairy cattle to reach the target figures, long-term finance will be required.

(b) Introduction of perennial crops

For both Types 1 and 2, the FIRR will exceed the appraisal standards and project implementation will be feasible. But since, even if perennial crops are introduced, no harvesting will be possible until at least the 4th year after planting (or even longer for certain crops), long-term finance will be required. Moreover, the fact that no harvesting will be possible until the 4th year after planting also means that there will be no income until the 4th year after planting. Therefore, steps should be taken to introduce perennial crops from the 5th year (from the beginning of the dairy farming business), by which time dairy farming business will be stable.

b) Milk distribution and processing facilities

The cooler stations, milk lorry, and milk processing facilities will all have a high FIRR and project implementation will be feasible. However, the initial costs will be high, it will take some years before farmers can increase their head of cattle to the planned number, and until they do so the volume of fresh milk handled will be small. Therefore, business will be poor for a few years and (as with the farmers themselves) long-term finance will be vital.

c) Jam & marmalade

The jam and marmalade factories will have a high FIRR and project implementation will be feasible. However, since the initial costs will be high and it will take 8 years before these costs are recovered, long-term finance will be required.

d) Road and water supply projects

If the cooperative implements road and water supply projects and the costs for these are levied from farmers, a minimum of Gs 700,000 will need to be collected from the farmers every year for the FIRR to exceed 9%. The farmers will have no problem with this in terms of their farm business, as they will be left with an annual income of at least Gs 5 million even after paying the levy of Gs 700,000. However,

since the core of the project is of a highly public nature, measures involving subsidies etc. will be desirable.

(2) Economic analysis

The implementation of measures for environmental conservation will yield a high EIRR of 12.7%. Thus, from a national point of view, these measures will be worth taking. Moreover, the EIRR of projects other than the measures for environmental conservation will be a high 33.8%. Thus there is significance in pursuing this project.

(3) Other analysis

① Introducing perennial crops on steeply sloping land will help prevent soil erosion.

② The introduction of paraíso will stop the felling of trees around the National Park for firewood, and the environment around the National Park will improve.

③ If the number of tourists visiting the National Park increases, there will be a greater demand from tourists for local souvenirs and the like and this will additionally lead to side incomes for women manufacturing local produce.

④ Environmental awareness among local inhabitants will change.

6) Project for soil improvement and the promotion of cotton crops (Zone 3)

Detailed analysis results are shown in CUADRO A 8.5.2.42 to 47.

(1) Financial analysis

The FIRR for the project as a whole will be a high 23.3% and project implementation will be feasible.

a) Cotton seed factories

As the FIRR for the cotton seed factories will be a high 16.1%, project implementation will be feasible. Moreover, sensitivity analysis shows that the business of seed factories will be largely unaffected even if the single yields of farmers change, but will be highly sensitive to changes in shipment values (unit prices). Since cotton is an international commodity, its shipment value (unit price) is decided internationally. Therefore, movements on international markets will need to be watched closely prior to implementation.

b) Cooperative

The cooperative will implement soil improvement and technology diffusion, and will levy shares of payment from the farmers to repay the costs of these. If these shares are set at Gs 200,000 per farm per year, the cooperative's FIRR will be 14.7% and project implementation will be feasible.

c) Farmers

Farmers will make repayments in exchange for project implementation by the cooperative. Even so, their incomes will increase by Gs 216,000 from the present level.

(2) Economic analysis

The EIRR of the project as a whole will be a high 32.0%. Thus, from a national point of view, there is significance in pursuing this project.

(3) Other analysis

a) Creation of employment

If the now idle cotton factories re-start operations, employment for a total of 1,800 people should be created every year.

b) Knock-on effects

Superior seeds will be distributed throughout the country, and damage from the picudo pest should be reduced nationwide.

c) National land conservation

Since soil deterioration will be prevented, the implementation of the project is also promising from the point of view of national land conservation.

7) Project for the development of fruit producing estates (Zone 4)

Detailed analysis results are shown in CUADRO A 8.5.2.48 to 56.

(1) Financial analysis

The FIRR for the project as a whole will be a high 31.5% and project implementation will be feasible.

a) Cooperative

The cooperative will introduce machinery and develop communication hardware, and will levy shares of payment from the farmers to repay the costs of these. If these shares are set at Gs 350,00 per year, the FIRR for the cooperative will be 9.0% and project implementation will be feasible.

b) Farmers

Farmers will make repayments to the cooperative in exchange for loans of machinery and the like. After making these repayments, Type 1 farmers will have an FIRR of 11.9% and Type 2 an FIRR of 20.1%. Thus in both cases project implementation will be feasible. However, since the initial costs will mount up for both types (since some years are needed before harvesting), and because the FIRR figures are low, long-term low-interest finance will be needed.

c) Fruit sorting & packing facilities

The FIRR for the mango and grape collection & packing facilities will be a high 12.2%, making project implementation feasible. Meanwhile, the FIRR for the macadamia nut processing plant will also be a high 16.2%, making project implementation feasible. However, since the initial costs will be high for both facilities, and it will take 5-6 years before these costs are recovered, long-term finance will be needed.

(2) Economic analysis

As the EIRR of the project as a whole will be a high 30.3%, there is

significance in pursuing this project from a national point of view.

(3) Other analysis

a) Creation of employment

① Collection & packing facilities

The construction of collection & packing facilities should create employment for a total of 1,640 workers annually.

② Harvest season employment

In the harvesting season (November-January), employment should be created for a total of 33,000 harvest labourers.

b) Bruno ratio

One of the objectives of this project is to promote exports of fruit. At the planning stage the foreign exchange rate was Gs 1,970 to the US dollar, while, if this project is implemented, the BR will be 1,294. Thus the project will be effective in terms of acquiring foreign currency.

c) Others

① Consumer activity by beneficiaries (due to their increased incomes) will also stimulate economic activity in the surrounding area.

② Thanks to increased incomes, people will be able to lead richer lives, and the school attendance rate of children will increase. As a result, educational standards will improve and the range of professional options will broaden.

8) Project for the promotion of suburban dairy farming (Zone 4)

Detailed analysis results are shown in CUADRO A 8.5.2.57 to 64.

(1) Financial analysis

The FIRR for the project as a whole will be a high 16.9% and project implementation will be feasible.

a) Farmers

The FIRR for farmers will be a high 20.5% and project implementation will be feasible. However, the initial costs will be high, it will take some years before farmers can increase their head of cattle to the planned number, and until they do so the volume of fresh milk handled will be small. Therefore, business will be poor for a few years and long-term finance will be vital.

b) Distribution & processing facilities

The cooler stations, milk lorry, and milk processing facilities will all have a high FIRR and project implementation will be feasible. However, the initial costs will be high, it will take some years before farmers can increase their head of cattle to the planned number, and until they do so the volume of fresh milk handled will be small. Therefore, business will be poor for a few years and (as with the farmers themselves) long-term finance will be vital.

(2) Economic analysis

The EIRR of the project as a whole will be a high 20.8%. Thus there is significance in pursuing this project from a national point of view.

(3) Other analysis

a) Bruno ratio

One of the objectives of this project is to substitute imports of dairy farming produce. At the planning stage the foreign exchange rate was Gs 1,970 to the US dollar, while, if this project is implemented, the BR will be 1,137. Thus the project will be effective in terms of saving foreign currency.

b) Farmers

By promoting dairy farming, the incomes of farmers can be increased by Gs 2 million. Thus, people will be able to lead richer lives, and educational opportunities for children will increase.

9) Project for the improvement of adult education for farmers, etc. (Zone 5)

Detailed analysis results are shown in CUADRO A 8.5.2.65 to 69.

(1) Financial analysis

a) Apiculture farms

The FIRR when undertaking apiculture will be a high 14.6% and project implementation will be feasible. However, the initial investment will be high (Gs 4,155,000), and it will take 8 years before this investment is repaid and profits are made, since most of the equipment to be introduced has a short durable life of 5 years. Therefore, long-term finance will be required.

b) Apiculture processing

The honey processing facilities will have a high FIRR of 21.2% and project implementation will be feasible. However, the initial costs will be high and long-term finance will be required. Moreover, since the FIRR will be sensitive to changes in honey production volumes, a detailed study of production volumes in this area will be required prior to project implementation.

