JICA Ogata Sadako Research Institute for Peace and Development
August 2023

JAPANESE IMMIGRANTS WHO SUPPORTED THE DEVELOPMENT OF PARAGUAY

THE ACHIEVEMENTS THAT MADE PARAGUAY THE WORLD'S FOURTH LARGEST SOYBEAN EXPORTER AND AN IMPLEMENTER OF NEW INITIATIVES FOR INDUSTRIAL DIVERSIFICATION

Makoto KITANAKA, Kazuo FUJISHIRO, Akio HOSONO, Keisuke ITO

JICA Project History Series No.4

Japanese immigrants who supported the development of Paraguay

The achievements that made Paraguay the world's fourth largest soybean exporter and an implementer of new initiatives for industrial diversification

An Omnibus of Histories

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Foreword

This book outlines the long-term contributions of Japanese immigrants to the economy of Paraguay, a country located in the center of South America. Three of the four authors have had experience in working in the JICA Paraguay Office, and the other one has a track record of conducting research on the inclusive development of Paraguay. The book has been organized as an omnibus of histories written by the four authors. All of them write, from their own point of view, about the active roles that Japanese immigrants have played in Paraguay.

Migration from Japan to Paraguay, which began in 1936, has a history of over 80 years. The effects of Japanese immigrants on Paraguayan society and its economy have been immense. The book focuses on initiatives centered on soybean production as an example of success in the history that deserves special mention. Furthermore, it presents the increasingly diversified and expanded agricultural activities of Japanese immigrants beyond soybean production in recent years.

The structure of the book is as follows. The prologue touches upon the range of connections between Paraguay and Japan. Chapters 1 to 3 depict the hardships Japanese immigrants experienced immediately after they started to settle in Paraguay, their efforts to set soybean production on its way, and how they eventually established a firm position in the world in terms of scale of production. Chapter 4 outlines the initiatives taken to diversify the economy through industrializing agriculture and developing food processing, and is followed by Chapter 5, which takes up sesame production and the automotive component industry, both of which have recently emerged. Chapter 6 delineates the partnership between the Japanese and Paraguayan societies forged by Japanese immigrants, and the epilogue shows how the official ceremony to commemorate the 80th anniversary of Japanese immigration was held in Paraguay.

This book, which records one aspect of the history of relationships between Japan and Paraguay, was originally published in Japanese in 2019, a memorable year which marked the 100th anniversary of the establishment of diplomatic relations between the two countries. It is unique in that it turns the spotlight on the long-term contributions and accomplishments of Japanese immigrants. There are a variety of books

dedicated to particular fields of the Paraguayan economy, but this seems to be the only one that pulls together the economic effects of Japanese immigrants and their achievements in a comprehensive manner from the perspective of the active roles they played. I hope this book will provide a good basis for the peoples of Japan and Paraguay to understand each other and to remember the efforts of Japanese immigrants who have long played a lively role in Paraguay.

To help in chronicling this history, Japanese immigrants offered various forms of cooperation to the authors. They granted interviews and provided photographs and other materials, which proved extremely valuable in looking back upon the history of over 80 years. I would like to take this opportunity to thank them for their generous cooperation.

The Project History series of the JICA Ogata Research Institute is published with the aim of reconstructing the history of JICA projects from a broad perspective, while tracing specific and individual facts carefully. In this series, we have so far published thirty-three books in Japanese, five in English including this volume, and one in Spanish, which is a translated version of this book. I sincerely hope this book and others in the series will prove helpful to readers in understanding the projects undertaken by the dedicated staff of JICA and their counterparts in other organizations and countries.

Yoichi Mine
Executive Director
JICA Ogata Sadako Research Institute
for Peace and Development

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Prologue

Bonds between Paraguay and Japan

Makoto Kitanaka

1. The Great East Japan Earthquake

Mr. Ichiro Fukui, President of the *Asociación Japonesa de Yguazú* (Japanese Association of Yguazú), who lived in the Yguazú colony located in the eastern part of Paraguay close to the national border with Brazil, looked forward to watching the daily news from Japan, his native country. It had become possible to watch "NHK World" in Paraguay even though the country is situated on the other side of the earth. But on that morning, he stared at the images on TV in surprise. He instantly understood that a massive earthquake had occurred in Japan, causing tremendous damage, although such an event could not be quickly imagined in Paraguay, which is not an earthquake-prone country.

At 18 seconds after 2:46 p.m. on March 11, 2011 (Japan time), a massive earthquake occurred, with the seabed in the Pacific Ocean 70 kilometers east of Sendai City, Miyagi Prefecture, as its epicenter. A huge tsunami ten meters or more in height at certain places followed this earthquake, causing devastating damage to coastal areas in the Tohoku and Kanto regions.

As he stared fixedly at the TV screen reporting the miserable situation, Mr. Fukui wondered if there was anything he could do for his native country from Paraguay, and his mind filled with such thoughts. But given the long distance between Japan, located on the other side of the globe and Paraguay, good ideas did not occur to him easily. He agonized over what he should do, but on the night of March 15 Kazuo Watanabe, Japanese Ambassador to Paraguay, called him. The Ambassador told him about a spectacular plan to donate 100 tons of non-GMO soybeans grown by Nikkei farmers in the Yguazú colony, producing one million pieces of *tofu* from these soybeans, and distributing the tofu in the disaster-stricken areas free of charge.

On the evening of March 15, President Tomohiro Nakada of GIALINKS, a company based in Gifu that had annually imported some 2,000 tons

of soybeans produced in Yguazú for the past eight years, and Isao Taoka, the former Paraguayan Ambassador to Japan, were invited to the official residence of Ambassador Watanabe. Former Ambassador Taoka and President Nakada recalled that ten years earlier the *Central Cooperativa Nikkei Agrícola* (Nikkei Central Agricultural Cooperative) of Paraguay had entered into a food supply agreement with GIALINKS in the presence of the Paraguayan Minister of Agriculture and Livestock, and the Japanese Ambassador to Paraguay, among others, and that at that time, the cooperative had exchanged a promise with them, saying that it would provide support if Japan fell into some difficulty or other. Before they reached the Japanese ambassador's official residence, both of them had decided that this was exactly the moment when the promise should be fulfilled, and they concluded that specifically, one million pieces of tofu should be produced using 100 tons of Yguazú-grown soybeans, which were already stockpiled in a warehouse in Japan, and delivered to the stricken areas. The cost was approximately $250,000. Ambassador Watanabe heartily supported this proposal, and having reached the conclusion that there was no other idea that was more deserving of support from the Nikkei society in Paraguay, the Ambassador immediately called Mr. Fukui in the Yguazú colony.

On the following day, Mr. Fukui, who is a man of action, talked with volunteers in the colony, and several days later, he held a meeting of members of the local *Cooperativa Yguazú Agrícola* (Yguazú Agricultural Cooperative), and at that meeting the participants decided to provide soybeans free of charge and bear the necessary expenses. Following this decision, President Nakada of GIALINKS started to prepare for tofu production in Japan. Meanwhile, it was necessary to cover the expenses

Photograph of the support tofu package.

incurred by producing and distributing the tofu. This issue was solved because the Nikkei society's consent to appropriating part of the donations was obtained through the efforts of President Toshiharu Oda of the *Federación de Asociaciones Japonesas del Paraguay* (Federation of Japanese Associations of Paraguay).

Thus, with the swift action of members of the Nikkei society in Paraguay and the sincere wish to deliver tofu into which the Nikkei society's heart was put, tofu was given out to each and every one of victims of the earthquake. The production was in a package with the characters meaning "Our minds are united as one," with the national flags of Japan and Paraguay arranged on it, and this started with the cooperation of six tofu manufacturers in Japan that responded to GIALINKS's appeal.

But it was extremely difficult to deliver tofu after the earthquake, mainly because many roads were impassable. The first batch of support tofu was shipped on April 14, but given the problem of access the result was that the number of pieces of tofu delivered during the period up to May did not reach 40,000. Due to the subsequent efforts and ingenuity of the persons concerned, however, the number reached 900,000 at the end of December, and the initial goal of delivering one million pieces of tofu was achieved on February 2 of the following year. These efforts included the visit of Mr. Fukui and President Oda to the stricken areas. In June, both of them went to Japan and talked personally with the Governors of Iwate and Fukushima Prefectures. They explained about the project in detail and conveyed the sincere thoughts of the Nikkei society in Paraguay about support. This support continued until all the Yguazú-grown soybeans were used up, and eventually, the number of pieces of tofu delivered reached 1,288,096 by the end of September 2012, 18 months after the earthquake. If it is supposed that the support tofu was eaten by dividing it among family members, the bonds to and thoughts of the Nikkei society in Paraguay would have been shared by two to three million victims of the earthquake.

The tofu delivered to stricken areas was extremely well received, and the Japanese Associations of Paraguay received many letters of appreciation from victims who lived in temporary houses. The Paraguayan Nikkei society's support through tofu attracted prominent coverage in the mass media, and then Prime Minister Yoshihiko Noda sent a certificate of appreciation to the Cooperativa. Later, this project was taken up in

subsidiary teaching materials in history ("Materials: History in color," *Hamajima Shoten*), which were utilized for junior high school education across Japan.

2. Present-day Paraguay

The Paraguayan capital of Asunción is experiencing a boom in skyscraper construction. From the perspective of food security, the sharp rises in grain prices, which began in 2008, are considered an instability factor, and as exemplified by the occurrence of riots in various places of the world, they are still fresh in our memory. But this has had positive effects on grain producers in South America, which is the world's granary today. In 2005, Paraguay's GDP per capital was $1,507 (United Nations, January 25, 2019), but by 2010 it had doubled to $3,228, and in 2014 registered $4,713, the highest ever. Subsequently, it has slowed down slightly, but it has remained at $4,000 or more ($4,322 in 2017). Not only grain production but also exports of beef have grown in recent years, and such growth has benefited the agriculture sector, prompting its profits to be directed to real estate investment. Due to the effects of climate change, however, Paraguay's agricultural production with underdeveloped irrigation facilities always has an instability factor although it is currently steady, and investments for future agricultural infrastructure are hoped for today. In addition, the production of grain, including soybeans, is called "agricultural management premised on mechanization," and support for small farmers is important for abolishing disparities in income.

After gaining its independence in 1811, Paraguay, a landlocked country

View of Asunción, including a site of skyscraper construction.
Source: author

situated in the center of South America had until the early 20th century an environment that lacked economic activity. However, with the arrival of the era of ICT, it is overcoming its former disadvantages. Restrictions on foreign direct investments are simple and flexible compared to those of the neighboring countries, Brazil and Argentina, and in recent years, sewing and assembly industries (including Japanese-affiliated businesses) targeting the Brazilian market have developed, contributing greatly to the expansion of employment of young people in provincial areas of the country. In the future, this trend will be increased further if the government policy is more favorably evaluated by businesses that want to enter Paraguay.

Furthermore, there are many factors favoring foreign investment, including clean, abundant electric energy from the Itaipu power generation dam jointly operated with Brazil and the Yacyreta power generation dam jointly operated with Argentina, the existence of the untapped, abundant Guarani aquifer,[1] a social situation where fewer crimes occur than in other Central and South American countries, and the mild disposition of the people. Paraguay is one of the countries that are expected to achieve balanced development in the future.

3. Paraguay at the beginning of immigration

Immigration to Brazil on the Kasato-maru in 1908 was the beginning of immigration to South America, but in 1934, when it reached a high-water

Settlers clearing primary forests.
Source: Federación de Asociaciones Japonesas del Paraguay

[1] Rock layer that stores underground water. The Guarani aquifer, which lies under Argentina, Paraguay, and Brazil, is one of the largest freshwater aquifers on earth.

mark (some 20,000 Japanese migrated to Brazil annually), the Brazilian government started to restrict immigration from Japan in accordance with the "two percent clause" added to the Brazilian Constitution. For this reason, attention was focused on Paraguay, Brazil's neighbor. At that time, partly because of the effects of the Chaco War with Bolivia, Paraguay welcomed Japanese immigrants to enhance its vitality.

Immigration to Paraguay began from settlement in La Colmena (meaning "beehive" in Spanish) in 1936. Early settlers dedicated themselves to the cultivation of cotton, rice, vegetables, and so on, but troubles continued as exemplified by the drought at the end of 1944 and the damage caused in 1946 by grasshoppers, which came in such large numbers that they blocked sunlight. In addition, the outbreak of the Pacific War cast a dark shadow on the Nikkei colonies.

After World War II, immigration projects were resumed, and Japanese immigrants settled in La Paz and Amambay in 1956, in Alto Paraná (currently Pirapó) in 1960, and in Yguazú in 1961. In 1959, the Japan-Paraguay Immigration Agreement was concluded between the governments of the two countries.

But the settlement was a fight against primary forests. Every day, settlers cleared the jungle by hatchet, chopped down by saw gigantic trees whose diameter exceeded one meter, and dug up stumps using cattle. On the downside, some settlers died from endemic and other diseases during that interval. The development of living infrastructure, including the education of children and electricity, was also a major problem for the early settlements.

Japanese settlers, who had experienced a hard life in postwar Japan, overcame this succession of hardships with an indomitable spirit, and in 1960, they exported 360 tons of soybeans to Japan via Buenos Aires for the first time, but days of hardship still continued in subsequent years. At that time, the Tokyo Olympic Games in 1964 led Japan to enter a period of rapid economic growth, and the Japanese started to realize affluence in their lives.

What particularly troubled immigrants was that they could not find the main crops that would provide the basis for effective agricultural management. They continued to be faced with unexpected problems,

such as the damage caused to citrus crops by disease and the restriction by Argentina of imports of agricultural products at certain times.

Under these circumstances, the year 1973 was a major turning point for Nikkei farmers living in Paraguay and for Paraguayan agriculture. The beginning of changes was a sharp rise in the market price of soybeans in Chicago. In Japan, too, the import of soybeans from the United States was suspended, and this caused a serious social problem. But it was a turning point for Nikkei farmers in Paraguay. The soybean-wheat planting system stabilized agricultural management, laying the foundation for the subsequent development of Nikkei colonies. In 1983, no-till farming was introduced in the Yguazú colony, solving the long-standing problem of erosion, and this technology immediately spread among other soybean producers in Paraguay, helping to make Paraguay the world's fourth largest exporter of soybeans. This was exactly the period when Nikkei immigrants laid the foundation of Paraguay's wealth.

In June 1978 the then Crown Prince and Crown Princess of Japan became the first members of the Imperial Family to visit Paraguay and they came to the Yguazú colony. In October 1986, a festival to commemorate the 50th anniversary of Japanese immigration was held in the capital city of Asunción on a grand scale, and a folk music concert by Kosetsu Minami added a special touch to the celebration. In August 2016 a festival to commemorate the 80th anniversary was celebrated in the presence of Princess Mako. Finally, Japan and Paraguay celebrated the 100th anniversary of friendly relations between the two countries in 2019.

Visit to Paraguay by Their Imperial Highnesses the Crown Prince and Crown Princess of Japan in 1978.
Source: Federación de Asociaciones Japonesas del Paraguay

An inscription, "We take part in the new world," is conspicuously inscribed on the white wall of the JICA Japanese Overseas Migration Museum located in Yokohama's Minato Mirai 21 area. This sentence, which is written in English, Spanish, and Portuguese, was crafted by Dr. Tadao Umesao, the First Director-General of the National Museum of Ethnology, taking into consideration the path followed by Japanese overseas emigrants when the Japanese Overseas Migration Museum was established in 2002. Through the present book, the authors look at the drama of the three generations of Japanese immigrants and their descendants by describing how they have been involved in the foundation of Paraguay.

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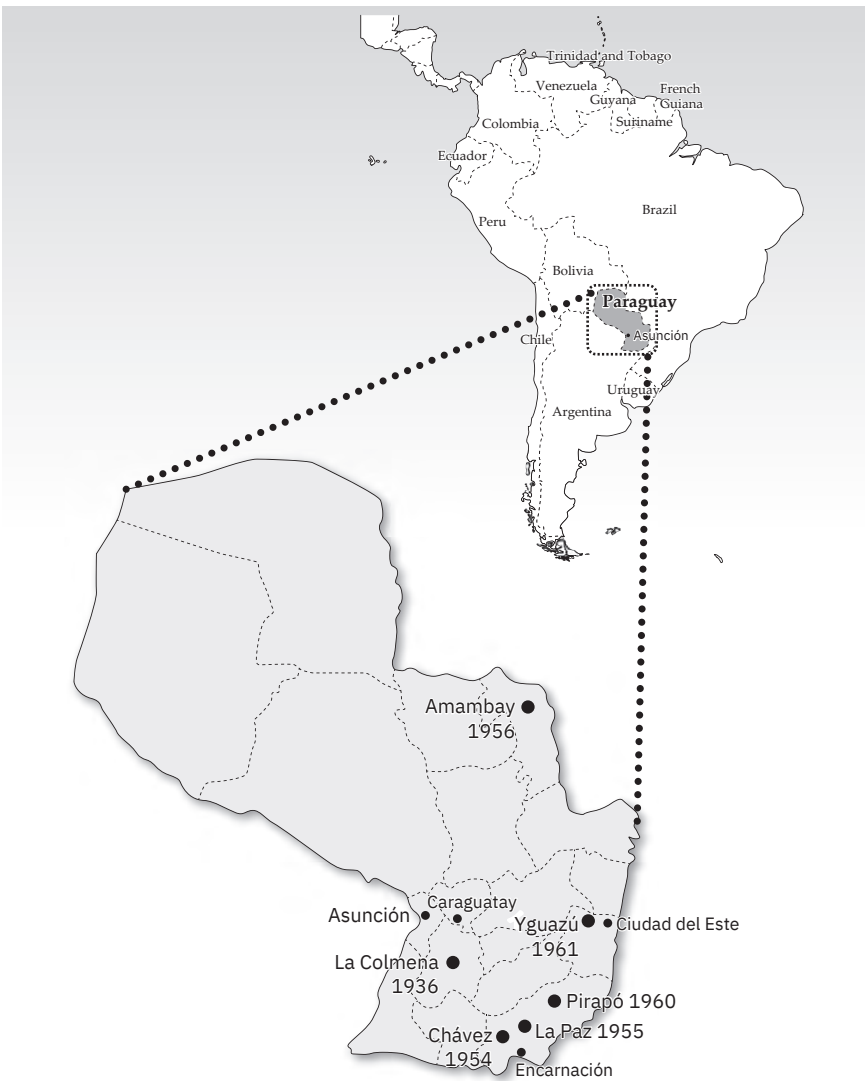
Chapter 1

Soybean production in Paraguay whose foundation was laid by the Japanese-Paraguayan (Nikkei) Society

Kazuo Fujishiro



1.1. Introduction of soybeans and the history of Japanese immigration

Paraguay which grew into a major producer of soybeans in the world

According to the Ministry of Agriculture and Livestock, the agriculture and stock raising industries accounted for about 30% of Paraguay's GDP and about one-third of its exports in 2017, and one can well understand that the agriculture and stock raising industries support the country's economy. The history of agricultural production in Paraguay began with the Spanish conquest in the 16th century, and in the 20th century, tobacco and cotton became principal export items. In the early 1970s, mechanized large-scale agriculture for new crops, soybeans and wheat, started and this was supported mainly by agricultural immigrants from countries such as Germany, Italy, Japan, and Brazil.

In 2016, referring to the contribution of the Nikkei society, which celebrated the 80th anniversary of immigration to Paraguay, to the agriculture sector, the then Agriculture and Livestock Minister Juan Carlos Baruja clearly stated, "Nikkei people in Paraguay are playing an active role in many areas and are known for their industriousness, discipline, and honesty. Meanwhile, large Nikkei farmers, who produce soybeans and wheat, have played a central role in achieving the export of agricultural products to the international market as a source of foreign currency acquisition in Paraguay." [2]

By 2017, Paraguay was the fifth largest producer of soybeans and the fourth largest exporter of soybeans in the world. Paraguay had come to play a major role in global soybean production together with countries such as the United States, Brazil, Argentina, and China. This chapter clarifies the history of the introduction of soybeans, the driving force behind the connection of Paraguay to the world economy, the development path followed by mechanized large-scale agriculture until its realization, and the contribution made by the Nikkei society in programs such as the establishment of no-till farming.

[2] La Federación de Asociaciones Japonesas en el Paraguay (2016).

Introduction of soybeans into Paraguay

According to the Japanese Ministry of Agriculture, Forestry and Fisheries, China is the place of origin of soybeans (Scientific name *Glycine max*, of the pea family *Fabaceae*). In Japan, they already existed in the mid-Yayoi period and have been used since then. Soybeans were introduced into Paraguay by Pedro Nicolás Ciancio, a Paraguayan doctor, in 1921. Ciancio was born as the son of an Italian immigrant in the Department of Caazapa in 1892, and after graduating from a high school in Asunción, he studied medicine and food nutrition at the University of Naples in Italy. After he returned home, he taught at the Faculty of Medical Science of the National University of Asunción. He introduced soybeans as a source of protein that could replace meat in the dietary life of poor peasants in Paraguay, and he left the remark that "soybean production in Paraguay started in 1921 when I introduced the crop into the country."

Ciancio emphasized soybean protein from the viewpoint of nutrition science, passionately encouraged the large-scale cultivation and dissemination of these beans and their wide use in dietary life, and worked hard to give lectures and write articles in Paraguay and abroad. Excerpts of what he said in these activities include, "It is obvious from science and the 1,000-year history of mankind that soybeans are most nutritious," "It has become clear that the Paraguayan land is suitable for soybean cultivation," and, "Our food problem can be solved by cultivating soybeans in a small area of land manually at low cost and eating them daily or twice or three times a week." [3]

View of the land used for early soybean cultivation (planting after clearing primary forests and burning).
Source: Iguasu Nokyo 50-nen shi

[3] González de Bosio (2014).

Until the 1920s, soybeans had been cultivated mainly in the Department of Caazapa, the birthplace of Ciancio, but the area of cultivation was negligible. Partly because of the effects of conservative Paraguayan culture, the introduction of soybeans was not favorably received at that time, and Ciancio was ridiculed as a "soybean doctor." Nevertheless, soybeans introduced to improve the nutrition of the poor grew into an export crop that supported the Paraguayan economy in the 1970s, 50 years after their introduction. In 1956, Ciancio passed away at the age of 64 without knowing of the tremendous contribution of soybeans to the country.

Start of Japanese immigration to Paraguay

It was in 1936 that the immigration of Japanese to Paraguay began. Over 20,000 Japanese migrated to Brazil annually, but in 1934, the Brazilian government revised its Constitution and included the "two percent clause" to restrict the number of Japanese and other foreign immigrants the country would accept, virtually closing the door to immigration from Japan and forcing the Japanese government to find an alternative country. At that time, Paraguay was impoverished due to the Chaco War with Bolivia, which had been raging since 1932, and the government decided to accept Japanese immigrants as part of the policy it had pushed to introduce foreign immigrants as part of the measures to recover the country's vitality.

In March 1936, officials of the Brazilian Colonization Company Limited and the Japanese Ministry of Colonial Affairs in Argentina arrived in Asunción and investigated candidates for settlement, but there were objections to settlement by Japanese immigrants in the new administration of Colonel Rafael Franco, who had seized power in the revolution of February 17 of the same year, and it required a certain period of time before the acceptance of immigrants was permitted. On April 30, the Paraguayan government issued a presidential decree to permit the entry of 100 families of Japanese immigrants on a trial basis, opening the way for the immigration of Japanese to the country.

Foundation of La Colmena, the first colony of Japanese immigrants

The La Colmena colony is situated in gently sloping hilly land at a height of 300 meters about 130 kilometers southeast of Asunción, and it is currently

part of La Colmena City in the Department of Paraguarí, but in the early days was part of Iriarte, Ybytymí. "La Colmena" means "beehive" in Spanish, and the colony was so called because Japanese are hard workers. Starting in June 1936, immigration leaders from Brazil settled there, and in August, the first group consisting of 81 Japanese immigrants from 11 families arrived and settled. In the subsequent five years until 1941, a total of 28 groups comprising 790 Japanese immigrants from 123 families settled in La Colmena.

Immigrants who settled in the tracts of land decided by drawing lots worked hard to clear primary forests and develop them into cultivated land; their hardships were indescribable. Even so, they cultivated cotton, beans, rice, corn, peanuts, onions, potatoes, vegetables, cassava, tobacco, tung trees, grapes, and so forth in the lands developed by clearing forests. At that time, the Paraguayan government emphasized the cultivation of cotton as an export crop, and engaging in cotton cultivation was a condition for accepting Japanese immigrants to La Colmena. From July 1938, when a ginning factory was completed, to around 1950, Japanese immigrants in La Colmena produced a large part of Paraguayan cotton.[4]

Paraguay's first collective soybean cultivation in the La Colmena colony

Japanese immigrants who settled in La Colmena started to cultivate soybeans as a necessity in their lives immediately after their settlement. There is a record that says that for the short period of time from 1937 to 1953, soybeans were produced in the La Colmena colony not only for subsistence but also as a cash crop. It is estimated that it was Japanese farmers in the La Colmena colony that collectively cultivated soybeans for the first time in Paraguay.[5]

The largest area of production was about 70 hectares during the period from 1942 to 1943, and the largest output was 66 tons during the period from 1941 to 1942, but a look at the amount of soybeans produced per hectare shows that this varied from about 400 kilograms to 1,000 kilograms, considerably lower than today, when production is mechanized. The unit yield was highest in 1941 and 1942, when it was 1,084 kilograms per hectare, and

4 Paraguai nihonjin ijyu 70-nen shi (2007).
5 Aoyama (1987).

this exceeded the unit yield of 970 kilograms per hectare in Japan in the same year, as published by the Japanese Ministry of Agriculture, Forestry and Fisheries.[6] It is necessary to take into consideration that Japan was a combatant in World War II, but this figure shows one aspect of the high technological capabilities of Nikkei farmers in the La Colmena settlement in those days. Referring to the production and sale of soybeans in the La Colmena colony, Mr. Genjiro Chiba, who was born in La Colmena in 1941, said, "When I offered the remainder of soybeans used for *miso* and soy sauce, a company that produced coffee bought it. They seemed to mix it with coffee and sell it as soybean coffee." [7]

A winery that was to make the name "La Colmena" well-known in Paraguay was completed in 1951, and in the same year, some 3,000 liters of La Colmena-brewed wine "La Colmenita" were shipped to Asunción. Due to boom in grape cultivation, soybeans came to be produced as a subsistence crop again, with no statistical data available on their production as a cash crop in the La Colmena colony after 1953.

When World War II broke out the Paraguayan government supported the Allied Powers and in January 1942 severed diplomatic relations with Japan. In 1943, an order to stop the activities of groups organized by Japanese was issued, and in March 1945, the La Colmena colony was designated as a concentration camp for Japanese residing in Paraguay. During World War II various restrictions were placed on Nikkei immigrants, forcing them to experience hardships with Japanese-language education provided in farmers' warehouses in secret. Even in this situation, hoping for Japan's victory, Japanese immigrants donated money, and in May 1943, they remitted about $20,000 to their native country as war funds through the consular section of the Embassy of Japan in Argentina. The remittance of such a large amount of money despite their hard lives in those days expresses the deep thoughts Japanese immigrants had entertained toward their native country since immediately after they migrated. The deep thoughts of Japanese immigrants in Paraguay toward Japan were conveyed to their native country again in the form of "one million pieces of tofu" after the Great East Japan Earthquake of 2011 as mentioned in the Prologue.

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[6] Collection of soybean-related data, Ministry of Agriculture, Forestry and Fisheries website.

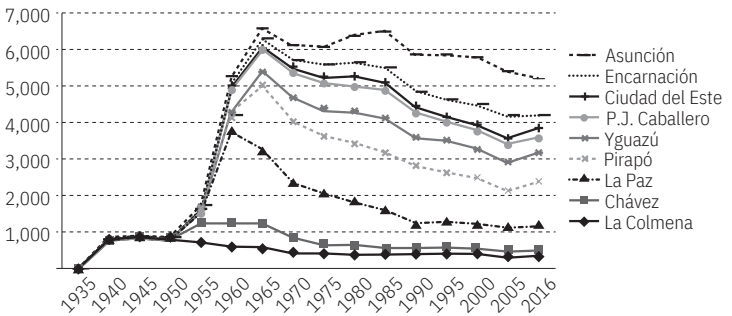
[7] Sendo (2014).

Postwar resumption of immigration

Following the move in both Japan and Paraguay in the first half of the 1950s to seek the resumption of Japanese immigration to Paraguay, nine families immigrated to the La Colmena colony in 1954 and 1955. Starting in 1955, 131 families immigrated to the Chávez colony, followed by the immigration of 137 families as contract workers in coffee plantations in the Department of Amambay in 1956 and the immigration of 372 families to the La Paz colony (which occupies an area of 16,000 hectares, 2.5 times as large as the area inside the JR Yamanote Line in Tokyo) between 1956 and 1961. Following the restoration of diplomatic relations between Japan and Paraguay in 1957, the boom of immigration to Paraguay reached its zenith.

In the early 1950s, the Japanese government prepared to resume overseas migration as a national project, and in 1954, it established the Federation of Japan Overseas Associations, and in 1955, it founded the Japan Emigration Promotion, Co., Ltd. The Federation of Japan Overseas Associations was responsible for recruiting and training migrants in Japan, sending them overseas, and receiving them and guiding farming in the countries to which they migrated. Meanwhile, the Japan Emigration Promotion, Co., Ltd. was in charge of developing collective colonies, dividing them into lots and selling them, and granting loans to migrants. In 1954, the Federation of Japan Overseas Associations resumed the sending of migrants to Paraguay, and in 1957, it established a Paraguay office, took over the operations of the Japan-Paraguay Colonization Company, and started services to receive immigrants. In 1956, the Japan Emigration Promotion, Co., Ltd. set up its Paraguay office and began preparations

Life immediately after immigration. Source: Iguasu Nokyo 50-nen shi



Source: This figure has been created based on the "Paraguai nihonjin ijyu 70-nen shi" (Journal of the 70th Anniversary of Japanese Immigration to Paraguay) and data from the Federación de Asociaciones Japonesas del Paraguay.

Figura 1-1 Chronological Changes in the Population of Japanese Immigrants by Place of Residence

to open collective colonies.[8] In December 1956, the Japanese government opened its legation in Asunción (upgraded to embassy status in October 1961) and in 1959 entered into a migration agreement with its Paraguayan counterpart, including the acceptance by the latter of some 85,000 Japanese immigrants.

Unimaginable hardships during the early period of settlement

However, the local reception system and the development of colonies did not catch up with the immigration of Japanese families, forcing immigrants to suffer from dire poverty in the harsh environment of primary forests, and many of them left the land due to the poor results from farming. Mr. Oda Toshiharu, who was born in Hiroshima in 1942, arrived in the Fram colony in January 1957. Even today, Mr. Oda, who was 14 years old at that time, clearly remembers how the colony and its vicinity were in those days.

"All areas around the colony were covered with jungle, and I pushed my way through the trackless primary forests for reclamation. I spent one year breaking in three hectares of fresh land manually, but the clearing work was incredibly difficult. I cleared the forests by barbarian sword and burned the cleared land. I cultivated crops such as Japanese radish, scallion, onions, potatoes, and cassava for subsistence. In those days, since

[8] Noguchi (2003).

none of the crops I produced sold, I could not earn cash and was utterly destitute. Because it took ten years before cash was earned from tung trees and yerba mate, which are both perennial crops, I had to rely on soybeans, which is a short-term crop. I started to produce soybeans three years after settlement, but in those days, none of the crops I produced sold, so I remained badly off. Nonetheless, I worked desperately because I could not sit still out of my Japanese temperament. Thus, I was able to expand my cultivated land to 100 hectares four years later," said Mr. Oda. Later, Mr. Oda went to Encarnación, where he worked hard for a trading firm and sent money to his family which remained in the colony. After experiencing various hardships, he opened a Japanese restaurant named "Hiroshima," which is very prosperous today under the management of his son, who took over the business.

In 1958, when Japanese immigrants in the La Paz district of the Fram colony wrote a petition emphasizing the straitened circumstances of the colony and submitted it to the Japanese Diet (Parliament), it was played up by mass media and became widely known in Japan. This questioned again how the postwar migration of farmers should be protected, prompting the government to consider improving the environment of colonies, establishing systems to receive immigrants, and taking more effective measures to support immigrants, such as financing. In 1963, the Federation of Japan Overseas Associations and the Japan Emigration Promotion, Co., Ltd., merged to form the Japan Emigration Service, a corporation having a special semi-government status, and in 1974, the Japan Emigration Service was renamed the Japan International Cooperation Agency (JICA). In 2003, the latter's business was taken over by an incorporated administrative agency with the same name (JICA).

Clearing of primary forests in the 1960s. Source: Iguasu Nokyo 50-nen shi

The Pirapó colony (84,000 hectares, about 13 times as large as the area inside the JR Yamanote Line in Tokyo) was established in 1960 and the Yguazú colony (88,000 hectares, about 14 times as large as the area inside the JR Yamanote Line in Tokyo) in 1961. However, in the 1960s, as Japan entered the period of rapid economic growth, the number of migrants to not only Paraguay but all other overseas colonies decreased sharply. Initial plans called for 2,000 families to migrate to the Pirapó colony, but during the period up to 1966, only 328 families settled there.[9] This left the foundation that enabled the development of mechanized large-scale agriculture in the Pirapó and Yguazú colonies isolated, an important point when looking back upon the history of rapid progress in soybean production by Japanese immigrants.

1.2. History of the establishment of soybean production by the Nikkei society

Trials and errors in the selection of agricultural products during the period up to the choice to produce soybeans

In Nikkei colonies, trial and error was repeated for many possible cash crops that might lay the foundation for agricultural development after immigrants had settled. The following section looks at these initiatives in three colonies.

The La Paz colony received 372 families from 1956 to 1961, and while clearing primary forests, they cultivated short-term crops, such as soybeans, cotton, and miscellaneous beans, on small tracts of land to earn money from farming to live on for the time being. And in order to stabilize and develop farming, these families attempted the type of farming management that focused on perennial crops, working to introduce tung trees, yerba mate, pomelos (citrus), etc. But while the yield of short-term crops fell due to damage caused by long rains, droughts, hail, etc., perennial crops failed to achieve stable farming management because of stagnant selling prices, the outbreak of diseases, and so forth. One farmer dreamed, saying, "If I plant pomelos in several *cho* (hectares) of land, I will be able to go to Japan every year," but in 1967, a canker broke out in citrus plantations, and the Ministry of Agriculture and Livestock ordered all citruses to be felled for disposal, and thus, the dream disappeared

[9] Noguchi (2011).

overnight.[10]

Immigrants who started to settle in Pirapó in 1960 constructed temporary huts in the slash-and-burn farmland and planted vegetables and cassava for subsistence and tung trees as a perennial crop there. For intercropping, they cultivated cash crops, such as corn, cotton, soybeans, and miscellaneous beans. In the second half of the 1960s, however, the selling prices of tung oil, yerba mate, and grapefruits remained sluggish, making the type of farming management that focused on these perennial crops impossible. In the 1970s, the planting of soybeans started for mechanized large-scale agriculture, and as it became possible to grow wheat as an off-season crop, perennial crops, such as tung trees and yerba mate, were cut down one after another. Sericulture was introduced as a new industry in 1969, and campaigns were carried out to spread it nationwide, mainly through the holding of lecture meetings on silkworm culture. In 1970, the then Japan Emigration Service, the then Overseas Economic Cooperation Fund, Katakura Industries Co., Ltd., ITOCHU Corporation, and other entities jointly established the ISEPSA Company to operate a cocoon drying factory. Following the start of operations at the joint-venture firm, some 470 Nikkei and Paraguayan farmers in 14 regions of Paraguay were engaged in sericulture in the second half of the 1970s, producing 240 tons of fresh cocoons, processing them into dry cocoons, and exporting them to Japan.[11]

Sericulture was favorably evaluated as a measure for small Paraguayan farmers to a certain extent, but ISEPSA was shut down in 1983 due to

Mulberry field (left) and ISEPSA's cocoon drying factory (right). Source: Iguasu Nokyo 50-nen shi

[10] Cooperativa La Paz Agrícola (2012).

[11] Federación de Asociaciones Japonesas del Paraguay (2016) and Asociación Japonesa de Pirapó (2000).

the adverse effects on silkworms of agricultural chemicals sprayed for soybean production in Nikkei colonies and the total embargo imposed by Japan on the import of silk products from overseas as part of the countermeasures against the growing imports of cheap Chinese-made silk textiles following the restoration of diplomatic relations between Japan and China. Following the decline of tung tree cultivation in the early 1970s, the oil mill operated by CAPSA in the Acacarayá district and CAICISA, an oil milling company, which was directly managed by the then Japan Emigration Service in Encarnación, gradually shifted the product they handled from tung trees to soybeans.[12]

In 1961, 14 families relocated from the Fram colony to the Yguazú colony, where they cultivated crops, such as corn, soybeans, and various vegetables. Initially, they produced various crops, including those used for subsistence, but as the number of settlers grew, they concentrated on the cultivation of tomatoes, which were profitable and could be quickly converted to cash. The tomatoes were consigned to Nikkei wholesalers in Asunción, and settlers bought production materials and daily necessities directly from the wholesalers using the agricultural products as security. After the middle of the 1970s, the number of tomato farmers, including Paraguayan farmers, rose sharply, intensifying sales competition. The

Table 1-1 Factors That Limit the Spread of Crops Introduced in Nikkei Colonies in Paraguay

Category	Limiting factors	Examples of crops
Export crops	1. Crash or stagnation in international prices	Tung trees
	2. Sudden changes in the international market environment (such as embargos on exports)	Sericulture (withdrawal of businesses that enter the industry)
	3. Decline in international competitiveness (delay in labor saving)	Corn and cotton
	4. Outbreak of diseases and insects that damage crops	Taiwanese tung trees and tung trees (Yguazú)
Crops for domestic consumption	1. Market competition (the domestic market is small)	Vegetables (tomatoes and melons), poultry farming, and fruit trees
	2. Extensive and less profitable	Beef cattle
	3. Concern about the outbreak of diseases	Pig breeding

Source: This table has been created by partially revising what is listed in Nagai (2000b).

