JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
TECHNICAL SECRETARIAT OF PLANNING, PARAGUAY

THE STUDY
ON
THE ECONOMIC DEVELOPMENT
OF
THE REPUBLIC OF PARAGUAY

FINAL REPORT

CLUSTER FORMATION : MAIN REPORT

VOLUME 5

November 2000

DAIWA INSTITUTE OF RESEARCH LTD.
PACIFIC CONSULTANTS INTERNATIONAL

PREFACE

In response to a request from the Government of the Republic of Paraguay, the Government of Japan agreed to conduct a Study on the Economic Development of the Republic of Paraguay, and entrusted the study to the Japan International Cooperation Agency (JICA).

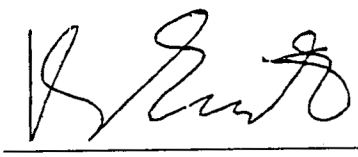
JICA organized a study team composed of Daiwa Institute of Research Ltd. and Pacific Consultants International. The team, headed by Mr. Hidesuke KOTAJIMA of Daiwa Institute of Research Ltd., visited the Republic of Paraguay five times between October 1998 and September 2000. In addition, JICA set up an advisory committee headed by Professor Akio HOSONO, of the Research Institute for Economics and Business Administration, Kobe University, which examined the study from technical points of view.

The team held discussions and conducted joint field research with the Paraguayan counterpart team, which was headed by the Technical Secretariat of Planning and composed of officials from relevant ministries. Based on these joint efforts, the team prepared the Draft Final Report and presented it to the Government of the Republic of Paraguay in August 2000. After returning to Japan, the team conducted further studies and compiled the final results found in this report.

I hope this report will contribute to forming an appropriate Development Strategy for the Paraguayan economy. I also hope it enhances the friendly relations between the two countries.

I wish to express my sincere appreciation to the Paraguayan counterpart team and others concerned for their close cooperation throughout the study.

November 2000



Kunihiko Saito
President
Japan International Cooperation Agency

November 2000

Mr. Kunihiko Saito
President,
Japan International Cooperation Agency

Dear Mr. Saito,

Letter of Transmittal

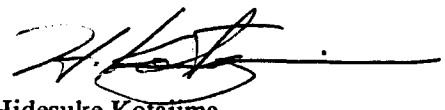
We, hereby, have the pleasure of submitting the "Study on the Economic Development of the Republic of Paraguay." The report describes the results of the Study conducted by Daiwa Institute of Research Ltd. and Pacific Consultants International, in accordance with the contract entered into with the Japan International Cooperation Agency (JICA).

Our Study Team carried out five field surveys between October 1998 and September 2000. While in Paraguay, the Team conducted a joint study with the Paraguayan counterpart team, composed of different ministry officials, to formulate development strategies along with projects for implementation, in order to enhance the economic competitiveness. In the process, skills and technology were also transfered to Paraguay. Based on results of the field surveys in Paraguay and study activities in Japan, the team prepared this report, in cooperation with the Paraguayan side.

In view of the urgency of strengthening the economic competitiveness and the socio-economic development of the Republic of Paraguay as a whole, we recommend that the Paraguayan government implement these suggestions without delay.

We wish to take this opportunity to express our sincere gratitude to the Technical Secretariat of Planning and other authorities concerned in the Republic of Paraguay for the kind cooperation and warm hospitality they extended to our Team. We also wish to express our deep gratitude to your Agency, the Ministry of Foreign Affairs, the Japanese Embassy in Paraguay, and the JICA Paraguay office.

Very truly yours,



Hidesuke Kotajima
Team Leader,
The Study on the Economic Development of the Republic of Paraguay