(2) Economic analysis

As it is expected to take at least 10 years before the effects of constructing the adult education & training centre and introducing the mobile education & guidance vehicle will be felt, revenues and costs will not balance in financial terms. However, the EIRR will be a high 21.4%. Thus this project will be highly favorable from a national point of view and should be pursued.

(3) Other analysis

a) Indicators

By implementing this project, incomes will increase and the integrated poverty index (IPI) will be improved by at least 0.08 points from the present level.

b) Introduction of water supply facilities

By introducing water supply facilities it will be possible to provide water for domestic use even in times of drought. As a result, improvement can be expected in the quality and convenience of life, and water-fetching labour by women and children should also be reduced.

c) Others

The school attendance rate of children should increase as a result of improved awareness by farmers and increased incomes. This will also lead to increased tax revenues in future.

10) Project for the promotion of sericulture (Zone 5)

Detailed analysis results are shown in CUADRO A 8.5.2.70 to 72.

(1) Financial analysis

Farmers will have a high FIRR of 32.4%, making this a favorable project. However, the initial investment will be high (about Gs 12.5 million) and long-term finance will be required. Moreover, since it will be difficult to implement the project in this area on its own, it needs to be incorporated in the sericulture industry of Paraguay as a whole.

(2) Economic analysis

As the EIRR of the project as a whole will be a high 41.1%, there is significance in pursuing this project from a national point of view.

(3) Other analysis

a) Acquisition of foreign currency

Although quantitative figures cannot be shown since this project forms part of Paraguay's sericultural industry as a whole, silk thread is an export commodity and will lead to the acquisition of foreign currency.

b) Environmental conservation

Establishing mulberry fields will help prevent soil erosion and deterioration, making this a favorable project in terms of environmental conservation as well.

11) Project for the promotion of combined agriculture & livestock farming (Zone 6)

Detailed analysis results are shown in CUADRO A 8.5.2.73 to 83.

(1) Financial analysis

The FIRR for this project as a whole will be a high 15.2%, and project implementation will be feasible.

a) Farmers

① Type 1

The FIRR in the case of cultivating cotton and carrots, after soil improvement and the introduction of irrigation facilities, will be a high 31.1% and project implementation will be feasible. However, the initial investment will be large and long-term finance will be required. The FIRR in the case of promoting dairy

farming, meanwhile, will be 7.4%, very close to the appraisal standard. Thus fully detailed study will once again need to be made prior to implementation.

② Type 2

The FIRR in the case of cultivating cabbages after the introduction of irrigation facilities, while at the same time introducing oranges, will be a high 15.8% and project implementation will be feasible. Meanwhile, the FIRR in the case of promoting dairy farming will be 7.7%, thus fully detailed study will need to be made prior to implementation. Moreover, since the initial investment needed for promoting dairy farming is large, this should not be undertaken until business from the introduction of oranges etc. has stabilized (in the 6th year). Finally, since the initial investment needed for promoting dairy farming is large, long-term finance will be required.

③ Type 3

For Type 3, the initial investment is small and benefits will arise from the first year. Thus project implementation will be feasible.

④ Type 4

The FIRR in the case of apiculture will be a high 14.6% and project implementation will be feasible. However, the initial investment will be large (Gs 4,155,000), and it will take 8 years before this investment is repaid and profits are made, since most of the equipment to be introduced will have a short durable life of 5 years.

b) Collection & shipment facilities

① Cooler stations & milk lorry

The cooler stations and milk lorry will have a high FIRR and project implementation will be feasible. However, the initial costs will be high, it will take some years before farmers can increase their head of cattle to the planned number, and until they do so the volume of fresh milk handled will be small. Therefore, business will be poor for a few years and (as with the farmers themselves) long-term finance will be vital.

② Wholesale market

The FIRR will be high and project implementation will be feasible. However, the initial investment will be large and long-term finance will be vital. In addition, the FIRR will fall below the appraisal standards if the shipment value (consumer purchase value) fluctuates. Thus detailed price study will be needed before implementing the project.

c) Processing facilities

① Milk processing

The cost of organizing cooperatives will be added to those of the processing facilities. As a result, the FIRR will be high both in terms of commercial and cottage-industry production, and project implementation will be feasible.

However, the initial costs will be high, it will take some years before farmers can increase their head of cattle to the planned number, and until they do so the volume of fresh milk handled will be small. Therefore, business will be poor for a few years and long-term finance will be vital.

② Honey processing

The honey processing facilities will have a high FIRR of 21.2% and project implementation will be feasible. However, the initial costs will be high and long-term finance will be required. Moreover, since the FIRR will be sensitive to changes in honey production volumes, a detailed study of production volumes in this area will be required prior to project implementation.

③ Marmalade processing

The jam and marmalade factories will have a high FIRR and project implementation will be feasible. However, since the initial costs will be high and it will take 8 years for these costs to be recovered, long-term finance will be required.

(2) Economic analysis

The EIRR of the project as a whole will be a high 41.1%. Thus there is significance in pursuing this project from a national point of view.

(3) Other analysis

a) Creation of employment

Introducing distribution & processing facilities as well as cultivating vegetables etc. in this project should create employment for a total of 10,000 workers per year. This is also expected to halt the ongoing exodus of the rural population.

b) Income improvement

Thanks to increased incomes, people will be able to lead richer lives, and as a result children should be able to complete compulsory education and farmers should be able to make improvements to subsistence infrastructure (e.g. electricity, water supply).

c) Others

Together with the effects of DERMASUR, this area (known as a "land-locked island") will be transformed into an area of high productivity.

12) Project for the development of model rural areas for paddy field development (Zone 6)

Detailed analysis results are shown in CUADRO A 8.5.2.84 to 91.

(1) Financial analysis

The FIRR for the project as a whole will be high at 15.8%, and project implementation will be feasible. However, for this project, ① contracts will be hard to draw up without mediation from the public agency in issues such as land lease, and ② as the initial cost is fairly high the project costs cannot be secured without

guarantees from the public agency. Therefore, it will be appropriate for the public agency to bear all project costs and for farmers then to pay back their own shares. In doing so, the FIRR of the public agency will not be aimed at making a profit even after shares of payment have been levied; in other words it will be set at 10%, close to the appraisal standard. If so, the increase in income per farm due to cultivating paddy rice should be Gs 9,620,000 in stable years (i.e. after complete repayment of shares for infrastructure improvement).

(2) Economic analysis

The EIRR of the project as a whole will be a high 21.2%. Thus there is significance in pursuing this project from a national point of view.

(3) Other analysis

a) Bruno ratio

One of the objectives of this project is to promote exports of rice. At the planning stage the foreign exchange rate was Gs 1,970 to the US dollar, while, if this project is implemented, the BR will be 1,180. Thus the project will be effective in terms of acquiring foreign currency.

b) Creation of employment

When the rice polishing plant is in operation, employment for a total of 720 workers (48 days) should be created.

c) Others

Thanks to increased incomes, people will be able to lead richer lives, and as a result children should be able to complete compulsory education and farmers are expected to improve their subsistence infrastructure (e.g. electricity, water supply).

Table 8.5.2.1 Results of financial analysis of all projects

Project	FIRR (%)
1) Project for the efficient use of farmland	43.4
2) Project for the enhancement of settlement land	27.2
3) Project for the enhancement of irrigation facilities in dry fields	31.5
4) Project for the demonstration of farmland conservation	–
5) Project for the development of agriculture including consideration for the environment	32.5
6) Project for soil improvement and the promotion of cotton crops	23.3
7) Project for the development of fruit producing estates	13.5
8) Project for the promotion of suburban dairy farming	16.9
9) Project for the improvement of adult education for farmers, etc.	14.6
10) Project for the promotion of sericulture	32.4
11) Project for the promotion of combined agriculture & livestock farming	15.2
12) Project for the development of model rural areas for paddy field development	15.8

Note 1: No final analysis will be made for the project for the demonstration of farmland conservation, in view of the nature of the project.

Note 2: The FIRR for the project for the development of agriculture including consideration for the environment excludes the cost of measures for environmental conservation.