[12] Cooperativa Yguazú Agrícola (2012).

profit ratio came to decline due to oversupply in some periods, and it was said that tomatoes were not profitable unless, when producing the crop, farmers visited others' fields, saw and asked when they planted their crop, and aimed at between-crop seasons.

At that time, the goal of the Japan Emigration Service for farming management in its emigration project was to lay the foundation that enabled sustained agricultural development by selecting suitable crops and developing colonies into their producing centers. To that end, the Japan Emigration Service recommended the introduction of many product items, including tung trees, sericulture, beef cattle, and pig breeding. It is difficult, however, to develop production centers in developing countries steadily unless many conditions are fulfilled because social and economic infrastructure is usually underdeveloped, information on cultivation technology and markets is not easily obtainable, and support from the Paraguayan government cannot be expected.[13]

Expansion of soybean production in the Nikkei colonies in the Department of Itapúa and pioneers in Santa Rosa

In the Department of Itapúa, immigration started in the Chávez colony in 1955 (Fuji district in 1955, the La Paz district in 1956, and the Santa Rosa district in 1957), in the La Paz colony in 1956, and in the Pirapó colony in 1960. To supply their own needs, Japanese immigrants cultivated soybeans, a crop essential for daily dietary life, making it possible to produce *miso*, soy sauce, *tofu*, and *natto*. Given the growth of soybeans they cultivated as a subsistence crop, they strongly hoped that this initiative would produce a cash crop in some way or other, but in those days, soybean sales channels had not been established. Under these circumstances, the late Mr. Toshimaro Yamawaki of the Santa Rosa colony, who hailed from Kochi and died in 1996, opened the way for exporting soybeans to Japan through the then Itapúa Federation of Agricultural Cooperatives. The realization of exports produced by Japanese immigrants to their home country in 1960 gave great momentum to the expansion of soybean production. As the birthplace of soybean production, the present La Paz colony is continuing to produce soybeans even today.

Among the Japanese immigrants who worked hard with Mr. Toshimaro

[13] Nagai (2000b).

Mr. Toshimaro Yamawaki who opened the way for exports to Japan.
Source: Mr. Satoshi Yamawaki

Yamawaki to expand soybean production in the Santa Rosa colony were the late Mr. Sadamitsu Jinzenji (who came from Kochi and died in 1997), who strove to implement large-scale soybean production, and the late Mr. Genji Hisaoka (who also came from Kochi and died in 1980), who made every effort to spread soybean production. The following section recalls the above-mentioned period based on what their descendants told the author about them.

Mr. Kiyoshi Jinzenji (born in Kochi in 1937), the first son of the late Mr. Sadamitsu Jinzenji, immigrated to Paraguay at the age of 21, having thought about migration before his father. Kiyoshi had aspired toward large-area agriculture from the very beginning but had many difficulties in purchasing tracts of land. Recalling those days, Kiyoshi said, "About ten years after I immigrated, I heard that a major German-Paraguayan landowner was selling land, and I purchased 1,500 hectares of land from the landowner. But due to long rains, I was unable to harvest corn, nor did I sell tofu because it went bad, and therefore, I had a hard time paying the price of the land. The reason I was able to overcome the crisis was that I was able to sell timbers from the land I had purchased. I felled trees, added value to them by sawing them up into construction materials, and sold them in Buenos Aires via Encarnación. By doing this, I was able to finish paying the price of the land." Making the most of this extensive land, the Jinzenji family launched out into large-scale soybean cultivation. This result was recognized, and in 1976, at the

Mr. Sadamitsu Jinzenji, who is receiving a certificate of commendation from President Stroessner.
Source: author

Bella Vista soybean festival, Sadamitsu was officially commended by the then President Alfredo Stroessner.

In *Paraguai nihonjin ijyu 70-nen shi*" (The Journal of 70 Years of Japanese Immigration to Paraguay), Mr. Hiroshi Hisaoka (born in Kochi in 1941), the first son of Mr. Hisaoka, recalled the period when Mr. Hisaoka immigrated to Paraguay, saying, "In those days, on the 1.5 hectares of land he had developed with difficulty by clearing primary forests, my father planted soybeans, he was not confident though as to whether he could sell the product. At that time, I was 16 years old and could not object to my father, and this baffled me. But now I understand that my father did something great." Remembering those days, Ms. Yoshiko Yamagami (born in Kochi in 1947), the first daughter of Mr. Genji Hisaoka, said, "My father had experience producing soybeans when he migrated to Manchuria before the war. When he immigrated to Santa Rosa and cultivated soybeans on a trial basis, he found they would grow well, and therefore, he felt that everything would go well if he chose the right time and variety when he planted soybeans. Partly because Messrs. Yamawaki, Jinzenji, and Hisaoka in the Santa Rosa colony all came from Kochi, they frequently gathered and talked passionately about how to expand soybean production. She added, "After he got a strong sense that soybean production would succeed, my father worked to spread soybean cultivation not only among Japanese immigrants but also among German and Ukrainian immigrants in an effort to secure a certain amount of soybean production." These accomplishments were recognized, and in 1976, Mr. Genji Hisaoka was officially commended at the soybean festival celebrated in Bella Vista.

Early soybean field (left) and the manual harvest of soybeans (right). Source: Iguasu Nokyo 50-nen shi

The La Paz colony, which strove for soybean production with Messrs. Yamawaki, Jinzenji, and Hisaoka as its leaders, has made many contributions as a pioneer in commercial soybean production in the Nikkei society up to the present day. However, the export of Paraguayan soybeans to Japan, which started through the efforts of Mr. Yamawaki and the kindness of other persons concerned in the public and private sector of Japan, was discontinued in only two years for the following three reasons:[14]

(1) The soybeans grown in fiscal 1962 failed to meet the quality rating requirements for exports to Japan because of their poor condition due to long rains;
(2) As a soybean mass-production system was being established with exports to Japan as its goal, oil milling companies and local exporting trading firms paid attention to and took interest in soybeans on the assumption that a certain quantity of soybeans would be secured. This made it unnecessary to take the trouble to export soybeans to Japan, where they sold for high prices, but rigorous quality standards were applied;
(3) While Paraguayan-grown soybeans in those days were rather suitable for oil extraction, Japan had a different type of demand, requiring protein-rich soybeans for processing purposes;

This attempt to export soybeans to Japan ended in only two years, but its significance was not small. Specifically, one outcome was that the fact that in the Department of Itapúa, soybeans were cultivated by Japanese immigrants on a scale large enough for export, was made known to people in Paraguay and abroad, and it is believed that this led Nikkei colonies to organize cash crops with soybeans as their core. In 1962, while the total amount of soybeans produced in Paraguay was 2,900 tons, the amount of soybeans produced by Nikkei agricultural cooperatives was 2,400 tons, representing as much as 83% of the total crop. For this reason, it is no exaggeration to say that in Paraguay most of the soybeans were produced by Japanese immigrants in those days. Farmers in the neighborhood, including Germans and Paraguayans, who saw Japanese immigrants cultivate soybeans in this way, started to grow soybeans in the second half of the 1960s partly because they did not have any other suitable short-term cash crops.

14 Aoyama (1996).

Fifty years of immigration, development, and trials and errors

Following the domestic confusion over the presidential election in 1954, Army Commander Stroessner staged a coup in May and became President in August. During the 35 long years until 1989, he succeeded in being reelected seven times while receiving the support of the Colorado Party (popularly known as the Red Party). The President was known to be pro-Japanese and is said to have had the idea of making Paraguay the Japan of South America. He often visited Nikkei colonies and took part in their various events to deepen exchange with Japanese immigrants. In addition, Ms. Agustina Miranda, an aide to the president in those days, made every effort to help start the La Colmena colony, playing the role of building a bridge with Japanese immigrants.

In 1986, President Stroessner sent a message to the *Paraguai nihonjin ijyu gojyu-nen shi* (The Fifty-Year History of Japanese Immigration to Paraguay), saying that "Japanese immigrants are extremely sincere, and they are an exemplary people who observe the law and tradition of Paraguay well," and in addition, on the occasion of the 50th anniversary of immigration, he cited the five major results brought by Japanese immigrants, which were confirmed by both Japanese and Paraguayan experts, as follows:

(1) They converted primary forests to rich agricultural land;
(2) They introduced olericulture and spread its technology and at the same time improved the dietary life of Paraguayans;
(3) They opened the way for soybean exports and developed soybeans into a major export of Paraguay;
(4) They achieved self-sufficiency in wheat, for which Paraguayans had

Japanese immigrants in the middle of the 1960s.

Source: Iguasu Nokyo 50-nen shi

depended on imports before;
(5) By working with Japanese immigrants, Paraguayans learned the working spirit of Japanese and their disciplined lives.

Items (1) to (4) confirm that Japanese immigrants contributed greatly to agriculture in Paraguay, and furthermore, Item (3) recognizes that Japanese immigrants contributed to opening the way for soybean exports and developing soybeans into a major export item of Paraguay.

After 1962, soybeans were sold to local trading firms or Argentine trading concerns, and this prompted the expansion of soybean production in Paraguay. However, the mechanization of soybean production did not progress in those days, and in order to become the fifth largest producer of soybeans in the world, it was necessary to overcome various problems, such as introducing machinery, developing cultivation technology, and taking countermeasures against agricultural pests. Japanese immigrants' initiatives to meet these challenges are clarified in the following chapters.

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Column 1
Fostering of the Nikkei identity through Japanese-language learning

Makoto Kitanaka

At the Nikkei Heritage Language Seminar held in Japan in January 2012, a total of 19 experts from nine Central and South American countries participated and engaged in heated discussions, and the results of the seminar were put together in a document entitled "Japanese-Language Education Tomorrow." The document describes the mission of Japanese-language education as "developing persons who have pride and confidence as descendants of Japanese immigrants through the Nikkei heritage language."

The prerequisite for establishing Nikkei identity is not necessarily the learning of Japanese, but it can easily be imagined that learning Japanese leads to a deeper understanding of Japanese culture. In addition, learning Japanese provides more opportunities for people of the same generation to sit in one classroom, inevitably encouraging them to share their awareness as descendants of Japanese immigrants and thinking about subjects such as the present situation of the Nikkei society and its ideal form in the future through various conversations. This process is expected to have important impacts on the building of their character as descendants of Japanese immigrants as they grow up. At the same time, these opportunities will not only establish connections among people of the same generation but also invigorate communication at all levels across all generations. The mission included in the document mentioned above suggests that unlike non-Nikkei people who learn Japanese as a foreign language, it means more than a language to not only individual descendants of Japanese immigrants but also the Nikkei society.

Important in this mission is securing capable teachers in Japanese. The stable employment of good teachers leads to systematic, continuous, high-quality lessons. With the above-mentioned mission in mind, it is necessary to consider maintaining excellent Japanese-language teachers in a stable manner as a top priority to

develop the next generation in Nikkei society.
Japanese-language education is an issue to be addressed by the Nikkei society in each country, but dispatching Japanese-language teachers from Japan and inviting learners to Japan will help deepen their interest in Japan and Japanese culture further. Both the Japanese government and JICA need to provide active support for this through the Japan Foundation and other organizations.

Chapter 2

Rapid progress in becoming a major producer of soybeans and the contribution made by the Nikkei Society

Kazuo Fujishiro

2.1. Nikkei agricultural cooperatives that played a leading role in expanding soybean production

Soybean production in the 1970s and the general situation of the Nikkei society

In Paraguay, agriculture grew to the point where it accounted for 34% of GDP and employed over 50% of the labor force in the 1970s, with 95% of the value of exports at that time represented by agricultural and processed products, and it came to be positioned as a key industry in the Paraguayan economy. Due to growing overseas demand and increases in selling prices, the annual growth rate of the agriculture sector rose from 2.5 percent during the period from 1962 to 1972 to 7.0 percent during the period from 1972 to 1978, and the sector played an important role as the growth engine of the Paraguayan economy. In this process, soybeans, which fulfilled their major function as an export crop, grew so much that this product had competitive power in the international market.

In 1972, the Paraguayan government formulated a national soybean plan in which it promoted efforts to increase soybean production mainly by spreading suitable varieties of soybeans and cultivation technology and making the financing systems for producers more substantial. The Ministry of Agriculture and Livestock worked to improve the foundation for soybean production by constructing silos in both the La Paz and Pirapó colonies as major soybean producing centers. Following the sharp rises in the price of soybeans in the Chicago market from the second half of 1972 to 1973, a soybean boom arrived in Paraguay. Each of the La Paz and Pirapó colonies in the Department of Itapúa and the Yguazú colony in the Department of Alto Paraná established an agricultural cooperative, and in order to lay the foundation for mechanized large-scale agriculture, these cooperatives expanded their business to purchase farm machines and

implements and production materials, as well as credit services, such as loans for farming, digging up roots, and purchasing large farm machines and implements.

The year 1973 was a major turning point in the immigration projects for South America. Since the Kasato-maru project in 1908, some 240,000 Japanese had gone to South America via the migration ship *Brazil Maru*, but in 1973, with its last voyage for migration to South America, Brazil-maru terminated its function as a migration ship. The number of passengers on the last voyage of Brazil-maru was small compared to its capacity of 900 passengers, at 245 passengers, and they consisted of migrants to Brazil, Argentina, Bolivia, and Paraguay. The migration project was now at a turning point as the number of migrants to South America declined markedly due to the rapid growth of the Japanese economy at home.

In the 1970s and thereafter, to develop soybeans into an export item, Japanese immigrants had to overcome several challenges, including the realization of mechanized large-scale operations and the acquisition of no-till farming technology, as they strove to establish modern agriculture, and this chapter clarifies how they faced and surmounted these challenges.

The Agricultural cooperative sector played a central role in agricultural development in Paraguay

Paraguay is a landlocked country, and its disadvantageous location inevitably makes transportation costs high. Only if a production system is established that makes the best of factors such as the fertile red soil called "terra roxa," receiving the amount of rainfall that enables rain-fed agriculture, even though it varies from one year to another, and vast areas of agricultural land that rise and fall comparatively gently, does it become possible to grow export crops that are competitive in the international market. In that sense, as far as soybeans are concerned, there was an absolute requirement to build a modern production system, and to achieve higher productivity and lower costs it was essential to establish mechanized large-scale agriculture.

The Constitution of Paraguay declares that cooperatives shall be promoted, and the *Instituto Nacional de Cooperativismo* (INCOOP; National Institute of Cooperatives) works as a regulatory government agency. In terms of agricultural production, the *Federación de Cooperativas*

de Producción (FECOPROD; Paraguayan Federation of Productive Cooperatives)[15] has implemented projects that involved not only large farmers but also peasant ones, including technological development and financing, for more than 40 years. In Paraguay, there are about 180 agricultural cooperatives, which provide union members with technical guidance, jointly purchase machinery and materials, provide loans, and sell and export products. In addition, agricultural cooperatives, which are required by the Cooperatives Act to utilize 10% of their annual profits as educational funds, strive to promote development of human resources by providing training opportunities to union members and their children as well as residents in the neighborhood. With agricultural cooperatives playing an extremely large role in Paraguayan agriculture, it can be said that the agricultural and rural development projects in Paraguay are a model led by agricultural cooperatives.

Central Cooperativa Nikkei Agrícola (Nikkei Central Agricultural Cooperative) and five Nikkei agricultural cooperatives

In Nikkei colonies agricultural cooperatives play a central role in agriculture and rural development, and it can be said that without them, it would have been difficult to realize agricultural promotion in these colonies. The *Central Cooperative Nikkei Agrícola* is the Nikkei federation of agricultural cooperatives established in 1980 in accordance with the Cooperatives Act of Paraguay, and currently, five Nikkei agricultural cooperatives are affiliated with the Central Cooperative: (1) *Cooperativa Agro Industrial Colmena Asuncena* (Colmena Asuncena Agro-industrial Cooperative), (2) *Cooperativa Amambay Agrícola* (Amambay Agricultural Cooperative), (3) *Cooperativa La Paz Agrícola* (La Paz Agricultural Cooperative), (4) *Sociedad Cooperativa Pirapó Agrícola* (Pirapó Agricultural Cooperative Society), and (5) *Cooperativa Yguazú Agrícola.* It should be added that after the Great East Japan Earthquake that occurred in March 2011, causing unprecedented damage, the *Central Cooperativa Nikkei Agrícola* and its five-member agricultural cooperatives remitted a total of $110,000 in contributions to JA-Zenchu for the reconstruction of their native country.

[15] FECOPROD is a federation consisting of 32 agricultural cooperatives in Paraguay, and four Nikkei agricultural cooperatives are also part of the Federation. http://www.fecoprod.com.py/

(1) Cooperativa Agro Industrial Colmena Asuncena

Established in 1948, the *Cooperativa La Colmena* (La Colmena Agricultural Cooperative) first produced cotton and then cultivated tomatoes, potatoes, onions, and other vegetables, and furthermore, it produced grapes, peaches, Japanese plums, and other fruits, and made and sold wine. Established in 1964, the *Cooperativa Hortícola Asuncena* (Asuncena Horticultural Cooperative) produced tomatoes, exported them to Argentina, and operated vegetable direct sales stations in Asunción. In 2004, the two cooperatives merged to form the Colmena Asuncena Agricultural Cooperative, taking into consideration that it had become difficult to maintain their separate management, and the new cooperative operates under the slogan "Aiming at a peaceful society with a sense of solidarity from thinking and working together.[16]

(2) Cooperativa Amambay Agrícola

In 1958, a total of 942 people settled in the Johnson farmland, but in the following year, due to tremendous damage caused by frost, their coffee plantations suffered devastating damage, and the *Cooperativa Agrícola de Johnson Estate* (Johnson Farmland Agricultural Cooperative) was declared bankrupt. In 1960, aiming at independent pioneer farming, Japanese immigrants united themselves and established the *Cooperativa Amambay Agrícola*, and in the following year, this agricultural cooperative was authorized. At first, the Agricultural Cooperative focused on coffee cultivation, but after it lapsed into a serious business slump again due to frost damage in 1966, it went through trials and errors in sericulture and in the production of citruses, Taiwan oil tung, and other crops, and then, after 1990, it shifted to mechanized large-scale agriculture with soybeans and wheat as its main products.

(3) Cooperativa La Paz Agrícola

In La Paz City, after the first settlement in 1955, four colonies established and operated respective agricultural cooperatives, but a train of immigrants abandoned the harsh living environment and left the colony, and the number of union members declined. In 1970, four agricultural cooperatives (Chávez, Fuji, former La Paz, and Santa Rosa) in the Department of Itapúa combined to form the *Cooperativa Fram* (Fram Agricultural Cooperative; renamed the *Cooperativa La Paz Agrícola* in 1988), and the new Agricultural Cooperative mainly handled soybeans,

16 Central Cooperative Nikkei Agrícola (2012).

wheat, tung trees, fresh cocoons, corn, and other products. In the 1970s. mechanized large-scale agriculture progressed rapidly, and in the 1980s, the Fram Agricultural Cooperative succeeded in becoming a major producing center of soybeans and wheat. In addition to seed silos, grain silos, and flour mills, the Agricultural Cooperative is carrying out projects one after another, including operating feed factories and looking for ways of meat cattle breeding as well as managing a supermarket.

(4) Sociedad Cooperativa Pirapó Agrícola

In Pirapó City, settlement began in 1960, when the *Cooperativa Agrícola Alto Paraná* (Alto Paraná Agricultural Cooperative) was established (in 1974 its articles of association were revised, and it was renamed the *Sociedad Cooperativa Pirapó Agrícola*). Immediately after settlement, production centered on soybeans, cotton, and corn began, and sericulture and tung tree production were practiced actively for some time, but they did not take hold. In the second half of the 1970s and thereafter, a production system consisting of soybean production in summer and wheat production in winter took root, and later, the Agricultural Cooperative succeeded in forming a major producing center of these crops by advancing the development of agricultural land through the introduction of heavy machinery. It also launched the management of grain storage and seed silos, gasoline stations, and a supermarket.

(5) Cooperativa Yguazú Agrícola

In 1961, 14 families relocated from the Fram colony to the Yguazú colony, and they worked to establish the *Cooperativa Yguazú Agrícola*, which was authorized in 1965. In 1965, 16 Nikkei farmers set up the *Cooperativa Agroindustrial Ganaderia Takushin Yopoi Ra* (Takushin Yopoi Ra Agro-industrial Cooperative). Initially, they worked to produce corn, soybeans, tomatoes, watermelons, eggs, and other products and concentrated their energies on the development of sales channels to Asunción. The two agricultural cooperatives took the opportunity of joint sales and purchasing operations to merge in 1970, but in 1980 financing problems put the combined agricultural cooperatives into a serious business slump. In the 1990s, as the result of various reconstruction efforts, mechanized upland farming was established, with soybeans, wheat, and corn accounting for over 90% of the total output. Moreover, the Yguazú Agricultural Cooperative embarked on the management of not only grain silos and flour mills but also a supermarket, gasoline stations, and other services in striving to stabilize its operations.

2.2. Mechanized soybean production driven by Nikkei agricultural cooperatives

Development of mechanized large-scale agriculture in the 1970s in three Nikkei agricultural cooperatives

In the 1970s and thereafter, soybean cultivation based on mechanized large-scale agriculture was developed in Nikkei colonies in real earnest. In relation to such development, the following section looks at the stumping and soil preparation, joint purchasing, credit, and other projects implemented by three Nikkei agricultural cooperatives while focusing on the functions fulfilled by these organizations.

(1) In the *Cooperativa La Paz Agrícola*, the rise in the market price of soybeans due to soaring oil prices in the 1970s led cooperative members to shift the production of key crops to mechanized large-scale agriculture centered on soybean cultivation. As a project of the Agricultural Cooperative, stumping work using two bulldozers lent by the then Japan Emigration Service began. As cooperative members bought more and more agricultural machines and implements, production materials, and other goods required for grain production, the Agricultural Cooperative expanded its credit services, such as facilitating loans for farming management and for the purchase of large agricultural machines and implements.

(2) In 1972, as its new project, the *Sociedad Cooperativa Pirapó Agrícola* started stumping and soil preparation work using two bulldozers and three tractors lent by the then Japan Emigration Service. Initially, there were problems, such as the training of operators and the repeated occurrence of failures, but cooperative members overcame these problems, purchased two new bulldozers using the Agricultural Cooperative's own funds, and expanded the area of cultivated land and advanced mechanization. In 1974, the amount of soybeans produced exceeded 10,000 tons, and in 1977, it reached a little less than 18,000 tons. The project using heavy machinery, which continued until 1992, newly cleared primary forests, and the Agricultural Cooperative gave up cultivating tung trees, a perennial crop that generated profits only once every few years, and stumped fields and expanded farmland. As a result, in 1993, the amount of soybeans handled by the *Sociedad Cooperativa Pirapó Agrícola* exceeded 40,000 tons for the first time.

(3) For the *Cooperativa Yguazú Agrícola*, it was essential to expand the area of farmland, develop cultivated fields that enabled tractor operation (stumping and disposal of felled trees), and introduce large agricultural machines, including tractors and seeders, as the agricultural cooperative strove to shift to upland farming. The Japan Emigration Service, which had determined that in order for Nikkei farmers to get out of their severe economic circumstances it was necessary to expand the area of farmland and shift to mechanized farming, approached them to form an organization to use machinery. In addition, the Japan Emigration Service provided young farmers with services such as training to develop bulldozer/tractor operators. With three bulldozers, four tractors, and their attachments lent by the Japan Emigration Service, the young farmers started to advance soil preparation in cultivated lands and expand their area for mechanized agriculture. In the second half of the 1970s, there was growing interest in mechanized upland farming, and as demand could not be met by the machinery owned by the Agricultural Cooperative alone, stumping work was performed energetically using bulldozers that farmers had requested JICA and individual operators to provide. The amount of soybeans produced annually, which stood at about 1,000 tons in the first half of the 1970s, increased to about 4,000 tons in the second half of the decade, occupying an overwhelming percentage of all sales items handled by the agricultural cooperative in terms of volume.

One example of mechanized large-scale agriculture achieved in the Pirapó colony

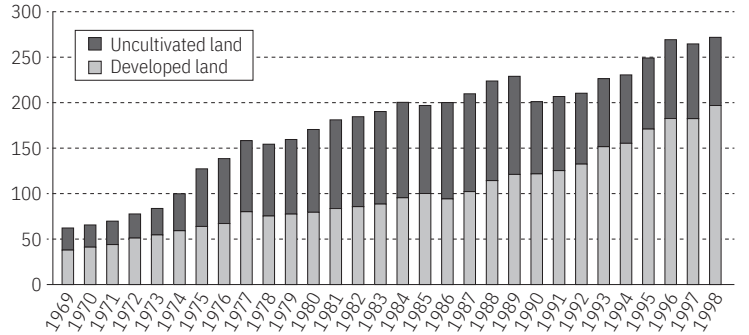
When he was 15 years old, Mr. Seiko Nishidate, who was born in Iwate in 1948 and resides in Pirapó, dreamed of becoming a large landowner, persuaded his family about his dream, and immigrated to Paraguay in the following year. His life in Paraguay started from clearing primary forests while living in a tent, and after more than 50 years of farming in Pirapó, he had overcome various difficulties and was an owner of 380 hectares of land, realizing his long-cherished dream. Mr. Nishidate said, “Around 1964, immediately after I settled, the price of the tung trees recommended as a perennial crop crashed, causing a train of farmers to experience hardships in their lives - a period when the so-called “Buenos disease” prevailed, forcing these farmers to relocate to Argentina. From 1981 to 1982, sericulture was encouraged, and some farmers dedicated themselves to it but lost sales channels because the ISEPSA Company,

which operated a cocoon drying factory, shut down in 1983. And in the 1980s, excessive investments by mechanized large-scale farmers became a problem, bringing many farmers into financial difficulties one after another. In those days, Cooperative president Yoshihiko Oda not only requested the Paraguayan government to help introduce new machinery but also went to Japan twice to make an appeal. Only a handful of people knew how repeatedly he had complained to the president of the Banco *Nacional de Fomento* (National Industrial Promotion Bank) and the Minister of Agriculture and Livestock about the sad plight of cooperative members with agricultural land, the life of cooperative members, as security." He also said, "The Paraguayan government set an official exchange rate as part of its countermeasures against super-inflation and announced an agricultural promotion policy that gave preferential treatment to producers, applying the official rate to dollar-based agricultural debts, such as imported agricultural materials as well as farming machines and implements, and applying free market prices to the settlement of accounts for soybeans exported as agricultural products, and it carried out the policy resolutely. Nikkei farmers must not forget that what they are today depends on the above-mentioned support provided by the Paraguayan and Japanese governments."

The average area of land owned per household in the Pirapó colony is shown in Figure 2-1. The period when heavy machines, such as bulldozers and other large agricultural machinery, were introduced corresponds with the period when the area of land owned increased. In the 1990s and thereafter, the percentage of developed land rose as a result.

After graduating from a high school in the neighboring city of Obligado,

Cultivation by an early tractor (left) and an early combine (right). Source: Iguasu Nokyo 50-nen shi



Source: Hirakeyuku daichi dai 4 shu: Pirapo ijyuchi 40-nen shi (2000).

Figure 2-1 The Average Area of Land Owned per Household in the Pirapó Colony

Mr. Yukio Takahashi, who was born in Pirapó in 1961, learned the maintenance of agricultural machinery through JICA training (1983 to 1985). He said, "In the first year, I received training in Ehime, and the main training sites were the Ehime Agricultural Experiment Station (current Ehime Research Institute of Agriculture, Forestry and Fisheries), and the No-kigu Center (Agricultural Machinery and Implements Center) of the *Kuma Nogyo Kyodo Kumiai* (Kuma Agricultural Cooperative; currently the Matsuyama City Agricultural Cooperative). In the second year, I was able to learn the operation and maintenance of tractors at Kubota station located in Obihiro, Hokkaido. During these two years, I was able to learn much about agricultural machinery, and the knowledge I acquired is still useful even today." Mr. Takahashi returned to Paraguay in 1985, and afterward he worked to promote mechanized agriculture in Pirapó, making the best of the knowledge of agricultural machinery he had acquired through the training. Subsequently, from 2005 to 2007 and from 2009 to 2012, he served as president of the *Sociedad Cooperativa Pirapó Agrícola*, contributing to the development of agriculture in Pirapó.

Factors that achieved mechanized large-scale agriculture for soybeans

The foregoing section described the circumstances under which the La Paz, Pirapó, and Yguazú agricultural cooperatives realized mechanized large-scale agriculture for soybeans in the 1970s. If these circumstances are taken into consideration, four points can be cited as factors that helped

Box 2-1 JICA's provision of training opportunities to the Nikkei society

JICA is implementing the Training Program for Japanese Descendants through which it receives Nikkei people from Central and South America as trainees and provides technical training, making the most of the know-how and experience of local governments, NGOs, universities, public service corporations, private enterprises, and other entities in Japan. Training areas include healthcare, welfare, agriculture, and education. One objective is to contribute to nation-building through technical cooperation from Central and South American Nikkei people, and another is to help build a Nikkei society in Central and South America with local communities playing a central role therein by receiving trainees and promoting wide participation in this initiative by citizens. In fiscal 2019, JICA planned to receive trainees from eleven countries (Argentina, Cuba, Colombia, Chile, Dominican Republic, Paraguay, Brazil, Venezuela, Peru, Bolivia, and Mexico), and around 140 Nikkei people were invited during the year.

During the period from 1971 to 2019, a total of 421 Nikkei immigrants participated in the Training Program for Japanese Descendants for Paraguay's Nikkei society. The training program covers a wide range of areas, and those activities often taken up as subjects include agriculture, Japanese-language education, health and medical care, and welfare for the elderly.

The number of participants in the agriculture sector is 124 (29.3% of the total), and in addition to agricultural cooperative management, agricultural machinery, and fruit cultivation, the training program covers areas such as livelihood improvement, women in rural communities, and processing of agricultural products to meet the needs of the Nikkei society in Paraguay. Particularly in the 1970s, as many as 73.1% of 26 Nikkei trainees received training in the agriculture sector, acquiring Japanese technology and expertise in agricultural management, stock farming, sericulture, cooking oil refinement, and so forth, and contributing to laying the foundation for agricultural development by Paraguay's Nikkei society. In addition, to promote agricultural development by strengthening Nikkei agricultural cooperatives, JICA cooperated in developing Nikkei human resources by receiving 12 trainees to improve the techniques of Nikkei immigrants of middle

standing from 1985 to 1996 and 44 trainees for Nikkei agricultural cooperative senior manager training from 1999 to 2017 (JICA Paraguay Office 2019).

to realize mechanized large-scale agriculture: (1) the lending by the then Japan Emigration Service of bulldozers to the agricultural cooperatives; (2) the growth in demand for soybeans in Paraguay and the international market; (3) the national soybean plan formulated by the Paraguayan government in 1972; and (4) sharp rises in the price of soybeans in the Chicago market from 1972 to 1973.[17]

(1) The lending by the then Japan Emigration Service of bulldozers to the agricultural cooperatives: As mentioned above, two bulldozers were lent to the *Cooperativa La Paz Agrícola*, two to the *Sociedad Cooperativa Pirapó Agrícola*, and three to the *Cooperativa Yguazú Agrícola*, speeding up stumping and prompting a dramatic shift from perennial crops, which had been difficult to sell, to soybeans.

(2) Growth in demand for soybeans in Paraguay and the international market: CAPSA built a new oil mill in Capiatá in 1970, actively embarking on soybean oil extraction, and this helped increase demand for soybeans in Paraguay. In addition, market conditions improved as demand for soybeans grew in the international market in the 1960s and thereafter. In order to buy soybeans as raw materials for domestic operations at low price, Paraguayan oil millers, including CAPSA, requested the Ministry of Agriculture and Livestock and the Ministry of Industry and Commerce to ban the export of domestically produced soybeans. Soybean producers resisted, requesting that they should be allowed to export soybeans as before, but the export of Paraguayan-grown soybeans was prohibited from 1970 to 1974. The soybean output predicted for 1971 was 60,000 tons, and the Paraguayan government assigned 12,000 tons to free transactions, including exports, and the remaining 48,000 tons to domestic transactions. From the fact that the Itapúa Federation of Agricultural Cooperatives obtained as many as 6,500 tons of the 12,000 tons assigned to free transactions, it can be confirmed that Nikkei immigrants contributed greatly to soybean production in those days.

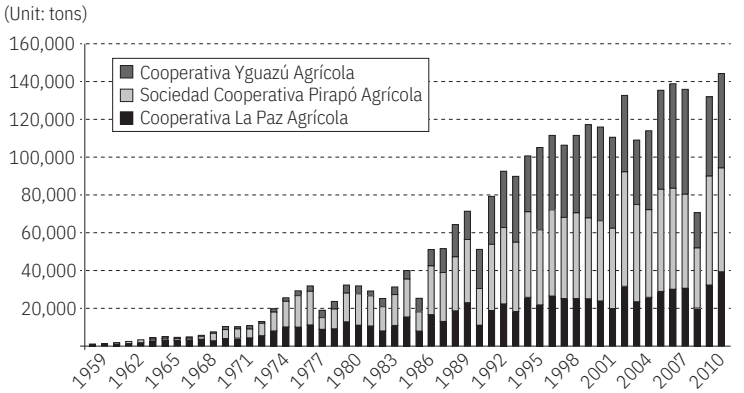
[17] Noguchi (2000),

(3) The national soybean plan formulated by the Paraguayan government in 1972: The Paraguayan government set the goal of increasing annual soybean production to some 21,000 tons, about twice as large as in 1972, by 1975, mainly through the spread of suitable varieties of soybeans and cultivation technology, the expansion of financing for producers by the Banco Nacional de Fomento, and the construction of grain silos with dryers. The construction by the Ministry of Agriculture and Livestock of grain silos in the La Paz and Pirapó colonies was part of the national plan, and these silos were completed in 1975. These grain silos made the drying and storage of soybeans easy and reduced loss mainly due to decay, enabling farmers to convert products to cash more certainly than before.

(4) Sharp rises in the price of soybeans in the Chicago market from 1972 to 1973: The amount of soybeans produced in the United States in 1972 fell due to unseasonable weather, causing soybean prices to soar. The soybean price of $12.12 per bushel (one bushel of soybeans is equivalent to about 27.2 kilograms of soybeans) at the Chicago market in June 1973 was the highest ever recorded in the history of soybeans up to 2008. In 1973, amidst the shortage of soybeans supplied in the country and their soaring prices, the U.S. government banned the export of crops such as soybeans and cotton seeds. The American embargo on exports hit Japan the hardest, which depended largely on imports of soybeans from the U.S. For food security, the Japanese government sought stable suppliers overseas. Eventually, this led to cooperation in the development of the Cerrado in Brazil,[18] whose main objective was to cultivate soybeans.[19]

Tractor introduced in the early 1970s. Source: Iguasu Nokyo 50-nen shi

[18] Hongo and Hosono (2012).
[19] Koike (2006).



Source: Central Cooperativa Nikkei Agrícola (2012).

Figure 2-2 Changes in the Amount of Soybeans Produced by the Three Nikkei Agricultural Cooperatives

Introducing mechanized agriculture required a large amount of funds, but some Nikkei farmers started to have financial difficulties around 1975 and brought their debts to their agricultural cooperatives, and therefore, the agricultural cooperatives were forced to take action. In 1977, the agricultural cooperatives waited in the hope that the Chicago soybean market price would further soar, but it fell sharply, and the agricultural cooperatives ended up missing the good opportunity of selling soybeans at a high price. During this period, mainly due to sluggish grain prices, damage caused by unseasonable weather, and soaring interest rates, debts grew, causing many Nikkei farmers to give up their agricultural land and leave their colony. The remaining farmers bought the agricultural land of those who left the colony, and as a result, they secured a tract of cultivated land large enough for mechanized large-scale agriculture.

During this period, meanwhile, many Nikkei farmers started to cultivate wheat to stabilize farming management, and there were three advantages to this initiative. One was that farmers became able to earn income twice in one year through a two-crop system in which they cultivated wheat in winter as an off-season crop for soybeans, and that this made fund management easy. Another was that using the agricultural machinery introduced to cultivate soybeans for wheat cultivation enabled its efficient utilization. Still another was that the implementation by the Paraguayan government of its second national wheat plan in 1977 made access to suitable varieties of wheat and technology easy, guaranteed producer

prices, and promoted financing through the *Banco Nacional de Fomento*.[20] Thus by working to overcome problems in the improvement of cultivation technology and in the distribution of harvested products while making the most of these advantages, farmers established the foundation for stable farming management using a two-crop system based on soybeans and wheat.

