

The Environmental and Social Impacts of Unsustainable Livestock Farming and Soybean Production in Paraguay

A Case Study¹



Deforestation for cattle ranching in the Paraguayan Chaco. Photo © Miguel Lovera

1. Overview

“An island surrounded by land” is how Paraguay is sometimes described partly because it is one of the two land-locked countries in the Western hemisphere (the other is Bolivia), but also because of its distinctive history and politics. Paraguay's economic activity centers on agriculture and livestock, and in terms of land tenure present the most unequal and unfair case of distribution worldwide.¹

Livestock and soy production (almost wholly of Monsanto's Round Up Ready transgenic variety) are the most important primary production sectors. Most of the land in the country is privately controlled and devoted to these two commodities. Hence, most of the negative

¹ This case study was prepared by Dr. Miguel Lovera on behalf of the Centro de Estudios e Investigacion de Derecho Rural y Reforma Agraria de la Universidad Catolica de Asuncion, Paraguay

environmental and social impacts derive from these two activities. A vast proportion, about 96%, of the soybeans cultivated in Paraguay are destined for export as livestock feed. A majority of the cattle slaughtered each year in the country are also exported, with most of this trade controlled by a handful of multinational companies that form an oligopoly not only in Paraguay, but also around the world.

2. Land Tenure in Paraguay

Control over large-scale agriculture in Paraguay is exerted by a combination of oligarchic groups and transnational interests. The predominant tenure group is composed of landowners, and the power of this group was consolidated during Colorado Party rule between 1954 and 2008. The Colorado Party, especially during the dictatorship of General Alfredo Stroessner, privatized 12,229,594 hectares (ha), with the result that existing private holdings now total 85.5% of the territory — in the hands of just 2.6% of the population.ⁱⁱ

The current population of Paraguay is 6,600,284 inhabitants.ⁱⁱⁱ The country's agricultural area is 31,086,894 hectares, with 289,666 farms and 278,967 individual farmers.^{iv} As stated above, in Paraguay, 2.6% of the owners hold 85.5 % of the land, making it the country with the most unequal land distribution in the world.

The Agricultural Census 2008^v carried out by the Ministry of Agriculture and Livestock, shows that, compared with the previous census of 1991,^{vi} there has been:

- A significant reduction in the total area of properties that are less than 100 ha, which includes small farmers, peasants and medium-size landowners,²
- An increase of 34.8% in the number of farms of 100 to 500 ha, and
- An increase of 56% in the number of farms of 500 or more hectares.

The 2008 survey also shows that of a total of 289,666 officially existing properties, 7,478 are more than 500 ha in size, totaling 27,807,215 ha (8,438,002 ha more than in the last census in 1991). This means that this band incorporates 96.9% of the new lands being exploited for agriculture.

Properties smaller than 5 ha represent 91.4% of the farms surveyed which indicates a decrease of 3.9 % compared to the 1991 data. Many of these small farms are held by just a few owners, meaning that too little land in Paraguay is in many hands.

The Beef Industry in Paraguay

- | | |
|------------------------------|---|
| • Production Units: 123,822 | • Exports (2006-2010): US\$3.5Billion |
| • Cattle Stock: 12,305,822 | • World Exporter Ranking: 8 th |
| • Cattle/Human Ratio: 1.95 | • Active Packing Houses: 30 |
| • Contribution to GDP: 12% | • Secured Markets: 71 |
| • Employment: 17% work force | • Operative Markets: 55 |

Source: Asociación Rural del Paraguay, 2012^{vii}

² Colloquially, these 'well-off' peasants are known as *mborياهو ryguata* in Guaraní, meaning poor but 'full-bellied.'

The predominant tenure group is composed of a group of landowners that was consolidated during the long tenure of the Colorado party (1954 to 2008). The Colorado Party, especially during the dictatorship of General Alfredo Stroessner, privatized up to 75% of the country's territory, mainly for the establishment of cattle ranches ('estancias' in Spanish).

Although most of the land is not intensively used and speculation is high, owners usually clear large extensions of the land plots to justify its apparent use to avoid intrusion by landless peasants.