Note 3: The FIRR for the project for the improvement of adult education for farmers, etc., refers only to apiculture farms.

Table 8.5.2.2 Results of economic analysis of all projects

Project	EIRR (%)
1) Project for the efficient use of farmland	74.1
2) Project for the enhancement of settlement land	30.3
3) Project for the enhancement of irrigation facilities in dry fields	41.8
4) Project for the demonstration of farmland conservation	23.6
5) Project for the development of agriculture including consideration for the environment	12.7
6) Project for soil improvement and the promotion of cotton crops	32.0
7) Project for the development of fruit producing estates	18.3
8) Project for the promotion of suburban dairy farming	20.8
9) Project for the improvement of adult education for farmers, etc.	21.4
10) Project for the promotion of sericulture	41.1
11) Project for the promotion of combined agriculture & livestock farming	19.9
12) Project for the development of model rural areas for paddy field development	21.2

Note 1: The EIRR for the project for the development of agriculture including consideration for the environment excludes the cost of measures for environmental conservation.

8.6 Selection of most favoured projects

1) Criteria for selecting most favoured projects

When selecting most favoured projects in the various model areas, the following criteria will be used to compare the respective projects. Those with the highest points totals will be selected as most favoured projects.

① Finance

3 points if the FIRR is more than double the appraisal standard in financial analysis (9%), 1 point if less than double, and 0 points if less than the standard.

② Economy

3 points if the EIRR is more than double the appraisal standard in economic analysis (7%), 1 point if less than double, and 0 points if less than the standard.

③ Technology

3 points if existing technology in the area can be used, 1 point if new technology is introduced and can be used immediately, and 0 points if technology cannot be introduced immediately.

④ Systems for implementation

3 points if existing systems in the area can be used, 1 point if new systems are introduced and can be used immediately, and 0 points if systems cannot be introduced immediately.

⑤ Environment

3 points for projects that include consideration for the environment, 1 point for projects that have no impact on the environment, and 0 points for those that do have impact.

⑥ WID

3 points if particular consideration is given to WID, 1 point if some consideration is given, and 0 points if no consideration at all is given.

2) Selection of most favoured projects

Table 8.6.2.1 shows the points awarded on the basis of the above criteria. As a result, the most favoured projects in the respective zones will be as follows.

Zone 1: Project for the efficient use of farmland

Zone 2: Project for the enhancement of irrigation facilities in dry fields

Zone 3: Project for the development of agriculture including consideration for the environment

Zone 4: Project for the development of fruit producing estates

Zone 5: Project for the improvement of adult education for farmers, etc.

Zone 6: Project for the promotion of combined agriculture & livestock farming

Table 8.6.2.1 Selection of most favoured projects

Zone	Project	①	②	③	④	⑤	⑥	Total	Rank
1	Project for the efficient use of farmland	3	3	3	0	1	1	11	1
	Project for the enhancement of settlement land	3	3	0	1	1	1	9	2
2	Project for the enhancement of irrigation facilities in dry fields	3	3	1	3	1	1	12	1
	Project for the demonstration of farmland conservation	0	3	0	1	3	1	8	2
3	Project for the development of agriculture including consideration for the environment	3	1	3	3	3	1	14	1
	Project for soil improvement and the promotion of cotton crops	3	3	3	1	1	1	12	2
4	Project for the development of fruit producing estates	1	3	1	3	1	1	10	1
	Project for the promotion of suburban dairy farming	1	3	1	1	1	1	8	2
5	Project for the improvement of adult education for farmers, etc.	1	3	1	3	1	3	12	1
	Project for the promotion of sericulture	3	3	1	0	3	1	11	2
6	Project for the promotion of combined agriculture & livestock farming	1	3	1	1	1	1	8	1
	Project for the development of model rural areas for paddy field development	1	3	1	0	1	1	7	2

3) Implementing most-favoured projects

In order to implement the most-favoured projects selected in the previous section, more detailed feasibility studies will need to be implemented, and it is vital that the Paraguayan side makes urgent efforts towards these feasibility studies as well as the subsequent implementation.

PROJECT IMPLEMENTATION PLAN

CHAPTER 9 PROJECT IMPLEMENTATION PLAN

9.1 Project implementation system

In order to implement this Support Program, a strong project execution system is necessary. The project execution system is shown in graphic form in Figure 9.1.1. This project execution system attempts to effectively use current organizations to play their respective roles. In June of 1992, the new constitution was promulgated and local governors were elected and it was hoped that the power would be decentralized to the local areas. For this reason, it would be ideal if the functions of the local governments were increased and the central government became the institution responsible for the projects and the local organizations related to the project became the executors. Thereby the central and local organizations would work together on the project.

In addition, it is not possible to designate an organization which can oversee the local level of the project execution system in the survey area in a broad sense. However, because it is possible to designate such an organization for model area projects, the most appropriate cooperative or farmers' organization is chosen for each area.

The assignment of roles for project execution is as follows. Because the assignment of roles such as planning, execution, capital, debt and jurisdiction (ownership) in the execution of a project varies with the type and classification of the project, some types are shown in Table 9.1.1. It is necessary to clarify the assignment of roles for execution.

1) DGP (Department of General Planning) ... Institution responsible

(1) Sponsor the Project Adjustment Committee mentioned below and act as a mediator at the local level as the project execution body.

(2) In addition to planning and budgeting, conduct general business with DINCAP (National Department of Project Coordination and Administration) which is in charge of public projects (including semi-public projects) and INCOOP (National Institute of Cooperative Unions) which is in charge of cooperatives.

2) CAP (Project Adjustment Committee) ... Adjustment organization (creations)

(1) CAP consists of the related departments of the Ministry of Agriculture and Livestock and related ministries, this committee supports the execution of the project. This committee accepts applications from the departmental project promotion committees at the local level, discusses them and reports on them to the DGP. They also evaluate the execution conditions of the content of the report.

(2) On the local level, representatives of the governor of the department and the district farmers cooperatives may participate in this committee. JICA (CETAPAR, JICA's agricultural test centre in Paraguay) participates as an observer.

3) DINCAP (National Department of Project Coordination and Administration) ... Supervisor of public projects

(1) Supervises farm roads, drinking water, small-scale irrigation and model small-scale farms. In order to execute public projects (including semi-public projects), machinery and devices supplied are sent to the destination offices of the public organizations concerned by arrangement with the central public organizations and thon maintenance and management is carried out. In this case, DINCAP clearly specifies the priority areas and care is taken to achieve well-harmonized total development.

4) CAH (Smallholder Credit Agency) ... Agricultural credit

(1) In charge of aid to small-scale farmers through farmer1s cooperatives and users' groups through development financing loans for measures against picudo, diversification of production, promotion of honey and honey bees, agriculture land protection and agricultural processing and circulation.

5) FDC (Rural Development Fund) ... Agricultural credit

(1) In charge of aid to small-scale farmers through IFIs (Intermediary Financing Institutions) through development financing loans for informational aid to existing cooperatives and farmers' cooperatives which mainly work on model small-scale farmers.

6) Departmental Project Promotion Committee ... Local committee (creations)

(1) This committee is established in each department. The committee members are representatives of the department, district, related local public organizations, model small-scale farmers, farmers' cooperatives, users' groups and intermediary financing institutions.

(2) In this case, in order to have the local producers participate in the committee, over half of the participants are representatives of farmers' cooperatives (including users' cooperatives and intermediary financing institutions) and model small-scale farms. The ratio of representatives of farmers' cooperatives to representatives of model small-scale farmers is 1:2.

