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China's Investments and Land Use in Latin America

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A photograph of Xi Jinping and Boris Johnson walking on a red carpet. They are both wearing dark suits and waving. In the background, a large blue ship with "COSCO SHIPPING ROSE" written on its side is docked. The ship is surrounded by colorful shipping containers (blue, green, orange, red). The image is partially obscured by a dark blue diagonal overlay.

**JACK D. GORDON INSTITUTE
FOR PUBLIC POLICY**

CHINA'S INVESTMENTS AND LAND USE IN LATIN AMERICA

IN PARTNERSHIP WITH THE WILSON CENTER'S LATIN AMERICAN PROGRAM

AUTHOR
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EXECUTIVE SUMMARY

The relationship between the People's Republic of China (PRC or China) and countries in Latin America transcends economic collaboration. Culture, language, diet, infrastructure, and technology are continuously transformed through this relationship. Over time, the relationship has altered the landscapes too: China is now the main trading partner for those Latin American countries that have kept their traditional roles as providers of raw materials. The increased demand for commodities is impacting natural resources and local peoples at a time when climate change makes sustainability practices most urgent.

Latin America needs to revise its practices and prioritize the efficient management of land, water, minerals, and waste to evolve in this relationship. For many industries, Chinese investments and trade increased when the region was already at capacity supplying its domestic markets and other Western countries. Latin American countries are facing the challenge of adapting to this increased demand while ensuring social and environmental sustainability in their territories.

This report aims to contribute to a nuanced view of Chinese investments and trade. In many cases, it shows how unsustainability is not the result of the practices of Chinese companies but rather the nature of the resource, local legal frameworks, or global industry standards. The report also highlights cases in which poor decision-making by both Chinese companies and Latin American countries is driving resource extraction to a tipping point.

The sectors analyzed include three of the commodities most traded with China: soy, copper, and beef. Two additional cases anticipate the impact that the growing demand for lithium and pork can generate in Latin America in light of the imperative to scale up climate action and halt environmental degradation.

The extraction of lithium and production of soy for the Chinese market is not more damaging environmentally than the operations of other Western companies. Considering the national legal frameworks applicable to these industries, Chinese investments and trade in these sectors are not inherently different; other countries would likely implement the same practices. What is unique to China's demand is its scope; it has the capacity to process and consume enormous quantities of commodities at a level far surpassing that of other countries. In light of this reality, Latin American countries must devise development plans for these industries and not rely solely on voluntary sustainability standards adopted by the private sector.

Beef production in Brazil provides a good example of how the local legal framework determines the impact of an economic activity; legal loopholes allow and even incentivize environmental degradation. Foreign demand is indirectly linked to deforestation and the appropriation of indigenous lands; beef purchased by China has a larger probability of being connected to the clearing of land. These conditions could be improved if the PRC increased its sustainable sourcing requirements and standards.

Legal frameworks play a similar role in the socio-environmental conflicts surrounding the Las Bambas copper mine in Peru. This case is not representative of how Chinese mining companies operate in the country but shows how decisions on a global scale, such as mergers, can lead to local conflict if the national authorities are unprepared to oversee relationships between the company and the local population.

This report recognizes both challenges and opportunities in the China-Latin America relationship as it looks toward the future. China has become an important ally in adopting renewable energy technologies in Latin America, thus contributing to its climate change mitigation goals. But the rising demand for agricultural commodities such as pork poses epidemiological risks and promotes environmental degradation beyond the local impact that industrial pork farming may cause in a country such as Argentina, which is interested in expanding these farms.

A final section emphasizes the urgency of adopting better production practices and preserving Latin America's vulnerable ecosystems, especially in light of climate change.

INTRODUCTION: A NUANCED APPROACH TO THE CHINA-LATIN AMERICA RELATIONSHIP

This report acknowledges two seemingly opposing truths. First, Latin American countries have benefited greatly from their partnership with the People's Republic of China (PRC or China), and there is potential to continue engaging in a beneficial relationship. Second, South-South engagement is driving Latin American countries' natural resource exploitation and environmental degradation to a tipping point, with the risk of irreversibly affecting local ecosystems and livelihoods.

Latin American countries have voluntarily entered trade and investment relationships with the PRC and continue to enthusiastically explore new Chinese markets for their products. The issue, however, is that the region's unsustainable production practices have remained unchanged, maintaining the same standards that predated the boom in Chinese demand for Latin American products. The rise in sheer volume created by Chinese demand when climate change preparedness is increasingly urgent has added to the existing environmental risks created by traditional production practices.

The region has benefited greatly from its growing economic relationship with the PRC: Countries have been able to access financial resources, fill their transportation and energy infrastructure gaps, and secure a steady demand for their products. More recently, the PRC has become a valuable ally to fight the COVID-19 pandemic; multiple Chinese actors made supplies available through what's been called "mask diplomacy,"¹

Despite economic growth, a debate is growing among civil society and conservation organizations in the region over the unforeseen impacts of infrastructure projects. Lending conditions, especially those of resource-backed loans, are being questioned and deemed "debt traps" by some,² and the pressure that increased commodity production puts on nature has contributed to conditions that spark environmental inequity and socio-environmental conflict with local communities. This has raised a pressing question, prevalent among the region's long-time partners: Is the China-Latin America relationship beneficial to the latter?

The answer is not straightforward. The specific context of each trade relationship or project provides nuances that need to be addressed carefully considering the actors involved, the timing of the collaboration (whether investment, aid, or trade), and the nature of compounding environmental degradation.