ABBREVIATIONS & ACRONYMS

	English	Spanish
ABASTO	Central Market of Asuncion City	Mercado Central de Abasto de la Municipalidad de Asunción
ABP	Paraguayan Banks Association	Asociación de Bancos del Paraguay
ACEPAR	Paraguayan Steel Company	Aceros del Paraguay S.A.
ANTELCO	National Telecommunications Company	Administración Nacional de Telecomunicaciones
APAL	Alcohol monopoly corporation	
APC	Paraguayan Quality Association	
ARP	Rural Association of Paraguay	Asociación Rural del Paraguay
ASEAN	Association of South East Asian Nations	
BCP	Central Bank of Paraguay	Banco Central del Paraguay
BID(IDB)	Inter-American Development Bank	Banco Interamericano de Desarrollo
BIS	Bank for International Settlements	
BNF	National Development Bank	Banco Nacional de Fomento
BOD	Biochemical Oxygen Demand	
BVPASA	Stock Exchange and Products of Asunción S.A.	Bolsa de Valores y Productos de Asunción S.A.
CADEP		Centro de Analisis y Difusión de Economía Paraguaya
CAH		Crédito Agrícola de Habilitación
CAP		Cámara de Anunciadores del Paraguay
CAPECO	Chamber of Paraguayan Cereals and Oleaginous	Cámara Paraguaya de Exportadores de Cereales y Oleaginosas
CBC		Cámara y Bolsa de Comercio
CCM	Council of Common Market	
CECTEC		Centro de Educación, Capacitación y Tecnología Campesina
CEDIAL		Cooperación Empresarial y Desarrollo Industrial
CEPAE		Centro de Apoyo a la Empresa
CERNECO		Centro de Regulación, Normas y Estudios de la Comunicación
CET	Common External Tariff	Tarifa Externa Común
CETAPAR	Comprehensive Agriculture Experimental Center	Centro Tecnológico Agropecuario en Paraguay
CI	Competitive Index	Indice Competitivo
CNV	National Securities Commission	Comisión Nacional de Valores
CIP		Centro de Importadores del Paraguay
COD	Chemical Oxygen Demand	Demanda Química de Oxígeno
CODEX	The Joint FAO/WHO Foods Standards Program	
CRIA		Centro de Investigación Agrícola
DGEEC	Statistics and Census Bureau, STP	Dirección General de Estadísticas Encuestas y Censos, STP
ECLAC (CEPAL)	Economic Commission for Latin America and the Caribbean	Comisión Económica para América Latina y el Caribe

EDEP	The Study on the Economic Development of the Republic of Paraguay	Estudio sobre el Desarrollo Económico de la República del Paraguay
EU	The European Union	Unión Europea
FAO	Food & Agricultural Organization	
FCPCAL	State run railroad	Ferrocarril Presidente Carlos Antonio Lopez
FDC	Rural Development Fund	Fondo de Desarrollo Campesino
FDI	Industrial Development Fund	Fondo de Desarrollo Industrial
FDI (IED)	Foreign Direct Investment	Inversión Extranjera Directa
FECOPROD		Federación de Cooperativas de Producción Ltda.
FEPRINCO		Federación de la Producción, la Industria y el Comercio
FIDA		Fondo Internacional de Desarrollo Agrícola
FINAEX		Programa de Financiamento à Exportação de Máquinas e Equipamentos
FOB	Free on Board	
GATT	General Agreement on Tariffs and Trade	
GDP (PIB)	Gross Domestic Product	Producto Interno Bruto
GTZ	German Agency for International Cooperation	Agencia Alemán para Cooperación Internacional
Gs	Guaraní (Currency Unit of Paraguay)	Guaraní (moneda paraguaya)
HACCP	Hazard Analysis & Critical Control Point	Control Crítico y Analisis de Peligro
ICOR	Incremental Capital Output Ratio	Proporción del Producto Marginal del Capital / Rendimiento Marginal
IDB (BID)	Inter-American Development Bank	Banco Inter-Americano de Desarrollo
IDP	Productivity Index	Indice de Productividad
IED (FDI)	Foreign Direct Investment	Inversión Extranjera Directa
INAN	National Institute of Food and Nutrition	Instituto Nacional de Alimentación y Nutrición
INCOOP	National Institute of Cooperativism	Instituto Nacional de Cooperativismo
INTAL	Institute for the Integration of Latin America and the Caribbean	
INTN	National Institute of Technology and Standardization	Instituto Nacional de Tecnología y Normalización
IPS		Instituto de Prevision Social
ISO	International Standards Organization	Organización Internacional de Estándar
IVA	Value Added Tax	Impuesto de Valor Agregado
JBIC	Japan Bank for International Cooperation	Banco del Japón para Cooperación Internacional
JCIF	Japan Center for International Finance	Centro del Japón para Finanza Internacional
JETRO	Japan External Trade Organization	Organización de Comercio Externo del Japón
JICA	Japan International Cooperation Agency	Agencia de Cooperación Internacional del Japón
JIS	Japan Industrial Standard	Estándar Industrial del Japón
LF	Ladle Furnace	
MAG	Ministry of Agriculture and Livestock	Ministerio de Agricultura y Ganadería
MERCOSUR	Southern Common Market	Mercado Común del Sur
MH	Ministry of Finance	Ministerio de Hacienda
MIC	Ministry of Industry & Commerce	Ministerio de Industria y Comercio