7) Departmental Agricultural Departments and District Agricultural Sections ... project execution adjustment

Figure 9.1.1 Project implementation system

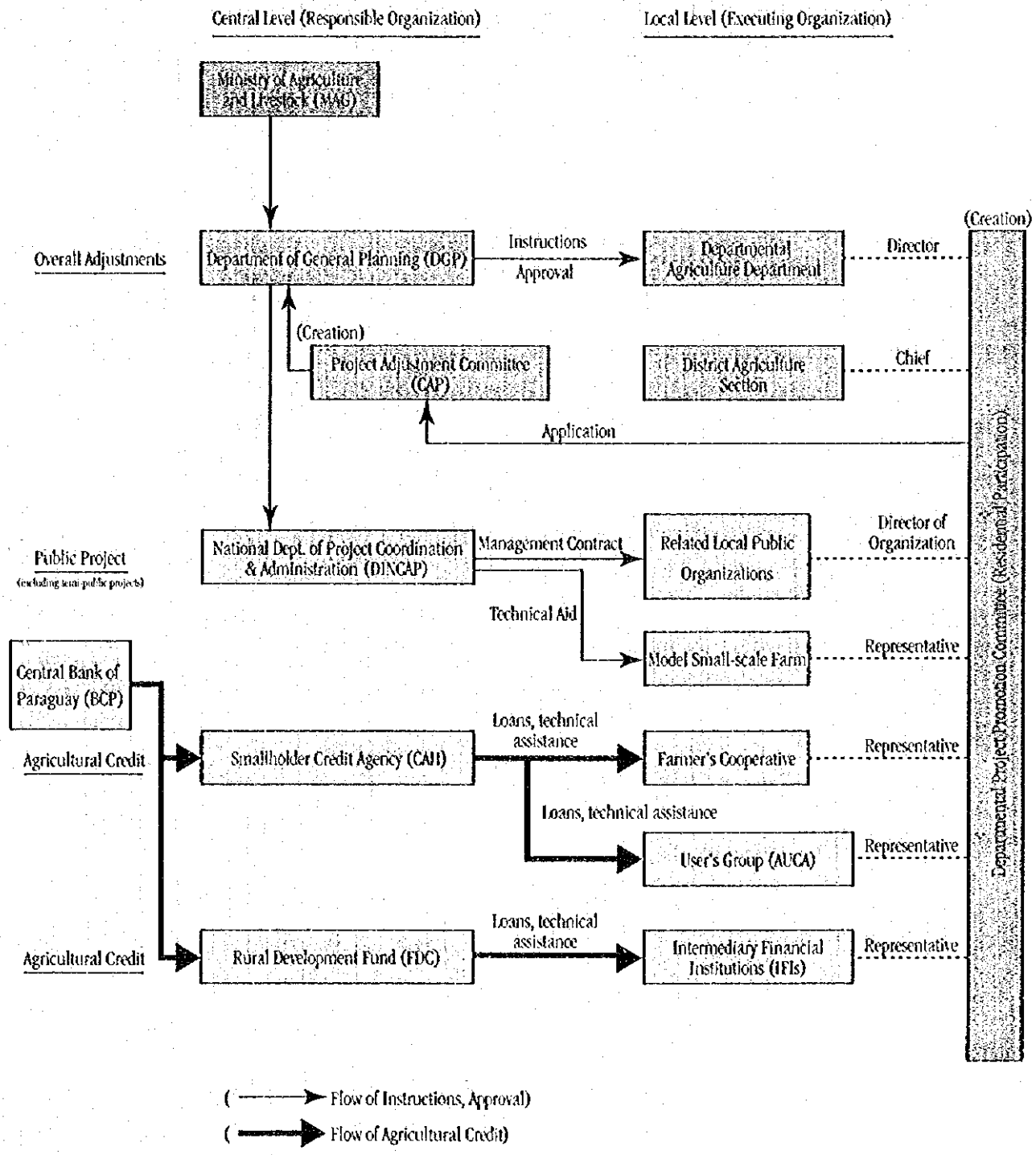

Figure 9.1.1 Project implementation system

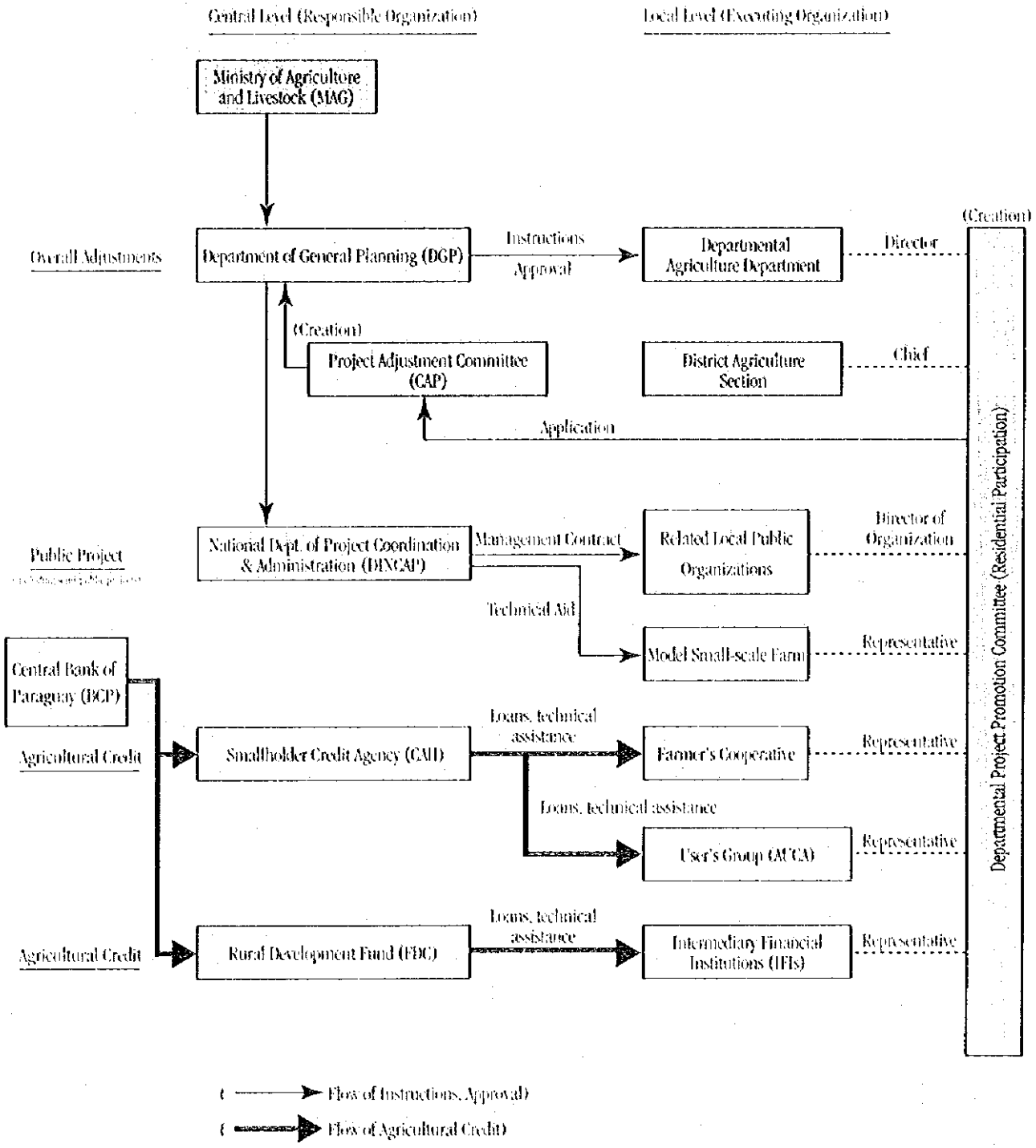

Table 9.1.1 Responsibilities of organizations when implementing projects

Type	Planning	Execution		Management	Property	Responsibility for Debt	Jurisdiction, Property
1. Public project (grant)	MAG	MAG		Users' group	MAG	None	99 year contract
2. blic projects (repaid) ① Road improvements	MAG(DINCAP)/ MOPC (agreement)	MOPC		MOPC	MOPC	MOPC	MOPC Jurisdiction
3. Semi-public projects ① Drinking water facilities	MAG(DINCAP)/ MSP and BS (agreement)	SENASA		SENASA (Users' group)	Machinery and equipment: SENASA	SENASA	Nominal change to SENASA after amortization for drinking water
② Irrigation facilities	MAG(DINCAP)	MAG(DINCAP)		- MAG - Users' group	Drinking water facilities: Users' groups - Machinery and equipment: MAG - Irrigation facilities: Users' groups	MAG (DINCAP)	Under jurisdiction of MAG after amortization for irrigation facilities
4. Private projects		Financing	Execution				
4.1 Agricultural coopera-tives or users' groups							
① Agriculture	CAH	CAH	CAH	Individual	Individual	Individual	Individual tenancy after amortization
② Livestock	CAH	CAH	CAH	Individual	Individual	Individual	Individual tenancy after amortization
③ Agricultural facilities	CAH	CAH	CAH	Individual	Individual	Individual	Individual tenancy after amortization
4.2 Intermediary Financial Institutions (IFIs)							
① Agricultural machinery	FDC	FDC	IFI	IFI	IFI	IFI	IFI tenancy after amortization
② Processing facilities	FDC	FDC	IFI	IFI	IFI	IFI	IFI tenancy after amortization

9.2 Maintenance plan

9.2.1 Agricultural & rural infrastructure improvement

1) Agricultural infrastructure improvement

(1) Arable land

Arable land (including field tracks) made by improving natural pasture land or fallow land are managed by the farmers themselves.