The greatest concentration of land has been accompanied by an exponential increase in the area devoted to genetically manipulated or modified (GM) soybean production, which currently stands at 3.1576 million ha, according to the Ministry of Agriculture and Livestock. Multinational corporations and foreign immigrants from Brazil, Central Europe (many of them of the Mennonite sect) and Japan, among others, largely control the soybean business in Paraguay.^{viii}



Cattle ranching in the Paraguayan Chaco. Photo © Miguel Lovera

3. Soy Production and the Use of Pesticides

Soy is currently the country's main export, ranking fourth in the world after the United States, Brazil, and Argentina and sixth in terms of world production.^{ix} Most of the soy produced is GM and involves a seed-herbicide technology package. This means that the seed cannot be cultivated without the prescribed herbicide. About 98% of the soybeans produced in Paraguay are transgenic varieties carrying Monsanto's Round Up Ready (RR) trait.³

The cultivation of GM soy has entrenched the extensive, mechanized, export-oriented agricultural model in Paraguay, with minimal labor demand and high use of pesticides, and all the consequences that come with it. Paraguay currently has the highest proportion of agricultural land devoted to soybean monoculture of any country in South America. The prevalence of this production model in Paraguay leads to an annual discharge of almost 27 million liters and 2.3 million kilograms of pesticides, figures that are growing as the land sown with GM soy increases.

³ Calculated by the author of the present report through a supply survey.

The table below shows the quantity of agrochemicals used in the production of transgenic soybeans. The use of additional herbicides, such as Cletodim, is necessary at the moment since the use of RR alone is no longer effective due to the development of resistant weeds.

Disaggregated Data on the Use of Pesticides in Cultivation of Roundup Ready (RR) Soy in Paraguay During 2013⁴

Technical Name	Type	Toxicological Class	Liter /ha	Kg/ ha	Total in Liters Applied on 3,157,600 ha	Total in Kg Applied on 3,157,600 ha
Glyphosate	Herbicide	Class IV Green Label	2		6,315,200	
Cypermethrin	Insecticide	Class III Blue Label	0.75		2,368,200	
Acephate	Insecticide	Class II Yellow Label	0.75	0.4	2,368,200	1,263,040
Endosulphan	Insecticide	Class Ib Red Label	1.2		3,789,120	
Tebuconazole	Fungicide	Class IV Green Label	0.5	0.33	1,578,800	1,042,008
Carbendazin	Fungicide	Class IV Green Label	0.4		1,263,040	
Cletodim	Herbicide	Class III Blue Label	0.4		1,263,040	
Paraquat	Herbicide	Class Ib Red Label	2.5		7,894,000	

Source: AlterVida/CEIDRA, 2013

4. Social Impacts of the Livestock Sector

On the basis of the official poverty standard, more than 50% of the population lives in poverty, of which about 1.2 million live in extreme poverty, which is especially widespread in rural areas.^x

Small farmers are the country's most vulnerable population, and rural poverty, the gradual loss of food sovereignty and food security, and the high concentration of land in the hands of a few for the production of export commodities is driving rural populations to urban centers or

⁴ This chart was initially put together by AlterVida in 2012 and updated by CEIDRA in 2013. AlterVida is a nongovernmental organization based in Asunción and CEIDRA is The Center for Studies and Research on Rural Law and Agrarian Reform of the Catholic University of Asuncion.

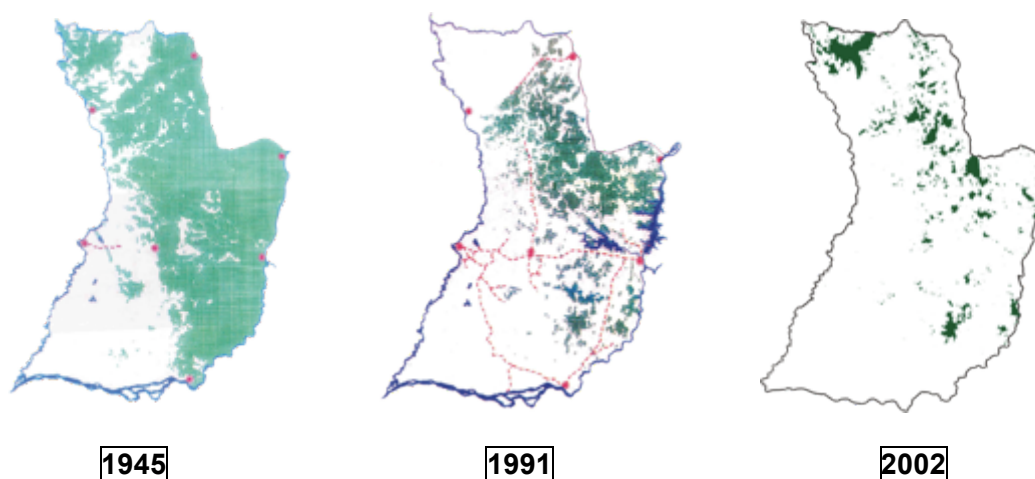
to neighboring countries. The expansion of the agricultural frontier for large-scale monoculture plantations, without respect for vulnerable populations or the environment and natural resources, thus constitutes an aggravating factor fueling forced migration.