In the first half of 2020, PRC actors entered into agreements with Latin American countries to provide medical supplies and vaccines. This occurred when the world's pharmaceutical companies' production was insufficient to serve developing countries. The Sinovac and Sinopharm³ vaccines were the first to arrive in many Latin American countries, allowing them to immunize their healthcare workers and, in some cases, politicians.

The international community, and the United States, in particular, have since taken a step forward, announcing generous support to developing regions in the form of medical supplies and technical assistance. More than 10 million people in Latin America will have access to Pfizer vaccines due to the Biden administration's policies⁴ and the increasing donations⁵ of Pfizer-BioNTech vaccine doses. This collaboration will certainly raise immunity in Latin American countries, given the relative effectiveness of the Pfizer vaccine for COVID-19 variants, compared to the lesser effectiveness of Sinovac and Sinopharm to viral mutations.

In the eyes of country leaders, the PRC-Latin America relationship has been deemed essential, strengthened through strategic partnerships with many of the region's countries. During his 2008 tour through the region, then-President Hu Jintao emphasized his government's willingness to build a relationship based on equality, mutual benefit, and shared development for the people of China and Latin America.⁶ Chinese President Xi Jinping has stressed these same principles, which guide many of China's bilateral agreements, such as the memorandum of understanding for the Belt and Road Initiative that 19 Latin American countries have signed.

However important these principles may seem, achieving equitable mutual benefit in the PRC-Latin American trade and investment relationship remains a challenge. Throughout their history together, Latin America has maintained its role as a provider of natural resources, at a high cost to its local ecology and communities. The strategic partnership has benefited the parties unevenly; nine of the ten Latin American countries that have entered strategic partnerships with China are abundant in commodities essential for sustaining Chinese growth.⁷

China's growing demand for minerals and agricultural products has made Latin American countries highly reliant on a single partner and transformed local landscapes to suit the international demand for these commodities. The growing demand, concentrated in extractive and agricultural products, gives this trade relationship a distinctly different environmental footprint than that of other exports: it is more carbon- and water-intensive and has heavy impacts on highly biodiverse areas inhabited by Indigenous peoples.⁸

Socio-environmental practices of Chinese companies are not inherently different or worse than those of their western counterparts. However, the scale at which production is required, added to previous internal and international demand, is becoming unsustainable and increasing vulnerability at multiple levels.

Moreover, markets in which Chinese companies participate are already highly concentrated globally. Antitrust processes accompany many of its investments in the lithium and copper industries; both are included in this report. Concentration is perceived not only in the global market for commodities but also in the local availability of land; claims of land grabbing have accompanied the Chinese demand for agricultural commodities, despite unclear data.

SUSTAINABILITY STRATEGIES ACROSS LARGE-SCALE TRADED COMMODITIES

Can social and environmental impacts be attributed to China's trade and investments relationship with Latin America? As is explained below, the answer relies on a case-by-case evaluation rather than generalizations of how Chinese companies perform.

Four cases are presented across renewable and non-renewable resources. Each explores what practices proved the most impactful and whether they were inherent to Chinese corporate behavior or the characteristics of Chinese demand.

Ultimately, the question that accompanies this analysis is, are the investments different because they are linked to China's demand for commodities? Or is the impact expected given industry practices, applicable legal frameworks, and the nature of the resources?

The first two cases, the extraction of lithium in Chile and the production of soy in Argentina, have not been found to cause excessive environmental damage when compared to operations by other western companies.

SQM, the lithium company in which the Tianqi Lithium company acquired 24 percent participation, is not different from other companies that mine for lithium (and water) in the Atacama Desert. The nature of the resource, hosted in underground brine, and the Chilean legal framework make mining for lithium in the desert an extremely water-intensive activity.

Applicable legal frameworks also determine the kind of opposition this participation has encountered. The transaction through which Tianqi became a shareholder in SQM faced opposition from the company's former leadership, which channeled complaints through the national competition agency and delayed the acquisition. The operation has also been challenged by Indigenous peoples experiencing severe water scarcity due to the mining operations and the government's lack of an adequate response.

As for soy production, there is no question that China's demand is significantly higher than that of other countries. Accusations of land grabbing have found their way into the public discourse, but, as this report shows, there's no clarity on the actual amount of land controlled by Chinese investments. This is partly due to the diversity of strategies that players in the agro-industrial sector are adopting (buying land, renting land, company-community contracts), strategies that are not exclusive to Chinese companies.

The third case, covering beef production in Brazil, provides another example of how the local legal framework determines the impact of the activity. In this case, the effect of deforestation and indigenous misappropriation is indirect. Several studies have been needed to determine how Chinese demand is different from other countries. Recent findings show that Chinese demand for beef does entail a higher deforestation risk, which would improve if the country adopted better sourcing standards, such as sanitary requirements and slaughterhouse approval processes.

Lastly, a unique case of copper extraction in Peru shows how global authorities can regulate a change of management that would affect local community development plans and environmental rights, despite complying with national legal frameworks. These issues could be foretold by Latin American countries, to thus center transparency and public participation and prevent the risks of long-term socio-environmental conflict.

The following section presents two cases of growing demand for commodities, warning of potential environmental degradation and social conflict. The lessons learned should inform Latin American countries' preparedness and improve management decisions moving forward.

Trade-offs in the rise of lithium extraction in Chile

Lithium is expected to add to the demand for Latin America's minerals for new energy technologies, with the added complication that many of Latin America's lithium reserves are embedded in local water sources. This makes extraction cheap in technological terms but costly in terms of water security and socio-environmental conflict with local communities.