Mr. Yoshimasa Goto, who was born in Hiroshima in 1950 and served as president of the Cooperativa La Paz Agrícola and that of the Central Cooperative Nikkei Agrícola, testified, "On average, Nikkei farmers have a larger area of cultivated land per household than German and Brazilian farmers and do not need to borrow agricultural land, and therefore, they enjoy more stable farming management. This is largely attributed to the division by the Japan Emigration Service of land for sale and loans facilitating land purchase." According to the data of FECOPROD, of which many agricultural cooperatives of soybean producers in Paraguay are members, on its member agricultural cooperatives in 2015, while the average area of agricultural land owned by one member of a FECOPROD-affiliated agricultural cooperative who was engaged in agriculture was 62 hectares, the average for the three Nikkei agricultural cooperatives (La Paz, Pirapó, and Yguazú) was 289 hectares, more than four times as large.

2.3. Development of a model of sustainable agriculture by Nikkei farmers: From "pioneering agriculture" to "conservation agriculture"

Awareness of crisis in the establishment of sustainable agricultural production

In the 1970s and thereafter, as Nikkei farmers developed large upland farming by introducing large machinery, it seemed that the two-crop system based on soybeans and wheat stabilized their farming management to a certain extent. However, there was inevitably a limit to the traditional tillage in which land was tilled deeply, and the problems of soil impoverishment and erosion became increasingly serious. Farmers were required to shift from "pioneering agriculture," in which they cleared primary forests and expanded the scale of farming through mechanization to "conservation agriculture," in which they earned profits

[20] Noguchi (2003).

while managing the already developed agricultural land in a sustainable way. The remarks of the late Mr. Akinobu Fukami, who came from Kochi and died in 2013 and served as president of the *Cooperativa Yguazú Agrícola*, clearly shows the awareness of crisis he had in those days:[21]

- "Soil is a precious asset for people who are engaged in agriculture;"
- "It is important to have a firm determination to continue agriculture forever and a strong belief to protect one's land by oneself not only in one's generation but also for the generations of one's children and grandchildren."

No-till farming technology in neighboring countries and the start of its introduction into Paraguay

In South American countries where upland farming is prosperous, no-till farming technology was introduced and put to practical use in the 1970s. *Zen Paraguai Nikkei-jin Fukouki Saibai Kenkyu Soshiki Kyogikai* (All-Paraguay Council of Nikkei No-Till Farming Research Organizations) defines no-till farming as a method of cultivation in which farmers reap the previous crop and plant the next one in the field without turning over its soil using an arado (an agricultural implement to break up soil) or preparing soil using a disco (agricultural implement to crush and press soil for preparation using a plate-like disk) and without performing inter-tillage for weeding (however, when seeds are sown, row tillage is always performed).

Brazil is the first South American country where no-till farming was practiced. In 1971, the then Brazilian Ministry of Agriculture and Livestock Southern Experiment Stations, which were located in Londrina and Ponta Grossa in the State of Paraná, started to test no-till farming, and in the second half of the 1970s, the number of farmers who practiced it and the area of land cultivated using it were considerably enlarged. In Argentina, the National Agricultural Technology Institute (*Instituto Nacional de Tecnología Agropecuaria*: INTA) began to test the method around 1975, and records show that it really started to spread among soybean producers during the period from 1975 to 1976. In Chile, no-till farming started to be used for a corn-wheat system in 1978, and its dissemination was promoted based on the research results of the Agricultural Development Institute

[21] Zen Paraguai Nikkei-jin Fukouki Saibai Kenkyu Soshiki Kyogikai (1993).

(*Instituto de Desarrollo Agropecuario*: INDAP). It can be confirmed from these early examples in South America that the experiment stations of the central governments played a major role in developing and spreading no-till farming technology.

Attempts at no-till farming in Paraguay were made in the 1980s, later than in these South American countries. The following section looks at the circumstances under which no-till farming was tried in Nikkei colonies first and its dissemination was driven by Nikkei farmers. It was the Alto Paraná substation of the Agricultural Technology Center in Paraguay (*Centro Tecnológico Agropecuaria del Paraguay*: CETAPAR) that paid attention to no-till farming first. In 1979, CETAPAR obtained information on no-till farming from Dr. Shiro Miyasaka of the *Instituto Agronômico de Campinas* (Agronomic Institute of Campinas) in the Brazilian State of São Paulo, and this led to a five-year comparative test of various cultivation methods (1980-1984). Then, CETAPAR obtained test results showing that yields from no-till farming areas were not inferior to those from tilled ones. Based on these results, CETAPAR believed that no-till farming was most effective to preserve soil for upland farming and held seminars to educate Nikkei farmers in no-till farming in the colonies by inviting experts from Brazil who were advanced in this method, for three years from 1982.

Launch of no-till farming by Nikkei farmers

Under these circumstances, a major event occurred that made Nikkei farmers go ahead with the introduction of no-till farming. The localized torrential downpour that struck the Yguazú colony in November 1982 registered a monthly rainfall of 481 millimeters, the largest ever recorded in the history of meteorological observations, and this caused large-scale soil erosion in the soybean fields. Together with soil, seeds and young budding plants were washed away from not only fields being cultivated to sow soybean seeds but also those in which seeds had already been sown, and many farmers suffered tremendous damage as they sowed seeds again or gave up planting. This disaster led the late Mr. Isamu Kubomae in the Yguazú colony, who came from Ehime and died in 2014, to start no-till farming for wheat in the winter of 1983. Mr. Fukami in the same colony began to practice no-till farming for soybeans in his 160-hectare field in real earnest in the summer of the next year and brought the same favorable results in soybean yields as when he practiced

tillage. In the following year, Mr. Fukami expanded no-till farming to cover all his 200-hectare field to which mechanization could be applied, bringing greater yields than any other neighboring farmer. Thus, he took the lead in practicing no-till farming and brought favorable results, and this was so convincing that Nikkei farmers in the Yguazú colony began to practice no-till farming, and this cultivation method progressed there immediately.[22]

Nikkei farmers in the Yguazú colony contributed greatly to the dissemination of no-till farming in Paraguay. Mr. Fukami, who was president of the *Cooperativa Yguazú Agrícola* at that time, set up *Zen Paraguai Nikkei-jin Fukouki Saibai Kenkyu Soshiki Kyogikai* in 1987, and

The late Mr. Akinobu Fukami (center in the photo), a missionary of no-till farming, when the then Agriculture and Livestock Minister García visited his field. Source: Iguasu Nokyo 50-nen shi

Local newspapers reporting the results of no-till farming. Source: author

Monument at the birthplace of no-till farming in Paraguay in front of the Cooperativa Yguazú Agrícola building. Source: author

22 Seki (1999).

mainly by organizing tours to inspect no-till farming in Brazil, holding training sessions in Paraguay, and conducting fact-finding surveys of no-till farming while obtaining the cooperation of CETAPAR, he made every effort to spread the cultivation method actively.

In the 1980s, the Yguazú colony was the center of no-till farming, but in the early 1990s, as the understanding that no-till farming was highly effective in preventing soil erosion and brought the same yield as tillage took root, the cultivation method started to be widely used in the La Paz and Pirapó colonies. Due to the success of no-till farming in the Nikkei colonies as described above, no-till farming gradually spread among German, Brazilian, and Paraguayan farmers. Mr. Fukami passed away in 2013, and his first son, Mr. Tadanobu Fukami, who was born in Yguazú in 1974, talked about no-till farming, saying, "My father was a blood type A person and had a meticulous nature. This could also be said about weed control, one of the important points in advancing no-till farming. The major reason for his success in no-till farming was thorough weed control, particularly the disposal of gramineous weeds."

Introduction of no-till farming into three colonies and its establishment

The *Zen Paraguai Nikkei-jin Fukouki Saibai Kenkyu Soshiki Kyogikai* records the verbal evidence of eight representatives of Nikkei farmers in Yguazú, Pirapó, and La Paz, who talked about what led them to introduce no-till farming. Listed below are excerpts from major pieces of verbal evidence:

Steady growth of soybeans enabled by no-till farming.
Source: Iguasu Nokyo 50-nen shi

Table 2-1 Chronological Table of Spread of No-Till Farming among Nikkei Farmers in Paraguay

Year	Major events
1979	• CETAPAR obtained information on no-till farming from an expert in upland farming (Dr. Shiro Miyasaka of the Instituto Agronômico de Campinas) who was invited by CETAPAR from Brazil.
1980	• CETAPAR started tests of cultivation and sowing methods, including no-till farming, at its Alto Paraná substation (until 1984).
1982	• CETAPAR began to introduce no-till farming and conduct educational activities by inviting experts from Brazil (until 1984). • The sowing of soybean seeds failed because the surface soil was washed away due to unprecedented localized torrential downpours (November).
1983	• Mr. Isamu Kubomae in the Yguazú colony embarked on no-till farming in wheat production.
1984	• Mr. Akinobu Fukami in the Yguazú colony practiced no-till farming in soybean production in real earnest (160 hectares).
1986	• CETAPAR started the inspection by representative Nikkei farmers of Brazilian no-till farming, making the most of the pilot leader development training system (until 1988).
1987	• Zen Paraguai Nikkei-jin Fukouki Saibai Kenkyu Soshiki Kyogikai was established (90 persons from the Yguazú, Pirapó, La Paz, and Chávez districts participated in the Council).
1988	• CETAPAR began training sessions in no-till farming (a training session was held twice a year, one in summer and the other in winter, in each of the subsequent years). • Zen Paraguai Nikkei-jin Fukouki Saibai Kenkyu Soshiki Kyogikai worked with CETAPAR to start fact-finding surveys to grasp problematic points in no-till farming. • No-till farming was introduced into about 10% of Nikkei immigrants' cultivated land for soybeans.
1992	• This was a year of droughts, but it was confirmed that the decrease in yields from cultivated lands covered by no-till farming was small. • CETAPAR organized information on no-till farming technology based on test and research results into materials for dissemination. • No-till farming was introduced into about 25% of Nikkei immigrants' cultivated land for soybeans.
1993	• A party of the Agriculture and Livestock Minister and other officials attended an opening ceremony of the no-till farming training hosted by CETAPAR. • Fukouki Saibai Kenkyu Soshiki Kyogikai was dissolved, paving the way for the establishment of the Asociación de Agricola Sustentable en el Paraguay (Paraguayan Association of Sustainable Agriculture) on September 1 (130 members).
1994	• About 75% of soybeans from Nikkei immigrants' cultivated lands were grown using no-till farming.
1995	• A lecture entitled "Three-ton yield soybean no-till farming technology" was given for all Paraguayan farmers under the co-sponsorship of the Zen Paraguai Eizoku Noho Kenkyukai and CETAPAR (attended by 400 persons).

Source: This table has been created by partially revising Nagai (2000a), Matsuda (1995), and the Zen Paraguai Nikkei-jin Fukouki. Saibai Kenkyu Soshiki Kyogikai (1993).

- Due to heavy rains in 1982, a large amount of soil was washed away from the fields. Being afraid that if we continued the traditional cultivation method, our children might not be able to engage in agriculture, we took the decision to adopt no-till farming, which was expected to be highly effective in preventing soil erosion;
- In the traditional cultivation, tilling work prior to sowing took time and labor, making it impossible to sow seeds at the right time, allow a sufficient number of days for growth, and maintain sufficient yields, and for this reason, we went ahead with the introduction of no-till farming, which was not affected by weather and enabled us to sow seeds at the right time;
- Previously, we had taken countermeasures against soil erosion by building contour terraces, but we could not prevent soil erosion using this method, and in addition, the contour terraces needed to be repaired each year. Therefore, we launched no-till farming, which was highly effective in preventing soil erosion and was less costly; and
- Fascinated by no-till farming, which meant lower workloads and machine investments than the traditional cultivation and enabled us to sow at the right time and gain high yields, we ventured effort and capital on the new cultivation method.

2.4. Past roles and future of the Agricultural Technology Center in Paraguay (CETAPAR)

Roles of CETAPAR in the model of sustainable agriculture development by Nikkei farmers

As the farming situation of Nikkei farmers changed, issues to be addressed in testing and research (such as the development of new varieties of soybeans as well as the establishment of no-till farming technology for soybeans, crop rotation systems, beef cattle fattening technology, and vegetable cultivation technology) underwent changes so that the needs of the farmers were met. Coupled with farming guidance and dissemination campaigns, CETAPAR contributed greatly to forming the farming foundation of Nikkei farmers. With the establishment and stabilization of these farmers, CETAPAR provided technical cooperation to extend its benefits to not only Nikkei farmers but also a wide range of agricultural engineers and farmers in Paraguay and upgrade the level of agriculture in the country. The following section looks back upon CETAPAR's major initiatives for Nikkei farmers and soybean production among the projects

it has carried out during the past 48 years.[23]

(1) Development of human resources among Nikkei (1963-2010)

CETAPAR gave lectures on subjects such as farming technology and Paraguayan culture to young Nikkei farmers, who did not have opportunities to acquire agricultural knowledge and technology immediately after they settled. Later, it hosted "lecture meetings for youths in rural communities" and "pilot leader development training sessions," contributing to the development of human resources among Nikkei farmers. As a result, those who took the lectures are playing an active role in today's Nikkei society as farmers of middle standing.

(2) Development of agricultural research groups (1963-2010)

CETAPAR worked to organize and train many agricultural research groups (such as pig breeding, sericulture, Taiwan tung tree, rice production, and poultry farming research sections) that met farmers' needs of the time, contributing to motivating Nikkei farmers to think about agriculture on their own initiative. The research groups trained by CETAPAR are as listed below:

- *Asociación de Agricola Sustentable en el Paraguay* (This organization led to the setup of an all-Paraguay corporate organization called *Federación Paraguaya de Siembra Directa para una Agricultura Sustentable* (FEPASIDIAS; All Paraguay Sustainable Agriculture Research Liaison Council), which included non-Nikkei farmers);
- *Asociacion de Productores de Nuez de Macadamia en Paraguay* (All-Paraguay Macadamia Nut Research Association);
- Pirapó Agricultural Research Group;
- Yguazú Beef Cattle Section;
- Yguazú Vegetable and Fruit Section.

(3) Selection and spread of stable kinds of soybeans that brought large yields (1963-2010)

After starting tests of and research in various varieties of soybeans at the Alto Paraná guidance farm in 1963, CETAPAR conducted tests to

[23] JICA Paraguay Office (2010) and JICA Paraguay Office (1988).

select varieties of soybeans that enabled continuous, stable production and choose many promising varieties of soybeans, including Santa Rosa, Hampton, Bragg, Parana, Viçoja, CTS-78, Pirapo-78, BR-4, and Iguaçu, from among those which were introduced from Brazil and other countries, and it strove to spread them as principal varieties of soybeans for the Nikkei colony. Later, in 1992, the outbreak of soybean cancrosis was confirmed in Paraguay for the first time. This disease struck a heavy blow to soybean production not only in Nikkei colonies but to all of Paraguay as well because the varieties of soybeans that had been grown up to that time lacked resistance to it. Since BR-16, which was chosen and was being introduced by CETAPAR, showed resistance to the disease, CETAPAR spread it among Nikkei colonies in 1993, and as a result, it was so widely planted that at one time it accounted for about 30% of the total area of soybean cultivation in Paraguay. In 1996, CETAPAR spread CD-202, and in 1998, it worked with the Cooperativa Yguazú Agrícola to spread Aurora, which was developed through the "Project to Strengthen the Production of Major Grains," a JICA technical cooperation project, and was selected as a variety of soybean for the Department of Alto Paraná based on the results of CETAPAR's area adaptation tests. As a result, Aurora developed into a variety of soybean that occupied one-third of the total area of soybean cultivation among the members of the agricultural cooperative four years after it started to spread, and even after genetically modified soybeans became the mainstream of markets, it continued to be grown as a variety of soybean used for food. Since this variety of soybean contains more protein than others, part of its amount produced is exported to the Japanese market as food soybeans (used for tofu).

(4) Introduction, testing, and dissemination of no-till farming technology in Paraguay (1980-2010)

No-till farming had already taken hold in Paraguay, but in 1981, as described above, the Alto Paraná substation started to test and conduct research on no-till farming in the country for the first time. And in 1983, Mr. Fukami in the Yguazú colony introduced no-till farming as a practical technology and tested it, and this led CETAPAR to spread the technology jointly with Nikkei farmers, mainly through training sessions, the inspection of advanced areas, and the compilation of technical manuals. *Zen Paraguai Nikkei-jin Fukouki Saibai Kenkyu Soshiki Kyogikai*, formed by Nikkei farmers, became the core of their activities, and this led to the organization of the *Asociación de Agricola Sustentable en el Paraguay*. No-till

farming is a technology that overturns the cultivation technology in which plowing is a standard practice, and in 2009, it was practiced in over 95% of Paraguay's major grain producing centers.

In the questionnaire survey conducted for Nikkei farmers in 2007, CETAPAR's contribution to the establishment of no-till farming technology was cited as one of its specific results, and this confirms the importance of the results mentioned above.

(5) Development of an agro-pastoral rotation system (1993-2010)

CETAPAR worked to develop an agro-pastoral rotation system aimed at the sustained development of upland farming, and to that end, it conducted tests jointly with the Japan International Research Center for Agricultural Sciences (JIRCAS), *Dirección de Investigación y Producción Animal* (Animal Investigation and Production Bureau) of the Paraguayan Ministry of Agriculture and Livestock, and the Faculty of Agricultural Science of the National University of Asunción. This test is the only initiative for agro-pastoral rotation in Paraguay and spreading of research results in the future is hoped for.

(6) Spread of soil preservation technology (1996-2000)

For engineers of the Ministry of Agriculture and Livestock (such as *Dirección de Extensión Agraria* [Agricultural Extension Bureau] and *Dirección de Formación Agrícola* [Agricultural Education Bureau]), *Crédito Agrícola de Habilitación* (Small-Farmer Finance Corporation), *Banco*

Inspection of cultivated land by the Zen Paraguai Nikkei-jin Fukouki Saibai Kenkyu Soshiki Kyogikai.
Source: Iguasu Nokyo 50-nen shi

Nacional de Fomento, and NGOs, CETAPAR held a one-month on-site domestic training session on soil preservation with no-till farming as its core for five years, and a total of 148 engineers were trained through this program.

(7) Widespread use of soybean waste as supplementary feed for stock farming (1999-2010)

Up to that time, soybean waste had been discharged from grain silos and treated as garbage, and except for part of the waste, farmers have had trouble disposing of most of it. CETAPAR paid attention to such soybean waste and clarified its effectiveness as supplementary feed for stock farming through testing. The amount of soybean waste discharged from the silos of the Yguazú, La Paz, and other Nikkei agricultural cooperatives is rising each year, but demand for such waste is also growing because its effectiveness as supplementary feed for domestic animals has been confirmed.

(8) Selection and spread of newly introduced crops (2001-2010)

CETAPAR provided for testing purposes crops that could be cultivated in winter before and after soybeans and investigated their adaptability. It confirmed that safflowers were effective in neutralizing soil acidity, reducing damage to root systems due to the dissolving of aluminum in the soil, and making phosphoric acid in the soil effective, and that they helped maintain and increase the degree of soil fertility. For this reason, CETAPAR has produced safflower seeds and spread safflowers as a green manure crop in Nikkei colonies. In addition, cooking oil extracted from safflowers contains much linoleic acid, and as inquiries are received from advanced countries, the potential of safflowers as an economic crop in the future is recognized.

(9) Confirmation of soybean cyst nematodes and technical guidance (2002-2007)

CETAPAR has conducted periodic monitoring of soybean cyst nematodes mainly in Nikkei colonies since 1993, and in 2002, its engineers confirmed for the first time that soybean cyst nematodes inhabited Paraguay. Later, CETAPAR cooperated with the *Servicio Nacional de Calidad y Sanidad Vegetal y de Semillas* (SENAVE; National Plant and Seed Quality Control

Bureau) and the then Dirección de Investigación Agrícola (Agricultural Investigation Bureau) of the Ministry of Agriculture and Livestock (currently the *Instituto Paraguayo de Technología Agraria* [Paraguay Agrarian Technology Institute]: IPTA) in monitoring the roundworm and examining its races and contributed to efforts such as providing related engineers with technical guidance for identification.

Future Nikkei CETAPAR for sustainable agriculture

On March 31, 2010, the Agricultural Technology Center in Paraguay (CETAPAR) was transferred to the Central Cooperativa Nikkei Agrícola, and on April 1 of the same year, CETAPAR made a fresh start as Nikkei CETAPAR. In October 2013, FECOPROD and the National Cooperative Union UNICOOP[24] joined it in its management, establishing a system that benefited not only Nikkei farmers but also other Paraguayan agricultural cooperatives at the national level. The major business lines of the new organization consist of: (1) analysis; (2) testing; (3) farm management; and (4) projects. In (1) the analysis business consists of analysis of soil, fertilizer components, agricultural chemicals, and feed, and examination of seeds, and analytical services are provided for pay. In (2) the testing business, services consist mainly of testing of suitable land for new varieties of soybeans and wheat. For (3) farm management, Nikkei CETAPAR formulates farm management plans based on green manure crop rotation systems in no-till farming, maps the degree of soil fertility in farms, and offers agro-pastoral rotation and systems and so forth. Finally, in (4) their projects focus on the development of rust-resistant varieties of soybeans in cooperation with JIRCAS, and on technological development to increase the productivity of cows in collaboration with Obihiro University of Agriculture and Veterinary Medicine.

During an interview with staff members of Nikkei CETAPAR in 2017, one of them emphasized the importance of testing and research, saying, “Testing and research business is costly, and it takes time before results are obtained. But we believe that we must absolutely continue this business because it justifies the existence of CETAPAR. Today, we hear that JIRCAS is developing rust-resistant varieties of soybeans jointly

[24] UNICOOP is a central federation of eight agricultural cooperative in the Departments of Canindeyú, Alto Paraná, and Itapúa. In the past, the Cooperativa Yguazú Agrícola was a member of UNICOOP, but currently, no Nikkei agricultural cooperative is affiliated with it. http://www.unicoop.com.py/es/

with the Brazilian Agricultural Research Corporation (EMBRAPA), Argentine National Institute of Agricultural Technology (INTA), National Agricultural Research Institute of Uruguay (INIA), and Mexican National Institute for Forestry, Agricultural and Livestock Research (INIFAP), but that the development of such varieties of soybeans with CETAPAR is the most successful project."

Meanwhile, Nikkei CETAPAR is working on new businesses, and one of them is INNOVAR,[25] an agro-pastoral exhibition aimed at promoting technological innovation in agriculture and stock farming in collaboration with the private sector (*Unión de Empresas Agropecuarias*: UEA [the Union of Agropastoral Companies]). A total of 90 companies from among agricultural machinery, seed, agricultural chemicals, financing, and other companies participated in the first exhibition held in March 2017 within the premises of Nikkei CETAPAR. The exhibition took place on a grand scale with new breeds of beef cattle and cow on display, the latest agricultural machinery, such as tractors and tillers, demonstrated, and various seminars on technological innovation in agriculture and stock farming held, and was attended by President Horacio Cartes along with many participants.

CETAPAR, which was first launched to support the farming of Japanese immigrants, later managed itself as Nikkei CETAPAR for seven years after 48 long years of cooperation, and today, it is establishing its status as a center to contribute to agricultural development in Paraguay.

At the first INNOVAR held in March 2017, while the first tractor provided by JICA was exhibited, there was a demonstration of the latest model of combine harvester. Source: Nikkei CETAPAR

[25] http://innovar.com.py/

Expectations are placed on the future path of Nikkei CETAPAR as it strives to overcome the many challenges and difficulties that it faces.

This chapter looked back upon the process of soybean cultivation developing into an export crop that supported Paraguay while focusing on the development of modern farming and the establishment of sustainable agriculture. The next chapter takes up other challenges which soybean cultivation in Paraguay faces and that soybean cultivation Nikkei immigrants aim at in the future.

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Column 2
Why do they learn Japanese?

Makoto Kitanaka

Visitors from Japan are really surprised at the beautiful Japanese spoken by most of the second-generation Japanese - Paraguayans in Paraguay. This is because they study Japanese not as a foreign language but as a national language using Japanese textbooks in the Japanese language when they are children. The majority of members in the third and subsequent generations are also bilingual if both of their parents are Nikkei. If one talks with members of the third generation about Japanese, they say that it is quite difficult to explain to their children properly as to why the latter need to learn Japanese. One can understand that there are various thoughts of parents about Japanese-language education among Nikkei families, from the forceful approach of saying that Nikkei people should simply study Japanese, which is the language of their mother country, to the passive approach of saying that it would be embarrassing if they cannot talk with their grandfathers and grandmothers in Japanese.

As they grow, children become aware that they are Nikkei and come to feel that it is important to take over Japanese culture and the Japanese language. It is natural, however, that they have a simple question, asking, “What is the meaning of studying Japanese hard when they do not have many opportunities of using it in Paraguayan society?” and “Isn’t it English that is a common language today?” In the future, as an increasing number of Nikkei families mainly speak Spanish for reasons such as international marriages, it is necessary to tell children about the significance of learning Japanese.

If visitors from Japan visit Nikkei colonies and talk with the people for a while, they always have the feeling that they have returned to the Japan of olden times. This is not only because of visual aspects of life, such as the existence of *torii* gates and the serving of Japanese tea, but one extremely important factor is that Nikkei people speak beautiful Japanese. Visitors would have a different impression if

Nikkei people responded to them in Spanish.

What would happen if Nikkei people in Paraguay visit Japan? It is often said that many of Nikkei people in Brazil and Peru cannot speak Japanese well and that there is not much communication with the local Japanese society they visit. On the other hand, Nikkei people from Paraguay who went to Japan to work are said to be very useful as coordinators in the workplace because they can speak Japanese. This cannot be confirmed directly, but it can be imagined that Japanese - Paraguayans do not have much trouble living in Japan compared to Japanese - Brazilians and Japanese - Peruvians, although there are individual circumstances, such as being single.

American society is a melting pot or salad bowl of races, and people of various ethnicities who gather from the world over are all regarded as equal if they are American. On the other hand, Jews have a complicated history and are said to consider their religion and blood to be important. In this world, if Japanese are asked what they consider important, they would say that it is Japanese language and Japanese culture. Whatever their skin color and whatever their nationality, foreigners in Japan who speak Japanese, like Japanese food, and live in Japan for several years seem to be comfortably accepted as neighbors. This applies not only to show-business personalities and sports athletes but also at the level of common people. This is probably affected by the history of Japan in which many people have come to Japan from the Chinese continent and the Korean peninsula and settled here since ancient times.

From now on, the world will become smaller and smaller, and as more and more people move, the percentage of those who live in a country other than their native one will grow. The young generation of Nikkei people will also have more opportunities to go to Japan, and more Japanese will visit South America, including Paraguay, on business trips and for other purposes. How deeply young Nikkei people can involve themselves in Japan through such opportunities depends largely on their high level of ability to communicate in Japanese. And such deep communication in Japanese will sustain their future career. It may be necessary to expose Nikkei people to

Japanese half forcefully when they are children, but if their parents are asked why their children need to learn Japanese, the author hopes that they will answer their children's questions properly, referring to what is written above to develop the young generation of Nikkei people who connect Paraguay and Japan. On the Japanese side, it is necessary to continue support for the Nikkei society in Japanese language education.

Chapter 3

Further challenges for soybean production in Paraguay and the Nikkei Society's outlook for the future

Kazuo Fujishiro

3.1. The large agricultural land occupation problem which the Nikkei society faces and initiatives for coexistence

Illegal occupation of agricultural land

Due in part to the expansion of mechanized agriculture in the 1970s and the establishment of no-till farming in the 1990s, soybeans grew into an export crop that supports the Paraguayan economy. In this process, Nikkei farmers came to face the problem of "illegal occupation of agricultural land," a problem that could not be avoided if they were to continue to coexist with others in Paraguayan society.

During the 35 years of the dictatorship of President Stroessner, Paraguay had a low crime rate and a high standard of public safety because his administration oppressed dissidents and freedom of speech. In February 1989 though, his dictatorship collapsed due to a coup by the army led by Lieutenant General Andres Rodriguez. Since Rodriguez, who became the 47th president three months later, had publicly promised agricultural land reform, landless and peasant farmers staged a movement for agricultural land backed by farmer organizations and religious groups which responded to the public promise. In May of the same year, an illegal occupation of agricultural land by over 1,400 landless farmers took place in the Yguazú colony, but they retreated when the Paraguayan government dispatched armed forces and police officers. However, in September over 400 farmers occupied agricultural land in earnest by bringing their household goods, domestic animals, and other belongings there. After they planted stakes in the land they occupied and demarcated it as if they owned it, they used trees they had felled to create square frames, constructed huts consisting of roofing and walls made of boards, sheets, galvanized iron sheets, large leaves, and grass in the frames, and stayed there. At first, most of the occupants were men, but they gradually

called their families to the huts and organized a system to stay on and live there by tilling the land and poultry farming.[26]

The *Asociación Japonesa de Yguazú* (Yguazú Japanese Association) held a meeting of immigrants, organized a committee to cope with the illegal occupation, and worked with the agricultural cooperative, landowners, and other parties concerned to find a solution, but the situation did not change for the better. Various Nikkei organizations submitted a joint petition to the Japanese embassy, and the Japanese government requested its Paraguayan counterpart to solve the problem early. Eleven months later, an alternative tract of land with an area of 1,500 hectares, located about 200 kilometers away from Yguazú, was prepared, and following payment by the Japanese Association for relocation for land development, housing-facility construction, and other expenses, the illegal occupants moved there, supposedly bringing the problem to an end. However, the landless farmers did not settle on this alternative land and were said to have sold it, leaving the Yguazú colony's anxiety about illegal occupation unresolved.[27] In 1993, the problem of illegal invasion also occurred in the former Encarnación branch's land owned jointly by the La Paz and Pirapó agricultural cooperatives.[28] One view is that behind this illegal invasion were the economic problems of landless farmers intertwined with political interests and other circumstances and that this made finding a solution even more difficult.

Scene from the investigation of illegal occupants (left) and the house of an illegal occupant (right).
Source: Iguasu Nokyo 50-nen shi

[26] Cooperativa Yguazú Agrícola (2012).
[27] Nikkei nogyo kyodo kumiai chuo kai 30-nen no ayumi (2012).
[28] Cooperativa La Paz Agrícola (2012).

There have also been many cases in which to line their own pockets a leader of farmers instigated an illegal invasion by manipulating farmers, and since landless farmers seek short-run cash income and immediately sell the land provided, this solution does not easily lead to the settlement of landless farmers and an improvement in their economic situation. The *Asociación Japonesa de Yguazú*, which experienced this incident, confirmed that it would strengthen its harmony and cooperation with non-Nikkei people and concentrate its efforts on building a new rural community and hometown that would go beyond races. This event provides an opportunity to keenly realize that the Nikkei society in Paraguay can only develop together with the local community.

Initiatives for local coexistence in the Yguazú colony

In the 1990s, in the Yguazú colony, farming based on wheat and soybeans became even more stable, establishing the foundations of its members' livelihood. As farmers built their houses and bought cars one after another, differences between their living standards and those of small Paraguayan farmers in the neighborhood became conspicuous. This was the reason for occurrence of various social problems, such as illegal occupation by landless farmers and robbery targeting Nikkei people. In September 1995, the *Comisión para el Desarrollo de Yguazú* (Yguazú Local Promotion Association) was established (obtaining corporate status in 1999) mainly by the second and third generations of Nikkei immigrants in the Yguazú colony with the aim of helping improve the living environment of peasant Paraguayan farmers through economic support and cultivating a sense of unity in the local community, thus enhancing the reputation of the Nikkei

The office of Iguasu Chiiki Shinko Kyokai (left) and a scene from a meeting of Iguasu Chiiki Shinko Kyokai (right). Source: Iguasu Nokyo 50-nen shi

society. The first project implemented by *Iguasu Chiiki Shinko Kyokai*, launched as an auxiliary body of the *Cooperativa Yguazú Agrícola*, was to set up a store using the building of the agricultural cooperative to sell high-quality production materials to small farmers who had difficulty in purchasing agricultural materials at low prices for cooperative members. In addition, the Agricultural Technology Center in Paraguay (CETAPAR) conducted agronomic surveys for the farmlands where peasant farmers produced crops, such as corn, cassava, and cotton, gave technical lectures, and provided guidance for productivity growth and crop diversification.

Using income earned from the sale of production materials, donations, and subsidies from Japanese sources as activity funds, the Association carried out projects, such as the "One-Cow Campaign (in which the Association provided dairy cows so that small farmers could earn cash income by squeezing out fresh milk and processing extra milk into yoghurt for sale)" by organizing a group of peasant Paraguayan farmers. Later, as JICA dispatched its Japanese volunteers, the association worked to create activities for cash income, including the cultivation of vegetables and fruits, bee keeping, and bread making. In 2007, the *Asociación Japonesa de Yguazú,* the *Cooperativa Yguazú Agrícola*, and CETAPAR jointly established an operating committee for the Association, and this enabled the three organizations to provide support to peasant Paraguayan farmers in the region through economic and technical cooperation. However, these support activities have not brought the expected ripple effects and satisfactory results to the local community, and Mr. Ichiro Fukui (born in Iwate in 1965), who has dedicated himself to these activities since the establishment of the Association, indicates the following four points:

(1) Even if soil improvement is needed, small farmers who have difficulty earning their daily bread cannot afford to invest in improvement materials; (2) Even if small farmers are instructed to keep cows, the quality of milk they produce is so bad that the price is knocked down, making milk production unprofitable; (3) The greatest problem is that there are no people in the community who can display strong leadership; and (4) Even if there is a leader, he is forced to sacrifice himself because the more the leader dedicates himself to support activities, the more he himself falls into financial difficulties.

Furthermore, as part of its efforts to contribute to the local community on its own initiative, the *Cooperativa Yguazú Agrícola* was mainly involved in

improving roads, distributing stationery and textbooks to local schools, and repairing school buildings, and in addition, it strove to create employment opportunities for local residents by promoting processing business at flour mills and so forth.

In the presidential election in April 2008, the laicized Catholic bishop Fernando Lugo (from the opposition coalition "Patriotic Alliance for Change"), who was politically left of center, was elected with support for the poor, corruption control, etc., as his campaign promises and assumed office as the 54th president. Around the time of this change of government, illegal occupants and demonstrators became active on a nationwide scale, and in the Yguazú colony, too, illegal invasion occurred at several locations in the areas neighboring the lands owned by the agricultural cooperative and those held by cooperative members and members of the Japanese Association.

An incident of illegal agricultural land occupation in the Yguazú colony in 2011

On September 28, 2011, landless farmers invaded the farm of Brothers Mario and Jorge Onishi in District R of the Yguazú colony and along the shore of the lake adjacent to the farm, and built shabby huts, starting illegal occupation. Some 200 farmers invaded and insisted, "This land is ours," citing the opinion of the *Instituto Nacional de Desarrollo Rural y de la Tierra* (INDERT; National Institute of Rural Villages and Land Development), which said that inappropriate surveys had been conducted in the Yguazú colony with 18,000 hectares of land (2.8 times as large as the area within the

Block line for illegal occupation (left) and the stand-off with illegal occupants (right).
Source: Iguasu Nokyo 50-nen shi

JR Yamanote Line in Tokyo) left unused, as the basis for their argument.

On October 3, in Yguazú City, the Japanese association, the city government, the agricultural cooperative, presidents of district associations, chambers of commerce and industry, and other parties concerned set up a committee to cope with this problem. They started to take countermeasure and consulted with the Japanese embassy and JICA. However, the situation was not resolved, preventing farmers from sowing soybean seeds.

On October 24, having obtained information on the addition of a new group to the illegal occupants, the Japanese immigrants arranged large agricultural machines on the municipal road and began surveillance activities. On October 26 and 27, with the cooperation of Paraguayan agricultural coordinators, who played an central role in acting to demand policy implementation for farmers, the Governor of the Department and members of the departmental assembly, the mayors of neighboring Brazilian colonies, the then President Yoshimasa Goto of the *Central Cooperativa Nikkei Agrícola*, the presidents of Brazilian and German agricultural cooperatives, and other parties concerned visited the committee to encourage its members, and on October 28, with many of these supporters in attendance, a large rally to block illegal invasion was held at the plaza along the national road in the urban district.

On October 27, Ms. Eudocia Lugo, the leader of the occupants, who was cousin to the then President Lugo, was arrested (found guilty in 2015), and probably because this arrest incited confusion among the illegal

Local newspapers reporting the illegal occupation of agricultural land in 2011. Source: author

occupants, some of them started to leave on November 1. On November 2, the 13 illegal invaders who had remained on the cultivated land up to that moment left, and the remaining occupants moved to occupied land on the shore of Lake Yguazú. On November 5, INDERT announced that no inappropriate land surveys had been conducted in Yguazú and that there was no surplus land, and this announcement prompted the illegal invaders to leave the occupied lakeside land. Looking back upon those days, Mr. Mario Onishi, who was born in Fram in 1961, said, "With the cooperation of the entire colony, we took turns to take action, such as night watch and road blockade, and as a result, we were able to solve the problem. However, since the illegal occupation took place at the same time as the planting of soybeans, the latter was delayed, causing a large loss in soybean production in that year. To tell the truth, the anxiety cannot be dispelled, as we are afraid that a similar incident may happen in the future."