MOPC	Ministry of Public Works and Communications	Ministerio de Obras Públicas y Comunicaciones
NGO	Non Government Organization	Organización No Gubernamental
ODA	Official Development Assistance	Asistencia de Desarrollo Oficial
OEM	Original Equipment Manufacture	
OJT	On the Job Training	Adiestramiento en el Trabajo
OPIT	Integral Transport Planning Office of MOPC	Oficina de Planificación Integral de Transporte de MOPC
ORMIC	Regional Office of Ministry of Industry & Commerce	
PIB (GDP)	Gross Domestic Product	Producto Interno Bruto
PITEX	Temporary Import Program for Exportation	Programa de Importación Temporal para Exportación
PROMODAF	Modernization Program for Development of Agricultural, Livestock and Forestry Sector	Programa de Modernización para el Desarrollo del Sector Agropecuario y Forestal
PROPARAGUAY	The Paraguayan Government Institution for Export Promotion	
R&D	Research and Development	Estudio y Desarrollo
RCA	Revealed Comparative Advantage	
R$	Real (Currency Unit of Brazil)	Real (moneda brasileña)
SENACSA		Servicio Nacional de Salud Animal
SENAI		Serviço Nacional de Aprendizagem Industrial
SMAW	Submerged Arc Welding	
SNPP		Servicio Nacional de Promoción Profesional
STP	Technical Secretariat of Planning	Secretaría Técnica de Planificación
TRIPS	Treatment of Regulation of the Intellectual Properties' Standard	
UIP	Paraguayan Industrial Union	Unión Industrial Paraguaya
US$	US Dollar (Currency Unit of USA)	Dolar (Moneda Estadounidense)
VAT	Value Added Tax	Impuesto de Valor Agregado
WTO	World Trade Organization	Organización de Comercio Mundial
¥	Japanese Yen (Currency Unit of Japan)	Yen (Moneda Japonesa)

CURRENCY EQUIVALENTS

Gs 3,470 / US$1.00
¥109.45 / US$1.00
As of September 2000

Cluster Formation: Main Report
Volume 5
Table of Contents

Figures

Tables

1. THE CLUSTER CONCEPT

The Sector concepts discussed in Chapter 2 of Main Report Volume 2 are “Concept to Overcome General Constraining Factors of Competitiveness” that are related to the overall Paraguayan economy and “Concepts in a Breakdown by Sector” that argue concepts shared by actors of a sector. However, these plans do not discuss which products of which industry should strengthen their exporting competitiveness specifically. In this section, we will clarify these points. They are cluster concepts, which will not take up any specific industry but to improve efficiency of the economic cluster including interrelated industries. Features of these concepts are in their intention to raise competitiveness of items with high prospect and expand their exports.

1.1 CLUSTER ORIGINATING IN THE AGRO-INDUSTRY

The growth rate of the Paraguayan economy hit its peak in 1980 and has declined for more than 20 year ever since. The decline appears mainly due to the relative decreasing ratio of private capital spending and the increasing ratio of investment in private houses that do not directly lead to the increase in production capacity from the standpoint of the macro economy. On the other hand, from the standpoint of the micro economy, the agricultural sector of real sectors retains competitiveness relatively, but the competitiveness of the manufacturing sector is gradually declining. Moreover, items with more processing and higher value added in particular are losing their competitiveness, which leads to the reduction in investment in manufacturing sectors. Then, items with value added lose their competitiveness further and give way to imported goods. At the moment, they seem to be in such a vicious cycle.

The more they are processed, the lower their competitiveness is. There are two reasons for it. One of them is the high trading cost among industrial sectors in the flow of supply chain. The cost includes distribution, information, communication, credit and so on. With these, the products that went through more processing seem to cost more. The other reason is the structure in which the manufacturing industries in the downstream are difficult to get scale-merit. In other words, the scale of them is small. As a result, the products in the downstream are weak in development capacity, cost competitiveness and export marketing capability compared to competing countries.

In order to develop economy, it is essential to shift the structure to the industry that can absorb much employment and have high value added. They should focus on developing a manufacturing sector with higher value added per 1 employee. To this end, it is realistic to seek for industrialization by using domestic resources with comparative advantage and sectors with production base at the core. When we look at the current state of Paraguayan industry from this viewpoint, as mentioned before, items with much processing are loosing their competitiveness while agricultural products retain relatively high

competitiveness. It is also characteristic that the agricultural processing industry represents more than 50% of the manufacturing industry in terms of production and value added.