By 2025, the demand for lithium is expected to increase to almost 1 million tons per year; by 2030, lithium could increase to nearly 10 times its current market size.⁹ By examining how mining has been carried out in the past, Latin American countries will hopefully implement more sustainable and participatory regulations for the increasing opportunities that lithium is expected to create.

The quick adoption of renewable energy generation, storage, and electromobility technologies worldwide is unmistakably playing a pivotal role in meeting global climate change mitigation goals. However, experts argue that from a local perspective, the minerals required for this transition are extracted under the same productive and historical conditions operating for centuries in Latin America, much to the expense of its Indigenous communities and local natural resources, thus creating new unsustainability.¹⁰

The increased need for energy storage devices (lithium-ion batteries for solar panels, personal gadgets, mobile phones, and electric vehicles) has driven the demand for lithium to double in the last decade,¹¹ with further projected growth as the world continues to adopt green technologies and renewable energy generation.

In order to understand the impact of increased lithium mining, this report looks at the socio-environmental issues arising from lithium extraction in the Chilean Atacama Desert. Chile is the second-largest exporter of lithium worldwide, an essential mineral for transitioning away from fossil fuels. Along with Chile, lithium deposits in Bolivia and Argentina are known as the "lithium triangle" and account for about half of lithium reserves worldwide.

In May 2018, the publicly-traded Chinese company Tianqi Lithium acquired 24 percent participation in the Chilean SQM (Sociedad Química y Minera de Chile), a leading producer of lithium worldwide and one of two extractive companies operating in the Atacama Desert. Tianqi Lithium purchased the stock from Nutrien Ltd., a Canadian fertilizer company, after approval from the Chilean competition authority.

This acquisition is regarded as the biggest transaction seen in the Santiago stock market and required approval of the Chilean Antitrust Tribunal.¹² It was feared that the Chinese company's partnership with SQM's competitor, Albemarle, through a lithium mine in Australia, could threaten the development of its Atacama business.

The transaction was momentarily halted due to a notable case brought forward by SQM's stakeholder Grupo Pampa under allegations of a lack of transparency. The Chilean Constitutional Tribunal dismissed the accusations and allowed the acquisition to move forward. Grupo Pampa, a conglomerate of agricultural and mining companies, holds 30 percent in SQM and is controlled by Julio Ponce, who had been "forced to step down as chairman of SQM in April 2015 amid a scandal over payments to politicians," and rejoined amid the antitrust complaint.¹³

To date, SQM and Albemarle are the only actors extracting lithium in Chile. Tianqi Lithium is now a partner to companies within the two economic groups: Albemarle in Australia and SQM in Chile.

What makes Chilean lithium particularly attractive to the international market is the low cost of extraction. The country's mineral deposits are in complex aquifer systems below the Atacama Desert. They serve an important ecological and cultural role, especially to the area's Indigenous communities, for whom the impacts of lithium extraction affect their livelihoods directly. The lithium companies in Atacama are no strangers to socio-environmental conflict: Since 2016, there has been a dispute over water use between SQM and the local communities before the Superintendence of the Environment.¹⁴

Nonetheless, the Chilean government regards brine and water resources as mining deposits, not an underground hydrological system.

The reserves of the Atacama salt flats are considered "the cheapest exploitation in terms of cost worldwide" by its local mining workers,¹⁵ and as having "no use other than as a resource, as a mineral" by mining companies in the area, as declared by the president of Albemarle.¹⁶

Lithium mining is water mining; the mineral is extracted as a component of the brine through a process that requires pumping large volumes of liquids to evaporate the water and process the minerals contained in the brine. According to Barbara Jerez, Ingrid Garcés, and Robinson Torres,¹⁷ lithium mining companies extract over two million liters of fresh and saline water daily from the Atacama salt flats. SQM is authorized to extract between 1,500 and 1,700 liters per second (l/s) of brine, compared to Albemarle's 442 l/s. Both operations are authorized to extract freshwater—SQM with 240 l/s and Albemarle 23.5 l/s.

This level of water extraction is worrisome, and the effects of the last decades of exploitation have not been fully identified. CORFO, the Chilean *Corporación de Fomento de la Producción*, has warned that the exploitation of the salt flats' water far exceeds its recharge capacity. Notably, both SQM and Albemarle extract water from roughly the same aquifer and are in constant competition for access to the same resources.

If it were not for lithium extraction, the water in the salt flats would have equivalent inflows and outflows, balancing the natural regime of this ecosystem, but the current extracting rates surpass historical recordings of water availability by 26 percent.¹⁸ Local farmers in San Pedro de Atacama are perceiving a water shortage and decrease in agricultural activities that impacts their livelihoods and food security and fractures the social fabric of their communities.¹⁹

The transition to green energy is a global phenomenon currently led by China's manufacturing capacity. However, if Chinese companies were not extracting lithium or producing lithium-ion batteries, it is likely that a different actor would step in and fill the void left in this growing market.

Again, conflict and pressure over natural resources are not exclusively Chinese. These extraction strategies are in line with what Latin America has traditionally practiced. Likewise, the vulnerability being experienced by the Atacama communities is tied to the definition that the Chilean government is using to manage its resources, by considering brine as a mining deposit, and not part of an underground hydrological system.