In June 2012, there was a gunfight between police officers and a group of farmers who had illegally occupied land in Curuguaty in the Department of Canindeyú in northeastern Paraguay that killed 17 persons, and this incident led public opinion into confusion as the government took criticism for misgovernment in agricultural land reform, public order, and other problems. On June 22, the upper house of the Congress of the Republic of Paraguay passed a bill for an impeachment trial, and President Lugo was dismissed. Following this dismissal, Vice President Federico Franco became the 55th President. The international community however criticized the impeachment trial process, which had taken only two short days.

3.2. Countermeasures against damage to soybeans by diseases and pests, a problem faced by the Nikkei society

Countermeasures against insects and diseases that damage soybeans, including soybean rust

Phakopsora pachyrhizi is a bacterium that was first reported in Japan in the early 1900s, and its invasion into Paraguay and Brazil was confirmed in 2001, into Argentina in 2003, and into North America in 2004. This meant that North and South America, two major producing centers of soybeans, which accounted for about 85% of the world's total output, were exposed to soybean rust, and it was estimated that the soybean output in North

and South America would fall by 30-80%.[29]

In Paraguay, soybean rust was first confirmed in the Pirapó colony in April 2001. In February 2002, the Regional Center for Agricultural Research (*Centro Regional de Investigación Agrícola*: CRIA) invited Brazilian experts and conducted a fact-finding survey of soybean rust, and as a result, the disease was confirmed in various places of the Departments of Itapúa and Alto Paraná, and in the Pirapó colony in particular, there were cultivated lands in which the disease was rampant. In this colony, the experts pointed out that kudzu vines around the cultivated land were involved as a parasite plant and indicated the need to exterminate the plant using agricultural chemicals and to elucidate the pathology of the disease, as well as check the possibility that the disease might cause serious damage to soybean production in Paraguay in the future.[30] In 2007 the *Cooperativa La Paz Agrícola* also saw red rust break out in some varieties of soybeans, and in some areas, causing farmers to suffer damage as yields were reduced significantly. Under these circumstances, with the cooperation of JICA, CRIA introduced soybean rust-resistant genetic resources from the Asian Vegetable Research and Development Center and National Chung Hsing University in Taiwan, and as a result, a rust-resistant variety of soybean was developed.

In December 2002, the outbreak of soybean cyst nematodes was reported in the Department of Caaguazú for the first time, and together with soybean rust, this is becoming an urgent issue to be addressed, as exemplified by the designation by the Ministry of Agriculture and Livestock of contaminated lands as areas isolated for plant control. Since soybean production constitutes the foundation of the national economy, the Paraguayan government requested JICA to provide technical cooperation in controlling these agricultural pests by strengthening CRIA, and the project to develop varieties of soybeans that were resistant to soybean cyst nematodes and soybean rust was carried out from February 2006 to February 2008. In order to enhance its basic ability to develop soybean rust-resistant varieties of soybeans, CRIA introduced and evaluated resistant genetic resources and selected resistant materials. Furthermore, to develop varieties of soybeans resistant to soybean cyst nematodes, CRIA conducted comparative tests of resistant varieties of soybeans,

[29] Yamaoka (2014).
[30] Tsuchiya (2002).

examined the resistance of lines to be developed and selected such lines, and developed new resistant varieties of soybeans, and as a result, it achieved the registration of CRIA-6 (Yjhovy) as a variety of soybean resistant to soybean cyst nematodes, the first of its kind in Paraguay.[31]

Later, a JICA Senior Volunteer was dispatched from September 2008 to September 2010. He cooperated in developing these resistant varieties of soybeans, working to develop new varieties of soybeans from promising lines of rust-resistant varieties of soybeans.[32] The experienced agricultural engineer Aníbal Morel, who has worked with CRIA since 1980, is a living witness who has learned many technologies to develop varieties of soybeans as he served as the Paraguayan counterpart of JICA's Japanese experts for a long period of time. Even today, he is engaged in developing new varieties of soybeans at CRIA (whose current name is IPTA), and in 2016, he succeeded in developing SOJA PAR R19, a soybean rust-resistant variety of soybean. In the test cultivation for this variety of soybean at the cultivated-land level, a yield of 4,000 kilograms per hectare was reported with a sterilizer sprayed only once,[33] and in March 2017, SOJA PAR R24, a second soybean-resistant variety of soybean, was successfully developed. These events should be seen as an important step when considering the international competitiveness of Paraguayan soybeans in the future. Mr. Morel said emphatically, "Without CRIA, which receives cooperation from Japan, the history of Paraguayan soybeans would be different. I will continue to develop new varieties of soybeans and develop varieties of soybeans that meet the taste of Japanese consumers."

Various results achieved by CRIA. Source: author

SOJA PAR R24. Source: Mr. Aníbal Morel

31 Tsuchiya (2008).
32 Kurosaki (2011).
33 ABC Color (2016).

3.3. Attempts to export soybeans to Japan and the outlook for the future

Export of Paraguayan soybeans to Japan

Many of the Nikkei soybean farmers in Paraguay are cooperative members and sell soybeans as a commodity to grain majors through these cooperatives, and in general, they produce genetically modified, herbicide-resistant soybeans using no-till farming. This enables the spraying of non-selective herbicides during the period of growth and has brought the benefit of removing the need for pre-harvest manual weeding, prompting the instantaneous spread of the "dream technology" soybean farmers had eagerly anticipated.[34] This also spurred soybean production to move toward the type of agriculture that seeks a larger scale of production by expanding farmland, but at the same time, it became essential to make greater investments in agricultural machinery and implements, land purchase and lease, etc. But scale expansion, rendered the vulnerability of farming management noticeable. During the droughts from 2004 to 2006 and the drought of 2009, farmers who found it hard to repay loans as they fell into financial difficulty were observed here and there.

One initiative to distinguish itself clearly from this expansion-type agriculture is the cooperation of Nikkei farmers in Yguazú with GIALINKS in Gifu prefecture, Japan. In 2002, as part of its efforts to provide safe and secure food to the people of the prefecture, GIALINKS started to import 225 tons of Aurora soybeans that were not genetically modified, followed by the import of 560 tons in 2006, 480 tons in 2007, 950 tons in 2008, and 600 tons in 2009. In order to store food soybeans for Japan, the *Cooperativa Yguazú Agrícola* rebuilt part of its seed silos and modified driers, belt conveyors, and other facilities to adjust to the products it received. Referring to the export of non-GM soybeans to Japan, Mr. Shinichi Matsunaga, who was born in Yamaguchi in 1947, said, "Immediately after we shipped Aurora soybeans to Japan, GIALINKS complained that they reeked of oil, but today, the Japanese side rather says, 'Don't you have that kind of soybean?' We do not know what the cause is, but when deep-fried tofu is made, it swells out well, and cooking oil for deep-frying lasts nearly twice as long compared to the case in which ordinary soybeans are used. But since Aurora requires four to five rounds of sterilization, it takes

[34] Kokubun (2008).

a tremendous amount of time and labor. In addition, its yields are low, and as such it is inevitable that all farmers shun it." [35]

Mr. Jorge Onishi (born in the Fram colony in 1965), who serves as Vice-President of the *Cooperativa Yguazú Agrícola*, is one of the producers who have worked to export soybeans to Japan since 2004. Although he faces various challenges, such as disease and weed control, to produce non-GM soybeans, he pays particular attention to exporting Paraguayan-grown soybeans to Japan. When asked why, he said emphatically, "I want to provide safe and secure food to people in Japan who took care of me. To repay their kindness, I will do whatever I can for them."

Challenges and outlook for Paraguayan soybean production in the Nikkei society

The farmers in Nikkei colonies in Paraguay, those in La Paz, Pirapó, and Yguazú, whose major industry is soybean production, point out their challenges and outlook for the future as described below. In La Paz, initiatives for multiple management, including stock farming, are important for developing successors of agriculture and setting the flour mill completed in 2003 and the feed factory completed in 2010 on their way. In Pirapó, most of the land in the colony has been developed as agricultural land, with only rocky mountains and lowlands left unused, and as preserving the developed agricultural land is presented as the top priority, the goal is changing "from pioneering agriculture to conservation agriculture." [36] Yguazú considers the important issues to be developing successors who will lead future generations, planning new businesses that create added value, conducting research to restore the fertility of cultivated land, and pursuing coexistence and co-prosperity with local communities in Paraguay. Four challenges common to the three colonies can be confirmed: (1) Upbringing of successors; (2) diversification of farm management; (3) restoration of soil fertility; and (4) coexistence and co-prosperity with Paraguay's local communities.

Mr. Isao Taoka (born in Tokushima in 1943), who served as president of the *Cooperativa La Paz Agrícol*a and president of the *Central Cooperative Nikkei Agrícola*, as well as being a former Paraguayan ambassador to

[35] Sendo (2014).
[36] Asociación Japonesa de Pirapó (2000).

Japan, said, "Partly because soybean production is greatly affected by rainwater, harvests fluctuate with yields, which are good in some years and bad in others. In anticipation of such fluctuations, farmers have to continue looking for ways of technical improvements, and diversifying farming operations is essential for stable management. In particular, it is necessary to work on the restoration of soil fertility constantly while considering agricultural land important and thinking about how we can hand it over to the next generation," and in addition, he warned, "The period of agriculture has ended in which we just produce certain crops, and we have to pursue farming management with the calculation of income and expenditure in mind. To that end, how to educate the second and third generations who will lead the future is an important issue to be addressed. Education is indispensable to develop the second and third generations who will play an active role in the Paraguayan society."

Mr. Seiko Nishidate, who long served as a board member of the *Asociación Japonesa de Pirapó* (Japanese Association of Pirapó) and the *Sociedad Cooperativa Pirapó Agrícola*, talked positively about the importance of restoring soil fertility, saying, "If we preserve soil properly, we can continue farming management until our grandchildren's generation. To that end, it is necessary to exert originality and ingenuity, such as planting trees and rotating crops, and if we do so, the future of Paraguayan soybeans is not so hopeless."

Mr. Fukui, who served as president of the *Asociación Japonesa de Yguazú* and a board member of the *Cooperativa Yguazú Agrícola*, talked about various trials and errors for soil preservation in a forward-looking way as follows: "In Paraguay, many agricultural lands have already been developed, making it difficult to expand the current area of agricultural land. In the future, we have to concentrate our energies on preserving the soil of existing agricultural lands. Since August 2016, while engaging agricultural engineers, interested farmers in the Yguazú colony have gathered and worked on scientific research in EM [37] and wood vinegar in an effort to find effective technology for soil preservation. The greatest challenge is how to reduce costs and develop technology to achieve soil preservation for future soybean production. After all, based on their past experience, the basic principle is 'The life of agriculture starts from soil

[37] EM, which stands for "effective microorganisms," is a generic name for all microorganisms, including lactic acid bacteria, yeast, and photosynthetic bacteria.

preparation,' and to that end, we must give wisdom." He also talked about his outlook for the future, adding, "In the future, it will be necessary to work on industrialization so that more value can be added to soybeans we produce. One example is to form an industrial cluster by producing feed from soybeans and constructing a broiler chicken meat factory to utilize it. This will create a new industry and employment in the local community, leading to the coexistence and development of the entire local community, including Paraguayans.

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Chapter 4

Formation of clusters of agricultural and livestock product processing attempted by the Nikkei Society

Akio Hosono

4.1. Soybean-based clusters of agricultural and livestock product processing that led the period of transition

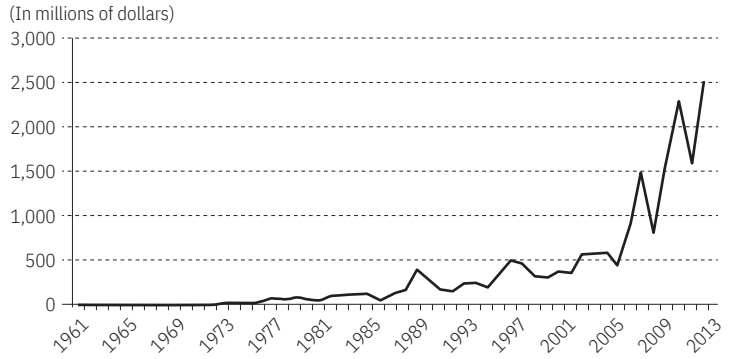
Shift from dependency on tropical primary products to diversified industry

The period from around 2000 to the present day was a real turning point for the industrial structure of Paraguay as it represented a shift from cotton to soybeans and the agricultural and livestock processing industry. In other words, it was a period of transformation from a rural economy dependent on tropical primary products to a diversified industry that consists of modern agriculture and food processing centered on the production of soybeans and other food crops. The value of soybeans exported, which stood at $370 million during the second half of the 1990s, rose to $1,020 million during the second half of the 2000s and to $2,500 million in 2013.[38] On the other hand, about 100 million dollars' worth of cotton was still exported during the second half of the 1990s, but the value of cotton exported during the second half of the 2000s was less than one-tenth of the value registered in its heyday, disappearing from the list of major export items.[39]

As shown in Figures 4-1 and 4-2, both the value of soybeans and that of soybeans, soybean oil, and soybean meal (produced together with soybean oil and also called "soybean cake") exported rose gradually during the first half of the 2000s and rapidly during the second half. And as indicated in Figure 4-3, gross domestic product (GDP), which had continued to register negative growth from the end of the 1990s to the

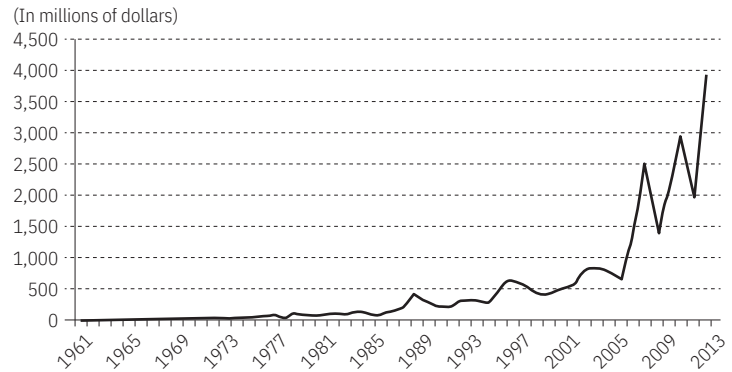
[38] The amount of soybeans produced grew from 2.91 million tons in 2000 to 6.46 million tons in 2010.

[39] The value of cotton exported fell to about $40 million during the period from 2006 to 2007 and to about $20 million during the period from 2009 to 2010.



Source: Ortiz Trepowski, Emilio et al. (2014), 21.

Figure 4-1 The Value of Soybeans Exported

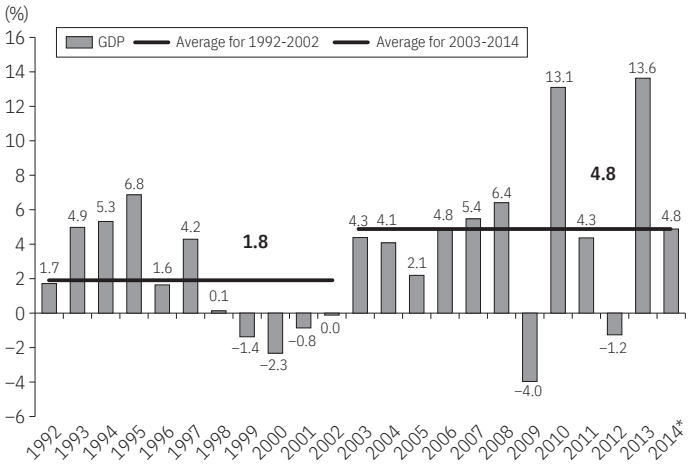


Source: Ortiz Trepowski, Emilio et al. 2014, 21.

Figure 4-2 The Value of Soybeans, Soybean Oil, and Soybean Meal Exported

early 2000s (1998-2002), started to grow in 2003 and achieved a high rate of growth during the ten years from 2003 to 2014, at 4.8% on average. This and the next chapters clarify what changes the Paraguayan industry and economy went through during this period as a result, and what factors made these results possible. Underlying these changes were the utmost efforts of many people, including Japanese immigrants.

It is evident that this period of changes was led by two factors: vigorous growth in soybean production, and industrial diversification spurred by the development of a succession of new industries. The changes in soybean production were described in detail in the previous chapters,



Source: Gobierno Nacional 2014, 51.

Figure 4-3 The Gross Domestic Product (GDP) Growth Rates of Paraguay

but during this period, which began in 2000, while the area of cultivation grew sharply, cultivation technology also advanced. That enabled a substantial rise in the value of soybeans produced. The area of cultivation for soybeans was 1.2 million hectares in 2000, but it started to expand at an accelerating pace in the early 2000s, reaching 2 million hectares in 2005, 2.68 million hectares in 2010, and 3.16 million hectares in 2013. During the first decade of this century, the area of cultivation thus surged by a factor of 2.5 times. Who would have imagined that Paraguay would become the world's fourth largest exporter of soybeans today? The country also became the world's fourth largest exporter in terms of soybean oil and the fifth in terms of soybean meal. And the growth in soybean production enabled the expansion of wheat production, too. Paraguay steadily changed from an importer of wheat to an exporter, and today, it is the world's tenth largest wheat exporter.

This was not the only change during the first decade of this century. During this period, many of the small farmers who had previously produced cotton were able to shift to sesame production, and Paraguay became an exporter of sesame in one leap. The poultry farming, pig breeding, and other industries that use compound feed, which employs soybean meal produced together with soybean oil as a material, as well as the egg and food processing industries, also developed during this period and started

to export their products. The production of high-grade leather seats for motor vehicles and other businesses began playing the role in the first instance of the development of new industries which could participate in the international supply chain, as written in the last chapter of this book. Japanese immigrants contributed to all of this. This and the next chapters look at how they did so.

The active role played by the 1.5th and second generations makes an opening for new industries

The first generation of Japanese immigrants in Paraguay were pioneers in soybean production, and as described above, they enabled soybeans to replace cotton and become a major export item as cotton production declined. Following the results of the first generation, the young 2nd or 1.5th generation emerged in the 1990s and the early 21st century, and as Paraguay was strongly affected by globalization, these generations made great contributions as pioneers who opened up new growth sectors in this country. It is no exaggeration to say that this was as significant as the establishment of soybean farming.

The term "second generation" as referred to here requires some explanation. In Paraguay, those who are usually called the "second generation" of Japanese immigrants in other countries include the generation of young people who immigrated together with their parents when they were children as well as the second generation of Japanese immigrants who were born and raised in Paraguay. Strictly speaking, the former may have to be called the 1.5th generation. Responding sensitively to the changes of the times, young people in these 1.5th and second generations took on the challenge of diversifying industries beyond soybean farming and adding higher value to these industries while taking over their parents' pioneer spirit.

We have seen that the early efforts of people centered on the first generation of Japanese immigrants, who took the lead in soybean production and contributed to the establishment of environmentally friendly and highly productive cultivation methods, bore fruit, helping Paraguay to change to an exporter of soybeans. Then, the efforts of the 1.5th and second generations of Japanese who looked hard at the coming new age and made remarkable contributions to the expansion of a value chain with soybeans as its starting point and the development of industries other

than soybean production helped Paraguay to advance its industry and transform its structure. They were industries that were enabled only if technology and experience were accumulated, and they were highly innovative, but involved risks. Thus, the young generation of Japanese immigrants were determined to take risks, becoming the so-called "first movers," and proved the feasibility of these industries.

Countries exporting primary commodities are exposed to harsh international competition. In particular, the international competition over tropical agricultural products is fierce. The price of products such as coffee, sugar, cotton, cacao, and bananas crashes if a powerful exporter appears in the market, greatly affecting countries that produce them. A well-known example is Vietnam becoming a leading exporter of coffee and having an impact on the international coffee market. The decline of cotton, which had been Paraguay's largest export item, was striking.

Soybeans, an agricultural product of the temperate zone, which Japanese farmers steadily helped to take hold in Paraguay, are a kind of grain and an important food, and in this respect, they are different from the above-mentioned tropical agricultural products. The world's demand for soybeans has grown constantly. Soybeans, which replaced cotton as a major export item for Paraguay, played the role of acquiring foreign currency. But in addition to the task of acquiring foreign currency through exports, Paraguay faced new challenges. More than anything else, the population continued to grow at a high rate, increasing the number of young workers. The government had to provide employment opportunities to young people. Furthermore, it was necessary to maintain the employment of people who had been engaged in industries that were forced to downscale themselves, as was cotton production. To that end, it was necessary to create new industries for industrial diversification and at the same time provide more employment opportunities by enhancing the processing capabilities of existing industries to produce high-value-added products for export.

Young people in the second generation mainly took the lead in bringing a breakthrough that met this challenge. In general, it is no easy matter to develop new industries. Even if a government works to do so, it often fails. Doing so involves all the more difficulties if private enterprises try it. Difficulties include acquiring necessary technology, developing new markets, and obtaining funds for those purposes and making investments,

and even if a private enterprise succeeds in doing so, it may not be able to recover the investments made as others imitate it. There are many studies of these difficulties, including Dani Rodrik's, for example.[40] But there are people who successfully overcame these difficulties in Paraguay. This and the next chapters describe the impressive history of how these difficulties were surpassed.

4.2. Taking on the challenge of building soybean/assorted feed/livestock/meat processing clusters

Cleverly using the disadvantaged position of Paraguay, a landlocked country

The expansion of soybean production in Paraguay enabled the country to earn income from soybeans instead of cotton, and moreover, it allowed the country to achieve a scale of exports that far exceeded that of cotton. But when soybeans, a primary commodity, are exported, their international price is determined at the grain market in Chicago and other cities, and what Paraguayan farmers receive is the price obtained by deducting transportation costs to the market. For Paraguay, a landlocked country with an underdeveloped transportation network, this puts the ex-farm price under great pressure. One way to overcome this disadvantage is to add high value to soybeans by processing them in Paraguay before exporting them. This requires the establishment of a production chain that consists of processes from soybean production to feed production using soybean meal, domestic animal breeding, and meat processing for sale to the domestic market and export. And it is essential to form a cluster or a concentration of enterprises that comprise industries that support the production chain. Many industries are required for this process, including the production of fertilizer, agrichemicals, and other inputs for agriculture, logistics, and finance.

Pioneers in feed/livestock/meat clusters

It was Mr. Yoshiaki Taoka, the first son of Mr. Isao Taoka, and his partners who founded UPISA (literally translated: a union of producers in Itapúa) that attempted to form a cluster of soybean, feed, pork for export, and processing industries for the first time. In the 2000s, UPISA developed

[40] For example, Rodrik (2007).

while overcoming many difficulties and played its role as a pioneer of industrial diversification in Paraguay.

Mr. Isao Taoka recalled these actions,[41] saying, "In the future, what should be done to add high value to grains in agriculture and stock farming rather than sell them as they are? There was such an idea among Japanese agricultural cooperatives, too. They later worked on it, but in those days, they did not do so on their own initiative. Under these circumstances, there was growing interest in establishing a meat processing company among the local volunteers." Several members of the *Cooperativa La Paz Agrícola* joined the volunteers, and one of their leaders was Yoshiaki, the first son of Mr. Taoka. The leading members of the group included persons concerned with the Trociuk Bank in Fram and Mr. Ireneo Engelmann, who served as mayor at that time and later became president of UPISA. UPISA was established in 1998, and its factory started operations in 2000.

The processing of meat that could be exported overseas had many difficulties to overcome. Mr. Taoka said, "In order to export meat, we had to meet the international environmental and sanitation standards, including making used water clean before releasing it to rivers. Since meeting these standards incurred large costs, some members gave up the idea." Under these circumstances, Mr. Yoshiaki Taoka, Mr. Engelmann, and other members dealt resolutely with the problem. And they introduced necessary technology while accepting the advice of Brazilian and Argentine experts.

Pork processing was undertaken by Ochsi and Studenko in addition to UPISA. Pork from each of the three companies has its own characteristic taste. But only UPISA exports its pork. Neither Studenko nor Ochsi has any of the environmental and safety equipment required for export permits. By contrast, UPISA originally started its business with exports in mind.

[41] Mr. Isao Taoka served as the Mayor of La Paz until 2004 (and chairman of the city assembly for one term during that period), after La Paz, one of the Japanese colonies, became a new independent city in the year which marked the 50th anniversary of Japanese immigration (1986). He served as head of the Cooperativa La Paz Agrícola in 1999 and 2001. Later, he served as the Paraguayan ambassador to Japan.

Overcoming difficulties in opening up new export markets

Finding export destinations and ensuring stable supply of pigs as a material are essential for UPISA to succeed as an exporting company. The meat processing industry has already grown in neighboring Brazil and Argentina, and it is not easy to export meat to these countries. It is necessary to open up new markets. Meanwhile, if meat prices rise in Paraguay, farmers sell their pigs in the domestic market, preventing the securing of materials (pigs) needed to continue meat exports. The first step was to export meat to Russia, but in order to secure the necessary funds, UPISA had to obtain loans from banks, and Mr. Yoshiaki Taoka even needed to put up his property as security. In addition, to continue its operation in a stable manner, UPISA had to purchase a certain number of pigs from pig breeding farmers, but usually these sell their pigs to buyers who offer higher prices and do not necessarily sell them to UPISA. Therefore, Mr. Taoka and other farmers decided to ensure the stable and steady delivery of pigs to UPISA from their own farms, although this was disadvantageous in terms of pricing.

Mr. Taoka said, "This was one of the greatest difficulties which UPISA faced immediately after its foundation. However, if the entire country depends on its domestic market alone, prices would crash, causing tremendous damage to pig breeding farmers if production grows excessively. To avoid such a situation, it is necessary to expand the export market and diversify the buyers of pigs from breeding farmers. Furthermore, this leads to the addition of higher value to Paraguay's export items, which has positive effects on all pig breeding farmers, but in general, they always give priority to immediate profits." Mr. Taoka and other farmers attempted to establish a pork processing and exporting system required from a long-term viewpoint and made utmost efforts to achieve this goal.

UPISA and the agricultural cooperatives that became the core of the cluster

Another challenge was to secure compound feed of good quality. Here lies the importance of constructing a production chain that covers all processes from upstream to downstream ones. "It is necessary to fatten up pigs into ones that weigh 110 kilograms or more in 120 days. Holding the key to securing such fat pigs is feed. That is possible if appropriately mixed feed is available. The *Cooperativa La Paz Agrícola* had members

who bred pigs, and there was growing interest in building a compound feed factory among them (to be described later). The technology to mix feed to produce compound feed is important, and compound feed must be able to produce 110-kilogram pigs by fattening them up. Young pigs generally weigh 5-6 kilograms each, and from then they have to gain weight by one kilogram per day. The agricultural cooperative investigates the ingredients of compound feed by computer. The dilemma which the agricultural cooperative faces is that while it needs to buy the grain (such as corn and kaoliang) it uses as materials for compound feed from its members at the highest prices possible, it must sell the compound feed it produces to its members at the lowest prices possible. Therefore, the agricultural cooperative needs to produce compound feed using grain it purchases when the price is low and store it. It is easy to say this, but in fact, it is really difficult. How to do this while maintaining the high quality of feed is the engineer's chance to show his skill. For this reason, mixing rates and other factors are business secrets. Furthermore, the taste of pork is greatly affected by what is added (such as salt) when compound feed is produced."

Therefore, the relationship between agricultural cooperatives and UPISA is important in that the former collects soybeans, produces feed, and supplies it to pig breeding farmers. This constitutes the core of the cluster. One of these agricultural cooperatives is the *Cooperativa Colonias Unidas* (Colonias Unidas Agricultural Cooperative). "The *Cooperativa Colonias Unidas* has a stake in UPISA and at the same time supplies feed, working closely with the company.[42] It adopts a system in which as an agricultural cooperative it provides young pigs and feed to pig breeding farmers and pays member farmers for raising these pigs (service provided). Therefore, UPISA purchases pigs from the *Cooperativa Colonias Unidas* rather than from individual farmers. UPISA purchases an average of 5,000 pigs monthly from the agricultural cooperative, and if pigs bought from other providers, including Cabaña El Nido, are included, it purchases an average of 7,000 pigs per month, and the number sometimes reaches as high as 10,000. The company slaughters and processes these pigs and sells pork and processed products (sausages and spiced sausages called *chorizo*, which are together generally called *embutido*). It produces 7,900 tons of meat and 4,000 tons of processed products each month. Pig breeding

[42] In addition to Mr. Taoka, Mr. Ireneo Engelmann, Oleaginosas Raatz S.A., the *Cooperativa Colonias Unidas*, and other investors are major shareholders of UPISA.

farmers also buy compound feed from the *Cooperativa La Paz Agrícola*." This cooperative will be described later.

Motives for becoming pioneers and the strength to overcome difficulties

Mr. Taoka and his son Yoshiaki, especially the latter, actively involved themselves in the foundation of a company that became a pioneer in meat production and processing for export. What was their motive? What was behind their motive? Yoshiaki is the second generation of a Japanese immigrant. At first, he intended to study in Brazil. But a university was established near the colony, the Itapúa campus of Catholic University, which consisted of faculties of agriculture and other sciences. Mr. Isao Taoka participated in the foundation of this university. Yoshiaki chose to study at this university. And as he studied there, he could exchange with people beyond the Nikkei society and direct his eyes to challenges for the development of Paraguay from a broader perspective. This was what the first generation of Japanese immigrants, who could not help but devote themselves to the establishment of stable farming as they settled, could not easily achieve. Yoshiaki recalled this, saying, "In this region, there was exchange between Japanese and people from other countries, such as Ukraine and Germany. We learned much from this exchange, and new initiatives emerged from it. I also came to know persons concerned with the *Cooperativa Colonias Unidas*. I visited the United States also, learning from major American granaries that farmers could not produce in winter because their fields were covered with snow." Yoshiaki thought that he had to look hard at his own region and know its characteristics. In Itapúa, farmers are able to produce throughout the year. So, diversification is possible. He thought that he must make the most of these characteristics.[43]

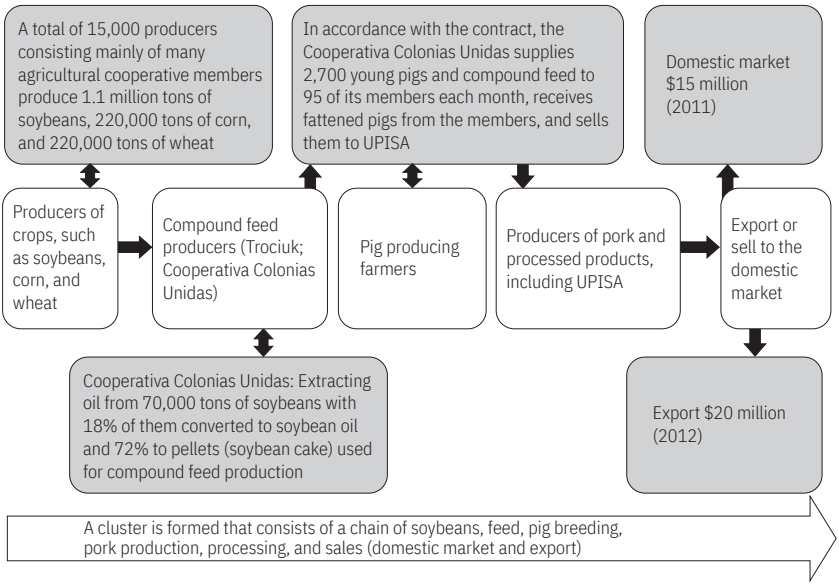
[43] Based on this idea, Mr. Yoshiaki Taoka thought that it was important to know how to make the most of regional resources for a production chain and utilize them to diversify production and add high value to products, and he has implemented that. He aims at adding high value to products through UPISA, and at the same time, he makes it a principle to produce five crops in two years, including off-season cropping, and in addition, by growing fruits, producing rice in the lowlands, and fattening up pigs, he has realized a diversified agriculture and stock farming industry on his own farm. Furthermore, he fattens up pigs by placing rice husks on the floor and also uses the rice husks to increase the fertility of his farmland, thus striving for an environmentally friendly production system that brings synergistic effects between agriculture and stock farming.

But UPISA faced great difficulties. Mr. Isao Taoka recalled: "As a pig breeding farmer, my son continued to show a loss. Not a few people left UPISA because of the deficits they suffered. My son and other few people remained. Ordinary small pig breeding farmers do not calculate profits in detail. They go into the red when the price of wheat bran is high, and the market price of soybeans is also high. These prices go up along with international market prices. Then, the price of compound feed soars, but the market price of meat remains unchanged, causing farmers to run into deficit. On the other hand, if international soybeans prices fall, profits from pig breeding rise. Therefore, it is important to keep feed. Pig breeding farmers also try to keep more feed, but it is costly to do so."

In addition to the market prices of soybeans and wheat, his son was faced with difficulties unique to distant export markets. "We experienced various troubles when exporting. Since Russian ports are quickly frozen, ships sometimes had to come back with their cargo unloaded. Therefore, we had to export products to Russia during the three months from June to August. In addition, some countries refused to accept our products. After the collapse of Lehman Brothers, Russia delayed paying, and UPISA's debts piled up at local banks. What is done for the first time always faces difficulties," he continued.

"It takes 90 days for pigs to be delivered to the factory, processed, and exported. Of this, the domestic portion takes 45-60 days. But since we have to pay the pig breeding farmer within 30 days, we need a large amount of working funds, particularly when exporting. The larger the scale of production becomes, the more working funds we need, and the more difficult it is to set the production on its way." Many of the investors in UPISA, including Mr. Taoka, were engaged in the pig breeding business, too, and therefore, they had to withstand additional difficulties. He also said, "Banks continued to finance this business because they knew its investors well. But it was also important that all parties concerned knew that Japanese were to be trusted and were serious. The Naranjal, Pindo, and Raúl Peña agricultural cooperatives as well as the Brazilian agricultural cooperatives also trusted us, not to mention the *Cooperativa Colonias Unidas*."

Ten-odd years after its foundation, UPISA had achieved steady



Note: Figures in the chart indicate the state of affairs around 2010.
Source: This figure has been created by the author based on UN-ECLAC/JICA (2014, 147), interviews, and other materials.

Figure 4-4 Cluster of Soybeans, Compound Feed, Stock Farming, and Meat Processing (Department of Itapúa)

development while overcoming difficulties. In their joint studies,[44] referring to this accomplishment, the United Nations Economic Commission for Latin America and the Caribbean (UN-ECLAC) and JICA stated that meat manufacturers, including UPISA, had completed the development of a production chain that consisted of soybeans, feed, and meat, and then, they pointed out, that it was only UPISA that had grown rapidly by exporting its products successfully, and that that was because the company had realized optimal production processes.[45] As indicated in Figure 4-4, a cluster producing soybeans, feed, pigs, meat, and produced

[44] ECLAC/JICA (2014).

[45] The Japanese government and JICA supported the development of the production chain and the cluster with UPISA as their core. For example, thanks in part to the good offices of Mr. Taoka, the 60-kilometer uncompleted portion of the Ruta Graneros del Sur, a road that contributed greatly to reducing transport costs for agricultural products and other materials, was completed using 2KR (grant assistance for food production) saved funds. In addition, JICA's Senior Volunteers and third-country experts from Brazil cooperated in developing the export of pork. Pig breeding manuals for export that were prepared with the help of JICA, contributed to UPISA becoming a pioneer in the export of pork.

products was formed through these processes.

4.3. Diversification to high-value-added agriculture and stock farming: Leading the development of the poultry farming and egg industry

Repeated trials

UPISA contributed to diversifying the Paraguayan industry and adding high value to its products by producing and exporting pork and its processed products, but it was Mr. Hiromichi Maehara and his family that contributed to poultry farming and the production of eggs. There were a succession of trials and errors before Mr. Maehara encountered poultry farming. The path he followed after encountering it was also far from even. He recalled what he had experienced before he encountered poultry farming as:

"After I came to Paraguay, I first attempted to grow bananas three times. But bananas are vulnerable to frost. I planted banana seedlings on a 2-3 hectare tract of land where we had less frost. I also went to see wetlands in Ecuador and Brazil." "In the third attempt, referring to my experience from the first two, I completed the arrangements to perfection by going as far as Israel and spending a large sum of money to introduce a 40-hectare fully automated irrigation system." [46] "I had many troubles. I built a bridge over a muddy river and constructed reservoirs and water gates. I installed two 120-horsepower motors. I also received instruction from a university teacher in Campinas, Brazil. I put fowl droppings in the soil, but the teacher said that they did not work, so I learned that fowl droppings were useless."

Mr. Maehara also first introduced pineapples. But this, too, was difficult. "Paraguayans do not eat something new. I also started dairy farming with 15 milk cows. I also tried vegetables and fruits. I worked on vegetables because I found when my mother became sick, and my family moved to Asunción that only three to four families cultivated vegetables. I attempted to grow tomatoes and other vegetables. Tomato cultivation expanded so much that as many as 40 families or more grew them. It took

[46] This remark is quoted from a book recently written by Messrs. Fukashi Maehara and Hiromichi Maehara (Fukashi and Hiromichi Maehara 2014,172).

one week to export tomatoes to Argentina's Buenos Aires by freight train. Later, we shipped them by truck. But farmers who had produced tobacco in greenhouses in Corrientes in northern Argentina looked for crops they could grow in the greenhouses because tobacco suffered from a disease. And what they started to cultivate instead was, believe or not, tomatoes, and afterward, we became unable to export tomatoes."