Although Hong Kong and Singapore do not have affluent resources, they succeeded in advancing their industrial structure from assembly and process to the information industry and the financial industry. These cities owe their success to their advantageous locations as well as their investments in human resources. However, Paraguay is an inland country and has disadvantage in location. On the other hand, their potential in agricultural resource is promising. The economic development based on the agriculture should be accompanied by industrial advancement and rise in value added of products. To this end, it would be appropriate to choose interrelated sectors for the supply chain from sectors related to the agro-industry and reinforce their export competitiveness. In that case, main challenges would be reducing transaction cost in the supply chain and strengthening competitiveness of bottleneck actors.

It is important to take a group of sectors with strong relations between sellers and buyers and organizations concerned as a cluster and strengthen them, which is why we propose a strategy to develop a cluster with the agro-industry as a base.

This plan requires Paraguayans to review their industrial policy in which they have made efforts in expanding exports of nontraditional products. Exports of some nontraditional products are rapidly growing. However, they are small in scale and do not make much contribution to the economy. On the other hand, traditional products are large in scale and even slight efforts for their export expansion have big impact on the economy. To boost the economic development by micro improvement, they have to pay more attention than ever to the increase in value added and exports of traditional products.

1.2 STRATEGIC CLUSTER

Cluster means a group that belongs to a specific field and consists of interrelated companies and organizations that are also geographical neighbors. These companies and organizations are linked by their common features and complementary relations. Therefore, a cluster should be taken not only as the same type of businesses located in a certain district but also as a group of different types of businesses and organizations that are related to one another. The formation of a cluster means the creation of a network within a specific geographical area, where the frequency of exchange and influence increase because companies and organizations are located close to one another. Geographical neighborhood makes it easy to generate intimate association between human beings, face-to-face communication, and reciprocal action through the network of individuals and institutions.

As was mentioned in 1.1, Paraguay has competitiveness in agriculture but their competitiveness is weak in agricultural processing industries including food industry. This fact demonstrates that

coordination between agriculture and forestry and manufacturing industry are not always successful. It also suggests that it is necessary to take agriculture, forestry and manufacturing industry as an integrated cluster.

For instance, most of soybean is finally pressed oil, which is used for edible, and strained lees is used as cattle feed. In Paraguay, however, only some 20 % of soybean production is pressed oil. Holland, to which Paraguay exports large amount of soybean, imports about 5 million tons of soybean every year, consumes half of the strained lees as cattle feed domestically and exports the rest. In addition, the cattle that are raised on the feed are processed into pork meat or chicken meat for a large scale exporting. In comparison with Holland, Paraguay has not developed competitive processing industry or stock-raising industry that are positioned in later stage than the oil pressing. For all that their soybean has the world's top class competitiveness, they fail to seize the opportunity of raising value added. As for cotton, they have capacity of producing cotton thread or cotton fabric, but production facilities are unused due to the shortage of raw material over the past several years. The link between the production of raw material and processing industry has become weaker. The wood processing industry has grown by depending on affluent forest resources, but it is highly likely to scale down since their forestation project is making little progress. As these examples, weak linkage between agriculture and forestry and manufacturing industry often get them to miss the opportunity of creating new value added or induce the decline of processing industry. If the connection between agriculture and forestry and manufacturing industry were stronger, agricultural sector would expand the market for agricultural processing, and agricultural processing industries would raise their competitiveness by making use of raw materials' comparative advantage. The government's support, which have tended to focus on agriculture, should expand its scope to the agricultural processing industry, which in turn can also increase the competitiveness of the agriculture.

In the globalized market economy, the field of competition is shifting from between products or companies to between clusters. Even though competitive products or companies exist momentarily, they would not remain in the long lasting competition if the cluster supporting them were fragile. For example, stevia, originated in Paraguay, went through cross breeding for reducing bitter principle in Japan and other countries, and China started mass culture of stevia. As a result, competitiveness of stevia moved to China, where crossbreeding and mass production were carried out, has competitiveness now. On the other hand, Paraguayan competitiveness of stevia has declined. At the moment, only 3 companies are producing it. Paraguay lags behind China not only in culture technique but also in competitiveness as a stevia cluster with research laboratories of crossbreeding and cultivation method integrated. It is important to reinforce the competitiveness of the cluster.

Cluster is essential to promote investment as well. It is necessary for the Paraguayan economy to expand capital expenditure that is connected with the production capacity. A cluster would attract

domestic companies and foreign capitals for investment. In a district with a cluster, information on sellers and suppliers, research laboratories, human resource and infrastructure including roads, electricity and tap water would be ready more often than not. In such a district, it would be easy to start operation of plants after their entry. Active investments would increase competitiveness of the cluster and attract more investments, which would turn to be virtuous cycle. It is regretful that there is no such a cluster in Paraguay and direct investments from overseas are made sporadically on many types of businesses.