The technological approaches driven by the Green Revolution, now including genetically modified seeds and pesticides, have caused on the one hand the degradation of the fertile lands and loss of biodiversity across the country and, on the other hand, the indiscriminate use of agrochemicals. These practices have caused the disappearance of forests, a high degree of pollution of the air and waters, and an increasing number of cases of chronic and acute poisoning amongst the Paraguayan population. These factors make the survival of family farming, as well as the Indigenous People's lifestyles, increasingly difficult, and constitute another factor leading to land grabbing and land abandonment.

5. Environmental Impacts of the Livestock Sector and its Social and Cultural Consequences

The areas initially destined for the planting of GM soybeans were the east and southeast of the eastern region of Paraguay, which have the most fertile soils, and under which lays the Guaraní Aquifer. The name of the aquifer reflects the fact that the area of the aquifer coincides to a great extent with that of the Grand Guaraní Nation, the Indigenous Peoples that dominated vast territories until the advent of European colonization in the sixteenth century and still inhabit the region today. The Guaraní Aquifer is the largest single body of fresh water in the world with a permanent volume of around 45,000 km³^{xi} with its main recharge areas in Paraguay; it therefore requires protective measures to control the risk of contamination as a result of the intensive use of pesticides in monocultures.

Deforestation in the Eastern Region of Paraguay



Source: Sobrevivencia-Friends of the Earth, Paraguay, 2009⁵

Most of the country's forests were originally cleared to establish cattle ranches, as noted above. However most of the deforestation in Paraguay is currently being carried out to clear land in order to plant soybeans and associated crops such as maize (corn), wheat, and sunflower. This is not the case in the Chaco region, however, where most of the deforestation is still being undertaken to create pasture and establish ranches. In 2013,

⁵ These educational materials have been developed by Sobrevivencia from many different sources.

268,000 ha of forest were destroyed in the Chaco. Deforestation rates in this region were the highest in the world in 2013, reaching up to 2,000 ha/day.^{xii}

Most of this deforestation has been fuelled by investments from Brazilian and Uruguayan investors. Brazilian investors count on abundant soft loans from the BNDES (Banco Nacional do Desenvolvimento Econômico e Social), which operates through numerous credit banks, providing loans to Brazilian citizens.

Uruguayan investors come with their own finances and prejudices. Scared by what they consider disadvantageous 'socialist' economic measures in their country, they sell their land to Argentinean investors at prices averaging US\$7,000 per ha, to buy land in the Chaco instead, at a much lower price of US\$300–500 per ha. Investments in ranch development cost an average of US\$400/ha. This implies that in 2013 alone, more than US\$100,000,000 was pumped into the hands of land speculators to fuel a spiral of deforestation that might only cease when the last hectare is traded and converted to pasture.

Labor conditions on the ranches, particularly during the land-clearing phase, are dire. As the International Labour Organization (ILO) puts it “...*the workers used to convert the Chaco forest into cattle ranches are frequently victims of debt-bondage, a modern form of slavery in which the men clearing the forests are paid wages too low to ever cover exorbitant fees for food and shelter.*”^{xiii} A majority of these workers are aboriginal peoples from the Chaco. They are the offspring of several peoples that once lived in and sustainably managed the Chaco for millennia, now reduced to small isolated and impoverished townships where they seemingly exist simply to benefit the new landowners.