Encounter with poultry farming

He continued to recall, saying, "The encounter with poultry farming was that I went to Brazil to study there. In Brazil, there are many peddlers who visit one village after another. When I shared a pension room with these people, they gave me various kinds of information.[47] I heard that in Brazil, the wealthiest farmers were those engaged in poultry farming. They explained that the reason was that unlike farmers who could harvest only once a year, poultry farmers were able to earn a daily wage. In JICA colonies in Brazil, I heard that many farmers had recovered through poultry farming. But my father objected, saying, "Stupid bird keepers!"

Nonetheless, Mr. Maehara attempted poultry farming. First, his younger brother went to São Paulo to learn about poultry farming. "In 1968, we started with 500 chickens. The first ambition was to increase them to 20,000 to 30,000 chickens. We did not even imagine that we would develop into a poultry farming company with one million chickens."[48] But the path they followed was not easy at all. "In 1974, a large number of eggs came in from Brazil. In addition, a disease broke out. Cheap products were smuggled from Argentina and Brazil. Argentine corn was cheaper than Paraguayan corn. Naturally, feed became cheap, and eggs were produced excessively. As a result, they were sold for completely unrealistic prices. We were not able to compete with them."

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47 Fukashi Maehara and Hiromichi Maehara (2014) explain about this point as follows: "From several years after I migrated to Paraguay, I went to Brazil for inspection each year. Since I visited farmers, I stayed in a country pension. In those days, as the door-to-door sales system was used in Brazil, there were many salespeople among the immigrants from Japan, and they sold agricultural chemicals, fertilizers, seeds, chickens for poultry farming, feed, machinery, and so forth. I met those people at pensions, and since they were of the first generation as I was, and there was no language barrier between us, I could obtain much information on Brazil" (181).

48 Fukashi Maehara and Hiromichi Maehara (2014, 177).

Turning point for business expansion

But a turning point arrived. "In 1982, Fernando Collor de Mello became president, changing Brazil's exchange policy and eggs ceased to come in from Brazil as the price of Brazilian eggs doubled. Smuggling cannot be stopped when there are price differences between Brazil and Paraguay. If there are no longer any such differences, there is no benefit to import. So, eggs ceased to be imported from Brazil. Then, in 1986, we employed a Brazilian veterinarian and increased the number of chickens from the previous 100,000 to 200,000."

Prior to this, in 1979, Mr. Maehara had set up a directly managed egg store. "Up to that time, sales had been consigned to others, but the consignees did not try to sell actively. When I sold at the directly managed store, I learned various things. Through this experience, I learned that I could get along by producing eggs and decided to stop cultivating tomatoes and concentrate on eggs. The reason we became the largest egg producer was that we expanded egg production by borrowing $3.5 million from the Industrial Development Fund (Fondo de Desarrollo Industrial). Before that, we learned technology from Japan, Europe, the United States, Mexico, etc. Of course, we learned technology from Brazil as well. In 1997, we had 350,000 chickens. Then we used loans from the Industrial Development Fund (1998-1999) to invest for the automation of chicken houses and the construction of feed factories, silos, and other facilities. By doing so, we increased the number of chickens to 650,000. After we borrowed money, the guarani (currency unit of Paraguay) was depreciated, enabling us to reduce our debts considerably. We introduced fully automated egg sorting equipment that used a belt conveyor. We were the first producer in Paraguay to introduce this type of machine." In those days, Koreans introduced technology from California, but the most advanced equipment at that time was based on European technology Mr. Maehara introduced, and major Brazilian producers also adopted this technology.

Construction of an integrated system covering all processes from upstream to downstream

Thus, through large-scale investments, the egg production business of Mr. Maehara and his family (the Spanish name of the company is *Granja Avicola Maehara*; hereinafter referred to as "Maehara Nosan") achieved further development in the 2000s. And the company established an

integrated production system covering all processes from the securing of raw materials to the sale of products. Around this time, UPISA launched its business as mentioned above. The major characteristic of Mr. Maehara's business is that it established an integrated production system that enabled it to perform almost all processes from upstream processes to downstream processes in the production chain. Mr. Maehara emphasized, "The difference between our company and others is that we perform all processes from upstream to downstream ones, including the breeding of chickens that starts from chicks, the mixing of feed, and the production and sale of eggs, in an integrated manner. The business of chicks does not pay unless the number of chicks bred is five million or more. But since there are only two million chicks in the Paraguayan market, we bring chicks from Brazil. We buy raw materials for compound feed from the Continental Grain Company's factory. We also dealt with the *Cooperativa Colonias Unidas* from 1995 to 2010. We bought soybean meal from the oil mill of the agricultural cooperative. The production of one kilogram of chicken needs 2-3 kilograms of compound feed, and the quality of compound feed is important."

"The number of chickens we currently have has reached one million, but we have to maintain the combinations of chickens of different ages. This is the aspect of poultry farming that troubles us most. We produce eggs from chickens for 70 weeks after they start to lay eggs. We employ 300 persons for that purpose. We also produce boxes for eggs. The production system is most advanced, but we also use the conventional systems in some aspects of our operations. Apart from the production unit, about 100 people work for the sales network. Thus, a total of 400 people work in our company. In addition, there are people from 100 families who sell eggs through their own channels. There are also wholesalers of eggs."

The important benefit of integrated production is that feed, which holds the key to the quality of eggs, is mixed in-house. Maehara Nosan produces compound feed at its own feed factory, which is capable of producing 30 tons of feed per hour. This factory organizes a production program that adapts to the health of chickens and environmental changes. Feed is mixed by using a computer to organize a program that adapts to the situation. Chinese chives, a fresh green type of feed, are blended into compound feed.[49] Mr. Hiroki Maehara, who is in charge of feed

[49] The following section in this paragraph is quoted from Tadashi Sasaki (2007, 165-167).

management, explained the reason for this to Mr. Tadashi Sasaki, who visited the egg business, as follows: "After we designed the ingredients of feed and supplied it, the chickens became so healthy that we could hardly recognize them. The number of sick chickens decreased sharply, making expensive medicines and the time and labor required for treatment unnecessary, which is very helpful. This leads to higher survival rates, better egg-laying performance, and higher-quality eggs. Chinese chives are given to chicks every day and to adult chickens once every two days. The effect of Chinese chives supplied as feed is tremendous."

In order to secure quality raw materials for feed in a timely manner, Maehara Nosan built a soybean oil mill and has silos and warehouses for storage. With all these facilities located in the company premises, the integrated production system has brought the effects of overall transport and production cost reductions and quality improvements. It is no exaggeration to say that Maehara Nosan has really formed a cluster of egg production by concentrating major related industries in its organization.

In addition, the company introduced windowless chicken houses earlier than any other company.[50] Each house can breed 50,000-60,000 chickens, and the computer-aided, fully automated system controls feed supply, lighting, sanitation, discharge of droppings, and egg collection and sorting. In addition to high productivity, the benefits of the system include the ability to keep the proper temperature throughout the year, prevent chickens from being affected directly by the open air, dispel all apprehensions about environmental pollution, and cope with agricultural

Maehara Nosan's poultry farming complex.
Source: Federación de Asociaciones Japonesas en el Paraguay (2016)

[50] The following section in this paragraph is quoted from Tadashi Sasaki (2007, 168-169).

pests, such as avian influenza viruses, which invade from the outside.

Establishment of "Yemita" as the best-known brand of domestically produced eggs

As described above, Maehara Nosan constantly had to compete with imports from Brazil. It successfully distinguished itself from others in the same situation by competing with imports from Brazil over high quality and establishing its brand as a national one. The Spanish word for "yoke" is "yema," and the brand name "Yemita" was coined by combining it with the location of the farm "Ita." The Spanish word ending "ita" means "something cute." This made Yemita a synonym for Paraguayan eggs, and today, it is the best known brand of domestically produced eggs.[51]

Currently, Maehara Nosan produces about 800,000 eggs daily, accounting for nearly half of the total output in Paraguay (See Table 4-1). According to a survey conducted by a research institute in Paraguay based on materials available around 2010, the number of eggs consumed by a Paraguayan annually was 137, far less than the 250 or more registered in advanced countries (The Food and Agriculture Organization (FAO) recommends 300 eggs), but it can be said that as a pioneer in the egg industry, Maehara Nosan has contributed greatly to establishing a system in which domestically produced soybeans are turned into domestically

Table 4-1 Egg Production in Paraguay

	Output (daily)	Annual output	Number of chickens	Number of eggs consumed per person annually	Percentage of eggs consumed per person annually	Amount of compound feed used (daily)	Trademark (Location)
Granja Maehara	830,000 eggs	298.8 million eggs	1.1 million	63 eggs	46.1%	115 tons	Huevos Yemita (Ita)
Las Tacuaras	600,000 eggs	216 million eggs	800,000	46 eggs	33.3%	Unknown	Nutrihuevos (Villeta)
Others	370,000 eggs	133.2 million eggs	600,000	28 eggs	20.6%	Unknown	
Total	1.8 million eggs	648 million eggs	2.5 million	137 eggs	100.0%		

Source: This table has been created by the author based on Ortiz Trepowski, Emilio et al. (2014, 73).

[51] The following section in this paragraph has been written based on Tadashi Sasaki (2007, 170-171).

Yemita trademark eggs. Source: Maehara Nosan

produced feed and then into highly nutritious quality eggs for domestic consumption.[52] Such a contribution has been recognized, and the Minister of International Trade and Industry Award was presented to the company in Japan.

4.4. Developing into a major producing center of wheat together with soybeans[53]

Flour mills that became a decisive factor for wheat production

The first decade of the 21st century was also important in that Paraguay achieved wheat self-sufficiency and started to export wheat. Nikkei agricultural cooperatives played a leading role in this respect. Each agricultural cooperative responded to industrial diversification and advancement in Paraguay with its own strategy. For example, in terms of wheat, the *Cooperativa Yguazú Agrícola* became the first Nikkei agricultural cooperative to build a flour mill (its operation started in 1998). *Sociedad Cooperativa Pirapó Agrícola* also worked to spread wheat production early.[54] Meanwhile, noteworthy from this chapter's viewpoint, the establishment of a production chain is one of the *Cooperativa La Paz Agrícola's* initiatives. This cooperative made united efforts to promote the production of wheat

52 Source: Ortiz Trepowski, Emilio et al. (2014, 72-73). In addition to egg production, Maehara Nosan is engaged in large-scale stock farming in the Chaco region and other businesses, but this chapter focuses on its egg business.

53 This section has been written based on the interview with Mr. Yoshimasa Goto, head of the *Cooperativa La Paz Agrícola*, and the references listed at the end of Chapter 5.

54 Mr. Seishichi Nihei, who had long worked to spread and give guidance in wheat production as a director in charge of farming at the agricultural cooperative, was officially commended by the Ministry of Agriculture and Livestock in 1982 (*Sociedad Cooperativa Pirapó Agrícola* 2010, 135).

as an off-season crop for soybeans, launched flour milling business, and then constructed a feed factory and advanced stock farming.[55] Mr. Yoshimasa Goto, head of this cooperative, explained the circumstances as follows:

"This region is a major production center of wheat in Paraguay. The agricultural cooperative made utmost efforts. The government aimed at wheat self-sufficiency, and this had a positive effect on wheat production, however it was a disadvantage to cooperative members that they did not have a flour mill. The price was sometimes beaten down. They tried to build a flour mill, but in the early days, electricity was not available. Electricity finally became available in June 1988. With electricity available and roads constructed, there was growing interest in factory construction. A flour mill was completed in 2003."

"In order to secure construction funds, we discussed whether to invest more money. About 70 cooperative members all agreed to do so.

The flour mill and the celebration of its completion.
Source: JICA Paraguay Office

The completed flour mill.
Source: JICA Paraguay Office

[55] This section focuses on the wheat production, flour mills, feed factories, and stock farming promotion of the *Cooperativa La Paz Agrícola*, but this district has played a pioneering role in soybean production as well. The *Cooperativa Yguazú Agrícola* is well known as the birthplace of no-till farming in Paraguay, but La Paz is the birthplace of soybean cultivation. It was Mr. Genji Hisaoka that had the idea of soybean cultivation; he said that he had planted soybeans in a 1.5-hectare tract of land he had developed by clearing primeval forests in the belief that soybeans would become an export crop in the future. According to Mr. Hiroshi Hisaoka, his son, Mr. Hisaoka was officially commended by Paraguay's president as the first soybean producer in 1976. Up to the early 1960s, soybeans had been threshed manually, but in the 1960s, Hiraiwa-style, Tanabe-style, and other soybean threshers were manufactured and marketed by Japanese immigrants one after another (*Federación de Asociaciones Japonesas en el Paraguay* 2007, 205-206). Also see Chapter 1.

Everybody said that he knew technology, but in fact, when we started, it was found that nobody did. Fortunately, an engineer who had worked with a flour mill in Asunción happened to offer to work at the *Cooperativa La Paz Agrícola* flour mill. This man had worked at the factory of Molinos Harineros del Paraguay (MHP), which had once supplied 60-70% of flour in the country. The engineer who had worked there for 15 long years was the very person we needed who could not have been found at any flour mill in Paraguay. We bought the best machinery for the mill. This machinery was bought before the engineer came to the factory. From the very beginning, the idea was to make our factory large enough to grind all of the 25,000 tons of wheat produced by cooperative members. We set the goal of producing high-quality flour so that we could sell it at the highest price in Paraguay."

But they were faced with many difficulties. "For example, at the end of August 2013, we suffered tremendous damage as we had an unprecedented late frost and had to import wheat from Uruguay. The acquisition of technology was also important. Every day, we tested the quality of our flour by baking bread, and thus, factory personnel gradually learned technology. Guidance in such technology was left to the experienced engineer. But the engineer came to involve himself in the construction of a new flour mill planned in Asunción and quit the agricultural cooperative's flour mill."

The flour mill got started along the right lines, and the effects of this were significant. The first effect was on farmers' selling price for wheat. They could sell for a price 10%, and sometimes 20%, higher than when selling to others (such as ordinary flour mills). This encouraged them to cultivate more wheat. The export of wheat began around 2000 in real earnest. Before the flour mill was built, the agricultural cooperative exported wheat to Brazil. Today, Paraguay is the world's tenth largest wheat exporter. Paraguay is self-sustaining in terms of wheat, its long-felt wish, and this alone is an outstanding achievement, but even more significant is that it has become a wheat exporter.

Nikkei agricultural cooperatives that made wheat production take root as an off-season crop for soybeans

Paraguay became able to export wheat in the 2000s, and this is largely attributed to the contribution of Japanese immigrants who made wheat

production take hold as off-season cropping for soybeans and Nikkei agricultural cooperatives which promoted such efforts. Referring to this in his address entitled "Upon celebrating the 40th anniversary of the foundation of the *Cooperativa La Paz Agrícola*," Mr. Choei Yoshida said as follows: "We invented what the soybean-wheat planting combination based on mechanized farming is today, by trying and examining the soybean-wheat continuous cropping system that had been almost nothing immediately after settlement. We Nikkei people are highly proud of ourselves in that we succeeded in this pattern of farming. The reason is that most of the foreign immigrants, who had nervously watched us wondering whether this planting system succeeded, have so far imitated it." [56]

Originally, immigrants from Ukraine were the first to bring wheat to Paraguay. In Paraguay, farmers first tried to make the Department of Misiones the center of wheat production but failed, and wheat was successfully produced here in the Department of Itapúa. Today, the Department is a major producing center of not only soybeans but wheat as well. The Paraguayan government announced its wheat self-sufficiency policy in 1975 and 1976, and for that reason, Japanese experts took the lead in starting to develop varieties of wheat (warm-climate wheat suitable for this region in particular) at the Regional Center for Agricultural Research (CRIA) in the 1980s. The variety developed by Japanese experts was most suitable for this region and highly productive, and therefore, we used it. The development of this variety transformed wheat production. The Japanese experts sent to CRIA laid the foundation for that. Based on this research, variety improvement has continued to the present day. For details of CRIA, see Chapter 3.

The quality of the *Cooperativa La Paz Agrícola's* wheat and flour is evaluated as high. *Taiyo to tomoni: Rapasu nogyo kyodo kumiai 40-nen shi: 1970-2010* [Living with the Sun: Volume of the 40-Year History of La Paz Agricultural Cooperative 1970-2010] states the quality as follows:" More than anything else, the strength of this agricultural cooperative is that we have quality wheat, and this has enabled us to supply quality flour, gaining a good reputation and full confidence in various places of the country. Along with this, that effect manifests itself in pricing as well." [57]

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[56] Cooperativa La Paz Agrícola (2012, 139-140).

[57] The circumstances under which the agricultural cooperative worked with the aim of

The flour product produced at the flour mill is named "Coop. La Paz," and the agricultural cooperative took the opportunity to create its logo based on this. In 2003, at the same time the flour mill started operation, the agricultural cooperative decided to build additional silos to store wheat for flour production.[58]

Expansion of stock farming and revitalization of the local economy through feed production

The success of the flour mill was highly significant in two more ways. One was revitalization of the local economy. The other was that the flour mill was the driving force behind the construction of a feed factory, which would further develop the agricultural cooperative's business.

Today, the number of personnel at the cooperative is 150, including those of the flour mill and the feed factory, and the number increases to 600 if their family members are included. The number of cooperative members was 103 in 2000, but grew to 150 in 2014. Ninety of these members are actually engaged in agriculture. Overall, the cooperative members employ around 150 to 200 persons. If the number of their family members is a little more than 600, it can be said that a total of about 1,500 people are directly related to the agricultural cooperative. Since the population of La Paz is 2,500, the agricultural cooperative's contribution to the local economy is great. The revitalization of the local economy has improved the public order of La Paz City considerably as compared to the previous level. These changes in agriculture, which began from soybean production, had wide-ranging effects, benefiting the local community in the 2000s.

Goto, the head of the cooperative notes that, thanks to the income from its flour mill, the agricultural cooperative came to have money enough

becoming a major production center of soybeans and wheat are written in detail in the book (Cooperativa La Paz Agrícola 2012, 35). In some years, cooperative members made up for the decreases in their income from soybeans with income from wheat, although the latter was an off-season crop, an indication that expanded wheat production was highly significant. Increased production contributed to more stable farming management, and in addition, this meant that the country no longer needed to rely on wheat imports and instead could export wheat. It is said that in 1987, Paraguay achieved the production of 226,000 tons of wheat, an amount that enabled the country to meet domestic demand as aimed at by the Ministry of Agriculture and Livestock (Cooperativa La Paz Agrícola 2012, 47).

58 Cooperativa La Paz Agrícola 2012, 71.

and to spare. In 2010, "we used the money to construct a feed factory. The factory uses wheat bran generated by the flour mill. Soybean meal is bought from outside. Much bran is mixed for feed to breed cattle, and corn is mixed for feed to breed pigs and chickens. We receive outside advice on technology for the feed factory, but the flour mill's engineers also contribute to it. Products from the agricultural cooperative's feed factory are subtly different from others, and such differences are our selling point. One can find differences in feed only after one month. The greatest difference is found in eggs, and if the quality of our feed is not good, we cause much trouble to egg producers. Our social responsibility is thus extremely heavy."

"All people concerned with stock farming tend to blame feed if their business does not go well. In their area, a veterinarian from the cooperative immediately goes and investigates what the cause is. There is a beef-cattle breeding boom right now, and farmers have come to use silo-sorted bits of soybeans and other kinds of grain, which were formerly discarded. Feed from the cooperative is mixed with this. The feed factory pays in some way or other. Wheat is produced by the majority of cooperative members. The cooperative members produce only half of the amount of corn used by the agricultural cooperative, but since corn is difficult to sell, the feed factory is beneficial to cooperative members in this respect, too. We will strive for diversification using the feed factory as a springboard. The future direction of our business is broilers for the time being. Eggs are difficult. Capable people are needed for the egg business."

As described above, the cooperative has steadily expanded its production chain by itself, and with soybean production as its core, the production chain encompasses the production of wheat as an off-season crop, the grinding of wheat, and operation of the feed factory. And today,

The feed factory. Source: JICA Paraguay Office

it keeps expansion of stock farming in mind. But in light of its nature as a cooperative association, the agricultural cooperative respects the intentions of its members and emphasizes careful management based on the agreement of its members. Goto explains "the members of the agricultural cooperative vary in operational scale, and if it had not existed, disparities between small and large farmers would have widened, with the former unable to continue farming and only the latter able to survive. Without the agricultural cooperative, individual farmers whose position was weak would have had much more difficulties in farming management with the price beaten down and financial institutions unwilling to grant loans."

"The flour mill was expected to suffer a deficit for five years but was in the black in the first year of operation. The reason personnel at the worksite were deceived less frequently was that they were clever and sensible. The stance of cooperative members is also important. It is important to work quietly and steadily. Such members are considered important. If they leave something to outside people, they will fail. The way feed is mixed at the feed factory has been established."

Investment in technology is essential to stable expansion of the production chain. The cooperative is concentrating its energies on this point, too. According to Goto, "this agricultural cooperative makes it a rule to save 10% of its profits for the educational fund, and this fund is also used for the stock farming experimental station (the agricultural and stock farming experimental station operated by the agricultural cooperative). At this experimental station, veterinarians use the agricultural cooperative's feed to confirm its effects (such as the rate of eggs laid) and compare them with those of others' feed. A considerable amount of money is used. The experimental station is testing the effects of feed for beef cattle, pigs, and fowls. Only milk cows are not covered by these tests. Veterinarians investigate what appropriate ways of mixing are. Agricultural tests are also conducted. Tests consist mainly of those of agricultural chemicals and crop varieties. But we believe we should focus on stock farming. We want to promote stock farming." These initiatives will enable the cooperative and its members to add even higher value to agricultural and livestock production in this region and further diversify it.

✳ The references for Chapter 4 are listed at the end of Chapter 5 together with those for Chapter 5.

Column 3
Rebirth of the La Colmena colony and the Expo Frutas

Makoto Kitanaka

The first place where Japanese settled in Paraguay was La Colmena (1936). Farmers produced vegetables and fruits for the capital city of Asunción, making the most of the favorable location, being accessible by two and half hours' car ride from the city. While the water service and roads improved with the support of Japan, the excellent children of Nikkei people left their native place to work in the capital because of proximity, making La Colmena's situation slightly different from that of other colonies that were made rich by soybean production.

If this situation had continued, the Nikkei population would have decreased, and the Japanese flavor of La Colmena, the first settlement of Japanese in Paraguay, would have continued to dwindle. Not only the Nikkei society in La Colmena but also that in other settlements was anxious about the future of La Colmena. So, there was a plan afoot to revitalize the La Colmena settlement.

As JICA offered support, the planners collected the opinions of not only the Nikkei society but also the Paraguayan society in La Colmena. The majority of opinions were about the shortage of hospital beds and the need for road improvement, but few submitted ideas suitable for revitalization of the entire La Colmena community. Emerging from the meetings held repeatedly was a proposal to plan something with fruits, a special feature of La Colmena, as its theme.

The final plan was to organize a La Colmena fruit festival in conjunction with the time when grapes and other fruits, La Colmena's specialties, could be harvested. In the first *Expo Frutas* (Fruit Festival) in 2012, the festive mood rose with music and dance on the eve of the festival, and on the festival day, as many people from Asunción visited the event site, the festival livened up with street parades and other celebrations. The number of visitors who bought boxes of La Colmena-grown fresh fruits, which were less

expensive than in the market, was noticeable when they came home. Held each year thereafter, the Expo Frutas, which is operated jointly by the Nikkei and Paraguayan societies, has come to be recognized as an annual event in Paraguay.

Members of Nikkei families who were born in La Colmena and had left for Asunción return to their native place and enjoy the Expo Frutas on this day. In provincial areas of Japan there is a similar idea of taking some opportunity to revitalize a village, but the secret to success in La Colmena was probably to emphasize the quality fruits the Nikkei society had long worked to produce. The value of La Colmena fruits is reevaluated favorably not only in the Nikkei society but in all of Paraguay, and it is even becoming one of the local features of which Paraguayans living in La Colmena are proud.

Nikkei colonies change as time goes by, but it seems that they are reborn by respecting the efforts of their predecessors and bringing a breath of fresh air into them. This is exactly the feat enabled by Japanese DNA.

Chapter 5

Development of new industries and the diversification of exports

Akio Hosono

5.1. Development of the sesame industry enabled by long years of technological development and the spread of newly developed technology to small farmers

Riding on the loading platform of a truck to Asunción

Mr. Toshikazu Shirosawa migrated with his family from Hokkaido to Paraguay in 1958. Mr. Shirosawa, who was a junior high school student in those days, made up his mind to study in the capital city of Asunción and went there riding on the loading platform of a truck at a time when there were few decent means of transport. This decision and enthusiasm were the root of what Mr. Shirosawa's sesame business is today. "A middleman came to the colony to buy corn. He loaded a pile of corn he had bought on the platform of his truck and covered it with a sheet of canvas. He said that he would take me to Asunción if I did not mind sitting on the corn, and I rode on the truck. Being afraid that my life would be jeopardized if I fell, the middleman fastened the rope that fixed the sheet and the band of my trousers with a towel on the truck." The national road from Encarnación to Asunción was a road in name only, it was not paved in those days and was so bad that if it rained it became muddy, causing tires to sink into it, and if it dried, wheel tracks became hard. "Nobody might have imagined that I would go to a school in Asunción, but in my opinion, I wanted to study there because Asunción was the center of the country."

Before that, group training was provided under the sponsorship of the Japan Overseas Council and he participated in it as one of the 15 agricultural trainees. "Trainees stayed at the training site for 70 days, and the training program was really strict with practical exercises beginning in the early morning, but it was extremely substantial with visits to German colonies and tours to Argentina. The practical exercises held at the agricultural experimental station in Pirapó led me to take interest in agriculture, which involves itself in nature. One of the managers at the

training site at that time was Mr. Miyagawa, who was later killed by guerrillas in Peru. I cultivated a friendship with him in subsequent years, and he took good care of me."

Partly because of such connections, sometime after he started to study in Asunción he received a letter asking, "Why don't you apply, because the Japan Emigration Service (JEMIS) is inviting applications for the position of employees?" Due to the poor postal service in those days, the letter arrived two months later than the deadline, and the acceptance of applications had been closed. For that reason, he was not hired as a regular employee, but he began to do jobs, such as the organization of materials, on a daily allowance basis. Since he could not afford to pay school expenses, he continued to work while studying. This was when he was about 18 years old. Later, he was hired as a local employee. He worked with the Emigration Service while studying economics at university, but he worked overtime for so many days that he did not have enough time to sleep. "Particularly, at the time of settling accounts and budgeting, I came home early in the morning every day; I often came home after working until 0400, and went to work at 0700 after taking a shower. I had really hard days. In addition, with little toilet paper available, it was a difficult time. I had to give up my studies halfway."

After he worked with the Emigration Service for seven and half years, he became independent, although the Emigration Service tried hard to dissuade him from quitting, and in 1971, he started up an exporting company. That was Shirosawa Company.[59] After that, over 40 years passed.

Encounter with sesame, a "gift from God"

What he worked on first was peanuts. At that time, the company's major export destination was Europe, but its connections with Japan were gradually becoming stronger. In the beginning, exports to Japan consisted mainly of leather and peanuts. It was more than 20 years ago that he started to think about the possibility of producing and exporting sesame seeds. There were various opportunities to do so. In the early 1990s, the

[59] In Paraguay, the company is known as Shirosawa Co. SAIC. This chapter focuses on Shirosawa Company's sesame business, but in addition to the production and export of sesame seeds, the company exports peanuts and processed foods using corn for materials. The latter is known for its product name "Yes-Yes."

decline in cotton production by small farmers in Paraguay was becoming noticeable. Behind the decline was increased cotton production in many countries of the world. Some countries promoted cotton production and exports through large amounts of subsidies. "I remember that I talked with Mr. Yutaka Hongo, who had been sent to the planning agency of the Paraguayan government, and concluded that if cotton cultivation became useless, 300,000 farmers would flow into cities, causing serious troubles, and that alternative cash crops were necessary. Mr. Hongo returned to Japan, and thinking that as I remained in Paraguay, I had to solve the problem in some way or other, I tried to find crops suitable for small farmers," Mr. Shirosawa recalled.

"Visiting Brazil and Argentina, I investigated in various ways. When I was visiting some areas in Brazil where peanuts were grown, I came across one company that dealt in sesame seeds together with peanuts, although the amount handled was not large. At that time, interested in the crop, I ordered those sesame seeds from the firm and planted them in the Yguazú colony. Then, they were all destroyed by early frost because I was not familiar with sesame at all. But I had experienced sesame production. I was beaten but wanted to try it again. Moreover, I understood that sesame was suitable for small farmers. The reason was that the crop was manually produced by family members and that mechanization was difficult. I assumed that they would be less exposed to competition with agricultural powers like Argentina, Brazil, and the United States. So, I believed at that time that this was a 'gift of God.'" Later, this phrase came to be used frequently, but it was Mr. Shirosawa who used it for the first time.

Sesame was a crop for which demand was steadily growing in Europe, Japan, and other regions and was not a crop whose supply could rise sharply, causing its price to crash. But the first people who objected when Mr. Shirosawa tried to start a business of exporting sesame seeds were the senior managers at Shirosawa Company whom he had trained. The reason was that in those days a sesame business was expected to face various difficulties. Mr. Shirosawa talked about his determination at the time, saying, "Nine of the ten executives and senior managers objected. This was because I proposed to build a sesame business in the most difficult area in Paraguay. Areas where there were many small poor farmers were dangerous. The majority of executives and managers wondered why they had to go to dangerous places where merchants were unwilling to go

and sell things. Today, even if we enjoy affluent lives to a certain extent, what would happen if over 1.5 million poor people became unable to earn their living? We would live in a society in which anything could happen if they attempted robbery, murder, or a coup in order to live and raise their children. We are all in a ship called 'Paraguay'! Let us work on this business for our own families. Finally, I decided as president. Since going to the project site for investigation involved danger, we armed ourselves when we went there. I believed that spreading a crop alternative to cotton that small farmers could produce was essential. Today, I may sound like a braggart, but at that time, I was driven by a sense of mission."

Start from scratch in sesame cultivation: The outstanding achievement of development of the Escoba variety

In addition to that, the major challenge he had to overcome was to develop a variety that would fit the export market and to spread technology, such as cultivation methods, to farmers. It was essential to develop a tasty variety that met the preference of consumers in the Japanese market, to which it would be exported. In the second half of the 1980s, Shirosawa started to cultivate over 40 varieties of white sesame on a trial basis. In addition to using its own test cultivated land, the company distributed white sesame seeds to small farmers for test cultivation. Mr. Shirosawa's efforts bore fruit, achieving the development of the "Escoba variety," which was recognized in the Japanese market. It took four years to develop this variety through cross-fertilization.[60] The Escoba variety was well received in Japan, to which it is exported. It is safe to say that Shirosawa thus created the first sesame research institute in Paraguay. The reason is that in those days a sesame research institute could not be found anywhere in the country. "Today, there are other research professionals. However, nobody knew sesame in those days, and it took four years to discover the Escoba variety. I showed sweets containing sesame seeds and explained that they were put on McDonald's buns." Mr.Shirosawa started completely from scratch. He had to do research for himself. "I

[60] According to the study conducted by the United Nations Development Programme (UNDP), Shirosawa started the test cultivation of sesame on its plantation in 1989. Through subsequent research, the company succeeded in developing this excellent variety in 1994. In 1995 and 1996, as its spread progressed, the amount of sesame produced in Paraguay grew from 120 tons in 1994 to 1,200 tons in 1996, and it reached 8,343 tons in 1999 and 2000 with the output per hectare being 945 kilograms, three times the world average according to FAO statistics. Furthermore, in the following year, the productivity rose to 1,209 kilograms per hectare, four times the world average.

myself thought that I had to do research by myself. I never intended to rely on somebody else."

Mr. Shirosawa's nephew studied at Tokyo University of Agriculture, and later, he was trained for two to three years at a nursery company located in Shizuoka, which was financed by Ajinomoto Co., Inc. Through such connections, Ajinomoto asked Shirosawa to cultivate about 15 varieties of sesame on a trial basis. It was an extraordinary agreement, and the company continued test cultivation for three years for research. This test cultivation had nothing to do with the Escoba variety, but in this process, the company learned various things. Currently, it is working with Ajinomoto in Peru in various ways.

It was not easy to spread sesame cultivation technology

Along with the difficulty of developing new varieties, it was not easy to spread technology to small farmers. Paraguayans are not familiar with sesame seeds. Naturally, small Paraguayan farmers who do not eat sesame seeds had no experience in growing sesame, and it was essential to spread cultivation methods and other techniques in a carefully thought-out manner. "At first, we conducted test cultivation by distributing seeds to 20-30 families. When concluding a contract, we guaranteed pricing and promised to take all products without fail, and in the first year, farmers could harvest around 15 tons of sesame. Agricultural engineers provided technical guidance. After that, we held over 800 training sessions during the period of ten years or so. Since they are continuing even today, the total number of sessions held has already reached more than 1,000. I have

The photo of sesame seeds.
Source: Federación de Asociaciones Japonesas en el Paraguay (2016)

The photo of a sesame plantation.
Source: JICA Paraguay Office

done this business, thinking that it was natural to have a difficult time," said Mr. Shirosawa.

Shirosawa has employed many promotion personnel to spread production technology. It constantly has about ten agricultural engineers with university training, and in addition, it has promotion personnel with high school training, whose number ranges from 50 to 70 although it varies, and one promotion officer is in charge of 100-150 families. The activities to promote sesame production were a heavy burden on the company, but Mr. Shirosawa recalled, "I told employees that I understood that the burden was heavy even if it was intended for dissemination and that profits became small, and I emphasized that it was nonetheless important to keep a balance by providing technical guidance for dissemination while working to ensure that the company does not go bankrupt. I continued to say to employees that we were doing something great and that we should be proud of what we were doing. That could not be replaced by money. What we were doing was to contribute to society by eliminating poverty while compiling a budget that would enable the company to survive. Today, this is understood and gives the employees' confidence." Mr. Shirosawa continued to say, "When we visit provincial areas today, farmers say that formerly they could not afford to send their children to school but that they can do so now. Before, even if their children became sick, they did not even have money to buy medicine. Now they can take their sick children to a hospital. They tell us to take bananas and potatoes as a token of appreciation. Nothing makes us happier than this. And the executives and employees who have followed me are also wonderful, and I am grateful to them."

Giving priority to spreading technology to small farmers without charging patent fees even if patents are obtained

Since the development of the Escoba variety, the company has continued research in various aspects, including sesame varieties and organic fertilizers, and this effort has allowed it to accumulate many research results. In particular, it has worked with universities to test the effects of organic fertilizers on sesame, and reached the point where such fertilizers were spread widely among small farmers. "I thought about what institutions we should work with, but it was very beneficial to work with universities."

"Sesame varieties can be registered as patents. The Escoba variety is No. 1 in that it is tasty, but it takes 120 days before it grows large enough to be harvested. The longer the period up to harvest, the higher the possibility of suffering from agricultural pests. Therefore, nearly ten years ago, mainly by working with a university, we developed a variety called SH1, which allows us to harvest in 90 days. The "S" of SH1 stands for Shirosawa. Currently, this is most popular. In the future, as international competition intensifies, we will lose to competitors unless we advance mechanization. The SH1 variety goes well with mechanization, but the Escoba variety cannot be mechanized. The future challenge is how to advance a certain level of mechanization without losing the characteristics of sesame as a "gift of God." In other words, that means introducing machinery that suits small farming and improves productivity. We have not obtained a patent for the Escoba variety. We have obtained a patent for SH1, but for the time being, we do not charge a patent fee. We make it a rule not to charge a patent fee because the producers are small farmers." Thus, it can be said that Shirosawa Company provides superior varieties as public goods.

Mr. Shirosawa went on to recall, "At first, we had a hard time because there were many things we did not know. Test cultivation sometimes failed because of frost. In addition to spreading technology, it was important to raise funds so that farmers could start sesame cultivation. In those days, there was no financial institution in the area where sesame was grown, and the company lent necessary funds in the form of advance payments. As farmers earned more income and public order improved, a financial institution called "Financiera" came to the area. Today, banks also come to grant loans. We developed other markets so that we did not depend on the Japanese market alone. By producing nearly twice as much as the output destined for Japan, we have tried to export to more diverse markets."

A sesame production cluster that developed

As these efforts accumulated, a sesame production cluster was gradually formed, consisting mainly of sesame growers, collectors, exporters who carefully sort out sesame seeds, inspect their quality, and pack them for export, promotion personnel who support the dissemination of technology to small farmers, and fertilizer manufacturers. Leading the formation of this cluster was Mr. Shirosawa and the Shirosawa Company.