(2) Wet field irrigation facilities

There is a necessity to strengthen the functions of existing water use groups. In addition, in order to make efficient use of water resources and adjust water distribution in times of drought, the Office of the Vice-Minister of Environmental Natural Resources of the Ministry of Agriculture and Livestock must intervene and take a more active role. Adjustments must be made between the users of the facilities.

(3) Field irrigation facilities

Committee s of users of irrigation facilities are formed to determine methods of maintenance and management and methods of collection of maintenance and management fees and achieve appropriate maintenance and management. The irrigation facilities in the various fields are managed by the individual farmers.

(4) Farm roads

MOPC is in charge of maintenance and management of roads and therefore manages farm roads as well. By 1996, MOPC had area offices in 12 departments with the exception of Concepción and Canindeyú. With the expansion and strengthening of these area offices, maintenance and management of farm roads has become more thorough. In addition, there has been growing demand from residents for road construction and repair by the government and the participation of residents was obtained by establishing a roads committee in each production committee.

2) Agricultural infrastructure improvement

(1) Drinking water facilities

Users' committees were formed for each facility and the appropriate maintenance and management is carried out according to the management guidelines established by SENASA.

(2) Facilities for brick drying

These facilities are managed jointly by the producers

(3) Establishment of primary and secondary educational facilities

These facilities are for IBR settlements which do not have such facilities, therefore maintenance and management is carried out mutually.

9.2.2 Buildings

1) Farmers' aid associations

(1) Training facilities

Training facilities were organized by the various committees and cooperative organizations in order to strengthen the organization of farmers and are managed and run by cooperatives.

(2) Training centres

Managed and run by the departments. It is planned that the administration costs will be provided by the departmental governments.

2) Circulation of agricultural products

(1) Collection and shipping facilities

Agricultural product selection and wrapping facilities and milk collection facilities are managed by cooperatives organized by farmers or production committees. The management cost is covered by users' fees.

(2) Wholesale markets

Public markets are managed by local public groups as done in the past. The management cost is covered by users' fees.

(3) Laboratories for plant quarantine, and branch office for plant quarantive analysis residual agricultural chemicals

Laboratories for plant quarantine and analysis residual agricultural chemicals are managed by the Plant Quarantine Department of the Plant Protection Agency. The management cost is covered by examination fees and funds from the government.

3) Procession of agricultural products

(1) Common use processing facilities

Common use processing facilities for macadamia nuts, marmalade and honey are managed by cooperatives organized by farmers or committees.

(2) Cottage industry scale processing facilities

Facilities for the processing of milk and for the extraction of the essence of petit grain are managed by the farmers themselves.

(3) Corporate scale processing facilities

Facilities for the processing of milk are managed by cooperatives or private corporations.

(4) Food processing laboratories

In Paraguay, the field of food processing is under the jurisdiction of the MIC (Ministry of Industry and Commerce). These laboratories are created by government and private industry investing money to create and manage an institution. The

institution is managed self sufficiently. The management costs are offset by the business profit.

(5) The cotton spinning factory which is being run as a model project (for this project there was already a building available and machinery was supplied) is managed by a private corporation.

4) Institutions related to farming practice

(1) Promotion of livestock

The artificial insemination centre and the Barrerito livestock farm are managed by the DIPA (The Department of Livestock Research and Production) of the Ministry of Agriculture and Livestock in San Lorenza. The artificial insemination centre is managed by DEAG. The management costs are covered by the rental of male livestock and the sale of semen.

(2) Facilities for the promotion of sericulture such as mulberry trees, silkworm strain research, and silkworm production facilities

are managed by government and private institutions. These institutions receive technical aid for management from CETAPAR and IAN. Management of these facilities is the same as with food processing laboratories.

9.2.3 Agricultural machinery

Agriculture machinery for soil improvement and soil layer improvement are managed by cooperatives. The cooperatives lease to the production committee s and the cost of maintenance and management is covered by the users' fees. Agricultural machinery for circulation processing and machinery related to farm practice is maintained and managed by the organizations shown on 9.2.2.

The agricultural machinery introduced according to the efficient use of farm land plan is managed by intermediary organizations with the Ministry of Agriculture and Livestock as the central organization. Producers' organizations can borrow the equipment for a fee.

9.3 Schedule for project implementation and distribution of project cost

As shown in 6.3, "Development targets", the final year of this support program is 2017. The business implementation plan is divided into 3 periods, the short term (1998-2002), the medium term (2003-07) and the long term (2008-17). Because it is necessary to consider the priorities of the projects when distributing them, the implementation of model area projects is mainly in the short term (see 6.3.1 "Setting the project target year"). In particular, the example of model agricultural credit which covers the entire survey area serves to contribute indirectly to the development of sustainable agriculture in Paraguay and in the MERCOSUR market and will therefore be implemented in the short term as a PG-P8 continuing project. If this project can successfully attain its objective and continue with the 3rd and 4th steps, the prospects for the development of agriculture in Paraguay will improve.

As for the distribution of projects, improvement of pasture and agricultural land which requires much work and improvement and construction of farm roads will be implemented in the long term according to the implementation capacity of the Paraguayan government. With respect to the annual cost of the project each year, the Ministry of Agriculture and Livestock currently aims to borrow etc. US $40 million (foreign currency base) from foreign governments to cover implementation costs. In addition, in order to achieve positive results in the short term, it is favorable to speed up implementation of the project, in other words, create a forward-looking distribution of projects (see Table 9.3.1).

9.4 Rationale for capital procurement

When viewing the individual projects of the strengthening plan, because the proposals concerning dispatch of specialists and the proposals related to loans to be repaid and grants are complex, they are arranged for the whole survey area and for each project in the model area and these matters are formulated by the government of Paraguay.

After the formulation of these proposals, the government of Paraguay considers which is the most appropriate provider of financing for each proposal. However, in principal, the government of Paraguay should make efforts to receive finance from the IBRD (International Bank for Recovery and Development), the IDB (Inter-American Development Bank), other international financial institutions or various foreign countries.