It is likely that, in a different situation, the exploitation of lithium salt flats would be carried out in the same way, with other actors following the same governance rules. It is the scope and capacity for transformation of the resources that are inherently Chinese. The PRC's pace of processing raw materials into new technology and influencing their widespread adoption is the real challenge for Latin American countries. Whether the region can keep up with these requirements sustainably will determine if their partnership with China contributes to achieving "the South American industrial and energy dream."²⁰

The characteristics of this demand are fundamentally Chinese. Now, it's Latin America's turn to establish what kind of exploitation is intrinsically Latin American. Countries have the upper hand in establishing regulations applicable to resources within their territories. Thus far, they are failing to adapt to these new challenges.

Agro-industrial activities, land tenure, and local vulnerability

Multiple factors drive deforestation in Latin American countries, including transportation infrastructure, illegal extraction of minerals and timber, land grabbing, expansion of urban areas, weakening environmental regulations, and—most relevant to our analysis—agricultural activities. The main concern is that the international market, China in particular, could be driving deforestation with its increased demand for commodity production.

Evidence shows that deforestation is not inherent to Chinese demand for agricultural products, but the scope of its demand causes an increased impact on natural resources. Countries like Brazil and Argentina have become dependent on Chinese demand for beef and soy. Despite initiatives to adopt sustainable production standards, these industries remain linked to deforestation and forest fires to clear agricultural land.

The PRC has become reliant on food grown elsewhere, expanding its investments in the agricultural sector worldwide. While about 20 percent of the global population lives in China, its territory only has 9 percent of the world's arable land for livestock or agriculture. On the contrary, Latin America and the Caribbean have a population of approximately 600 million and as much as 30 percent of the world's surface area suitable for agricultural activities.²¹

In turn, Chinese demand for agricultural commodities has helped buffer Latin America from adverse economic shocks. The PRC remained a critical trading partner through the global effects of the 2008 U.S. subprime mortgage crisis and has been a significant factor in Brazil's robust economy throughout the fall of commodity prices in 2011 and 2012, poor fiscal management, and the political crisis that affected the economy from 2014 to 2016.

While shielded from global crises and internal mismanagement by this partnership, Latin American countries are becoming sensitive to changes in the Chinese economy. When China's growth slowed by 2 to 3 percentage points in 2013-14 and remained steady at 6 to 7 percent since, Argentina and Brazil "felt the full force of a negative GDP shock from China,"²² with average growth rates and per capita income dropping precipitously between 2014 and 2017.

Similarly, after a 7.5 percent fall in exports during 2020, the Mercosur economy was tempered due to the quick recovery of the Chinese economy. In this scenario, the Comisión Económica para América Latina y el Caribe (CEPAL) reports that export flows between Mercosur countries and the PRC continued to gain significance to the detriment of regional destinations.²³ With this tendency, export flows also continued their trend toward the increasing importance of primary goods.²⁴

Having built this reliance, a large proportion of the countries' natural resources were committed to China. By 2016, China accounted for 13.1 percent of Argentina's trade, and Argentina 0.3 percent of China's; China accounted for 18.1 percent of Brazil's trade, and Brazil 1.8 percent of China's.²⁵ The sheer volume of this demand and the reliance on local livelihoods make it essential to rethink the conditions under which investments occur.

Beef and soy are some of the main commodities sold by Brazil and Argentina to China.²⁶ Due to the quick upturn in production, there have been allegations of land grabbing and deforestation through foreign direct investments, spread through the media. They have not transcended beyond mere rumors,²⁷ partially given the lack of data behind these accusations.

The following two cases address whether there is a direct or indirect relationship between Chinese demand, deforestation, and land grabbing. Additionally, it will outline other potential impacts of the relationship between Latin America and China by addressing an ongoing project: relocating industrial pork farms from China to Argentina.

Soy farming and land-use change in Argentina

China's demand for soybeans is mainly due to its growing need for animal feed and cooking oil. Its soy consumption increased from 10 to 83 million tons between the early 1990s and 2014,²⁸ with the country importing more than 80 percent of the soybeans consumed globally in 2012.²⁹

Much of this demand has fallen on Latin American countries, which supply approximately 60 percent of the soy imported by China (the remaining 40 percent is grown in North America),³⁰ with Argentina and Brazil becoming the leading producers. China bought as much as 71 percent of Argentina's soybean production in 2013, and 4.95 percent of Brazil's the following year.³¹

Chinese companies dominate global investments in the agricultural sector. The nature of their investments makes it hard to determine the precise form in which these companies dominate the supply chain and investment. Agro-industrial investors worldwide, not exclusively those from the PRC but Western companies as well, have adopted multiple strategies to secure their supply, including land acquisitions, rentals, and company-community contracts. The fear of occupation added to the uncertainty of how much land is in foreign hands has sparked notable rumors of land grabbing,³² primarily targeting Chinese companies.

Out of Chinese companies' agricultural foreign direct investments, about 50 percent is destined to food systems.³³ But there is currently no consensus on what the total area controlled by Chinese actors amounts to, nor is there clear evidence of government support in recent years for overseas "land grabbing." Moreover, ownership of land by Chinese companies has reportedly been impeded by the regulations in place in Brazil and Argentina, which restrict land ownership for foreigners.³⁴ Despite these difficulties, it is important to note that, like their multinational counterparts, Chinese actors are interested not just in buying land but also in investing across the production chain.³⁵

While Chinese management of agricultural projects may not be substantially different from that of other agribusiness actors, the tenure of land by foreign companies entails an increased risk of the dispossession of local communities, particularly peasant and Indigenous people's land, access to water, and exposure to agrochemicals.