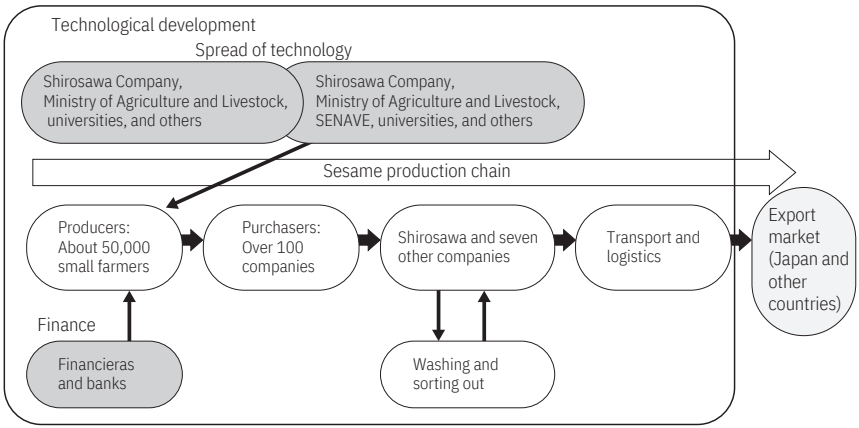
More than anything else, this is demonstrated by the high productivity Shirosawa's seeds took the lead in attaining.[61] The area planted and the output increased from a little less than 10,000 hectares and 6,000 tons in 2000 to about 55,000 hectares and 30,000 tons in 2006. Producing areas expanded from the initial Concepción and San Pedro to cover a wider range of areas, including Caazapa, Caaguazú, and Itapúa, and today, the area planted exceeds 80,000 hectares. The number of sesame growers rose sharply from 5,000 in 1999 to 35,000 in 2005 and about 50,000 (some 200,000 persons if their family members are included) today. They are all small farmers, and each assigns 1-2 hectares of land to sesame cultivation. Shirosawa has a contract with around 20,000 of these farmers, the largest in the area.

Since the middle of the 2000s, the cluster has developed significantly with the expansion of producing areas and total production. First, around seven years after Shirosawa's success, other companies that had found Shirosawa successful started to enter the sesame business, one after another. So far, seven companies have entered the market. As described earlier, financial institutions came to finance sesame producers. In addition, while the Ministry of Agriculture and Livestock has provided technical support and universities have promoted technological development, there have been moves, such as the organization of small farmers by NGOs and other organizations, to make the cluster more complex and multilayered (See Figure 5-1).

The harvesting of sesame.
Source: Shirosawa Company

Paraguayan sesame products sold in Japan.
Source: Shirosawa Company

[61] See Footnote 59.



Note: This figure illustrates the outline of a sesame production cluster during the period from the establishment of the sesame industry to its development. During this period, the scale of the sesame industry expanded as exemplified by the increase in the number of farmers who grew sesame, the expansion of producing areas (expansion to areas other than Concepción and San Pedro), growth in the area planted, and a rise in the amount of sesame produced.

Source: This figure has been created by the author based on interviews with Mr. Shirosawa, the figure on Page 151 of UN-ECLAC/JICA (2014), and other materials.

Figure 5-1 Cluster in the Sesame Industry

Continuing to take on new challenges

Sesame production got started along the right lines, but it gradually became necessary to address new problems, such as lower yields per unit area that were mainly due to repeated cultivation failure and poorer quality resulting from hybridization (crossing between different varieties). As the cluster expanded, Shirosawa worked to produce superior seeds and improve cultivation technology while cooperating with the Faculty of Agricultural Science of the National University of Asunción. This initiative was supported by Phase 1 of JICA's Project of Strengthening and Consolidation of Production and Use of Improved Sesame Seeds for Small-scale Farmers in Paraguay (October 2009 to October 2012),[62] and

[62] This project, which was intended to provide superior sesame seeds to small sesame-growing farmers in a stable manner, was implemented as the so-called "strategic industry-government-academia partnership project" from October 2009 to October 2012, and it worked to develop a group of model farmers who produce seeds, promote purification cultivation for the key Escoba variety, conduct adaptation tests for varieties introduced from Mexico and spread the most promising of them around, and improve the technical guidance and seed management abilities of the National University of Asunción, which had provided technical guidance to sesame-growing farmers

Phase 2 that was carried out from 2012 to 2016.

Thus, Paraguay's sesame industry developed significantly and became a major export industry after grain and meat, accounting for over 70% of food white sesame seeds imported by Japan in 2009.[63] However, various difficulties stood in the path to this success. In the case of Mr. Shirosawa, a pioneer, these difficulties were two to three times as formidable as those experienced by normal entrepreneurs.

First was the difficulty that is unavoidable when launching a new industry in Paraguay from scratch. Starting up a new industry in a developing country, particularly in the agriculture and fisheries sectors, involves tremendous risks. Even if one succeeds, new products are not protected by patents or the like as are those in the manufacturing industry. Dani Rodrik, an economist, says that first movers like this are really indispensable to the development of industry. But those who do that are rare so they should be highly valued, he added.

Second is the difficulty unique to an "inclusive industry," which consists mainly of production by small farmers. The characteristics of sesame as a crop suitable for small farmers, are important to allow them to escape from poverty, but if small farmers undertake sesame production, it is essential to spread technology needed to cultivate the crop. In addition, since small farmers do not have funds, they cannot start production unless the necessary funds are lent. If there are tens of thousands of farmers, it is extremely difficult for one private enterprise to provide all the necessary technology and funds.

The third difficulty is the market. Even if all the conditions of the suppliers are met, it is no easy matter to establish a system to develop and cultivate a variety that suits the Japanese market, which is sensitive to food safety and security, and collect, inspect, and export the crop. In addition to meeting the preference of the market, difficulties must be overcome in terms of safety, such as removing agrochemical residues.

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under contract from business firms. Purification cultivation as referred to here means a suitable cultivation method to choose one variety from among the existing seeds generated by crossing various varieties and to sow, germinate, and develop its seeds. After germination, the seedlings of other varieties mixed are removed, and at the time of harvest, one variety is left for purification.

63 Japan International Cooperation Agency (2014).

Mr. Shirosawa said, "The industry-government-academia cooperation and collaboration in the sesame industry, including small farmers and other producers, represents one model that flowered in Paraguay as an ideal form of industry in which many people participated and from which they benefited through participation. It can be said that through the success of this model, I found what I should do in Paraguay. It would be wonderful if this kind of model evolves quickly, spreading in many fields." Shirosawa is literally the core company or anchor company in the sesame cluster. "Things do not go well if there are many people who think that it is all right only if they are happy. It is necessary to look at the entire sesame industry in Paraguay and think what should be done. For example, if a problem like agrochemical residues occurs, not only the company that causes it but also the entire sesame industry in Paraguay suffers damage." Such a thought urged Mr. Shirosawa to dare to assume the presidency of *Cámara Paraguaya de Exportadores de Sésamo* (CAPEXSE; Paraguay Sesame Exporters Association). For initiatives to deal with the problem of agrochemical residues see Chapter 6.

Shirosawa Company's business favorably evaluated by international organizations

Shirosawa's business is highly evaluated not only in Paraguay but internationally as well. In 2008, the Ministry of Industry and Trade of Paraguay presented Shirosawa Company with the Innovative Agricultural Production Award (*Premio a la Producción Agrícola Innovadora*), and in the same year, the United Nations Development Programme (UNDP) and the Global Compact studied the company as a noteworthy case.[64] The technical magazine *Revista Paraguay Rural* ran a detailed special feature on the company's accomplishments in 2008. In 2009, based on this information, the United States Agency for International Development (USAID) played up Shirosawa's business by publishing a book entitled *Sesame: Innovación en Agronegocios* (Sesame: Innovation in Agrobusiness).[65] This book states that Shirosawa established Paraguay's sesame industry, stressing among other points that the company made a culture that emphasized quality (*cultura de calidad* in Spanish) take root and that it indicated that cultivation by small farmers was suitable for sesame production.[66] And it adds that

64 UNDP/The Global Compact (2009).
65 USAID (2009).
66 USAID (2009), particularly 45-48.

not only was Shirosawa a pioneer in the sesame industry, but it is also playing its role as the industry leader even today. Shirosawa introduced a traceability system in 2005, and the book presents the interesting effect of its increasing children's willingness to attend school. In other words, the company has worked to improve traceability, including the provision of dates of harvest, yields, and other production-related records by sesame-growing farmers, but some producers cannot read and write and seek their children's help when entering records in the table. The book states that this has indirect positive effects on school attendance.

The case study by UNDP and the Global Compact emphasizes that small farmers in Paraguay recognize the importance of quality and produced sesame seeds that are accepted by the Japanese market, which considers high quality important, and that this ensured the competitiveness of Paraguayan-grown sesame. Mr. Shirosawa said, "We cannot compete with Chinese and Indian sesame seeds in terms of pricing alone. Paraguayan-grown sesame seeds boast of their high productivity and highest quality in the world, and this allows us to compete in the global market." This is largely enabled by the spread of technology among small farmers, the tracing system, and other efforts. And what is emphasized together with this is that following the path opened up by Shirosawa seven companies entered the sesame business, further developing the sesame industry.

5.2. Birth of pioneers in the automotive component industry

In recent years, as described in the last chapter of this book, manufacturers have advanced into the wire harness and other automotive component industries in Paraguay one after another, and have advanced into the shipbuilding industry to build barges for rivers. The herald for these moves was the establishment of Toyotoshi Guillén Leather International (TG Cuir International, hereinafter referred to as Toyotoshi-Guillén), which launched the production of high-grade leather car seats in Paraguay. It is no exaggeration to say that Toyotoshi-Guillen became the first Paraguayan pioneer enterprise to join one of the automobile industry's global supply chains (which encompass all processes from the procurement of raw materials and the production of components to manufacturing, sales, and after-sale services in which various businesses participate). Expansion of its full-scale production was realized by the construction of a new factory in 2002.

Previously, the manufacturing industry in Paraguay was limited to products such as textiles, apparel products, and sundry goods. Paraguay's admission to the Southern Common Market (MERCOSUR) did not become a trigger for the country to display its locational advantage and competitive power to expand manufacturing industry. The automobile industry increasingly expanded its production through a bilateral automaking agreement between Brazil and Argentina, but Paraguay did not join it. It was only in the early 2010s that foreign-affiliated businesses started to invest in Paraguay to produce automotive components for MERCOSUR.

The Toyotoshi Group rooted in Paraguayan Society

Toyotoshi-Guillén was not founded overnight. In order to know the background of its foundation, it is necessary to trace the history of the Toyotoshi Group in Paraguay.[67] In March 1960, after working with Osaka Shosen (current Mitsui O.S.K. Lines) in Japan, Mr. Naoyuki Toyotoshi arrived in Buenos Aires, Argentina, by sea on the Brazil Maru. In Buenos Aires, he worked with a trading firm, where he was asked to find distributors for Toyota and Honda in Paraguay, and the efforts he made for that purpose later led him to start a business in Paraguay. After many twists and turns, he found a distributor for Toyota, and sales of Toyota cars began in Paraguay. Meanwhile, he persuaded his old friend, Mr. Miguel Carrizosa, who had already been a distributor for Honda motorcycles, to become a distributor for Honda cars. Mr. Carrizosa said, "If I can create a new company with you, I may agree to become a Honda distributor," and Mr. Toyotoshi decided to migrate to Paraguay. Toyotoshi Co., Ltd. (hereinafter referred to as Toyotoshi Company) was established in 1969. The company became a Toyota distributor in 1972.

Sales of Toyota cars in Paraguay got going, but Toyotoshi Company soon faced an unprecedented crisis as a financial crisis struck all of South America in the beginning of the 1980s. In an unheard-of step, the central bank, which exercised total control over the supply of foreign

[67] Mr. Toyotoshi founded the Toyotoshi Group, and after taking posts such as the President of Camara de Comercio Paraguayo-Japonesa (Japanese Chamber of Commerce in Paraguay) and the President of the Japanese Association in Paraguay, he became the Paraguayan Ambassador to Japan in 2009. The following section in this paragraph has been written based on Mr. Toyotoshi's autobiography, *Path to Prosperity: The Memoirs of Naoyuki Toyotoshi*, 76-88.

currency, stopped supplying foreign currency.[68] Though some importers went bankrupt, Toyotoshi Company overcame this crisis, which further strengthened the company. Subsequently, Toyotoshi Company became an agency for Sony, Hino, Daihatsu, Mitsui O.S.K. Lines, and other companies, and furthermore, it expanded its business by establishing a company for river transport and running stock farms, and at the same time, it was reorganized to form a new Toyotoshi Company in 1996. In 1997, the company completed a large showroom and a service factory in San Lorenzo.

Thus, Toyotoshi Company developed into a corporate group deeply rooted in Paraguay. During this period, the second generation of the Toyotoshi family also grew. The first son, Mr. Marcelo Toyotoshi, studied in the United States, and after graduating from Boston University, he worked with Toyota Motor Sales, U.S.A., Inc. and accumulated experience there. The second son, Mr. Mario Toyotoshi, studied in Japan, and after graduating from the International Christian University, he worked with Toyota Motor Corp. After gaining experience as mentioned above, the two sons returned to Paraguay and played an active role in the Toyotoshi Group.

Toyotoshi-Guillén joined Toyota Europe's supply chain

In this process of business expansion, Mario brought a business plan for using cowhide to manufacture car seats in 1981.[69] A company called

The San Lorenzo Plant. Source: Toyotoshi Company

[68] The following section in this paragraph has been written based on Mr. Toyotoshi's autobiography, *Path to Prosperity: The Memoirs of Naoyuki Toyotoshi*, 94-114.

[69] This and following paragraphs have been written based on Mr. Toyotoshi's autobiography, *Path to Prosperity: The Memoirs of Naoyuki Toyotoshi*, 144-148, and

"Vacapí," which had been established by a Frenchman in Paraguay, was put up for sale, and the Guillén family in France watched for a chance to buy it. The Guillén Group was a global front-runner in the field of office chairs and car seats, and Toyotoshi Company heard that the Group wanted to acquire Vacapí and then work with Toyotoshi Company to start a new business. The Guillén family came from near the city of Lyon, and Mr. Christian Guillén was an inventor. The Toyotoshi Company negotiated with the Guillén family, and these negotiations led to the establishment of the Toyotoshi-Guillén Company as mentioned above.

At first, Toyotoshi-Guillén sold Paraguayan-made high-grade leather seats to Toyota Europe, which acted as a distributor to sell them throughout Europe. Furthermore, these seats were sold to sellers such as Ford France, Ford Belgium, Subaru France, and Subaru Deutschland. Symbolizing the successful manufacture and sale of high-grade leather car seats was the construction in 2002 of a new factory, which hired 125 employees, two years and five months after the establishment of the company. Moreover, the company expanded its market to Puerto Rico and increased exports to Argentina.

It was highly significant that Paraguayan-made high-quality products were exported to Europe. One of the factors that enabled such exports was the efforts of Mr. Toyotoshi, his sons, and other personnel to implement *Kaizen* (improvement) and technological innovation. Mr. Marcelo Toyotoshi, explained some of their efforts as follows: "When an air bag opens, the leather sheet must open in conjunction with the opening of the bag. We developed this mechanism. This became a Toyotoshi-Guillén original product." The company also acquired ISO9002 certification, and the product became one of Toyota's genuine accessories. Toyota engineers frequently visited Toyotoshi-Guillén, giving advice on *Kaizen* and other core operational principles. Marcelo said, "So we are practicing *Kaizen* continuously. We are constantly learning. And we are creating our own models (*modelo propio*)." "*Kaizen* is wonderful and is applicable to a wide range of businesses, including bakeries and small and medium enterprises. We are actively participating in the activities of the chamber of commerce and industry, too, and Kaizen can widely be spread through this organization."

interviews with Mr. Marcelo Toyotoshi.

In his book, Mr. Naoyuki Toyotoshi emphasizes "continuous improvement" and "respect for human beings" as solutions developed based on Mr. Kiichiro Toyoda's idea, "customers first," saying that "this idea laid the foundation for the development of Toyota and represents the essence of what is known as the Toyota system that the automobile manufacturer boasts to the world." [70] And he goes on to say, "Toyota's philosophy and guiding principles are alive at our Toyotoshi Group. We are proud that if you look at the Group, you will realize that we are dealing with each and every one of our customers sincerely, striving to apply the most advanced technology and improve the processes continuously, and developing our capabilities diligently from day to day so that our customers are satisfied." [71]

Becoming a pioneer in the development of Paraguay's automotive component industry

Toyotoshi-Guillén launched their business as a pioneer in the new manufacturing industry, produced products of sufficiently high quality to be recognized as Toyota's genuine accessories, and sold them in Europe, and this is worthy of note. By making the Toyota Production System an integral part of its operations and establishing a production process with quality built therein, Toyotoshi-Guillen achieved a high operating rate, reduction in waste, high productivity, and so forth. This enabled the Paraguayan enterprise to participate in Toyota's global supply chain. Meanwhile, the optimal materials are collected from inside and outside MERCOSUR, and many of them, including the famed Pilar's thread to sew cloth and leather, are procured from suppliers in Paraguay, with others are secured from Uruguay (leather), Argentina, Brazil, faraway Thailand, and even Europe.

Managers from foreign businesses, including Japanese ones, who visit Toyotoshi-Guillén as a pioneer, learn as shown by the saying "Seeing is believing" that its labor force is of high quality, and use what they learn for future investments in Paraguay. Marcelo said, "People who did not know about Paraguay come here, visit the factory, and become surprised at higher-quality labor force and a lower rate of absenteeism than in other

[70] Quoted from Naoyuki Toyotoshi's *Path to Prosperity: The Memoirs of Naoyuki Toyotoshi*, 82.

[71] Quoted from Naoyuki Toyotoshi's *Path to Prosperity: The Memoirs of Naoyuki Toyotoshi*, 83-84.

countries." It can be said that Toyotoshi-Guillén, which achieved success in the 2000s, has played an important role as a leader and model in the advance of foreign capital in Paraguay in recent years.

5.3. Common characteristics of pioneer companies established by Japanese

There are several characteristics common to Japanese who did very remarkable work in Paraguay in the 2000s as presented in this and previous chapters. One characteristic is that the 1.5th and 2nd generations of Nikkei people, who took over the results the first generation had accumulated, came to play an active role while looking at things from a broad perspective, and made the most of the new, wider networks of connections they had built. Another is that they attempted to start and develop new businesses, particularly new industries, which others had not set up in Paraguay. This always involves risks. But while they were fully aware of risks when working on new businesses, they learned sincerely and strove to achieve goals persistently, and this is also a characteristic shared by them.

As quoted at the beginning of Chapter 4, the economist Rodrik stresses that these pioneers who found new industries are indeed invaluable to the development of a country and that support should be given generously to encourage them.[72] Pioneer companies launch new industries by introducing technology indispensable to the industries from foreign countries or developing it on their own. Such technology and experience spreads to local communities, contributing greatly to the development of domestic industries. However, for these pioneer companies, investments are highly risky, and furthermore, even if they succeed, they may be imitated, and be forced to compete with these imitators. As a result, investments are sometimes not recovered. For this reason, pioneer companies do not appear easily. Paraguay did not have an effective support system for these pioneer companies, but they have striven to achieve goals by themselves or by joining forces with many partners. The reason Rodrik emphasizes this is the ripple effect brought by these pioneers. He attaches importance to the effect of new industries suitable for the country concerned being created by those who are inspired by pioneers and learn from them. In addition, the pioneer companies presented in Chapters 4 and 5 (such as

[72] See Rodrick, Dani (2007).

UPISA, Maehara Nosan, *Cooperativa La Paz Agrícola*, Shirosawa Company, and the Toyotoshi Company) were companies that *learnt* on their own initiative as emphasized by Prof. Joseph E. Stiglitz, winner of the 2001 Nobel Memorial Prize in Economics, in his 2014 book, *Creating a Learning Society: A New Approach to Growth, Development, and Social Progress*, co-authored with Prof. Bruce C. Greenwald,[73] and this deserves special mention. Every time they were faced with difficulties, they used originality and ingenuity to open up a new path for growth. Pioneer companies do not have useful precedents, and therefore, it is crucially important to have the ability to *learn* on their own.

What should be pointed out as a third characteristic is that the pioneer companies have conducted their business while keeping in mind the lives and welfare of people who worked with them or around them as well as their contribution to the local community. Recently, mainly in Silicon Valley, businesses that have made society better have started to be favorably evaluated, and it is reported that a new management model which should be called "public interest capitalism" is attracting public attention.[74] Mr. Marc Benioff and Mr. David Brunner are reportedly taking the lead in promoting this concept, and the latter says, "Businesses must not boost profits so high that they hurt society through personnel reduction."[75] It can be said, on the other hand, that in Japan, the idea of an emphasis on public interest is rooted in the corporate climate of businesses as they take over the management philosophy of Eiichi Shibusawa and other business people. It is also reported that there are moves in India and other emerging economies to pay attention to this idea.[76] It can be said that the pioneer companies presented in this chapter have really practiced management coexistent with society and emphasizing welfare and the local community and have provided a model of such management.

What should be pointed out as a fourth characteristic is that these companies all played their important role as core companies (also called "anchor companies") that supported the agglomeration of new industries (clusters) in Paraguay. The formation of clusters was suggested by JICA as a major pillar of strategy to develop Paraguay based on its Study for the

[73] Stiglitz and Greenwald (2014).
[74] Page 6 of the June 28, 2016 issue of the *Nihon Keizai Shimbun*.
[75] Page 7 of the June 27, 2016 issue of the *Nihon Keizai Shimbun*.
[76] For details of Eiichi Shibusawa, see the series of articles on him which have been published in the Japan Journal for over four years.

Economic Development of Paraguay (EDEP).[77]

5.4. Economic development and cluster strategy in Paraguay

Industrial clusters in the economic development of Paraguay

The United Nations Economic Commission for Latin America and the Caribbean (UN-ECLAC) and JICA conducted a joint study on the economic development and cluster strategy in Paraguay during the period from around the 2000s to the present day, and the results of this study were published under the title "*Study on Inclusive Development in Paraguay: International Cooperation Experiences*" by UN-ECLAC and JICA.[78]

Attention came to be paid to the importance of industrial agglomeration and clusters in economic development through the awarding of the Nobel Memorial Prize in Economics to Prof. Paul Krugman in 2009 and the findings of the World Bank's World Development Report in the same year, but EDEP was published nine years earlier. EDEP was a detailed study of industries in Paraguay, and one of the theories to which the team of consultants referred in this study was Prof. Michael Porter's management theory that placed emphasis on industrial agglomeration and clusters.[79] In 1990, Prof. Porter published *The Competitive Advantage of Nations*, which became a best-selling book,[80] and in this book, by expanding the previous

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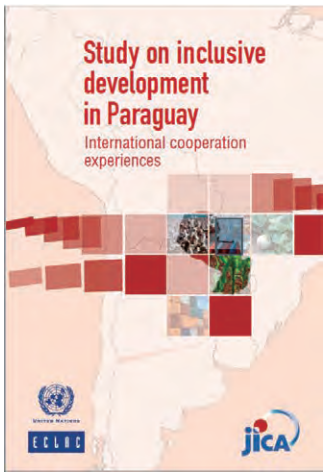
77 In Spanish, it is called "*Estudio de Desarrollo Económico de Paraguay*," which has become widely known by its acronym, EDEP. A preparatory study was first carried out, followed by a study by a team of consultants from Daiwa Institute of Research, which was dispatched by JICA for the period of about two years from October 1998. The final report was submitted to then President González Macchi in November 2000. In March 2001, the Paraguayan government formulated and announced the Economic Development Strategy Plan based on EDEP. For details of EDEP, see UN-ECLAC/JICA (2014).

78 See, in particular, Chapter 1 of ECLAC/JICA (2014). The Latin American and Caribbean Institute for Economic and Social Planning (ILPES), which was established as an annex to UN-ECLAC, also participated in the study. The report on this study was published in Spanish in 2013 (UN-ECLAC/JICA 2013).

79 In business administration, Prof. Michael Porter is well known for his studies of industrial agglomeration, clusters, value chains, and so forth, and in economics so is Prof. Paul Krugman (For Prof. Porter, see Notes 80 and 81). In economics, long-term studies by the University of Pennsylvania on location and spatial economy led to results such as the series of studies that followed the distinguished thesis in 1995 (Fujita and Krugman 1995). That was one of the reasons why Prof. Krugman won the Noble Memorial Prize in Economics in 2009. And this year, the World Bank published the World Development Report, which discusses economic development from this point of view.

80 Porter (1990).



theories, he stressed the importance of industrial agglomeration and clusters as one of the four factors that determined the competitiveness of nations.[81] Later, in the middle of the 1990s, this strategy began to be applied to Central American countries in order to promote economic development. In this region, which had experienced over ten years of civil war at that time, the Central American competitiveness strategy program was implemented with advice from Prof. Porter in an effort to develop competitive industries in the process of reconstruction after peace was realized. The formation of clusters was one of the program's goals. The implementation of the program coincided precisely with the period when EDEP began. As part of this EDEP study, the author visited El Salvador to learn from these local initiatives. He also visited the World Bank, which supported this program from Washington, DC.

The more recent joint study of UN-ECLAC and JICA explains the importance of clusters as described below. A cluster refers to the concentration of interrelated businesses and organizations (such as universities and public and private institutions that promote development)

[81] The four determinants are (1) factor conditions (factors of production, which can be said to be conditions of supply), (2) demand conditions (the existence of domestic or local markets that allow realization of economies of scale and enhancement of competitiveness), (3) related and supporting industries, and (4) firm strategy, structure, and rivalry (which are also determined by policy). These are factors that determine competitiveness but mean that they bring a new perspective to the conventional trade theory based on comparative advantage.

to form a production chain. Concentrated businesses and organizations enhance their competitiveness by connecting themselves more closely. Closer rivalry and cooperation are established among the concentrated businesses, prompting them to learn from each other about best practices and innovation, and this in turn enables them to increase productivity. The cluster also enables them to earn profits from economies of scale and diversification, and they have ripple effects on each other (strictly speaking, in economics, these are called "external effects"). Due to proximity, transport and logistics costs, and transaction costs are reduced significantly.

The joint study of UN-ECLAC and JICA inquired into what effects had been brought ten-odd years after EDEP published in 2000. That is exactly the period that Chapters 4 and 5 of this book examine in our attempt to clarify the changes that took place in Paraguay. That period is symbolized by the shift from cotton to soybeans. In other words, it was a period of shift from the economy dependent on tropical primary products to diversified industry that consists of modern agriculture and food processing, centered on the production of soybeans and other food crops, and manufacturing.

It can be said that EDEP anticipated the possibility of expanding new production activities, establishing new industries, and forming a cluster and broadening and deepening a value chain with such a cluster as its core, and proposed strategy to realize the possibility. In addition to the clusters of the pioneer companies presented in this chapter, the joint study of UN-ECLAC and JICA made detailed analysis on the remarkable development of other clusters during this period, including dairy farming clusters, sugar-alcohol clusters, clusters of fruit producers and their processed products, cassava-starch production clusters, and cotton-fabrics/clothing clusters.[82] Among these, cotton-fabrics/clothing clusters have seen the production of cotton-based fabrics and clothing develop and the value of their exports grow, although the production of cotton as a raw material declined and exports fell sharply. This result was achieved as the import of Chinese-made cheap products increased sharply, and the great contributions made by the strategy of Paraguayan companies, including Pilar, and their high-quality labor forces are worthy of note.

In the above-mentioned joint study, UN-ECLAC compares Paraguayan

[82] See Chapter 5 of UN-ECLAC/JICA (2014).

experiences with those of other Latin American countries, and states EDEP's contribution as described below.[83] Specifically, stating that EDEP offered a fresh approach to Paraguay in those days, UN-ECLAC cites the following six points: (1) EDEP introduced new ideas and concepts, such as clusters, production chains, and export corridors (efficient transport networks for export which connect producing centers and ports), and emphasized the importance of public-private partnership to enhance competitiveness; (2) It provided Paraguay, which had historically entered a difficult period, with a constructive basis for striving to implement new economic development models; (3) It founded new organizations and systems, including the National Organization for the Promotion of Market Competition (ONPEC). (For more information on ONPEC, see BOX 5-1); (4) It strengthened the functions of government agencies that formulated policy aiming at productivity growth, industrialization, enhancement of competitiveness, and so on; (5) It made the many activities of the private sector, including chambers of commerce and industry, and trade associations, take hold; and (6) It encouraged behavioral changes in the private sector, including reconsidering management models and business strategy.

The five points learned from EDEP's strategy are: (a) driving a cross-cutting agenda to improve the global competitiveness of the Paraguayan economy, (b) strengthening panels for production chains, (c) focusing on international cooperation programs, (d) linking national agendas with territorial agendas, and (e) formulating new development instruments. EDEP was conducted as part of JICA's cooperation, but referring to this, UN-ECLAC and JICA (2014) points out the following: "The involvement of JICA in Paraguay goes far beyond simply executing cooperation projects. The Japanese agency has been an active participant in the debate on the nation's economic development strategy based on strengthening production capacity with social inclusion, especially in the agricultural export sectors. ECLAC frames the experiences of JICA in Paraguay in the Latin American context, incorporating these into the regional debate on long-term strategy for inclusive and sustainable development. The case study presented in this volume provides the answer to a central question that ECLAC has asking in various international forums: how can structural change for equality be promoted in Latin America and the Caribbean?" [84]

[83] See UN-ECLAC/JICA (2014, 25-27).

[84] This is a theme UN-ECLAC has continued to study and actively discussed at its plenary

Industrial clusters and inclusive development

UN-ECLAC emphasizes inclusive development. EDEP, in proposing the cluster strategy, also emphasized its contribution to inclusive development. It indicated that the formation of a cluster enabled small and medium enterprises to join through participation in the production chain that processed agricultural products and at the same time led to the creation of employment. Recently, the United Nations Industrial Development Organization (UNIDO) published a report entitled *The UNIDO Approach to Cluster Development: Key Principles and Project Experiences for Inclusive Growth*, in which it stressed the inclusive aspects of clusters. It states as follows: "Cluster-based entrepreneurs and workers often share a similar social, cultural and political background and practice reciprocity and self-help. This tends to lend itself to growth patterns that are likely to be more inclusive than in most other economic contexts." [85]

In Paraguay, the first ten years or so of this century witnessed the achievement of remarkable industrial change and rapid growth, but what effects such achievement had on the reduction of poverty, the reduction of disparities, and other problems remains to be studied. During this period, however, there were no widening disparities as seen in many emerging economies. According to government statistics, the percentage of extremely poor people rose to 24.4% in 2002 and fell to 19.4% in 2010, and that of poor people also declined from 49.7% to 34.7%. Later, both continued to fall, in 2013, the former was reduced to 10.2%, and the latter to 23.9% (See Figure 5-2).

Similarly, according to government statistics, the Gini coefficient, which indicates income disparities, decreased from 0.55 in 2003 to 0.48 in 2013 (See Figure 5-3).

Thus, it can be said that the development of the Paraguayan economy through the agglomeration (clusters) of new industries from around 2000 to the present day generally represented inclusive development.[86]

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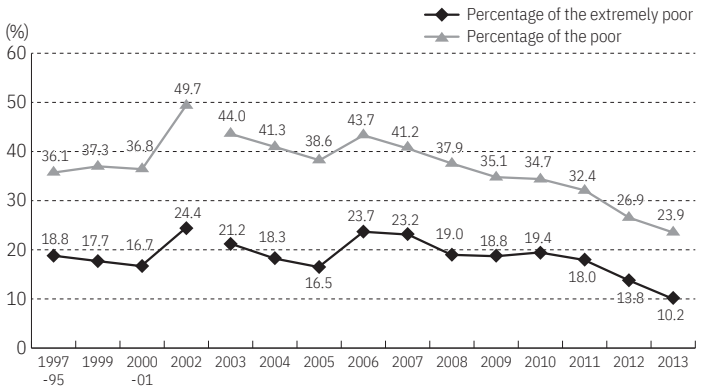
sessions since the early 1990s. UN-ECLAC (1990) is well known. Among its recent studies, UN-ECLAC (2012) attracts public attention.

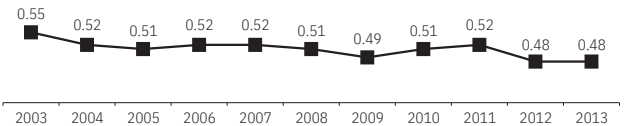
85 UNIDO (2014, 7).

86 Brazil, Paraguay's neighbor, also witnessed the development of value chains and clusters of soybean-based agriculture and agropastoral industries in the Cerrado (tropical savanna) progress significantly from the 1980s, and this has continued to the



Source: Gobierno Nacional (2014, 29).

Figure 5-2 Changes in the Percentage of the Poor in Paraguay



Source: Gobierno Nacional (2014, 30) and Secretaría Técnica de Planificación del Desarrollo Económico y Social (STP) (2014, 7).

Figure 5-3 Changes in the Gini Coefficient in Paraguay

present day. It is believed that, coupled with the social policy for the poor, including cash transfers on condition of school attendance, etc. (known as conditional cash transfer, CCT), this process contributed to reducing poverty and other disparities in the country. In particular, factors such as the expansion of employment opportunities due to the development of Cerrado agriculture and the processing of agricultural products and the decline in the real price of food due to grain self-sufficiency (shifting from a net importer of grain to a net exporter) are highly likely to have contributed to the results mentioned above (Hosono et al. 2016).

Box 5-1 People and organizations that promoted EDEP

In addition to those who were mentioned in this chapter, many people took part in the preparations for EDEP and its promotion. These people have remained active in Paraguayan society to this day. Originally, it was the Technical Planning Secretariat (STP) of the Presidency, particularly the then Director-General of the Secretariat, Mr. Guillermo Sosa, that thought it was necessary to work out strategy and a master plan to develop Paraguay, as it was increasingly urged to compete with other countries due to its participation in MERCOSUR. This was the starting point of EDEP. The Secretariat requested cooperation from JICA to achieve these goals, and in this process, it was decided that the author should participate in preparatory studies. In those days, many Paraguayans who were involved in EDEP and the National Organization for the Promotion of Market Competition (ONPEC) founded after its completion, which aimed at developing clusters and promoting competitive strategy in accordance with EDEP, disseminated EDEP's strategy, including the cluster strategy, and put it into practice themselves as opinion leaders. In this relationship JICA also provided cooperation in various ways.

The former STP Director-General Guillermo Sosa serves as the Minister of Labor, Employment and Social Security today. Mr. Gustavo Leite, who held an important post at STP when the EDEP study was carried out, served as Director-General of STP for some time, and currently, he is the Minister of Industry and Commerce. It is really regrettable that Mr. Luis Alberto Meyer, who advanced EDEP powerfully and made utmost efforts to found ONPEC, passed away in a traffic accident. President Dionisio Borda of the Center for Analysis and Dissemination of the Paraguayan Economy (CADEP), one of the major local think tanks which supported the study, took a lively part in the government as the Minister of Finance and has constantly emphasized the importance of EDEP, and today, he is again the President of CADEP. Mr. Fernando Masi, President Borda's right hand person, once served as advisor to the Minister of Industry and Commerce. Finally, Mr. José Molinas, who supported the survey as a young economist in the area of macroeconomics, worked with the World Bank for some time and then became the Director-General of STP.

ONPEC, which has corporate status, is joined by the Director-General of STP, the Minister of Agriculture and Livestock, the Minister of Industry and Commerce, and the Minister of Foreign Affairs, and under its management are a project to enhance the competitiveness of the export sector, as well as eight cluster-by-cluster and regional organizations. JICA has supported these activities, and the European Union also extended cooperation. With the cooperation of JICA, a project to help form clusters of cooperatives was also implemented.[87]

Many of the ONPEC members are representatives of cluster-related entities in the private sector. Chairman Caballero Vargas of Pilar, one of the most important textile companies in Paraguay, once served as Minister of Industry and Commerce, and today, he is playing an active role as the leader of the textile and garment cluster. Mr. Cesar Ross is a member of the Cooperativa Colonias Unidas and a director of UPISA, and he also serves as chairperson of ONPEC and president of the Paraguayan Chamber of Export. Similarly, Mr. Jorge Gattini served as Minister of Agriculture and Livestock until the beginning of 2016. Mr. Ronaldo Eno Dietze serves as rector of the Universidad San Carlos (San Carlos University). A galaxy of other able people includes Mr. César Jure, who leads the agricultural products export unit of ONPEC and plays an active role as a senior manager at the Paraguayan Grains and Oilseed Traders Association. As listed above, there have been many ministers in the commerce and industry, labor, and agriculture sectors and Director-Generals of STP involved in EDEP. The EDEP strategy constitutes part of the vision shared by many opinion leaders, including those who are mentioned above.

[87] This project was carried out with the cooperation of the Instituto Nacional de Cooperativismo (INCOOP), the Federación de Cooperativas de Producción (FECOPROD), and JICA.

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Column 4
Development of colonies and local co-existence

Makoto Kitanaka

Colonies of Japanese immigrants in various places of Paraguay have developed thanks to their many years of strenuous efforts. The colonies formerly covered with primeval forests gradually became prosperous through agricultural development and were reborn as the administrative units of cities. And the Nikkei society has established its firm position in Paraguay and gained the trust of Paraguayans. These colonies, which initially consisted mainly of Nikkei people, were stable as a Nikkei mayor governed them, but in recent years, as they developed, many Paraguayans have flowed into them from neighboring areas, gradually causing changes. One of the changes is that disparities between the rich Japanese society and the poor Paraguayan society have become prominent.

The society is going to move toward a new vision of "Nikkei society that develops with the local community;" a second round of development appropriate for the times. The following section presents two events that occurred in this initiative and impressed the author.