Table 9.3.1 Distribution of project cost

Item	Fee	Unit	Short term (5 months)					Medium term (5 years)					Long term (10 years)									
	$1,000		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1. Project implementation cost	2,791	(%)	10	5	5	5	5	10	5	5	5	5	10	5	5	5	5	5	5			
2. Direct business cost	558,263	(million $)	40.7	44.4	44.3	44.0	43.1	43.1	43.1	39.6	39.6	39.6	15.3	15.3	15.3	15.3	12.5	12.5	12.5	12.5	22.5	12.5
1) Land use project	728	(%)	30	40	30																	
2) Agricultural Development Project	290,790	(%)	9	10	10	10	10	10	10	9	9	9	1	1	1	1						
(1) Cultivation Project	161,890	(%)	10	10	10	10	10	10	10	10	10	10										
(2) Livestock Project	15,267	(%)	10	10	10	10	10	10	10	10	10	10										
(3) Agricultural Product Circulation Project	56,872	(%)	5	10	10	10	10	10	10	5	5	5	5	5	5	5						
(4) Farmer's Assistance Project	56,761	(%)	10	10	10	10	10	10	10	10	10	10										
3) Agricultural/Rural Improvement of Infrastructure Project	249,889	(%)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
(1) Agricultural Improvement of Infrastructure Project	176,644	(%)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
(2) Rural Improvement of Infrastructure Project	73,245	(%)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
4) Environmental Protection Measures	7,837	(%)	11	21	21	20	9	9	9													
(1) Environmental Protection Measures	968	(%)	20	30	30	20																
(2) Farmland Protection Measures	6,869	(%)	10	20	20	20	10	10	10													
5) WID Measures	6,019	(%)	10	10	10	10	10	10	10	10	10	10										
(1) Educational Training	2,983	(%)	10	10	10	10	10	10	10	10	10	10										
(2) Establishing a Collective Purchasing Centre	3,036	(%)	10	10	10	10	10	10	10	10	10	10										
6) Adjustments Related to the Implementation of Projects	3,000	(%)	10	10	10	10	10	10	10	10	10	10										
3. Land Use Fees	1,500	(%)	10	10	10	10	10	10	10	5	5	5	5	5	5							
4. Engineering Service Fees *2	83,739	(%)	7	8	8	8	8	8	8	7	7	7	3	3	3	3	2	2	2	2	2	2
5. Operating Expenses *2	55,826	(%)	7	8	8	8	8	8	8	7	7	7	3	3	3	3	2	2	2	2	2	2
6. Physical Contiengency *2	55,826	(%)	7	8	8	8	8	8	8	7	7	7	3	3	3	3	2	2	2	2	2	2
7. Price Contiengency *2	55,826	(%)	7	8	8	8	8	8	8	7	7	7	3	3	3	3	2	2	2	2	2	2
Sum of Operation Fees Total	252,717	(million $)	17.7	20.2	20.2	20.1	20.1	20.1	20.1	17.7	17.7	17.7	7.6	7.6	7.6	7.5	5.0	5.0	5.0	5.0	5.0	5.0
Total Operation Fees	813,771	(million $)	58.7	64.7	64.6	64.2	63.3	63.5	63.8	57.4	57.4	57.4	23.2	23.0	23.0	22.9	17.6	17.6	17.6	17.5	17.5	17.0
Value Added Tax (VAT)	81,377	(million $)	5.9	6.5	6.5	6.4	6.3	6.4	6.3	5.7	5.7	5.7	2.3	2.3	2.3	2.3	1.8	1.8	1.8	1.8	1.8	1.7

Note: Column *1 is in units of $1,000 and *2 is the distribution rate (%) according to the direct operation expense rate

CHAPTER 10 RECOMMENDATIONS

1) In order to break out of the current depressed state of the national economy and set it on the road to growth, the government of Paraguay should outline future prospects for the national economy and formulate concrete economic development plans for each sector.

Here, measures for small-scale farmers are a particularly important issue, and should be solved by redistributing increased income brought about through the economic growth of the nation as a whole.

2) In Paraguay it is difficult to lure top foreign companies via normal methods, since there are deficiencies in capital, technology, and other areas, in addition to the fact that, in terms of distribution, Paraguay has the disadvantageous geographical condition of being a land-locked country. Therefore, free zones (special tax exemption areas) etc. should be set up and strong incentives given, and these should be used as a springboard towards industrialization, including the farm product processing sector.

3) To promote agriculture and livestock farming, the government of Paraguay should establish a national agricultural development programme whose contents include ① setting policy targets, ② long-term prospects for production and measures aimed at this, ③stable prices and rationalized distribution of farm produce, ④ improving agricultural structure, ⑤making efficient use of farmland, and ⑥ improving the rural infrastructure.

4) Agriculture in Paraguay is supported by agricultural credit. For small-scale farmers, in particular, agricultural credit that bears an obligation for repayment is preferable to non-repayable aid, from the point of view of fostering a sense of responsibility. Therefore, if the details of applications from small-scale farmers who are strongly motivated towards farm management are consistent with policy objectives,they should be able to borrow the full amount they need in the form of long-term, low-interest loans. In addition, loan conditions and other aspects of agricultural credit should be relaxed, and steps should be taken to support small-scale farmers and modernize Paraguayan agriculture.

5) The Paraguayan government should take steps to foster movements for increased national savings and improved livelihoods and to raise the awareness of the people, making this the driving force of economic growth. In addition, in rural areas it should foster agricultural fairs and the "10-Ridge Movement" for crop diversification, and make efforts to improve production motivation.

6) In rural areas, the training of personnel is hindered by the low rate of school attendance. This is because schoolchildren are seen as a valuable agricultural workforce in busy farming seasons, with the lack of good educational facilities and the difficulty of procuring tuition fees as contributory factors. Therefore, the Paraguayan government needs to set school terms that suit the seasonal characteristics of regional agriculture, and set conditions to facilitate school attendance by local children, as well as taking steps to enhance educational facilities and improve educational standards.

7) Projects proposed in model areas should be started as soon as possible, since their effects will be immediate and considerable. In doing so, feasibility studies should be carried out promptly for proposals that require more detailed plans, including project implementation, capital procurement, and other matters.

8) To implement this Programme smoothly, an efficient system for project implementation needs to be arranged. To this end, central and local governments should work together to promote projects: at central level, close links should be forged with the relevant ministries and responsible departments, and responsible bodies determined; and at local level, implementing bodies should be determined from amongst the relevant organizations.

In addition, when implementing the projects, as well as transferring authority to local areas and empowering the organizations in question, the level of maturity (e.g. enhancement of farmers' organizations and the wishes of local inhabitants and beneficiaries) should be also be taken into account.

9) In order to implement environmental conservation and WID countermeasures efficiently given the constraints on personnel and capital, gradual targets should be set and implementation gradually effected, starting with those that are of greater priority.

APPENDICES

1 MEMBERS OF THE ORGANIZING COMMITTEE

Department of General Planning (DGP)

Department of Commercial Agriculture (DCA)

Department of Agricultural Extension (DEAG)

National Institute of Cooperative Unions (INCOOP)

Department of Agricultural Research (DIA)

Institute of Rural Welfare (IBR)

Department of Environmental Regulation (DOA)

Smallholder Credit Agency (CAH)

Department of Livestock Research and Production (DIPA)

Rural Development Fund (FDC)

Secretariat for Women's Issues (SDM)

and other requisite organizations

Note: The Chairman of this Committee will be the Director of the Department of General Planning in the Ministry of Agriculture and Livestock. The Secretariat will be set up inside the DGP.

2 LIST OF STUDY TEAM MEMBERS

Susumu Ojima	Team leader, environment
Nobuyoshi Sakamoto	Deputy team leader, regional development, farmland conservation
Hiroyuki Takai	Land use
Tomio Hanano	Rural society, WID
Yoshiharu Sato	Farm management
Shunsuke Akamatsu	Distribution, agricultural credit
Katsuto Kuniyasu	Soil, crop pests
Shuichi Takahashi	Agricultural economy
Shigeichi Takama	Agricultural diffusion, support systems
Teruhisa Tajiri	Agricultural & rural production infrastructure
Yasuo Kamiya	Agricultural product processing, facility design
Shinji Hirouchi	Project evaluation, design calculation
Shinichi Yoshino	Work coordination

3 LIST OF COUNTERPARTS

Ing. Higinio Molinas	Environment
Ing. Maria Noce	Regional development, rural society
Ing. Ken Moriya	Farmland conservation
Ing. Crisanta Rodas	Farmland conservation
Ing. Blanca Portillo	WID
Ing. Francisco Ibarra	Farm management
Ing. Damaso Baruja	Distribution
Ing. Mario Salinas	Agricultural credit
Ing. Armando Vera	Agricultural credit
Econ. Dario Zarate	Agricultural credit
Ing. Rosa Cardozo	Crop pests
Econ. Gladys Torres	Agricultural economy, project evaluation
Ing. Juan Estigarribia	Agricultural diffusion
Ing. Gilberto Gonzales	Support systems
Ing. Marciano Barreto	Support systems
Ing. Jorge Ogasawara	Agricultural & key rural production infrastructure, work coordination
Ing. Doria Baranda	Agricultural product processing
Ing. Rigoberto Davalos	Facility design

4 SCOPE OF WORK

SCOPE OF WORK

FOR

THE MASTER PLAN STUDY

ON

THE SUPPORT PROGRAMME FOR SMALL SCALE FARMERS

IN

EASTERN AREA

IN

THE REPUBLIC OF PARAGUAY

AGREED UPON BETWEEN

MINISTRY OF AGRICULTURE AND LIVESTOCK

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

ASUNCION, April 19, 1995

MR. NOBORU SAITO
LEADER
PREPARATORY STUDY TEAM
JAPAN INTERNATIONAL
COOPERATION AGENCY

DR. ARSENIO J. VASCONSELLOS PORTAS
MINISTER
MINISTRY OF AGRICULTURE
AND LIVESTOCK

I. Introduction

In response to the request of the Government of the Republic of Paraguay (hereinafter referred to as "the Government of Paraguay"), the Government of Japan has decided to conduct the Master Plan Study on The Support Programme for Small Scale Farmers in Eastern Area in the Republic of Paraguay (hereinafter referred to as "the Study"), in accordance with the relevant laws and regulations in force in Japan.