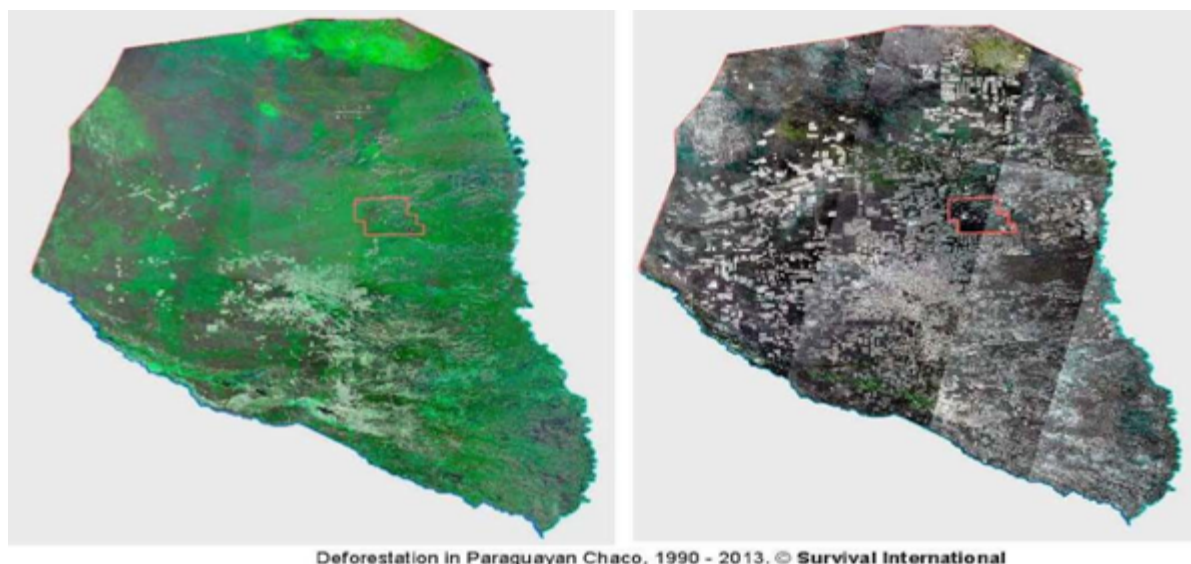


Ayoreo Men in the Gran Chaco. Photo © UNAP

Most if not all of these ranches encroach on the territories of the aboriginal peoples of the Chaco. The competition for territorial occupation started almost 500 years ago with the Spanish incursions into this vast territory, driven by their ambitions to conquer the legendary gold of 'El Dorado', the golden city of the ancient inhabitants of America. The Ayoreo People have lived in the Chaco for about 3,000 years. They have adapted to the harsh conditions of the region and developed a lifestyle that allows them to obtain all the material resources needed for their survival.

At present, there are still groups of the Ayoreo People living in voluntary isolation, mainly in the band of territory that has not yet been converted to cattle ranching or to national parks. This territory, however, is in the area where most of the current deforestation is taking place, as new lands are being sought. Due to their vulnerability to common diseases, up to 80% of populations in voluntary isolation might die if forest conversion breaks their isolation and destroys their livelihoods.

Deforestation in the Paraguayan Chaco, 1990 – 2013⁶



6. What Do Operations Look Like?

The key common characteristic underlying all large-scale rural production in Paraguay is that it is based on massive illegal land grabbing. The land had been held under speculation by the Colorado neo-oligarchs who, in some cases, became cattle ranchers and, in other cases, sold the land to soybean farmers and cattle ranchers. The expansion of ranches and plantations was done at the expense of peasant and Indigenous Peoples' habitats. The local populations have been displaced, forming massive groups of 'agribusiness refugees.'

In the case of soybeans, these are produced on the fertile soils of eastern Paraguay, the best soils in the country. These lands were, in part, occupied by Indigenous Peoples and peasant settlements established by the people and, at the time, approved by the government. During the '70s and '80s, the land under cattle ranches owned by the dictatorship clientele shifted domain to Brazilian colonists who started to buy land in the country, supported by the

⁶ The graphic shows an increase in deforestation (white areas). Natural vegetation including forests is represented by the green area in the left hand graphic and the grey area in the right hand graphic.

governments of both Paraguay and Brazil. The current production model is based on extensive cultivation of transgenic soybeans. About 98% of the soybeans produced in the country carry Monsanto's RR trait.⁷

Cattle ranching also takes place on the basis of the traditional oligarchic model, which has been adopted by the newly inaugurated local and foreign cattle producers, almost in the same form that it was developed more than a century ago. The novelty of the present cattle bonanza is that there is massive production for export, with export demand being almost five times larger than local demand (see below).^{xiv}

7. The Role of Multinational Corporations and the Role of Monsanto

Most of the soybeans produced, 72%, are exported as grain, and only about 22% are crushed to extract oil and soybean expeller.^{xv} Monsanto exports the grain without paying any taxes to the state. Furthermore Monsanto charges farmers an additional US\$4 royalty tax per ton, under the justification that most seeds of transgenic soybeans used are saved by the farmers from their own crops and they do not pay royalties to the company for its intellectual property. Farmers are fiercely opposed to paying any tax on their production, but have no problem paying the "Monsanto royalties" and no alternative.