To inform the discussion regarding the impacts of land tenure, multiple sources have tried to determine the scale of land under property or rented by Chinese companies. Regional estimates vary from one million hectares (ha) of farmland in Latin America³⁶ to "only" 300,000 ha.³⁷ Other calculations, such as Land Matrix, report around 500,000 ha, whereas the International Institute for Sustainable Development says nearly 800,000 ha were purchased or leased by China.³⁸

Margaret Myers and Jie Guo, who collected the previous information,³⁹ found that “many of the deals reported in land grab studies and databases (therefore accounting for their larger numbers) have yet to materialize or have fallen through entirely, leading to a considerable disparity in reporting. In fact, after an extensive review of reported land grabs in Latin America, this paper’s numbers are far lower than any of those reported thus far; just over 70,000 hectares of land have either been purchased outright or leased by China for crop cultivation.”

Moreover, García,⁴⁰ based on data available in Land Matrix and research conducted by Borras⁴¹ and Myers and Guo,⁴² has estimated that the amount of land China holds in Latin America and the Caribbean to develop agricultural activities amounts to 122,577 ha, acquired over 18 years. Per this estimation, approximately 37,463 ha are used for soybean cultivation, with Brazil (44,097 ha), Argentina (22,085 ha), and Jamaica (18,000 ha) leading the list of countries with the largest area committed.⁴³ Of this total, the author identifies that most of the countries with reported land grabbing are “institutionally solid, with clear regulatory frameworks and political stability.”⁴⁴

The high profitability obtained by soybean cultivation has generated reconfigurations in Argentina. Gras and Gobel⁴⁵ found the cultivation of this commodity in the Pampas region (central area of the country) advanced on lands that were previously dedicated to cattle raising (for milk and meat production), significantly reduced the cattle stock and availability for the local market. It also reduced the cultivation of agricultural products for local consumption, such as wheat, corn, and sunflowers. In the non-Pampas regions, soybean crops displaced rice, cotton, and vegetables. In addition to changes in land use, the main consequences include the expansion of the agricultural frontier and the dispossession of criollos’ and Indigenous peoples’ lands.

Eighty percent of Argentina’s soybean production between 2018 and 2019 was destined for the Chinese market in the form of beans, oil, flour, and pellets. Despite the impacts generated by the crops, there were few efforts to build an integral sustainable strategy and much interest in persevering in the trade relationship. President Alberto Fernández has claimed that Argentina is working to actively reaffirm its integral strategic association with China.

In the absence of said policies, sustainability practices have been left to private sector initiatives. Market-driven solutions have arisen to ensure soy is sourced from deforestation- and conversion-free land. While they constitute important efforts to transform the sector, these initiatives cannot substitute for the role of the state, especially when it comes to guaranteeing the rights of local and Indigenous peoples, who are sometimes displaced by indirect action and pollution.

As the largest buyer of soy in the global market, China can contribute to the adoption of sustainable practices worldwide. Claims of land grabbing have flourished in the absence of transparency, and even though they lack evidence, the expansion of soy and other industrial crops threatens local food security and climate resilience. In turn, countries such as Argentina need to strengthen their climate change mitigation and adaptation funds; from preventing deforestation to ensuring food systems resilience, reliance on a single crop may pose more risks than benefits in the medium term.

Cattle raising and deforestation in Brazil

China is the largest foreign consumer of Brazilian beef, a commodity expanding at the expense of forested areas in the Cerrado and Amazon regions.

Agriculture and land-use change account for more than half of Brazil's greenhouse gas (GHG) emissions. The country's fourth biennial update report to the United Nations Framework Convention on Climate Change, submitted in 2020, presents GHG emissions inventory with data as recent as 2016 (presented in the carbon dioxide [CO₂] equivalent of Global Warming Potentials Second Assessment Report [GWP-SAR], by sector). According to the report, agriculture accounted for 33.6 percent of emissions, and land-use change for 22.3 percent, with the remaining 32.4 percent corresponding to the energy sector.⁴⁶ Industrial processes (6.9 percent) and waste treatment (4.8 percent) are dwarfed by 55.9 percent of combined agriculture, land-use change, and forestry.

In 2016, Brazil featured seventh in the list of the world's biggest GHG emitters, with about half of the country's emissions coming from deforestation. In 2021, the country is still among the world's top ten GHG emitters, as shown by the World Resources Institute Climate Watch tool. In 2018, Brazil was responsible for 1.42 gigatonnes of carbon (GtC) of the total 3.96 GtC emitted by Latin America and the Caribbean.⁴⁷

Between 2015 and 2017, the largest export markets for Brazilian beef, offal, and live cattle were Hong Kong and mainland China, which together purchased 30.2 percent of Brazil's exports by volume.⁴⁸ In total, China's imports of Brazilian beef are linked to an emissions risk of 13.1 million tons of CO₂.⁴⁹

Chinese demand for beef did not start the on-going process of deforestation and land-use change in Brazil. The Amazon region did not even produce enough beef to feed its population until 1991. Brazil's internal demand for beef has increased, and new land had to be converted to pasture to ensure production. The land-use changes primarily affected the Cerrado, which is responsible for half of Brazil's cattle and beef production;⁵⁰ Atlantic Forest (15-20 percent of Brazil's total cattle production, deforested in the twentieth century),⁵¹ and later, the Brazilian Amazon region.⁵²

Between 1997 and 2003, the volume of beef exports increased more than fivefold, from 232,000 to nearly 1.2 million metric tons in carcass weight equivalent. Reportedly, 80 percent of the growth in livestock production took place in the Amazon and was largely export-driven.⁵³

The PRC cannot satisfy its internal market for beef,⁵⁴ which has prompted China to look for resources in Latin America, leading to deforestation and environmental degradation.