Accordingly, Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programmes of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Government of the Republic of Paraguay.

The present document sets forth the scope of work with regard to the Study.

II. Objectives of the Study

The objectives of the Study are;

1. to conduct the Study in order to formulate a Master Plan on The Support Programme for Small Scale Farmers in Eastern Area.

2. to conduct the Pilot study to indicate a method of implementation of the project for the model area / programme based on above Master Plan.

3. to carry out technology transfer to the counterpart personnel of the Government of Paraguay in the course of the Study.

III. Study Area

The study area is the whole Eastern Area which covers fourteen (14) provinces with approximate area of 159,827km².

IV. Scope of the Study

In order to achieve the above objectives, the Study will consist of two(2) phases and the following items.

1. Phase I

1.1. Collection and review of existing data and information and field survey on the following items:

(1) natural conditions

(2) social and economic conditions

(3) agricultural and rural infrastructures

(4) soil condition and land use

(5) agriculture(crop diversification, slash & burn cultivation etc

(6) census of agriculture

(7) agro-economy

(8) agro-financing

(9) land tenure, immigration and agrarian reform

(10) irrigation and drainage

(11) supporting systems(farmers organization, research, training and extention services etc)

(12) processing and marketing systems

(13) environmental aspects

(14) women in rural development

(15) others

1.2. Review of the exisiting development plans and projects in the Study area.

(1) national development plan

(2) agricultural development plan

(3) agrarian reform plan

(4) agricultural and rural infrastructure development plan

(5) administration and budget system

(6) activities of donor agencies

(7) others

1.3. Execution of inventry survey to clarify present conditon and problems of small scale farmers.

1.4 Execution of farmers household survey to grasp needs and potencials of small scale farmers.

1.5. Identification and analysis of development potencials and constraints based on the above survey.

1.6. Formulation of a Basic Development Plan of each sector and zone in the Study area.

1.7. Formulation of the Master Plan with the inclusion of the following components considering the viewpoints of women in rural development, people's participation and environmental aspects in the whole study area.

(1) Agricultural development plan

(2) Agriculture and rural infrastructure plan

(3) Agricultural processing and marketing system plan

(4) Farmers supporting plan(research,extention,financing etc)

(5) Environment conservation plan

(6) Others

1.8. Selection of the Model area / programme through the Master Plan Study.

2. Phase II

2.1. Collection of data and information in the selected Model area / programme through additional field surveys.

2.2. Execution of Pilot study to indicate a method of implementation of the project for the Model area / programme based on the Master Plan.

2.3. Recommendations

V. Study Schedule

The Study will be carried out in accordance with the tentative schedule attached in the Annex.

VI. Report

JICA will prepare and submit the following reports in Spanish to the Republic of Paraguay.

1. Inception Report
   Twenty (20) copies at the commencement of the Phase I field work.

2. Progress Report (1)
   Twenty (20) copies at the end of the Phase I field work.

3. Interim Report
   Twenty (20) copies at the commencement of the Phase II field work.

4. Progress Report (2)
   Twenty (20) copies at the end of the Phase II field work.

5. Draft Final Report
Twenty (20) copies at the end of the Phase II home office work. The Republic of Paraguay will provide its comments on the Draft Final Report to JICA within one (1) month after receiving the Draft Final Report.

6. Final Report
Eighty(80) copies in Spanish and Fifty (50) copies in English (only Main Report) within two (2) months after the receipt of comments on the DraftFinal Report.
In case any doubt arises in interpretation, English text shall prevail.

VII. Undertakings of the Government of the Republic of Paraguay

1. The Government of the Republic of Paraguay shall facilitate to carry out the study in accordance with the prevailing laws and regulations stipulated by the Republic of Paraguay, as follows :

(1) to secure the safety of the Japanese study team,

(2) to permit the members of the Japanese study team to enter, leave and sojourn in the Republic of Paraguay for the duration of their assignment therein, and exempt them from visa fees,

(3) to exempt the members of the Japanese study team from taxes, duties, fees and any other charges on equipment , machinery and other materials to be brought into and out of the Republic of Paraguay for the conduct of the Study,

(4) to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study,if necessar

(5) to provide necessary facilities to the Japanese study team for the remittance as well as the utilization of the funds introduced into the Republic of Paraguay from Japan in connection with the implementation of the Study, if necessary,

(6) to obtain permission for entry into special area for the purpose of implementing the study ,

(7) to secure permission which is considered and issued by the relevant authorities for the Japanese study team to take out all data and documents including maps and photographs related to the Study out of the Republic of Paraguay to Japan,

(8) to provide medical services as needed. Its expenses will be chargeable on the members of the Japanese study team.

2 The Republic of Paraguay shall bear claims, if any arises, against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.

3. Department of General Planning, MAG shall act as a counterpart agency to the Team and also as coordinating body in relation with other organizations concerned for the smooth implementation of the Study.

4. Ministry of Agriculture and Livestock shall provide , at its own expense, the Japanese study team with the following, in cooperation with other organizations concerned;

(1) available data and information related to the Study,

(2) additional survey related to the study, if necessary,

(3) counterpart personnel,

(4) suitable office space with necessary equipment and furniture,

(5) credentials or identification cards.

VIII. Undertakings of JICA

For the implementation of the Study, JICA shall take the following measures;

(1) to dispatch, at its own expense, the study team to the Republic of Paraguay,

(2) to pursue technology transfer to the counterpart personnel of the Government of the Republic of Paraguay in the course of the Study.

IX. Consultation

JICA and the Republic of Paraguay shall consult each other in respect of any matter that may arise from or in connection with the Study.

ANNEX

TENTATIVE SCHEDULE

Item Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
WORK IN PARAGUAY	▨	▨	▨	▨	▨	▨	▨					▨	▨	▨	▨	▨	▨	▨		○	
WORK IN JAPAN	□							□	□	□	□				□	□	□				□
REPORTS	△ IC/R							△ PR(I)				△ IT/R			△ PR(II)			△ DF/R			△ F/R

Remarks IC/R : Inception Report PR(II) : Progress Report II

PR(I) : Progress Report I DF/R : Draft Final Report

IT/R : Interim Report F/R : Final Report

○ : Comments on DF/R by Paraguay side

▨ : Field Work

□ : Home Office Work

M-5

5 MINUTES OF MEETING

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FOR

SCOPE OF WORK

FOR

THE MASTER PLAN STUDY

ON

THE SUPPORT PROGRAMME FOR SMALL SCALE FARMERS

IN

EASTERN AREA

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ASUNCION, April 19, 1995

MR. NOBORU SAITO	DR. ARSENIO J. VASCONSELLOS PORTAS
LEADER	MINISTER
PREPARATORY STUDY TEAM	MINISTRY OF AGRICULTURE
JAPAN INTERNATIONAL	AND LIVESTOCK
COOPERATION AGENCY	

In response to the request of the Government of the Republic of Paraguay, (hereinafter referred to as "the Government of Paraguay"), the Government of Japan decided to dispatch through Japan International Cooperation Agency (hereinafter referred to as "JICA"), which is responsible for the implementation of technical cooperation programmes of the Government of Japan, the preparatory study team (hereinafter referred to as "the Team "), headed by Mr. NOBORU SAITO, to the Republic of Paraguay from April 9th to 27th, 1995 so as to discuss and exchange views on the study with Ministry of Agriculture and Livestock, and officials concerned of the Government of Paraguay for the implementation of the study.