This makes Paraguay a tax haven, as few investments in the world yield as much as planting genetically modified soybeans in Paraguay. Estimating (conservatively) the market price for soybeans at about US\$500/ton, yields reaching averages of 2.4 ton/ha (in crop year 2013/2014), and production costs on the order of US\$400/ha, it can be seen that soybean production is capable of generating net profits of US\$800/ha per crop cycle. With two cycles per year, profits rise to US\$1,600/ha.



Deforestation to implant pastures.
Photo © GFC



Large silos concentrate grain production. Photo © GFC

Only about 4% of this soy grain is used in the country.^{xvi} This has severe consequences for food production in Paraguay, as the most fertile soils that produced food in the past have now been turned over to soybean production for export. The country's population now has less access to food than during Paraguay's last international war in the 1930s, against Bolivia.

⁷ Calculated by the author of the present report through a supply survey.

Cattle ranching is the other main economic activity in rural areas, occupying some 31,000,000 ha (a majority of Paraguay's territory).^{xvii} Paraguayan society, even today, can be regarded as feudal, in both political and economic terms. Cattle breeding is the traditional economic activity developed by 'patrician' families and was adopted by the newly formed oligarchy created by Stroessner and the Colorado party in the 1960s. The immediate action taken by the new landlords was to clear immense swathes of forests and replace them with grasslands to form an 'estancia,' and thereby become a fully fledged member of the upper class.

This process continues, although it involves massive Brazilian migration – Brazilians now occupy some 30% of the country's territory and constitute close to 10% of the national population, and this reality is introducing rapid changes in the traditional power balance. As described earlier, the Brazilian population was encouraged to move to Paraguay by the governments of both countries, and today this is supported with abundant funds to purchase land to grow soybeans and raise cattle.

In addition, most of the export trade is now controlled by a handful of multinational companies, which form an oligopoly. These same corporations control shipments not only in Paraguay but all around the world. The largest and most notorious are listed below.

Largest Grain Exporters in Paraguay – 2011

Company	Country of Origin	Turnover (US\$)
Cargill	USA	1,051,729,345
ADM	USA	849,750,855
LDC	France	462,915,518
Noble	Hong Kong	330,223,400
Bunge	Argentina	258,431,356
Vicentin	Argentina	129,624,859

Source: Rediex, Ministry of Industry and Commerce of Paraguay^{xviii}

The immense turnover reported by these companies is in complete contrast to their squalid contribution to the treasury of Paraguay. In 2012, the whole of the agribusiness sector contributed only US\$31 million, just 2% of national tax revenue, and a mere 1% of the value of the exports in question.