In 2012, Brazilian beef exports grew 7.8 percent compared to the previous year, and deforestation in the Amazon region began to increase again after eight years of decline. By 2017, 70 percent of China's beef imports came from South America, and in 2018, China purchased 50 percent more beef from Brazil than the year before.⁵⁵

To date, two-thirds of cleared land in the Amazon and Cerrado biomes have been converted to cattle pasture, "making the Brazilian cattle sector responsible for one-fifth of all emissions from commodity-driven deforestation across the entire tropics."⁵⁶

Brazilian cattle producers and commodity companies are known for using a loophole in federal law to hide cattle-driven deforestation; the term "laundering" cattle refers to the practice of making it seem like livestock were not raised on land recently deforested.⁵⁷ During Jair Bolsonaro's presidency, in particular, the country significantly weakened its environmental regulations and restricted the budget allocated to law enforcement in forested areas, allowing for these practices to spread. Bolsonaro has also accused Indigenous groups of holding back the country's economic prosperity.⁵⁸

China is not solely responsible for Brazil's adoption of unsustainable farming practices, but its growing demand is untimely. The Amazon region is approaching its deforestation tipping point and has run out of land⁵⁹ that can be sustainably farmed. Deforestation has already reached a 15 percent rate, compared to the Amazon's 1970s extent of more than 6 million square kilometers (km). More than 19 percent of the Brazilian Amazon has disappeared. Environmental researchers Carlos Nobre and Thomas Lovejoy have warned that "if just 20–25 percent of the rainforest were cut down, it could reach a tipping point at which eastern, southern and central Amazonia would flip to a savannah-like ecosystem."⁶⁰

However, the link between international demand and deforestation is not direct. Brazilian cattle ranchers are not deforesting new areas to raise cattle sold in the international market. It is more likely that foreign demand is sourcing beef raised in areas with a low agricultural impact on the forest and displacing local market cattle raising toward areas with high environmental impact. This phenomenon is pushing the domestic market toward regions with high rates of land-use change and deforestation.⁶¹

The phenomenon of cattle laundering is possible due to the number of confluent interests surrounding arable land (forested or not). Beef exports are mostly sourced from areas with lower deforestation risk than domestically consumed beef.

According to Zu Ermgassen et al., beef exports grew 30 percent in the last decade, moving into frontier regions by 2017 and displacing domestic production elsewhere. No direct correlation between beef exports and the expansion of pastureland into forested areas was found, but an indirect one can be reconstructed when taking other crops into account. While "the pasture area in Brazil has been relatively stable since 2005 at approximately 180 Mha [million hectares],"⁶² cropland for soy and sugar cane showed an increase of 19.2 Mha between 2005 and 2017, "with the majority of expansion occurring onto pasture, which, in turn, has expanded into forest."⁶³ This complex dynamic creates the conditions for cattle and deforestation to be insufficiently reported.

Research conducted by Trase, a partnership between the Stockholm Environment Institute and Global Canopy, focuses on spatially-mapping cattle exports to assess the risk of deforestation in different Brazilian provinces. Tracking the supply chain allowed Trase to estimate cattle-associated deforestation risks for various markets and countries that purchase beef from Brazil, including its own internal market. These measures allowed Trase to estimate how likely it was for a particular country or region to purchase beef raised on deforested land. The deforestation risk attributed to each represents the chances of sourcing cattle products from recently deforested land. It does not establish causality between the purchased beef and cleared land.

Trase's research found that international buyers tend to purchase beef from areas where local governments were "relatively consolidated,"⁶⁴ meaning they have well-developed agricultural sectors and deforestation is less recent than in municipalities supplying the domestic market. Trase's findings show a stark deforestation risk for Brazil's internal market compared to the international market. In the 2015–2017 period, Brazil's internal market purchased 80.9 percent to 82.4 percent of its total beef production, incurring an 85.8 percent to 86.8 percent deforestation risk each year. For the same period, the remaining 17.9 percent to 19.1 percent of Brazil's total beef production was destined for the international market, which bore a significantly lower deforestation risk of between 13.2 percent and 14.2 percent.

China's exposure to cattle-associated deforestation was the highest among the international consumers that make up the 17.9 to 19.1 percent segment. Under the PRC's current sourcing conditions, the beef purchased showed an estimated 21.7 percent to 31.3 percent of all export-associated deforestation risk, estimated at 15,900 to 23,000 ha per year.⁶⁵ These estimations should have considerable effects on the PRC's sourcing policies, as nearly half of the meat imported by China over the past year came from Brazil.⁶⁶

Considerations of animal health and welfare could reduce this risk, as the researchers reported “a notable difference in deforestation risk of imports arriving into ports in mainland China versus Hong Kong, driven by disparities in their sanitary requirements and slaughterhouse approval processes.”⁶⁷ On a positive note, if China were to implement policies to reduce deforestation risk, there should be room to integrate animal rights provisions.