There can be a variety of clusters that extend from agricultural sectors to industrial sectors. From the viewpoint of agriculture and forestry that cover raw materials, there can be as many clusters as the number of farmed items. From the viewpoint of agricultural processing, clusters can be pointed out by paying attention to common features or relevance of raw materials or processing method. There can be various kinds of clusters that originate in the agro-industry. However, it is not necessarily appropriate to take up many clusters at once in order to promote the cluster strategy. While there are limits to financial resources and human resources of the central government and local governments to support reinforcing clusters, it is imperative to put the economy on the growth track. It would be practical to select clusters strategically and implement them preferentially. Strategic clusters would be selected in terms of cost effectiveness, economic effectiveness and feasibility.

1.3 REINFORCE OF T-FORM LINKAGE

The policy for developing strategic clusters that originate in the agro-industry must note following 2 points.

One of them is typical in agricultural processing. Since the coordination among industries as well as agricultural processing industry is weak, their potential is not fully demonstrated. The higher the economic standard is, the linkage impact of industrial linkage table would be bigger. In Paraguay, the industrial linkage table has not been made, therefore, linkage impact cannot be determined. However, we can point out that coordination between industries is weak by observing economic actors such as farms and companies. In case of agricultural processing, close coordination between agriculture and processing is important. In processing fresh vegetables and fruits, the existence of agricultural processing industry that purchase harvested agricultural products immediately is valuable. To agricultural processing industry, stable supply of raw materials is a condition to keep operation rate of plants. However, coordination between the agriculture and processing industry is not good in many cases. In addition, transactions between processing business are small. In Paraguay, about 600,000 tons of soybean lees are produced annually. Only 40% of them are sent to mixed feed plants in Paraguay. The rest is exported as lees. As for processing cotton, from cotton thread, cotton fabric, coloring, to sewing, industries in latter stage are smaller in scale. This holds true in wooden products processing.

Some people point out that the concept of vertical integration is obsolete and products should be produced in most appropriate land because we can exchange information and goods quickly and the cost is low in this globalized economy. In some cases, countries that do not produce raw materials have strong competitiveness in processed products in wider definition such as textiles, leather goods, woodenwares and aroma chemicals. However, in general, there are much more countries with raw materials production which seek for vertical integration and show competitiveness in the field of processed goods. It is common to agriculturally developed countries to have advanced vertical integration of agricultural processing. It is true that Paraguay is an inland country, where high export freight deters the growth of exports. In this context, it is required to increase the extent of processing in order to raise unit prices for exports per unit weight. To this end, promoting vertical coordination in an industry is an important direction.

The second point to note is characteristic of Latin America. In Paraguay, companies have little sense of unity. Chilean or Argentina companies are increasingly dominating distribution channels in domestic market of Paraguay. Multinational companies have come to dominate the soybean market. However, Paraguayan companies lack unity. It holds true in exporting. Paraguay is a small country not only in MERCOSUR but also in the world. We expect that it would be extremely difficult to raise export competitiveness without unity of businesses in Paraguay, where only small and medium sized companies gather. In Denmark or New Zealand, which have strong export competitiveness, companies in the same industry are tied closely. Such a strong tie is reflected to export competitiveness through functional activity of the marketing board. In Paraguay, it is necessary to strengthen horizontal tie between businesses in the same industry to raise competitiveness, let alone dairy goods businesses that require more mergers and alliances.

It holds true in the agriculture as well. It is impossible for individual farmers without unity to supply required quantity of products that meet the needs of overseas market or processing industries at fair prices when they are necessary. Agricultural cooperative associations will play major roles in creating the horizontal tie between farmers and improve competitiveness or bargaining power of them all. Agricultural cooperative associations have functions to promote horizontal integration in the agriculture.

The government has paid attention to the agriculture through support measures. However, in comparison with the agriculture, support to the manufacturing industry is not enough even though there are laws to promote investment or funds for industrialization. Compared to Brazil, where positive support for the agricultural processing industry expand the demand for agricultural products and support the agriculture indirectly, Paraguay's support to this industry is scarce although the agricultural processing industry represent more than half of the manufacturing industry in terms of the number of

employees and value added.

As mentioned before, Paraguayan industries have weaknesses in vertical integration of supply chain, horizontal integration among the same type of industries and support measures for middle or downstream industries. It will be important tasks to seek for vertical and horizontal integration. In symbolic expression, deepening T-form linkage is the basic policy for strengthening the strategic cluster.