Agribusiness Income 2012⁸

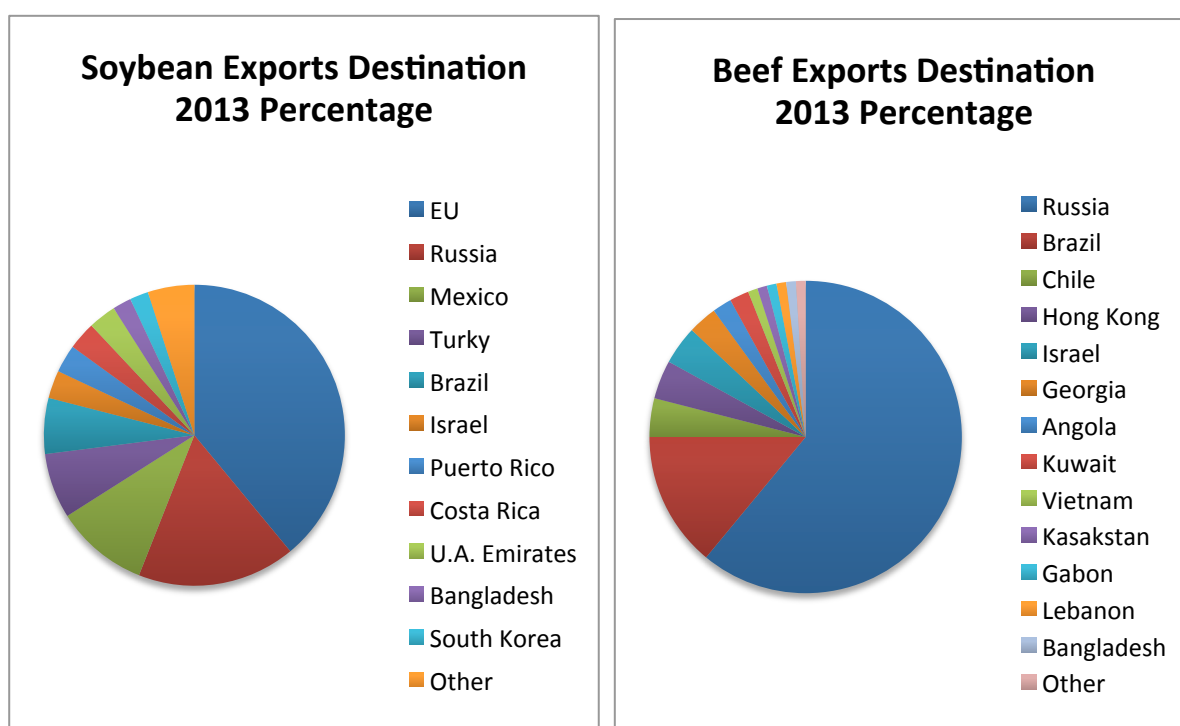
- Value of Exports.....US\$3 billion
- Production Costs.....US\$1 billion
- Taxes Paid.....US\$31 million

⁸ Calculated by the author in 2013 based on Paraguay Central Bank Data, www.bcp.gov.py

8. Where Soy and Cattle Products are Sold or Traded – Domestically and Globally

Since its inception in Paraguay in the late 1970s, soybean cultivation has grown exponentially each year. The Ministry of Agriculture and Livestock reports that approximately 3,300,000 ha were sown during the 2012/2013 growing season, yielding some 9.3 million tons. During 2013/2014, it is estimated⁹ that an additional approximately 100,000 ha were added to the soybean frontier and an increase in output similar to that of the last crop is expected in 2014/2015.

The bovine herd consists of some 12,305,822 head of cattle. This amounts to almost two cows for every Paraguayan. A total of 1.03 million head are slaughtered for export every year and 240,000 more are slaughtered for the internal market.^{xix}



Paraguay is the ninth largest exporter in the world of bovine meat. Average bovine meat consumption is also high domestically; at about 35 kg per capita per year, Paraguay ranks fifth in the world in per capita consumption of beef.

The main environmental implication of this extensive cattle ranching is deforestation. Some 50% of the deforestation in eastern Paraguay is due in the first instance to the conversion of forests to pastures, even though some 3 million ha of these lands are now dedicated to the production of export crops, mainly soybeans, maize, and wheat.

The chart below shows that most of the soybean is exported as grain and only some 22% is processed. This means that very little value is added to the raw soybeans. This situation is

⁹ Official information is not available, this data is based on sources connected to agribusiness operations.

encouraged by the tax structure of the country that charges income taxes to the industries on the basis of the volume they process, and does not charge export taxes on the raw grain.

Destination of Soybeans from Paraguay, 2006 – 2011

YEAR	EXPORTS		INDUSTRY		SEEDS		PRODUCTION TOTAL
	Ton.	%	Ton.	%	Ton.	%	Ton.
2006	2,380,344	65.40%	1,180,842	32.40%	80,000	2.20%	3.641.186
2007	4,360,804	74.50%	1,355,000	23.20%	140,000	2.40%	5.855.804
2008	4,438,085	74.40%	1,390,000	23.30%	140,000	2.30%	5.968.085
2009	2,282,705	83.30%	1,224,500	33.60%	140,000	3.80%	3.647.205
2010	4,654,429	72.10%	1,558,000	24.10%	250,000	3.90%	6.452.429
2011	5,138,364	72.10%	1,570,000	22.00%	420,000	5.90%	7.128.364