Satisfying China’s growing demand for Latin America’s natural resources under business-as-usual practices has caused significant damage to local ecosystems and the global climate. If Latin American countries’ efforts to trade with China do not factor in the increasing urgency to address climate change mitigation strategies, the region’s forests—and the Amazon, in particular—are likely to disappear and reach the point of irreversibly turning their largest rainforest from a carbon sink to a carbon emitter. Curbing emissions from deforestation has become more urgent than ever, considering the Amazon rainforest is currently releasing more carbon than it absorbs.⁶⁸

Latin American countries and Brazil, in particular, need to close the legal loopholes that incentivize deforestation as a viable source of production. Chinese demand can contribute to preventing deforestation risks by tightening sourcing requirements and integrating animal welfare requirements. Land-use change is a local issue with global impact, and the international community needs to consider alternative development models for food systems that center sustainability for local communities and advance climate change mitigation goals.

Copper extraction and socio-environmental conflict in Peru

Copper is one of the main commodities sought by China from Latin America. This mineral has been employed to allow China’s urbanization process and is used in electricity transmission. It is also an important component of the technology required to fuel its energy transition to renewable energies. For this reason, there is significant interest from transnational companies to manage the reserves worldwide, making the global copper market highly concentrated and subject to the supervision of international antitrust authorities.

After the United States, China has become Peru’s most important trading partner, the primary market for its exports, and the second-most important source of its imports. The PRC is present in the Peruvian mining industry as a buyer and, most importantly, as a direct investor. Peru is also considered the leading destination for Chinese mining investment in Latin America, with Chinese firms comprising around 36 percent of the country’s total mining investment portfolio.⁶⁹

This economic relationship has been beneficial for Peru, as Chinese demand for minerals helped the country overcome the 2008 global financial crisis. Yet, this relationship has not been free from socio-environmental conflict, as is briefly addressed in the Las Bambas case study below.

As mentioned, the case of Las Bambas is a unique example of how global authorities can mandate a change of management in a highly concentrated market such as copper, affecting activities locally and unintentionally sparking conflict. Although this is a unique case and not representative of the Peruvian copper industry or Chinese mining companies in the country, it shows that if Latin American countries are unprepared to prevent the risks that international mergers may create locally, extractive industry operations are likely to continue facing socio-environmental conflict to the detriment of local livelihoods.

Las Bambas is in the Peruvian highland region of Apurímac. The operation overlaps the districts of Challhuahuacho, Tambobamba, and Coyllurqui (Cotabambas province), at an altitude ranging between 3,800 and 4,600 meters above sea level.

The mine is considered one of the biggest copper reserves in the world and contains more than 1.08 million tons of copper concentrate. Glencore-Xstrata managed the project and, in 2013, was ordered to sell the mine as a condition for the Chinese antitrust authority to authorize the merger of the two companies.

The Chinese Anti-Monopoly Law (AML)⁷⁰ that went into effect on August 1, 2008,⁷¹ provides that all corporate mergers, acquisitions, or takeovers for companies with a significant nationwide turnover (within China)⁷² had to obtain clearance from the Antimonopoly Bureau of the Ministry of Commerce (MOFCOM).⁷³ Article 3 of the AML establishes that these concentrations are subject to approval as they may lead to the elimination or restriction of competition.⁷⁴

Through their conditional approval, MOFCOM established a series of requests to Glencore. Relevant to this case, Glencore was instructed to divest⁷⁵ from all of its equity interest in Las Bambas within the year following this decision and before June 30, 2015. The project was then acquired by MMG, the international unit of China MinMetals, a Chinese company, for US\$5.85 billion. The company started operating the mine in 2015.⁷⁶

The Environmental Impact Assessment (EIA) for the Las Bambas project contemplated the construction of a mining pipeline expected to extend over 200km. This infrastructure would reach the province of Espinar (Cusco), which opposed its construction.

Soon after the project was sold to MMG, several modifications were made to it and the EIA. One of them involved canceling the pipeline's construction and building a processing plant in the area.⁷⁷ With these modifications, the 450,000 tons produced yearly would be transported in trucks along a road that crosses several neighboring peasant communities. Traffic was thought to negatively impact noise and air pollution and the safety of the community, along with the risk of accidents, including toxic substance spillage.

Neighboring communities were not consulted regarding these changes in the EIA. Public participation mechanisms⁷⁸ were required by law at the time of obtaining the EIA but didn't apply to unsubstantial modifications that could be expedited through a process called the technical support report (ITS). Although not legally required, the relationship built when Glencore-Xstrata owned the mining concession deteriorated because of the lack of consultation.

The claims arose after a communal road within the Yavi Yavi estate was declared a "national road" at the end of 2017, allowing ore-loaded trucks to transport material to and from the port of Matarani (Arequipa). Yavi Yavi is within the community's territory, and the construction was prompted by the company's decision not to build the planned mining pipeline. A national road allows heavy vehicles carrying ore and potentially toxic chemicals to transit.

This situation has sparked socio-environmental conflict that persists to this day. Communities perceive that the modification to the EIA is substantial, but the Peruvian environmental authority considered it a minor change; the ITS does not require consultation.

The road facilitates the daily passage of approximately 300 trucks loaded with minerals, which, according to the protesting local communities, causes significant environmental impact in the area (dust, noise, vibrations, etc.) that could have been avoided with the infrastructure as originally planned.⁷⁹

The former Vice Minister of Mining Pedro Gamio warned in 2015 that suspending the pipeline could generate impacts that were not reported to the population in the mining project's EIA. He also warned of possible unrest and protests from the local population.⁸⁰

This case indicates the role that Latin American countries' decisions play in how foreign investments are perceived. As previously stated, environmental impact and socio-environmental conflict are not inherently how China operates in the region, but instead are a product of Latin American countries' lack of adequate planning to satisfy the scope of China's demand for natural resources.