One is the spirit-consoling service held in conjunction with the 52nd anniversary of immigration to the Pirapó colony on August 2, 2012. Although it is usually very cold with the temperature going down nearly to freezing point, the day was blessed with mild weather, and the service provided a good opportunity to look back upon the starting point of the Pirapó colony and together with the participants think of people who had passed away. In particular, with all students of elementary and junior high schools in Pirapó City dedicated flowers to the deceased The event was held in an innovative way, as not only the Nikkei society but also the entire city celebrated the anniversary of the colony.

The author heard that this was due to the excellent decision making of President Mizumoto of the Japanese Association and Mayor Nagami and believed that the anniversary provided all children

living in the city with a good opportunity to learn the history of Pirapó at first hand.

The other is the 24th Japanese-Language Speech Contest held at Centro Paraguayo-Japonés para el Desarrollo de Recursos Humanos (Paraguay-Japan Human Resources Development Center) on September 1, one month after the 52nd anniversary. Mr. Koji Nonaka, a high school student in the third generation of Nikkei immigrants in La Paz, presented a wonderful speech. This young man sent the message that it was necessary for the Nikkei society in the colony and the Paraguayan society around it to work together to further develop the colony. The generation of young people who think about the future of the Nikkei society seriously is growing.

In Paraguayan society, in which many give priority to themselves, their families and relatives, and groups with which they are affiliated, his call for working in their respective positions so that not only they but also those who lived around them became happy made the author feel as refreshed as when he looked at the transparent blue sky in Paraguay. The author believes that not only Mr. Nonaka but also many young Nikkei people have the same feeling. The colony that the first and second generations of Japanese immigrants developed with care aims at coexisting with the local community under the new leadership of the rising generation and opening up a new, bright future for the colony. Three generations of experience in the colonies of Paraguay will be extremely instructive to Japan as it discusses the reception of foreign workers.

Chapter 6

New Paraguay-Japan partnerships supported by the Nikkei Society

Keisuke Ito

6.1. New trends in international cooperation between Japan and Paraguay

Republic of Paraguay's development policy

In the presidential election held in the Republic of Paraguay on April 21, 2013, Mr. Horacio Cartes, a businessperson from the Colorado Party (also known as the Red Party), was elected, and on August 15 of the same year, he took office as president. After his inauguration, President Cartes announced the National Development Plan 2014-2030. This plan consists of twelve strategic goals set by combining three strategic focuses: (1) social development and poverty reduction; (2) inclusive economic growth; and (3) Paraguay's entry into the world, and four cross-sectional initiatives: (1) equality of opportunities; (2) transparent and efficient public management; (3) a national land use plan; and (4) the sustainability of the environment. One of the strategies that characterized the Cartes administration's development policy to implement these strategic goals is the "image of the country, trade promotion, and attraction of investments," a strategy that combines the strategic focus of "inclusive economic growth" and the cross-sectional matter "transparent and efficient public management."

In his inaugural speech, President Cartes touched upon his hope of reconstructing friendly relations with neighboring countries. Paraguay's status as a member of the Southern Common Market (MERCOSUR) was frozen due to the impeachment of President Fernando Lugo in July 2012, but with the inauguration of President Cartes, the country rejoined MERCOSUR, and partly because of these circumstances, the Cartes administration appears to consider restoring the image of Paraguay one of its important issues. Out of recognition that it is indispensable to create employment to reduce poverty, one of the administration's important issues, the administration is working actively to attract foreign direct investment (FDI). In fact, even since the 1990s, Paraguay has paid particular

attention to attracting foreign capital, giving preferential treatment as typified by Law 60/90, the Maquila Regime, and the establishment of Duty-Free Zones.[88] In addition to these various incentives to promote FDI, President Cartes, a former businessman, emphasized the country's advantages to FDI enterprises, such as easy access to markets in South American countries, low labor costs, and macroeconomic stability. During the past decade (2006-2015), Paraguay has achieved an average GDP growth rate of about 5.1%, and since its macroeconomic indicators, such as currency and rates of inflation, are comparatively stable, the country is certainly becoming increasingly attractive to FDI enterprises.[89] [90]

Japanese enterprises' advance into Paraguay

In June 2014, at the seminar held to attract foreign direct investments when he visited Japan, President Cartes explained about the Paraguayan government's policy for attracting such investments, and at the subsequent summit with then Prime Minister Shinzo Abe, he expressed his appreciation for Japanese businesses' contribution to the development of Paraguay and his expectations for their active involvement in the infrastructure, energy, and other sectors in the future.

In recent years, the move to look for the "one" of "Brazil plus one" has become conspicuous in South America, and it can be said that Paraguay is one of the leading candidates for "one." As there have been moves to shift production bases from Brazil to Paraguay due to the so-called "Brazil costs," such as soaring personnel expenses and complicated tax systems, the amount of direct investments from Brazil in Paraguay has grown sharply in recent years.[91]

In Paraguay there is the *Cámara Japonesa de Comercio e Industria en Paraguay* (Japanese Chamber of Commerce and Industry in Paraguay),

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88 For the outline of these systems, see *Paraguay: "Land of opportunities,"* a brochure from the Embassy of Paraguay in Japan.

89 The rating by Moody's, which stood at Caa1 in April 2003, rose to Ba1 in March 2015.

90 Mr. Mario Abdo Benítez, former chairperson of the upper house and candidate of the ruling Colorado Party, won the presidential election in April 2018 and assumed office as president in August of the same year. President Benítez is expected to take over the former administration's open economy policy, including the active attraction of FDI.

91 According to explanations by Commerce and Industry Minister Leite, Brazilian businesses account for about 80% of all businesses that entered the Paraguayan market using the Maquila Regime.

of which 32 companies were members as of the end of November 2016.[92] Formerly, many Japanese trading firms had representative offices, but as the number of Official Development Assistance (ODA) projects fell in the middle of the 1990s and thereafter, the majority of these offices were shut down. In recent years, the transfer of factories, mainly of wire harness manufacturers, a sector in the automotive component industry that is highly labor-intensive, from Brazil to Paraguay has progressed.[93] Referring to the moves of Japanese businesses to enter the Paraguayan market in recent years, Mr. Eijiro Hayashi, former president of the Japanese Chamber of Commerce said, "It is not easy for Japanese businesses to open up a new market in Paraguay, and it takes a long time and tremendous labor to do so, but they have business opportunities if they view Paraguay as a production base with markets in neighboring countries, such as Brazil and Argentina, in mind. But since it cannot be said that there are plenty of local personnel who can work as managers of middle standing, it is necessary for Japanese businesses in Paraguay to pay attention to the likelihood of being faced with personnel shortages as they expand their business there."

As value chains in the manufacturing industry are increasingly globalized, Paraguay is becoming a country that is likely to support parts of such chains, but it seems that there are several challenges that need to be overcome.

International cooperation and private partnership

Since the establishment of diplomatic relations between Japan and Paraguay in 1919, the bilateral relations between the two countries have been strengthened through the active role played by Japanese immigrants in Paraguay and Japan's ODA, which contributed to social and economic development in the country. In order to promote Japanese immigration to Paraguay and build stronger relations in economic cooperation, an agreement concerning immigration was entered into between the two countries in 1959, followed by the arrangements made in 1978 to dispatch Japan Overseas Cooperation Volunteers, and the Technical Cooperation Agreement concluded in 1979. As its ODA for Paraguay, Japan granted

[92] Website of Cámara Japonesa de Comercio e Industria en Paraguay (https://www.camarajaponesa.com.py/).

[93] This is not a factory transfer from Brazil, in 2011 Fujikura Ltd. advanced into the Paraguayan market, starting the manufacture of automotive wire harnesses.

a total of 88.001 billion yen in technical cooperation, 36.212 billion yen in grant aid, and 156.157 billion yen in ODA loans through fiscal 2016.[94] In terms of technical cooperation in particular, through JICA, Japan received a total of 4,295 trainees and dispatched 1,951 experts during this period, and at the same time, it sent 1,719 volunteers (as of the end of September 2018). As shown by these figures, Japan has contributed greatly to human resources development in Paraguay.

On the other hand, in many developing countries, including Paraguay, private funds flowing from overseas have come to exceed ODA funds, and with this trend, the role of ODA is changing gradually.

The Development Cooperation Charter adopted in February 2015 recognizes that in Asia the development of tangible and intangible basic infrastructure through development cooperation has improved the investment environment, and that development cooperation meanwhile has played the role of catalyst, promoting investments by private enterprise, and this led to economic growth and poverty reduction in the countries concerned.[95] Based on this recognition, JICA is providing cooperation to promote FDI, including those by Japanese businesses, mainly through the development of transport infrastructure, the raining of industrial human resources, and the improvement of existing systems and institutions.

New forms of international cooperation: Japan Academy

In cooperation with Nihon Gakko University, JICA launched a new initiative called the "Japan Academy of Commerce" in 2016. In a word, the Japan Academy aims at developing pro-Japanese entrepreneurs and those who are knowledgeable about Japan. JICA provides indirect support, such as referring lecturers making the most of its human and organizational networks and sharing teaching materials, to the entrepreneur development support course offered by Nihon Gakko University, an institution of higher education in Paraguay, which includes

94 Japan's ODA Data by Country (2017).

95 The Official Development Assistance (ODA) Charter was decided at a Cabinet meeting in 1992 and revised in 2003. From the viewpoint of interpreting "development" not only in its narrow sense but also in a broader sense, including peace building, governance, promotion of fundamental human rights, and humanitarian support, the ODA Charter was renamed the "Development Cooperation Charter" in its recent revision.

subjects such as Japanese values and business ways of thinking, and in November 2016, a memorandum on cooperation was concluded between the two organizations. Plans call for the entrepreneur development support course to consist of six modules spanning a total of 360 hours: (1) starting up a business; (2) corporate management; (3) Japanese businesses' strategy to enhance competitiveness; (4) Japanese language; (5) social and cultural values and commercial practices in Japan; and (6) planning investment and trade with Japanese enterprises as partners. Graduates are expected to become capable managers and good partners of those Japanese businesses that enter the Paraguayan market, and as indicated by former President Hayashi, they will contribute to solving the issue of local personnel shortages by becoming managers of middle standing.

Dr. Hermelinda Alvarenga de Ortega, deputy president of Nihon Gakko University, talked about the significance of the Japan Academy, saying, "The objectives of the Japan Academy are to: (1) strengthen the bonds of friendship between Paraguay and Japan, (2) promote Japanese businesses' investments in Paraguay, and (3) contribute to the development of Paraguay through these initiatives. The university has the important social mission of developing human resources. Through this course, young people in Paraguay can learn the business philosophy and management policy of Japanese enterprises. Up to now, we have learned many things from JICA, but from now on, we can also learn the strengths of Japanese businesses through this course. We will develop human resources who

It is acknowledged by everybody, including themselves, that Mr. and Mrs. Ortega are highly pro-Japanese persons. In 2016, both of them were presented with the Order of the Rising Sun, Gold and Silver Rays for devoting their services to friendship and goodwill between Japan and Paraguay and other accomplishments. Meanwhile, Hermelinda became the only non-Japanese person to be appointed a member of the Committee for the Festival to Commemorate the 80th Anniversary of Japanese Immigration to Paraguay.

Source: author

can fulfill important functions in Japanese businesses that advance into the Paraguayan market and become good partners of Japanese businesses. The Japan Academy will have impacts on Paraguay at the national level."

Hermelinda studied at Yokohama National University from 1989 to 1991 and obtained a PhD in pedagogy. When she studied in Japan, she was impressed by the discipline and industriousness of the Japanese, and after she returned home, in 1993 she worked with her husband, Dr. Dionisio Ortega, who is currently the president of Nihon Gakko University, to establish the Nihon Gakko school in Paraguay, in which they introduced Japanese discipline into education. In 2008, they established Nihon Gakko University, and currently, they are providing education to a total of about 1,000 students at all levels from kindergarten to university. In 2012, they opened a branch school, which comprised the faculty of agricultural science and that of accounting, in the La Colmena colony. According to Hermelinda, the faculty of agricultural science adopts the Japanese style of agricultural courses, which emphasizes working at production sites. While agricultural researchers in Paraguay have a strong tendency not to go to cultivated lands, the faculty of agricultural science at Nihon Gakko University places emphasis on research in cultivated lands when providing education.

The Development Cooperation Charter recognizes that in the international community today, diverse entities, including private enterprises, local governments, and NGOs, are playing an increasingly important role in solving development issues and ensuring sustained growth in developing countries, and that if this is taken into account, it is important to bring together not only ODA but diverse strengths as well. However, as the current bilateral relations between Japan and Paraguay are becoming more multi-layered and therefore, they cannot be understood from the viewpoint of the relationship of one ODA donor and its recipient alone, ODA for Paraguay is probably being urged to function as a catalyst for bringing various strengths together.

Connections between Paraguayan-grown sesame seeds and Japan

The trade relations with Japan cannot be discussed without mentioning sesame production. In terms of value, sesame makes up the majority of Paraguayan exports to Japan. In 2009, Japan relied on Paraguay, Guatemala, and Bolivia for about 85% of food white sesame seeds,

with Paraguay accounting for over 60% of this. The leading figure who made Paraguay a major producing center of sesame is Mr. Toshikazu Shirosawa, a Japanese immigrant. Following the success of Mr. Shirosawa, Paraguayan businesspeople entered the sesame business, and sesame is currently a valuable source of cash income for some 40,000 small farmers. Partly because farmers developed varieties and control quality with the Japanese market in mind, the quality of Paraguayan-grown sesame seeds is excellent, and they are favorably evaluated for high-cost performance compared to those from Central America and Africa, and since the beginning of 2000, their exports to Japan have expanded rapidly.

However, because of the decline in soil fertility due to continuous cropping, the outbreak of agricultural pests, and other factors, the amount of sesame produced in Paraguay remains sluggish. In addition to this, in 2008, agrochemical residues were detected in a cargo of Paraguayan-grown sesame, which failed to clear customs in Japan and were shipped back, and in 2013, partly because of the effects of this incident, the percentage of Paraguayan food white sesame seeds to Japan's total imports of such seeds fell to about 25%.

Persons concerned with industry, government, and academia, including CAPEXSE, the Ministry of Agriculture and Livestock, the National Service for Plant and Seed Quality and Health (SENAVE), and the National University of Asunción that were all concerned about the effects of sesame being shipped back as sporadically seen in 2008 and thereafter, started to work to solve the problem with the cooperation of JICA. To do

The photo shows a scene from the harvesting of sesame. Small farmers cultivate sesame manually because they have made little progress in mechanization. Sales channels of sesame seeds to Japan have been established, making sesame a precious source of cash income for small farmers.

Source: JICA Paraguay Office

this, it was necessary to make comprehensive efforts, such as establishing standards for agrochemical residues and the use of agricultural chemicals, strengthening the residue inspection system and traceability, educating farmers, collectors, and other parties concerned about residue problems and promoting standards for the use of agricultural chemicals and disseminating information thereon among them, and developing technological alternatives to the agricultural chemicals that caused the problem. To that end, united efforts by persons concerned with industry, government, and academia have been indispensable.

Mr. Naoyuki Takada, Representative Director and President of Katagi Food Co. Ltd., and Chairman of the Committee on Agrochemical Residues at the National Federation of Sesame Processing Unions, who paid attention to Paraguayan-grown sesame earlier than anyone else in Japan's sesame processing industry, talked about his expectations for the quality of Paraguayan-grown sesame seeds and JICA's cooperation, saying:

"In Paraguay, the production of sesame for the Japanese market began in the first half of the 1990s. Its good taste was favorably recognized from the beginning, but partly because the crop was not familiar to Paraguayan farmers, the area of sesame cultivation did not grow quickly during the first ten years of production. They had a lot of trouble communicating and spreading the timing for sowing and cultivation methods. Today, Paraguayan sesame seeds are the standard for white sesame seeds in Japan. But as sesame cultivation became popular, the problems of continuous cropping hazards and agricultural pests have arisen. The use

The photo shows President Takada, who gave a lecture at the International Sesame Seminar held by JICA in Asunción, Paraguay, in March 2014. The sesame market in Japan attracted much interest, and some 150 persons concerned with Paraguay's sesame industry participated in the seminar.

Source: JICA Paraguay Office

of agricultural chemicals to cope with these problems became the norm, making it impossible to control their inappropriate use, and this led to a violation of rules for agrochemical residues. The Paraguayan government, which took repeated "ship back" orders seriously, is said to have sought cooperation from JICA when taking measures to eliminate such violations. Requested by the Paraguayan government and the industry as Paraguay became a country that Japan could not neglect as a supplier, JICA first clarified the cause of the problem of agrochemical residues and is said to be cooperating with the government and the industry in making efforts, such as introducing technology to analyze agrochemical residues and educating small farmers. These JICA initiatives are well known among the parties concerned with the export and import of Paraguayan-grown sesame, and they all place their high expectations for the results of the initiatives. Today, black sesame cultivation in the southern Department of Itapúa is beginning, as is white sesame production, and Itapúa is also growing into a producing center that supplies a little more than 10% of the sesame seeds that meet Japan's demand."

Paraguay, a major agricultural country, and the food security of Japan

Except for sesame, the business relations with Japan in the agriculture sector are currently weak, but from the perspective of food security in Japan, Paraguay should be positioned as an important partner in the trade of agricultural products.

Paraguay is one of the leading exporters of agricultural products in South America, although this is not well known in Japan. It is the world's fourth largest soybean exporter, and with soybeans listed top, many agricultural products, such as beef, corn, and wheat, are exported overseas. In addition, the amount of rice exported has also grown sharply in recent years.[96]

Backed by this high agricultural potential of Paraguay's, Japanese businesses have come to invest in the agriculture of Paraguay, although only slightly. The Tsuneishi Group, which established a subsidiary in Paraguay in 2008, launched agropastoral operations by purchasing 25,996 hectares of land along the Río Paraguay, located some 40 kilometers south

[96] The amount of rice exported from Paraguay rose rapidly, from about 46,000 tons in 2005 to 405,000 tons in 2013.

Table 6-1 Major Agricultural Products Exported by Paraguay

Soybeans	Beef	Corn	Wheat
World's fourth largest exporter	World's fifth largest exporter	World's sixth largest exporter	World's tenth largest exporter
Stevia	Yerba mate leaves	Organic sugar	Powdered cassava
World's second largest producer and exporter	World's third largest producer and exporter	World's largest exporter	World's fourth largest exporter

This table has been created by the author based on *Paraguay: Land of opportunities* (2017), a brochure from the Embassy of Paraguay in Japan.

of the capital city of Asunción. It is planting crops on a trial basis with future production of beans, grain, etc., in mind. The connection between the Tsuneishi Group and Paraguay can be traced back for about 60 years. Mr. Hideo Kambara, who was the second president of the Group, organized a group of emigrants to Paraguay as mayor of Numakuma-cho in Numakuma-gun (currently Fukuyama City, Hiroshima), and the first batch of emigrants set sail from Kobe in 1956. In 2011, the Tsuneishi Group, which had ties with Paraguay, constructed a shipbuilding yard in Villeta, a suburban city of Asunción, to build pushers and barges for river transport, thus contributing to the development of the local community, mainly through the creation of jobs and the development of skilled personnel. In addition, the Tsuneishi Group, which established the Kambara Foundation and the Paraguay Kambara Ikueikai Scholarship Society, supports industrial promotion and human resources development in the Nikkei society.

To ensure food security in Japan, which has a low level of food self-sufficiency, it is indispensable to enhance the international competitiveness of domestic producers and maintain diverse and stable overseas food suppliers, and Paraguay is one of the promising candidates as a supplier of agricultural products. With much of its land still unused, it can be said that Paraguay has high potential to increase agricultural production. As described below, meanwhile, Paraguay, which is said to be the most pro-Japanese country in South America, is a country with extremely low political risks and should be involved in stable food supplies for Japan.

Agricultural investments by Japanese businesses in pro-Japanese Paraguay are likely to contribute not only to food security in Japan but also to the development of agriculture in Paraguay. In Paraguay's agriculture sector, which has been driven by the Nikkei society, attention is focused on Japanese businesses' moves toward agricultural investments.

International cooperation by universities: Initiatives of Obihiro University of Agriculture and Veterinary Medicine

The Agricultural Technology Center in Paraguay (CETAPAR) is located in Yguazú, one of the Nikkei colonies in Paraguay. The origin of CETAPAR is in the Yguazú and Alto Paraná guidance farms established in 1962 as part of the support for Japanese immigrants, and run as JICA's directly managed experimental stations. These farms brought results, such as the spread of no-till farming technology, introduction and dissemination of macadamia nuts, the development and spread of high-quality, disease-resistant tomato and melon varieties, the distribution of superior breeds of cattle and grass seeds, training of Nikkei farmers and small Paraguayan farmers, and the laying of farming foundations, and in 2010, CETAPAR was transferred to the *Central Cooperative Nikkei Agrícola*.[97] After the transfer, the Central Cooperative Nikkei Agrícola was expected to fulfill functions, such as testing and research, spread of farming, and human resources development. Currently, CETAPAR is managed by three organizations: the *Central Cooperative Nikkei Agrícola*, the *Federación de Cooperativas de Producción* (FECOPROD), and the National Cooperative Union (UNICOOP).

With CETAPAR as its institutional counterpart, Obihiro University of Agriculture and Veterinary Medicine implemented "Technical Support for Improvement of Dairy Skills in the Eastern Upland Farming Area," a JICA Grassroots Technical Cooperation Project aimed at developing dairy farming technology and training human resources, from 2011 to 2016, and currently, the University is carrying out its Phase 2: "Enhancement of Agricultural Training Center and Support for Human Resource Development for Promotion of Dairy Farming in the Eastern Region of Paraguay" (2016-2020). Apart from this Grassroots Technical Cooperation Project, the University implemented the "Itapua Prefecture Small Dairy Producers Strengthening Project" (2012-2018), which is aimed at supporting small dairy farmers in the department. The objective of this project, which was carried out through cooperation between the University and JICA, was to contribute to improving the productivity of small dairy farmers by sending a group of University students and graduates as JICA Overseas Cooperation Volunteers.

[97] Paraguai nogyo sogo shikenjyo (CETAPAR): 48-nen no ayumi (September 2010).

Volunteer projects implemented by JICA have three objectives: (1) contribution to the development or reconstruction of the economy and society of developing countries; (2) deepening of friendship and mutual understanding; and (3) cultivation of a global perspective and return of volunteer experiences to society. In 2015, the volunteer project program celebrated its 50th anniversary, and so far, a total of over 40,000 volunteers have worked hard at project sites in developing countries. In particular, the Overseas Cooperation Volunteers project (targeting youths aged 20-39), which began in 1965, not only contributed to social and economic development in developing countries but also played the role of developing Japanese youths, and in recent years, it has attracted the attention of Japanese enterprises which strive to develop overseas business.

One of the objectives of the above-mentioned Itapua Prefecture Small Dairy Producers Strengthening Project was to develop capable persons with a global perspective. After completing their term of office as Overseas Cooperation Volunteers, some of the students and graduates who took part in the project are engaged in Japan's overseas food business and are playing an active role at worksites in Latin America.

Based on these project results, Obihiro University of Agriculture and Veterinary Medicine is stepping up its efforts to develop human resources with a global perspective in Paraguay. In fiscal 2016, the University set about the project of (a) establishing its educational and research base within CETAPAR in cooperation with the center with the aim of developing agricultural experts with a global perspective and (b)

The photo shows former President Nagasawa and people concerned with CETAPAR at the official ceremony for the completion of a demonstration farm in the "Technical Support for Improvement of Dairy Skills in the Eastern Upland Farming Area" project. Source: JICA Paraguay Office

promoting agricultural research to contribute to industrial promotion in both Japan and Paraguay. Referring to the significance of promoting the project, former President Hideyuki Nagasawa of the University said; "The project embodies the mission of Obihiro University of Agriculture and Veterinary Medicine as it strives to contribute to agriculture in the world by developing human resources with a global perspective, and one of the results expected of this initiative is that specialists in agricultural science in Japan and Paraguay are bound by rigid ties and that permanent friendly relations are established between the two countries."

The cooperation extended by Japanese universities for agricultural development in Paraguay thus contributes not only to developing agricultural human resources in Paraguay but also to helping Japan's agriculture to develop business overseas through development of human resources with a global perspective in Japan.

6.2. Transformation of Paraguayan agriculture and rural society: Toward coexistence and co-prosperity of the Nikkei and non-Nikkei societies

Nikkei people as exemplary farmers in Paraguayan agriculture

The year 2016 marked the 80th anniversary of Japanese immigration to Paraguay. The La Colmena colony built by Japanese immigrants 80 years ago is currently known as a town of fruits. Since 2011, the Expo Frutas has been celebrated in December of each year, attracting a large number of visitors. With the cooperation of Kagawa Prefecture and JICA, La

The photo shows the Colka grape juice lineup. The Colka products were developed with the technical guidance of Kagawa Prefecture through the Support Program on Utilizing the Agricultural Product in Paraguay, a JICA Grassroots Technical Cooperation Project. Source: JICA Paraguay Office

Colmena City is working to develop processed agricultural products in an effort to add value to locally produced fruits. As the result of these efforts, grape juice and other products are being developed.

The price is 10,000 guarani per bottle (about 200 yen), which is not cheap compared to general commodity prices in Paraguay, but with no additives, Colka tastes good. The processing of agricultural products using locally produced ones has the potential to contribute to poverty reduction through the addition of high value and the creation of employment although it is not easy to set it on its way as a business, but this initiative in the La Colmena colony is worthy of note.

Mr. Koichi Miyamoto, Deputy President, and Director of the Central Cooperative Nikkei Agrícola, cultivates fruits, such as grapes, peaches, and persimmons, on his 25-hectare-or-so tract of land in the La Colmena colony. Mr. Miyamoto, who had played a central role in the above-mentioned Expo Frutas and the development of grape juice products, talked about the relations between Japanese and Paraguayans in La Colmena, saying,

"The Japanese initiated fruit cultivation, but today, Paraguayans grow fruits using almost the same area of land as the Japanese. Paraguayan farmers who could produce fruits of the same quality as fruits cultivated by Japanese have appeared. The integration of Japanese and Paraguayans is progressing in La Colmena with the culture of mutual cooperation for town development rooted in the colony. The year 2016 marked the

The photo shows "Agro Shopping," an event that consists of booths that directly sell agricultural products. This event is held every Tuesday using a parking lot in the Mariscal Shopping Center in Asunción. Vegetables and fruits produced in the suburbs of Asunción are sold, attracting many customers. Standing at the center of the photo is Mr. Daisaku Shibata, a Nikkei farmer. Source: author

80th anniversary of Japanese immigration to Paraguay. Various events to celebrate the 80th anniversary could be held with the cooperation of many Paraguayans."

Japanese who immigrated to Paraguay cleared primeval forests to reclaim land and have engaged in agriculture, and the agricultural technology brought by Japanese immigrants to the country has contributed significantly to developing Paraguayan agriculture and diversifying the dietary life of Paraguayans. For example, Japanese immigrants started to cultivate vegetables, which were almost not eaten by Paraguayans. Vegetables produced by Japanese immigrants gradually came to appear in the domestic market, playing a part in improving the dietary life of Paraguayans whose diet consisted mainly of meat, and vegetables are one of small farmers' precious sources of cash income today. Chinese cabbage is called *acelga Japonesa*, meaning "Japanese green vegetables." Some crops are called the same as in Japanese: persimmon is *kaki* and bean sprout is *moyashi*. A melon with a mesh pattern, which is called *melón Japonés*, is loved by many Paraguayans.

Paraguay has become the world's fourth largest exporter of soybeans, and this cannot be talked about without mentioning Japanese immigrants' contributions. No-till farming technology, which enabled sustained soybean production, spread mainly among Nikkei colonies, took hold, and then came to be widely used nationwide. Paraguay formerly depended on imports for wheat but has achieved wheat self-sufficiency, and today, it can earn foreign currency by exporting wheat, and this is also largely attributed to Japanese immigrants' contributions.

In 2016, the then Minister of Agriculture and Livestock, Dr. Juan Carlos Baruja, evaluated the contributions of Japanese and the Japanese government to agriculture in Paraguay highly, saying, "(the) Japanese are one of the promoters of vegetable and fruit production in Paraguay. They have also contributed to making Paraguay a major producer of soybeans, wheat, and other crops. The Japanese have played a central role in all aspects of agricultural production and have brought foreign currency to Paraguay through the export of agricultural products. At the same time, it is necessary to recognize the excellent results the Japanese government has brought in the development of the agro-pastoral sector through

technical and financial cooperation." [98]

Today, about 80 years after the first settlement in La Colmena and over 60 years after the immigration to Chavez, the first postwar settlement, Japanese immigrants are looked at with envy by Paraguayans. The success of no-till farming is largely due to the efforts of "exemplary good farmers" among Japanese immigrants,[99] but it is no exaggeration to say that Japanese immigrants and their descendants "Nikkei people" are all exemplary farmers in the entire agricultural industry of Paraguay.

Paraguay is said to be the most pro-Japanese country in Central and South America, and this is the result of the high reputation Japanese have earned as Paraguayans regarded them as industrious and sincere, and it should be recognized that Nikkei people are an important diplomatic asset.

The Japanese-language school in the La Colmena colony.
Source: JICA Paraguay Office

Development of Paraguayan agriculture and challenges for small farmers

With the globalization of economy, the agriculture and rural society of Paraguay have undergone major changes during the past quarter century. Large, export-oriented, and business-oriented farmers[100] producing

98 EVOLUCIÓN 80 AÑOS (1936-2016).

99 Case study "Agricultural Development and Soybean Cultivation by Japanese Farmers in Paraguay — From the Introduction of Non-tillage Cultivation to the Approach of an Environmental Conservation System for Upland Farming —" (Kazuo Nagai).

100 In Paraguay, there is no clear definition of large farmers, but in general, this refers to farmers who own 500 hectares of land or more.

commodities such as soybeans, corn, and wheat support economic growth in Paraguay by driving the agriculture sector of the country while introducing new knowledge, technology, and funding. The so-called "economies of scale" easily work in the production of soybeans, a typical crop for export-oriented agriculture. It is estimated that the profitable scale of mechanized soybean production is at least 100-150 hectares,[101] and in order to maintain and enhance their competitiveness, many farmers intend to expand the tracts of land where they cultivate the crop.

On the other hand, small farmers cultivate cassava, corn, and beans for subsistence, and in addition, they grow sesame, cotton, vegetables, and other cash crops, but it is not easy for them to escape from poverty. The author worked with the JICA Paraguay Office for about four years from November 2012, and in particular, he had the opportunity to hear from persons involved in the agricultural development sector about the problems faced by small farmers. The important points in such problems are summarized as described below:

- Agricultural technology: Small farmers do not receive sufficient public services to spread agricultural technology. The reason such public services do not work sufficiently is not discussed in depth in this book, but there is ample room for improvement of such services in both quantitative and qualitative terms.
- Financial service: Even if small farmers obtain new technology and knowledge from promoters, they need large funds to introduce such

The photo shows a view of a rural village in Paraguay. Large farmers cultivate soybeans, wheat, and other crops in vast tracts of land.
Source: author

[101] This is the result of interviews with members of the *Sociedad Cooperativa Pirapó Agrícola*.

technology but do not have easy access to public financing. The land owned by small farmers is often not registered, and one of the reasons small farmers are prevented from having access to financing is that they have no security required for borrowing;

- Financial education: Even if small farmers obtain loans, there are cases in which they are delayed in repaying them. One of the reasons for this is that the period during which loans are repaid does not correspond with the period during which agricultural products are harvested and sold. It is hoped that financial services will be improved, but in addition, it is necessary to raise the financial literacy level (knowledge and judgment) of small farmers who borrow money; [102]
- Organization: Only a few small farmers join agricultural organizations like Japan's agricultural cooperatives that sell agricultural and livestock products and purchase production materials. The majority of organizations that consist of small farmers only fulfill the function of being recipients of government subsidies. Therefore, the ability of small farmers to negotiate with markets is weak, and faced with the problem, "Even if we produce crops, they do not sell or their price is beaten down;"
- Non-agricultural income: In rural villages, opportunities to earn non-agricultural income are limited. One of the reasons for this is that mechanized agriculture like soybean production is not highly effective in creating employment. However, as it has continued to expand in

The photo shows a view of fields cultivated by small farmers. In Paraguay, as elsewhere in the world including Japan, young people are becoming less and less interested in agriculture. Under a blazing sun, which makes the temperature go above 30 degrees Celsius, or sometimes even 40 degrees, farming is harsh, and agricultural mechanization is an issue to be addressed by small farmers. Source: author

[102] Taking these circumstances into account, JICA provided cooperation to improve the quality of financial services for small farmers through its technical cooperation "Project to Strengthen the Organization for Financial Inclusion for Farmers."

recent years, the agro-industry[103] is expected to create employment in rural villages.

While small farmers have been faced with the various problems described above, large farmers have achieved steady growth, partly because the international prices of agricultural products, such as soybeans and corn, have remained comparatively strong.[104] In addition, since there are established regular sales channels for these agricultural products, the risk of having trouble in selling them as small farmers do is low. As the development of technology required for cultivation is being advanced under the private sector's leadership, large farmers with funding capabilities are introducing advanced technology developed in Paraguay and abroad without relying on the country's fragile public system to spread agricultural technology.[105]

Initiatives for coexistence and co-prosperity of the Nikkei and non-Nikkei societies

The disparities that arise between the rich and poor in rural areas as described above are likely to cause problems, such as the illegal occupation by the poor of land owned by large farmers and disturbance of public order, and for Nikkei colonies, these are not somebody else's problem. In 2011, the illegal invasion of the Yguazú colony by members of the land occupation movement organized by landless farmers called "sin tierra" as the community celebrated the 50th anniversary of settlement came as a shock to Nikkei society. There is also concern about the general deterioration of public order. The number of non-Nikkei people in Nikkei colonies has risen as the times have changed, and today, the majority of residents in the colonies are non-Nikkei people. In this situation, widening economic disparities between Nikkei and non-Nikkei people and the growing number of unemployed non-Nikkei workers may arouse jealousy and antipathy toward the Nikkei society and worsen general public order.

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[103] The agro-industry, which refers to an industry based on agricultural resources, includes flour milling, meat processing, oil and fat manufacturing, and sugar manufacturing.

[104] Ministry of Agriculture, Forestry and Fisheries' website (http://www.maff.go.jp/j/zyukyu/jki/j_zyukyu_kakaku/pdf/kakaku_1016.pdf)

[105] In Paraguay, varieties, agricultural chemicals, and agricultural machinery from its neighbors, Brazil, and Argentina, are often used.

In 2010, Mr. Yuzuru Miyasato, who served from 2010 to 2015 as mayor of La Paz, where the Nikkei La Paz colony is located, started to work on the community development project targeting the non-Nikkei poor in the city with the support of JICA Overseas Cooperation Volunteers. The former mayor Miyasato said, "Through the project, personnel in health posts became able to visit the poor for guidance, and agricultural promoters who had previously given the impression that they dedicated themselves only to writing reports almost without visiting farmers now began to visit production sites and provided guidance to farmers by themselves. This project is contributing not a little to the improvement of poor people's lives. In order for the Nikkei society to develop, it is necessary to ensure that the lives of non-Nikkei people in Nikkei colonies become better. The Nikkei society cannot hope to develop if Nikkei people think that it is all right if only their lives are good."

In Pirapó City in the Department of Itapúa, the same department as the one in which La Paz is located, a comprehensive program to help small farmers to become independent was launched in 2006 in the production, education, and health sectors under the initiative of Mr. Yoshio Kudo, mayor of Pirapó in those days, and in cooperation with initiatives of the Pirapó city government, JICA dispatched Overseas Cooperation Volunteers to the city in areas such as vegetable cultivation, home economics, and clothing and accessories for about six years from 2009 to 2015 in order to support the city's efforts for poverty reduction.

Meanwhile, investments in the agro-industry utilizing local agricultural products are being made in Nikkei colonies, and these investments are contributing to poverty reduction in the non-Nikkei society through the creation of local jobs. The *Cooperativa La Paz Agrícola* constructed a wheat flour mill in 2003. Mr. Satoshi Kono, former president of *Central Cooperative Nikkei Agrícola*, said, "*Cooperativa La Paz Agrícola* has 55 personnel in its organization and 120 workers engaged in its related businesses, and some 50 of the 120 workers are employed by the milling business. Previously, theft and other problems were found here and there, but there have been few such problems as we created local jobs, particularly those for non-Nikkei people, through business expansion." *Cooperativa La Paz Agrícola* constructed a feed factory for domestic animals in 2010 and is considering investing in a slaughterhouse and an oil mill in the future.

Nikkei colonies were built and have developed thanks to the efforts of

Japanese immigrants, but today, when non-Nikkei people make up the majority of these colonies, it is necessary to make incessant efforts to ensure that the two societies coexist and co-prosper with each other as mentioned above, because without such efforts, the colonies cannot hope for sustained development.

Nikkei colonies as a model of agriculture and rural development

The colonies of Paraguayans of Brazilian, European, and other ethnic descent are also faced with similar challenges and are looking for ways for coexistence and co-prosperity with local small Paraguayan farmers. JICA has supported the initiatives of communities with different economic environments as described above for coexistence and co-prosperity mainly through the Project for Formation of Clusters of Agricultural Cooperatives in the Eastern Region of Paraguay (2012-2016).[106] As explained above, it is not easy for fragile agricultural organizations to develop sales channels for products, but this project is aimed at building relationships of economic cooperation that would allow small agricultural cooperatives and groups of small farmers to use sales channels held by large agricultural cooperatives.