Source: CAPECO, 2011^{xx}

9. Effects on Communities

The expansion of production of soybeans and cattle in Paraguay is based on the theft of peasant and aboriginal communities' land holdings and ancestral lands. The illegal distribution of land, official complicity, corruption, and impunity are the ingredients that have led to the loss of land of a million Paraguayans who have as a result become 'soy refugees' in the poverty belts or slums of Asunción and Paraguay's other large cities and towns. Living conditions in these areas are very poor, deprived of all basic services and with no possibility of growing any significant amount of food. So, when the money peasants usually get from the soybean growers for abandoning their lands ceases, the people in these conditions enter a circle of mendicancy and marginality.

The National Secretariat for Statistics and Censuses estimates that about 90,000 people arrive in the metropolitan area of Asunción every year, enlarging the poverty belt of the capital city.^{xxi}

As pointed out above, lands once destined for agrarian reform (land redistribution) have also been conquered by agribusiness for soybean and cattle production. According to the 'Comision Verdad y Justicia' (Truth and Justice Commission in Spanish, 2008)^{xxii} some 7,851,295 ha of land that were destined for agrarian reform were sold illegally to agribusinesses, and, in many cases, the previous owners were evicted by force or by deceit.

Furthermore, even though the expansion of agribusiness farms is already at a historic high, the agribusiness cartel UGP¹⁰ has announced that it intends to double or triple the land area where it cultivates soybeans. If this occurs, it will be devastating for Paraguay's rural population. As denounced by numerous civil society groups, there is already a 'chemical war' being waged on peasants, a war that uses Round Up as the main chemical weapon. When indiscriminately and carelessly spraying, without any thought for legal safety measures and barriers, many agribusiness farmers disrupt the lives of neighbors who have no defense against high-pressure or aerial herbicide spraying, which covers their crops and animals causing losses and death. Even more seriously, there are also significant impacts on human health, ranging from frequent allergies, skin damage, miscarriages and birth defects, to cancer.

After the *coup d'état* that toppled President Lugo in June 2012, which in itself is considered a coup by agribusiness,^{xiii} cases of peasant evictions and illegal land grabbing continue and are even increasing. Violence against peasant and indigenous leaders is clearly on the rise with some 25 murders since the current President Horacio Cartes assumed power. There is also a systematic stigmatizing campaign against social activism, particularly against land claims by landless farmers. This campaign has become more intense with peasant leaders being subject to prosecution. At the moment, some 131 individuals have been charged.

Conclusions

All signs show that Paraguay, both its territory and its population, are under attack by conquerors, but conquerors of a new sort. These new 'conquistadors' are racing to seize all available arable land and, in the process, are destroying peoples' cultures and the country's biodiversity — just as they are in many other parts of the planet, even in those areas that fall within the jurisdiction of 'democratic' and 'developed' countries. Every single foot of land is in their crosshairs. Powerful elites do not recognize rural populations as having any right to land at all.

Never-ending demand for meat, which also fuels the ever-growing demand for fodder and feed, boosts and facilitates the endless greed of the local oligarchy, which happily obliges the international cartels that control global food and agrofuels markets, in both manufacturing and the supply of inputs.

As the maps of deforestation included above show, there are no longer any native forests in the eastern region of Paraguay. All that remains are small fragments of once diverse subtropical forests, which are home to some 20 different Indigenous Peoples, and some 7,000 species of plants and animals. About 92% of Paraguay's original 8 million ha of forest have been replaced by four new species, namely soy, maize (corn), wheat, and cattle.

The Chaco region is following the same abusive termination process. Many voices in Paraguay used to warn about the destruction and human rights abuses occurring in the country. They used to say 'in twenty years we will not have any more forests'. Now, as time has passed, we see the destruction of biodiversity and ancient human civilizations taking place at an even faster pace than before. We are hurtling towards that scenario. Paraguayan society has been slow in addressing the challenge of halting it. At this rate, the Paraguayan Chaco has only about 40 more years to reach total transformation. By then, genocide and

¹⁰ Unión de Gremios de la Producción (UGP) is an agribusiness cartel, composed of multinational corporations and local companies dedicated to controlling soy and grain exports as well as the import, production, fractioning, and commercial promotion of transgenic crops and agrochemicals.

extinction will have taken place, unless new policies, practices, relationships, and analyses are undertaken.

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