Ministry of Agriculture and Livestock and the Team mutually agreed to the Scope of Work for the Master Plan Study on the Support Programme for Small Scale Farmers in Eastern Area in the Republic of Paraguay (hereinafter referred to as "the Study"). List of participants in the series of meeting is attached in the ANNEX.

The following minutes were prepared to confirm the main issues discussed and matters agreed upon by both sides in connection.

1. The Team requested Ministry of Agriculture and Livestock to assign qualified and necessary number of counterpart personnel for the Study at its own expences and Ministry of Agriculture and Livestock accepted this request.

2. The Team requested Ministry of Agriculture and Livestock to provide the Japanese study team with suitable offices with necessary equipment and furniture in the study area.
   Ministry of Agriculture and Livestock accepted this request.

3. The Team requested that a steering committee for smooth and effective implementation of the Study should be organized by relavant departments and organizations of the Paraguay side before beginning of the Study and should be held at least three(3) times at the submission of Inception Report, Interim Report and Draft Final Report.
   Ministry of Agriculture and Livestock accepted this request.

4. Ministry of Agriculture and Livestock requested that the counterpart personnel take advantage of training in Japan to promote effective technology transfer.
   The Team promised to convey this request to the Government of Japan.

5. Ministry of Agriculture and Livestock requested Japanese side to shorten the duration of the study as much as possible to get early conclusion of the study in view of the importance and urgency of small scale farmers' issue.
   The Team promised to convey this request to the Government of Japan.

6. Ministry of Agriculture and Livestock requested that the appropriate number of vehicles, equipment and machinery(such as meteorological and hydrological observation equipment, information processing machinery) which would be used for the smooth implementation of the Study should be provided by JICA.
   The Team promised to convey this request to the Government of Japan.

7. Ministry of Agriculture and Livestock requested that Initial Environmental Examination (IEE) should be executed by JICA study team in close cooperation with counterparts of the Paraguay side in the course of the study.
   The Team promised to convey this request to the Government of Japan.

8. Both sides agreed that the main beneficiary of the programme would be small scale farmers who own 20ha or less and they would be devided into several categories with different nature of the issues they would have.

9. Both sides agreed that agricultural technologies and methods developed by Centro Tecnologico Agropecuario en Paraguay (CETAPAR) and Japanese immigrants that could be successfully applied by Paraguayan farmers and counterparts should be considered in the study.

ANNEX

(LIST OF PARTICIPANTS)

<PARAGUAY SIDE>

* Ministry of Agriculture and Livestock (MAG)

Ronaldo DIETZE	Director, Dept.of General Planning
Aristides RADIAN	Director, Dept.of Commercial
Arnulfo FRETES E.	Vice Minister, Dept.of Environment
Ken MORIYA	Vice Director, Dept.of Extention
Maria NOCE	Staff, Dept.of General Planning
Jorge OGASAWARA	Staff, Dept.of General Planning
Gustavo RUIZ DIAZ	Staff, Dept.of General Planning
Margarita CAMPUZANO	Staff, Dept.of Cooperative
Fernando RIOS	Staff, Dept.of Cooperative
Gloria AQUINO	Staff, Dept.of Extention
Victor ARRUA	Staff, Dept.of Livestock
Raquel VILLALBA	Staff, Dept.of Environment

* Institute of Rural Welfare(IBR)

Joel AMARILLA	Director, Dept.of Planning

* Japanese Expert

Jun KUROSAWA	Dept,of General Planning, MAG
Hideo KATAHIRA	Dept.of Extention, MAG
Junnosuke HARADA	National.Institute of Agriculture (IAN), MAG

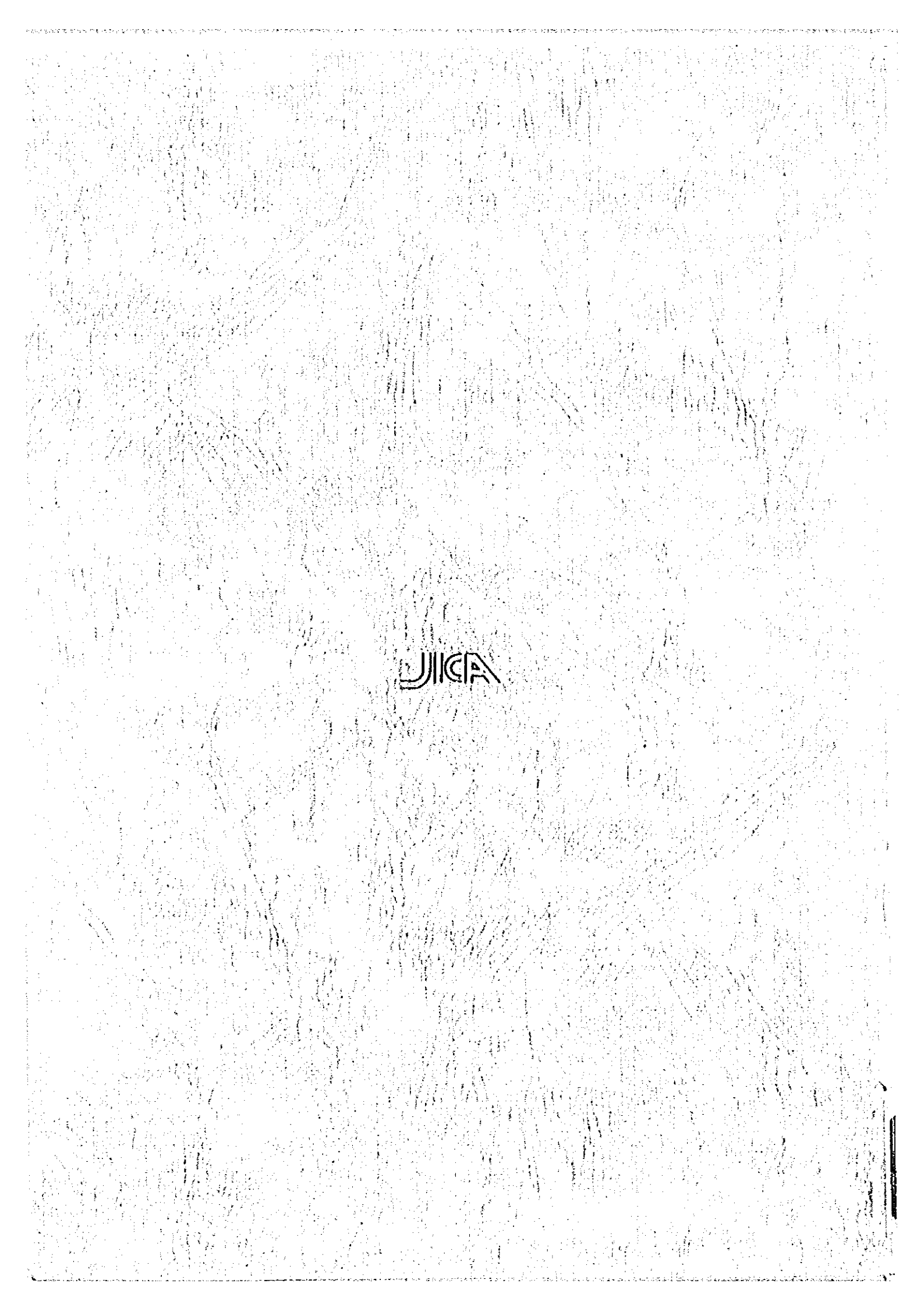
<JAPANESE SIDE>

* Preparatory Study Team

Noboru SAITO	Team Leader
Yoshihiro OZAWA	Member
Yoshitaka IGAWA	Member
Keiko AKAMATU	Member
Toshiro YAMASHITA	Member
Yutaka NOZAKI	Member
Yuri YAMANE	Interpreter

* JICA Paraguay Office

Kozaburo YONEZAWA	Deputy Director, Dept.of Technical Cooperation


JICA