For example, the *Nikkei Cooperativa Yguazú Agrícola*, which participated in this project, decided that it should provide funds to the *Mallorquín Agricultural Cooperative*, which consisted mostly of small farmers, and received repayments with soybeans. The soybeans received from the Mallorquín Agricultural Cooperative were sold through the *Cooperativa*

Photo of the Cooperativa La Paz Agrícola's flour mill and feed factory office.
Source: author

[106] JICA's website is https://www.jica.go.jp/project/paraguay/003/outline/index.html

Yguazú Agrícola's sales channels. This enabled even small farmers whose ability to negotiate with markets is weak to ship soybeans to markets under better conditions in a stable manner. Mr. Tadatoshi Kudo, head of the *Cooperativa Yguazú Agrícola*, said, "Reducing disparities is an important issue to be addressed by the Nikkei society. If only the living standards of Nikkei people improve, they would be faced with problems such as illegal land occupation if disparities widen." In 1998, the *Cooperativa Yguazú Agrícola* built a flour mill earlier than any other Nikkei agricultural cooperative, starting a flour milling business, and in 2016 it constructed a slaughterhouse. Through these investments in the agro-industry, the agricultural cooperative is contributing to creating local jobs.

The Japanese government has set "reducing disparities" as one of the priority areas in its development cooperation for Paraguay and has extended cooperation to improve the livelihood of the poor.[107] JICA, which aims at "dynamic development so that all people benefit from it," has supported development in a way that enables members of local communities to take the initiative in building relationships with external communities and coping in a comprehensive manner with issues, such as agriculture, health, education, infrastructure, and the environment with which they were faced, while making the most of local resources (such as natural settings, people, things, and funds). In supporting small farmers in becoming independent, JICA has striven to make comprehensive efforts, such as spreading agricultural technology, providing better access to farming funds, helping sell products, and creating employment through the organization and development of agricultural product processing industries.

But it is easier to preach than to practice. If asked what the characteristics are of public administration in Paraguay, most people would say "centralization of government and bureaucratic sectionalism" and a "top-down approach." And there is no denying that centralized government, bureaucratic sectionalism, and top-down approaches give the impression that they have been factors in depriving local communities of their initiative and preventing collaboration between the central and local governments and among parties concerned in the local community. So, to break down this situation that has continued over the years it would be more effective to present a visible model of the alternative reality because

[107] Country Assistance Policy for the Republic of Paraguay (April 2012).

"seeing is believing." It is not necessary to seek such a model overseas because it can be found in Paraguay. Go to the Nikkei colonies.

In the Nikkei colonies, with the start of development, an agricultural cooperative was established and took leadership in providing guidance in farming technology, lending farming funds, and jointly purchasing agricultural materials and selling agricultural products. In recent years, as described above, agricultural cooperatives have contributed not a little to creating local employment by planning investments in the agro-industry and implementing such plans. In addition, residents have united in efforts to develop social infrastructure, such as roads, schools, and clinics, and have striven to educate their children and improve their health. In recent years, as the ageing of the population has progressed, Nikkei settlements have aimed at improving the welfare of elderly persons. The very history of development in Nikkei colonies provides a model for rural development in Paraguay.

Up to now, there has been a strong tendency to recognize Nikkei immigrants and their society as the target of Japan's assistance. Today, however, Nikkei immigrants and the Nikkei society, who are familiar with both Japan and Paraguay and have built a model of agriculture and rural development in Paraguay, should be viewed as an important partner in cooperating with Paraguay in agriculture and rural development rather than as the target of Japan's assistance. Working closely with Nikkei immigrants and the Nikkei society will not only make Japan's cooperation in the agriculture and rural development sector of Paraguay effective and efficient but also back up the coexistence and co-prosperity between the Nikkei and non-Nikkei societies, which will in turn contribute to the sustained development of the Nikkei society.

6.3. Nikkei society in Paraguayan society: Toward the deepening of friendly relationships between Japan and Paraguay

Nikkei agriculture advances with the development of Paraguayan agriculture

FECOPROD, which has 33 agricultural cooperatives, including the Nikkei ones, as its members, accounts for 60% of the total agricultural output in Paraguay and plays the role of protecting the social and economic benefits

of its member agricultural cooperatives. Through investments by its members, FECOPROD established Productive and Commercial Ventures (ECOP) in 2010. ECOP is engaged in operations such as the procurement of agricultural inputs, including fuel, and the export of soybeans. As the soybean export market is controlled by grain majors, ECOP's attempt merits attention. In 2012, FECOPROD established a production and distribution bank referring to an example in Japan,[108] and in recent years it has worked to use meteorological data and develop a quality inspection laboratory for milk.

Mr. Blas Cristaldo, executive director of FECOPROD and former president of CETAPAR, cited (1) the training of human resources and the development of application technology, (2) a guarantee of the quality of agricultural products and strengthening of traceability, and (3) the reinforcement of logistics, including the development of transport infrastructure, as issues to be addressed in developing Paraguayan agriculture and emphasized the necessity of utilizing information technology as a cross-sectional initiative. Referring to the training of human resources and the development of application technology, he said, "Paraguay utilizes only around 20% of its agricultural potential, and to further develop Paraguayan agriculture it is necessary to advance research and technological development, develop researchers and engineers, educate producers, and strengthen the organization of agricultural cooperatives, including leadership training,

The photo shows Mr. Blas Cristaldo (right), executive director of FECOPROD, and Ms. Romina Espinola (left), his assistant.
In 2015, FECOPROD celebrated the 40th anniversary of its establishment.
Source: author

[108] With the cooperation of JA-Zenchu, JICA provided senior managers of FECOPROD with opportunities of training related to the organization and functions of Japanese agricultural cooperatives in Japan.

among other actions. CETAPAR can fulfill important roles as a base of research, technological development, and human resources development. We expect further support from Obihiro University of Agriculture and Veterinary Medicine, which has assisted CRETAPAR through the JICA Grassroots Technical Cooperation Project "Technical Support for Improvement of Dairy Skills in the Eastern Upland Farming Area."

In addition to the challenges indicated by Mr. Cristaldo, important issues to be addressed in developing Paraguayan agriculture include developing irrigation and drainage facilities and utilizing meteorological data to adapt to climate change, improving the financing system to promote agricultural investments, and enhancing international bargaining power in the trade of agricultural products. These issues probably also apply to the Nikkei agricultural cooperatives.

Mr. Kono, former president of the Central Cooperative Nikkei Agrícola, said, "There is a tendency to be satisfied with the past success experience and avoid reform among Nikkei farmers, but if they take such a negative attitude, it would be difficult to expect that they will develop in the future. In the future, initiatives to jack up the entire agriculture of Paraguay while working with FECOPROD will be necessary."

It can be said that the Nikkei farmers have entered the period in which in order to achieve further development as globalization progresses, they should work with industry organizations, such as FECOPROD, to cope with issues that cannot be solved by Nikkei farmers and agricultural cooperatives alone.

Today, as it is difficult to expect agriculture in Nikkei colonies to prosper unless Paraguayan agriculture develops, it may be more effective for the development of agriculture in these colonies to extend cooperation that helps jack up the entire agriculture of Paraguay than to extend cooperation that targets agriculture in the colonies alone. Pursuing the development of the entire agriculture of Paraguay with Nikkei farmers and agricultural cooperatives as its partner is probably an ideal form of new partnership between Paraguay and Japan.

The Attraction of Paraguay

The Japanese government has announced its policy of approaching the

world's food market, which is expected to grow rapidly in the future. To build a food value chain that makes the most of Japan's strengths, such as high quality, health-consciousness, and high safety standards, public-private partnerships need to encourage the Japanese food industry to develop overseas business and help developing countries to achieve economic growth. Food infrastructure, which is part of the food value chain, comprises a wide range of components, including irrigation facilities, agricultural machinery, plant factories, food manufacturing equipment, cold storage and transport chains, logistic centers, and distribution and sales networks, such as retailers and restaurants, and it is expected that these components will be combined into a package for overseas development. By region, it seems that the government's policy for Central and South America, a huge food market with a population of about 600 million that has high, but stable growth potential, is to promote the construction of production, processing, cold storage, and other chains for safe, secure, and tasty foods that target the middle classes.[109] The involvement of Japanese businesses in the agriculture and food industries of Paraguay has the potential to contribute to the development of agriculture and agricultural product processing industries of that country, and Japanese businesses are expected to invest in these industries, but to that end, Paraguayans need to emphasize the attraction of their country to Japanese businesses. What is the attraction of Paraguay for Japanese businesses, particularly those in the agriculture and food industries?

The author had the opportunity to attend the first meeting to strengthen Nikkei farmers for the "*Project of Interchange, Cooperation and Business Creation for Nikkei Farmers of Latin America in Fiscal 2016*," which was implemented by the Ministry of Agriculture, Forestry and Fisheries, and to make presentations on the potential to create agricultural business in Japan and South America in cooperation with JICA. In these presentations, the author cited the following four points as the attraction of Paraguay when seen from a Japanese person's point of view:

- Most pro-Japanese country in Central and South America;
- Favorable investment environment;
- High international competitiveness of agricultural products produced from its blessed natural environment; and its

[109] Website of the Ministry of Agriculture, Forestry and Fisheries. (http://www.maff.go.jp/j/kokusai/kokkyo/food_value_chain/about.html)

- Huge markets in neighboring countries.

Paraguay is the most pro-Japanese country in Central and South America. This impression will be supported by many Japanese who have stayed in Paraguay for any length of time. As mentioned earlier, behind this impression is the fact that Nikkei people have been favorably evaluated by Paraguayans as industrious and sincere. In a pro-Japanese country, various business negotiations will go smoothly.

It has also already been mentioned that Paraguay has a favorable investment environment. In addition to an abundant low-cost labor force, preferential treatment in tax and other systems, and macroeconomic stability, Paraguay has a better public order than neighboring countries, and Japanese food ingredients, such as rice, *miso*, and soy sauce, are almost all available. Moreover, the living environment with the Japanese school in Asunción providing almost the same level of educational services as in Japan[110] is highly attractive to Japanese businesses that consider involvement in the Paraguayan market.

As a major agricultural exporter, Paraguay offers many internationally attractive agricultural products, including soybeans. These agricultural products are also produced by Nikkei agricultural cooperatives. One of the factors that enable production of agricultural products that are highly competitive in the international market is its vast fertile land. Paraguay also abounds in water resources. For example, the construction of Yacyreta Dam has enabled farmers in the Yacyreta area to use 108 cubic meters of water per second for irrigation and other purposes. These water resources have been practically unused so far and are therefore available to support further agricultural and urban development. With no experience in large-scale irrigation development in Paraguay, the country's Ministry of Agriculture and Livestock is working to develop a master plan to promote agricultural development centered on rice production that makes the most of water resources in the Yacyreta area through obtaining the cooperation of JICA.[111] As there is concern about the effects of climate change nowadays, it is expected that in the future,

[110] Website of the Japanese school in Asunción (https://coljap.wordpress.com/).

[111] JICA provides cooperation through the Project for Study on Integral Development of the Adjacent Zones to Yacyreta Dam Reservoir. In this project, in addition to the master plan, the action plan to realize this plan, feasibility studies for development of irrigation and drainage facilities, and other initiatives are under way.

the experience gained by working out this master plan will allow stable agricultural production in other areas of Paraguay that are able to make effective use of the available local water resources.

Paraguay has a population of a little less than seven million, and in general, one may assume that it is therefore less attractive as a consumer market. But if one takes into consideration that it is a member of MERCOSUR and that there are huge markets in its neighbors, this completely changes such an assumption. Brazil has a population of over 200 million with its GDP per capita at $11,613 (2014), and the population of Argentina exceeds 40 million with its GDP per capita at $13,432 (2015).[112] The population of the State of São Paulo, in which one-third of Brazil's economic activities is concentrated, exceeds 40 million, and 70% of Nikkei people, whose number is estimated to be some 1.6 million, reside in this state.[113] The distance between São Paulo, the state capital, and Ciudad del Este, the second largest city in Paraguay, is almost the same as that to Brasilia, the capital of Brazil.

Potential of business in agriculture and the food industry in Paraguay

If the foregoing is accepted the business model described below can be conceived.

It is a business in agriculture and the food industry with Nikkei agricultural cooperatives, other Nikkei enterprises, and pro-Japanese Paraguayan entrepreneurs as its partners, which makes the most of Paraguayan agricultural products that are highly competitive in international markets, targeting Brazil, a huge market in South America, which keeps transport costs low compared to those for exports to other areas. More specifically, one suggestion is to invest in the production and processing of Japanese food ingredients as well as in the food distribution and restaurant industries (Japanese restaurants) in cooperation with Nikkei agricultural cooperatives and other partners with the São Paulo market in mind.

The immigration of Japanese to Paraguay has had major effects on the

[112] Website of the Ministry of Foreign Affairs (http://www.mofa.go.jp/mofaj/area/latinamerica.html).

[113] Website of the Japanese Consulate General in São Paulo (http://www.sp.br.emb-japan.go.jp/jp/comunidade/ history_jp.htm).

agriculture of Paraguay and the dietary life of Paraguayans. The advance of Japanese businesses into Paraguay's agriculture and food industry will contribute not only to the development of Paraguay's agribusiness, which has developed in recent years, but also to the revitalization of Nikkei society.

Column 5
Development of next-generation Nikkei leaders, which begins with the Yguazú Conference

Makoto Kitanaka

In February 2013, in response to the call of the JICA Paraguay Office, representatives of the Nikkei society in Central and South American countries gathered in the Yguazú colony in Paraguay, and the event popularly known as the Yguazú Conference took place. By sharing their experiences and exchanging with each other, participants held lively discussions about subjects, such as how to develop young people who would support the Nikkei society in the future and what role the Japanese government and JICA should play in this process. In countries that had a longer history of Japanese immigration than Paraguay, Nikkei people have made various efforts up to now, and this conference served as a very good stimulus to the Nikkei society in Paraguay. On the other hand, many participants from other countries expressed their opinions, saying that they had been impressed by the Yguazú colony, which was taking over Japanese and Japanese culture successfully.

Up to now Nikkei people have acted energetically in sports exchanges and other programs with Centro Nikkei (an organization into which the clubs of the second generation of Japanese immigrants in various North and South American countries where Nikkei people live developed) as their coordinator. The themes for the entire society are set by the Convention of Nikkei and Japanese Abroad, which brings Nikkei people worldwide together under the sponsorship of the Association of Nikkei & Japanese Abroad. Participants of the Yguazú Conference expressed their opinions, insisting that they needed a forum to discuss issues with which the Nikkei society is faced in Central and South America, and confirmed the necessity of the formation of a network that suited the new era, including stronger ties with Japan, and the results of discussions were put together in the form of the Yguazú Declaration and conveyed to all parties concerned.

Time passed, and on June 29, 2018, the Forum of Next Leaders in

Central and South American Nikkei Society took place at JICA's international conference hall in Ichigaya, Tokyo, under the co-sponsorship of the Ministry of Foreign Affairs and JICA. This was an open forum in which the next generation of leaders in the Nikkei society, the young generation in Japan, and Nikkei people residing in Japan, who were all invited by the Ministry of Foreign Affairs, as well as Nikkei trainees and foreign students, both of whom were visiting Japan under JICA and other programs, exchanged opinions on various themes concerning the Central and South American Nikkei society. The overall coordinator for the forum was Mr. Alberto Matsumoto, a Japanese-Argentine living in Japan. (https://www.jica.go.jp/information/seminar/2018/20180629_01.html)

In fact, Mr. Matsumoto had also participated in the Yguazú Conference held five years earlier, and in his keynote speech, he emphasized the importance of horizontal ties in the Nikkei society. The author believes that not only his subsequent efforts but also the Paraguayan Nikkei society's united support for the Yguazú Conference led to the organization of the Forum of Next Leaders in Central and South American Nikkei Society. The new vision of the Nikkei society discussed passionately at the Yguazú Conference was taken over by the younger generation five years later. The author hopes that the bonds with Nikkei people will evolve further.

Epilogue

Eightieth anniversary of Japanese immigration to Paraguay

Keisuke Ito

On September 9, 2016, the President, Chairmen of the upper and lower houses of the Congress, the Chief Justice of the supreme court, as representatives of the executive, legislature, and judiciary of the Republic of Paraguay, gathered at the site of the *Confederación Sudamericana de Fútbol* (CONMEBOL [South American Football Confederation]). Also seen at the site were the Vice President and over ten ministers, including the Minister of Foreign Affairs, Minister of Finance, and Minister of Industry and Commerce, as well as other distinguished people, such as governors, mayors, and parliamentary members. They met to achieve one objective, to celebrate the 80th anniversary of Japanese immigration to Paraguay.

On that day, an official ceremony to celebrate the 80th anniversary of Japanese immigration was held on a grand scale with Her Imperial Highness Princess Mako, the first daughter of Their Imperial Highnesses Prince and Princess Akishino, in attendance. Participants in the ceremony from Japan included Mr. Youichi Miyazawa, a member of the House of Councilors and representative of the Japan-Paraguay Parliamentarians' Friendship Federation, the Japanese ambassador to Paraguay, and persons concerned with local governments. Attendees from the Nikkei society included representatives of the Japanese Associations in Paraguay and persons concerned with Nikkei organizations in Central and South American countries. Initially, 750 persons had been expected to attend the ceremony, but although it was held on a weekday, over 900 persons participated in the event, and Japanese and Paraguayans celebrated the 80th anniversary of Japanese immigration together.

At the ceremony, Her Imperial Highness Princess Mako said as follows:

"I am glad that my official visit was realized by the invitation of the Paraguayan government in the memorable year of the 80th anniversary of Japanese immigration to Paraguay. I feel a special connection in the fact that I was able to visit Paraguay ten years after my father, Prince Akishino, made an official visit to the country. I am deeply grateful for

the warm welcome extended to this visit of mine, and at the same time, I express respect to Japanese immigrants and their descendants who have supported a bridge of friendship between Japan and Paraguay. I appreciate the kindness of the government and people of Paraguay who have warmly received Japanese immigrants and deeply thank Your Excellency President Cartes for your attendance. I hope that Japanese and Paraguayans will take this opportunity to further deepen the mutual understanding and exchange that have been promoted between the two countries through the efforts of their predecessors and hand them over to the generation who will lead the future."

Their Majesties the Emperor and Empress had visited Paraguay 38 years earlier, and His Imperial Highness Prince Akishino did so ten years earlier. Paraguay is the only country that has been visited by three generations of the Imperial Family.

Later, President Cartes delivered a congratulatory address to the following effect:

"We are greatly honored to have with us Your Imperial Highness Princess Mako, who came to Paraguay to celebrate the 80th anniversary of Japanese immigration together. The places where Japanese immigrants live today have become an example of discipline and are leading the development of Paraguay. Paraguay is one of the countries that are visited by members of the Japanese Imperial Family most frequently, and I myself was accorded an unforgettable cordial reception by His Majesty the Emperor when I visited Japan in 2014. Please firmly believe that Paraguay has been and

The Paraguayan government issued a set of stamps to commemorate the 80th anniversary of Japanese immigration to Paraguay. Source: Federación de Asociaciones Japonesas del Paraguay

will be one of the countries in the world that is most pro-Japanese and friendly to Japan. I express the greatest affection and respect to Japan as well as dignified Japanese immigrants and their descendants. The doors of our hearts are warmly opened to Your Imperial Highness Princess Mako, and we dedicate all the affection of the Paraguayan people to the Princess."

Prior to the ceremony, the upper house of the Congress of Paraguay expressed its appreciation of the contribution of Japanese immigrants to the development and prosperity of the Republic of Paraguay.[114] The lower house of the Congress declared that the 80th anniversary of Japanese immigration to Paraguay was a matter of national concern.[115] As many provincial (departmental and municipal) governments made similar announcements, the entire nation of Paraguay celebrated the 80th anniversary of Japanese immigration.[116]

The author had the opportunity to take part in this ceremony and saw many Japanese immigrants moved to tears when hearing the remarks of Princess Mako and the congratulatory address of President Cartes. Japanese immigrants and their descendants have contributed to the development of Paraguay, which has received them warmly. And Paraguay expresses the greatest affection and respect to these people. It was a moving ceremony.

In 2016, which marked the 80th anniversary of Japanese immigration to Paraguay, various events, such as a Kimono Show in February and the Miss Nikkei contest in March, were held throughout the year, and many Paraguayans celebrated this milestone year. The Festival *Japonés Gastronómico y Cultural* (Japan Festival) in October, which marked the finale of these events, attracted as many as 15,000+ people. Moreover, an admission fee was charged to participants of the Festival. Even though they had to pay an admission fee of about 600 yen per person, many Paraguayans rushed to the festival site where they enjoyed the sounds of Japanese drums and traditional Japanese dance, danced a *Bon* festival

114 DECLARACIÓN N 149, CONGRESO NACIONAL, H. Cámara de Senadores.

115 DECLARACIÓN N 397, Congreso Nacional, Honorable Cámara de Diputados.

116 The author participated in a tennis tournament, and a representative of the tennis club that hosted the tournament told him that club members wanted to celebrate the 80th anniversary of immigration together, and as exemplified by this, the contribution of Japanese immigrants to Paraguayan society was also recognized at the grass-roots level.

dance, and smacked their lips over Japanese food, and this was an indescribable sight. Cosplay, which attracts public attention in the world as a form of Japanese culture, was also presented, and Paraguayan youths who liked Japanese animation and *manga* (cartoons) added a special touch to the festival site by wearing the costumes of various characters. In addition, booths to present prefectures of Japan and Japanese culture were set up, and there were Paraguayans who were looking at *bonsai* and other features of Japanese culture with interest. Paraguay, the most pro-Japanese country in Central and South America—no other words come to the author's mind.

At the site of the Festival there was an interesting initiative called "Eco Ninja," which was suggested by Mr. Masayuki Miyazaki, an environmental technology coordinator at the Faculty of Natural Sciences of the National University of Asunción. Many people may remember that at the World Cup soccer tournament held in France in 1998, in which the Japanese team participated for the first time, Japanese spectators put away garbage after the game and that this was televised, winning the admiration of the world. Mr. Miyazaki tried the same thing at the festival site in Paraguay, where tossing away garbage carelessly was still a daily occurrence. Volunteers in *ninja* costume[117] urged participants in the Festival, particularly Paraguayan youths, in an entertaining way to put garbage in a trash box, and the sight of youths putting garbage in a trash box with a smile was agreeably amusing.

The photo of a scene from the Festival Japonés Gastronómico y Cultural.
Source: Federación de Asociaciones Japonesas del Paraguay

[117] The Nikkei youth department, JICA volunteers, and other people cooperated in the Eco Ninja initiative.

In 2015, Mr. Miyazaki, a second generation Japanese immigrant, visited the Miyako Ecology Center in Kyoto as a trainee in the JICA Training Program for Japanese Descendants and had the opportunity of learning about the city's approach to the garbage problem. After he returned home, as he repeated by trial and error to disseminate the knowledge he had acquired, it occurred to him that at the Festival, which was expected to attract over 10,000 people, he should put into practice the idea of reducing garbage left after the festival to zero. Mr. Miyazaki talked about the garbage problem in Paraguay as follows:

"In Paraguay, a large amount of garbage is always left at the sites of festivals and other events. When the Pope visited Paraguay in 2015, people gathered from nationwide to have a look at him, but I was much disappointed that a large amount of garbage had been left on roads after the Pope departed. Paraguayans have a strong tendency to think that if something is stained, it is all right if the stain is removed afterward, but environmental problems are not solved if such an attitude is taken. In Paraguay, with the development of the economy, the percentage of plastics to total garbage is rising sharply. It takes 400-1,000 years before plastics decompose naturally. Such garbage must not be left as it is. To that end, it is necessary to change the awareness of citizens, and the *Festival Japonés Gastronómico y Culturall* provides a perfect opportunity to do so. In the future, as in the past, I will continue to contribute to solving the garbage problem in Paraguay as far as I can."

"Eco Ninja" at the festival thus evoked a massive response, and Caacupé City decided to aim at reducing garbage left after the Caacupé Festival[118] to be held on December 8, 2016 to zero. Other cities are interested in this initiative, and Mr. Miyazaki supports city governments' similar initiatives as their advisor. This is a good example of Japanese values spreading in the country through Nikkei people.

The second generation of Japanese immigrants played a central role in planning and operating the 80th anniversary of Japanese immigration to Paraguay. Looking back upon the celebrations of the 80th anniversary, Mr. Ryusuke Higaki, a second generation immigrant and the then deputy

[118] On the "Virgin of Caacupé Day" on December 8, which is a holiday, many Catholics nationwide make a pilgrimage on foot to Caacupé, where stands the Cathedral Basilica of Our Lady of Miracles, Caacupé, the head church of Catholicism in Paraguay. This is a major event which attracts more than one million people from all over the country.

head of the Federación de Asociaciones Japonesas del Paraguay, said, "Up to now, Japanese immigrants have had a strong tendency to celebrate the anniversary among themselves, but partly because the planning for and operation of the recent 80th anniversary's celebrations were undertaken mainly by the second generation of Japanese immigrants, we had a strong feeling that we wanted to celebrate together with Paraguayans. The foremost objective of the 80th anniversary's celebrations was to convey our feeling of appreciation for Paraguayans, who had received Japanese immigrants warmly, kindly, and without discrimination. The *Festival Japonés Gastronómico y Cultural* became a major event in which over 15,000 people gathered. This type of event is usually accompanied by problems, but the 80th anniversary's celebrations, including other related events, ended without major accidents and troubles. After the festival we received various words of praise from the Paraguayan society. In particular, the fine organizational and operational abilities of Japanese and their careful consideration to guests were highly evaluated. Through the festival we believe that we were able to not only show Japanese things that were visible, including Japanese food, but also convey the uniqueness of 'Japaneseness' that was invisible. Some commented that they wanted us to organize the 81st anniversary next year (laugh)."

The festival provided the perfect opportunity to show Japanese virtues to Paraguayans, and many Paraguayans were fascinated by Japanese virtues. In order to praise its success the Jockey Club of Paraguay (horse racing club), where the Festival had taken place, hosted the final horse race in the week that followed the festival as the 80th Anniversary of Japanese Immigration to Paraguay Cup. Up to then, piles of garbage had been left after major events at the Jockey Club. After the festival, partly because of the above-mentioned Eco Ninja and the active involvement of some 420 volunteers, the Jockey Club was strongly impressed that the event site was returned in a cleaner condition than when it was borrowed, that nothing had been destroyed, and that all promises, such as the period during which the site was leased, had been kept, and it seems that this led to the hosting of the 80th Anniversary of Japanese Immigration to Paraguay Cup event.

In addition, the 80th anniversary's celebrations had the secondary effect of strengthening the unity of Nikkei communities. The performance of Japanese drums shown during the *Festival Japonés Gastronómico y Cultural* was given jointly by five groups of players, and this was the first instance

in which these five groups united their efforts to perform together. The organization of various events was financed mainly by donations from enterprises rather than depending excessively on contributions from members of Japanese Associations as it had before. The management sense of linking the public relations and marketing strategy of enterprises to the 80th anniversary's celebrations can only be expected of the second generation of Japanese immigrants.

In the society that has been built by the first and 1.5th generations of Japanese immigrants, Nikkei people who will lead the next generation are growing steadily. Japanese immigrants who have gained trust and respect in the Paraguayan society have laid the foundation for friendship between Japan and Paraguay. The second generation of Nikkei people, who were born and raised in Paraguay, have in their mind's Paraguayan values and the Japanese values that they have taken over from their parents. Based on the foundation laid by the first and 1.5th generations of Japanese immigrants, how will the second and subsequent generations develop the friendly relations between Japan and Paraguay? What excitement will they bring to the 100th anniversary of Japanese immigration to Paraguay 20 years from now?

The author looks forward to the answers to these questions.

The photo shows a performance of Japanese drums in the Festival Japonés Gastronómico y Cultural. Five groups of players performed together, beating a total of 80 drums.
Source: Federación de Asociaciones Japonesas del Paraguay

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In Place of An Afterword

Japanese immigrants have contributed greatly to the development of Paraguay. This is an important chapter of the history of friendly relations between the two countries but it is not well known, although it deserves much attention. This book certainly promotes a deeper understanding of this. At the same time, it invites the reader to understand the affluent life brought by the immigrant society and its economy. In developing a useful strategy for the future of the two countries, the relationships between Paraguay and the Nikkei society offer many suggestions to us.

I am very pleased that this book will be published in conjunction with the 100th anniversary of the establishment of diplomatic relations between the two countries.[119] It provides a good opportunity to confirm again the past deep connections between the two countries and will be the first step to show an outlook for the future and build closer relations between them.

Paraguay has fertile land and is blessed with favorable weather for agriculture. For this reason, Paraguay's strengths and potential concentrate in the agriculture sector. It is no accident that Paraguay is recognized as one of the major food suppliers in the world today. Even by world standards, Paraguay ranks high in terms of food exports. In 2018-2019, as far as soybeans were concerned, Paraguay recorded an output of about 10 million tons, which made the country the world's fourth largest exporter. Paraguay has the capacity to produce more food than is needed to support its seven million people.

This is not the result of accident. It is the result of appropriate policy, private investment, and long-term cooperation by immigrant communities in Paraguay. In particular, Japanese immigrants made remarkable contributions to the cultivation of vegetables and fruits and the production of soybeans. Although they were faced with major problems, such as insufficient infrastructure, cultural differences, natural disasters, and different weather and climate, immediately after they came, the blessings of nature in Paraguay supported the development of their rural life and promoted their settlements.

[119] This afterword was written in 2019.

In 1936, the first colony of Japanese was founded at La Colmena in the Department of Paraguarí, located about 150 kilometers from the capital city of Asunción. After that, Japanese developers dedicated themselves to agriculture, and immediately after they settled, they started to cultivate cotton, soybeans, sesame, dry-field rice, vegetables, and so forth, crops that were not then grown widely in Paraguay.

According to the early settlers they achieved the export of 20 tons of soybeans in 1937, only a year after the settlement of the first immigrants. La Colmena quickly realized the dream of Paraguayans, which was the diversification of agricultural production. And this success brought the second and third waves of Japanese immigrants in the middle of the 20th century, building new colonies in the southern and eastern areas of the fertile land of Paraguay.

As shown in this book, Japan extended technical and financial cooperation first to Japanese immigrants and then to the Paraguayan government. These contributions played an important role in the development of human resources and national land through technological innovation. In this relationship, it is necessary to refer to JICA. In Paraguay, JICA contributed to the most successful of bilateral exchange programs. Its contribution was that it helped make Paraguay one of the world's major soybean exporters by improving and developing soybean cultivation. It is not surprising that in terms of GDP, Japan's cooperation is directly involved in one of the three major products (soybeans, hydroelectric power generation, and beef) that support domestic production.

During the past ten years, the relationships between Paraguay and Japan have expanded from the successful agriculture sector to new ones, such as the production of automotive components, the building of ships, and introduction of technology into industrial processes. These recently launched initiatives are essential to long-term, steady growth, and because they are less affected by fluctuations in product prices, they contribute to the diversification of economic activities in Paraguay. In this sense, Japan is also becoming increasingly important in the process of diversification. This evolution has just begun, and I firmly believe that if the benefits introduced by the Paraguayan government, including the Maquila Regime and the Law 60/90 aimed at promoting industrial investments, are taken into consideration, the potential for industrial diversification is inexhaustible. In Paraguay, too, private Japanese businesses occupy an

important position in industrial diversification, as they understand the global market that requires efficiency, competitiveness, and high quality, and can act swiftly there.

In particular, those which operate in MERCOSUR benefit from not only its financial incentives but also production incentives in Paraguay. In terms of cost, a factor that affects production, Paraguay has a comparative advantage when it makes new investment decisions. Paraguayan youths, who have a driving force and vitality, will become something more than the most suitable partners for the long-term development of Japan. Those who have shared Japan's extensive experience in developing high-level human capital will become important factors that bring benefits to the two countries.

The society that has its roots in Japan is being integrated into the dynamism of Paraguay day by day, and this will certainly help create further dynamism in the country. Today, the Nikkei society is an integral part of economic, social, and cultural activities in Paraguay, which is extremely important to the overall welfare of the nation. As Paraguayans, Nikkei people are already playing a remarkable role in economic, military, diplomatic, and cultural fields and contributing significantly to the development of the country.

If these circumstances are taken consideration, the potential to organize future cooperation projects for the interests of the two countries is immeasurable. Paraguay can play an important role in contributing to the food security of Japan and provide safe food of good quality at affordable prices in the long run. This is in accord with the food security policy of the Japanese Ministry of Agriculture, Forestry and Fisheries. Given that Japan lacks cultivated land, food imports are one of the fundamental factors for food security. Japan can develop strategy to expand agricultural production by introducing new technology through private investment in Paraguay.

Japanese-Paraguayans are bringing the cultures of the two countries closer to each other and advancing commercial relationships that satisfy the qualitative demand of Japanese consumers. Meanwhile, the political and economic stability of Paraguay makes it possible to reduce the quantitative and pricing risks involved in food imports.

What the two countries should address is to continue to expand cooperation between themselves. This is the most sustainable way of overcoming challenges as the world becomes increasingly unpredictable. Participation by the private sector in processes and joint-venture projects that lead to policy making is an important factor in establishing closer cooperation. Japan has always been an ally of Paraguay, and today, this relationship is based on trust and friendship, and so will it be in the future. This book clearly shows the current relationships between the two countries and is expected to lead the reader to the introductory chapter of a new era that has already begun not only as an important phase of Paraguay's history but also as a stage marked by a pioneering, more advanced alliance.

March 1, 2019
Embassy of Paraguay in Japan
Embajador Raúl FLORENTÍN-ANTOLA

List of abbreviations

CADEP	Centro de Análisis y Difusión de la Economía Paraguya (Center for Analysis and Dissemination of the Paraguayan Economy)
CAPECO	Cámara Paraguaya de Exportadores y Comerciadores de Cereales y Oleaginosas (Paraguayan Grains and Oilseed Traders Association)
CETAPAR	Centro Tecnológico Agropecuario en Paraguay (Agricultural Technology Center in Paraguay)
CRIA	Centro Regional de Investigación Agrícola (Regional Center for Agricultural Research)
ECOP	Emprendimientos Comerciales y Productivos (Productive and Commercial Ventures)
EDEP	Estudio de Desarrollo Económico de Paraguay (Study for the Economic Development of Paraguay)
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
FECOPROD	Federación de Cooperativas de Producción (Paraguayan Federation of Producers' Unions)
FEPASIDIAS	Federación Paraguaya de Siembra Directa para una Agricultura Sustentable (All Paraguay Sustainable Agriculture Research Liaison Council)
GDP	Gross Domestic Product
ICT	Information and Communication Technology
INCOOP	Instituto Nacional de Cooperativismo (National Institute of Cooperatives)
INDERT	Instituto Nacional de Desarrollo Rural y de la Tierra (National Institute of Rural Villages and Land Development)
IPTA	Instituto Paraguayo de Tecnología Agraria (Paraguay Agricultural Experimental Station)
JICA	Japan International Cooperation Agency
JIRCAS	Japan International Research Center for Agricultural Sciences
NGO	Non-Governmental Organization
ODA	Official Development Assistance
ONPEC	Organización Nacional Promotora de la Estrategia de la Competitividad

	(National Organization for the Promotion of Market Competition)
SENAVE	Servicio Nacional de Calidad y Sanidad Vegetal y de Semillas (National Plant and Seed Quality Control Bureau)
STP	Secretaría Técnica de Presidencia〔Technical Planning Secretariat (of the Presidency of the Republic of Paraguay)〕
UNDP	United Nations Development Programme
UNICOOP	Central Nacional de Cooperativas Unicoop Ltda (National Cooperative Union)
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development

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Makoto Kitanaka was born in Hyogo in 1959. He completed his graduate studies at the Graduate School of Agricultural Science, Kobe University. In his university days, he joined the Overseas Cooperation Volunteers (Honduras vegetable volunteer). He entered JICA in 1985. Working mainly for agriculture-related departments, he was stationed in Argentina, El Salvador, and Paraguay (Resident Representative). In 2010, he obtained a doctor's degree from Tokyo University of Agriculture. In 2017, he left JICA as head of the Agricultural and Rural Development Department. Currently, he is the leader of the Project on Improvement of Agricultural Extension Systems for Grain Production in Cuba.

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Akio Hosono graduated from the University of Tokyo (College of Arts and Sciences). He worked with the JETRO Institute of Developing Economies, United Nations Economic Commission for Latin America and the Caribbean (UN-ECLAC), University of Tsukuba (Institute of Policy and Planning Sciences), and Kobe University (Research Institute for Economics and Business Administration). In 2002, he was appointed as Japanese Ambassador to the Republic of El Salvador; in 2008, he joined

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Keisuke ITO

Keisuke Ito was born in Aichi in 1971. In 1996, he graduated from School of Agriculture, Hokkaido University with a bachelor's degree in agricultural economics and entered JICA. He was stationed at the Bolivia Office (1999-2002) and the Paraguay Office (2012-2016), where he was engaged in operations such as agriculture and rural development and support for the Nikkei society. From 2010 to 2012, as a designated associate professor at Nagoya University, he served as Deputy Head of the Japan Intellectual Support Network in Agricultural Sciences. In 2017, he became the head of the Team 3 Division of the Rural Development Department, the post he has held to the present day.

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