As researcher Carlos Monge points out, the protests surrounding the Las Bambas mining project “signal profound shortcomings in mining governance in Peru, particularly with respect to the way the national mining sector authorities handle and approve changes in mining project design and environmental impact assessments (EIAs).”⁸¹ The case is an example of how the government failed to foresee the potential risks arising from a change in management of the mine and did not prioritize the local community's concerns.

LOOKING FORWARD: CHALLENGES AND OPPORTUNITIES IN THE GROWING RELATIONSHIP

China is a determining factor in Latin America's landscape, and substantial degradation can be attributed—either directly or indirectly—to the commodities it consumes. The impact on food systems, deforestation, and water scarcity has been described throughout the report. However, these unsustainable practices are not more inherently Chinese than Latin American.

This report has offered a broad view of the environmental costs of the Chinese-Latin American trade and investments relationship. It analyzed several industries integral to the collaboration, focusing on sustainability, climate change mitigation, and adaptation. The following refers to two growing partnerships in which China plays an essential role: the transition to renewable energy, which will allow countries to cut emissions from electricity generation, and the growing demand for pork, which would increase greenhouse gas emissions and require additional resources to maintain the herds.

Despite differences in production practices and supply chain characteristics among renewable and non-renewable commodities, the most important aspect of PRC-Latin American trade is the increasing pressure on natural resources it generates. Latin American countries are not making changes in their production strategies to face this pressure, nor doing nearly enough to ensure sustainable production. Instead, they are maintaining or adopting unsustainable practices that decrease their socio-environmental resilience.

To increase their socio-environmental resilience and ensure their products are sustainable in the long-term, Latin American countries can learn from their experience in other sectors—such as mining and agriculture—and apply the lessons to growing industries like energy generation and pork farming.

Leading the energy transition: China's contribution to clean energy adoption

On the opposite side of conflict, deforestation, and carbon-intensive activities, the relationship between China and Latin America has also helped some countries transition to renewable energy technologies. Chile, for example, has managed to achieve its goal of 20 percent non-conventional renewable energy in record time, thanks to some decisive legal requirements in its energy sector that allowed for the adoption of renewable energy technologies partly sourced from China.

Chile had been reliant on Argentina's natural gas as its primary source of low-emissions energy. In 1995, the two countries signed a protocol that provided the framework for privately-owned companies to secure contracts between natural gas producers in Argentina and Chilean consumers. The infrastructure built to support this system involved large north-to-south pipelines, natural gas power plants, and distribution facilities. As a result, by 2004, Chile imported almost 15 percent of Argentina's natural gas production.⁸²

Also in 2004, the Argentine economic crisis caused the government to set stringent export constraints on natural gas, bringing disruptive results to natural gas exports to Chile.⁸³ Given its installed capacity and dependency on natural gas, Chile had to look for alternative sources to guarantee energy security, which laid the groundwork for its renewable energy transition. Then-President Michelle Bachelet stated that “by 2010, 15 percent of the new generation capacity must be produced through renewable energy sources.”⁸⁴

At the same time, China was experiencing an excess in its production of photovoltaic panels. Between 2008 and 2013, the country’s solar panel industry dominated the market, dropping world prices by 80 percent, reportedly changing the economics of solar energy worldwide.⁸⁵ Chile seized the opportunity to rapidly expand its solar energy generation.

The trade relationship between Chile and China is not different from the rest of the region. Imports for Chile are concentrated in renewable energy technologies, and Chile’s exports focus on raw materials. Chile is among the world’s foremost producers of copper and lithium, two of the minerals for which China is the top buyer globally. China represents about 25 percent of the world’s demand for lithium, which it transforms into batteries that allow for renewable energy technologies, energy storage, and electric mobility to be sold globally and within the PRC. China currently represents 56 percent of world sales of electric cars,⁸⁶ successfully greening its transportation system.

In 2013 alone, Chile imported more than half of its solar panels from China for a total value of US\$40.9 million. While a small portion of its overall energy generation, this number has continued to grow, with a majority of new projects powered by renewable energy⁸⁷ along with Chile’s increasingly ambitious climate change mitigation commitments.

After entering the Paris Agreement in 2015, Chile approved its Roadmap (*Hoja de Ruta*) to 2050. The plan proposed an ambitious goal of generating 70 percent of its energy matrix from renewable sources by 2050, emphasizing solar and wind energy.⁸⁸ One of its midterm goals is to become the leading provider of technology and services for the solar energy industry by 2035

in Latin America. Chile may be well en route to achieving these goals, aided by its partnership with China.

China has become a reliable source of green energy technologies for Latin America, not only through solar panels but also by providing electric vehicles that have helped countries like Colombia and Chile reduce urban emissions. As recently as December 2020, the Bogotá City Public Transport Authority (Transmilenio) received more than 1,000 electric buses from Chinese private actor BYD Co. Ltd. BYD has a market share of more than 96.5 percent in the Colombian electric bus market and 99 percent in Bogotá specifically.⁸⁹ Prior to this, Santiago had the largest electric fleet in Latin America, with buses supplied by Chinese companies BYD, Yuting, and King Long.⁹⁰

However, the development of green energy generation technologies has a high environmental cost for Chile and other Latin American countries, where the minerals needed for the global energy transition are extracted.

Chile’s relationship with the PRC has contributed to the low-emissions development of its energy grid. But producing the commodities that China and the international market demand puts a high toll on natural resources, particularly the extraction of water required for lithium production in the Atacama salt flats, one of the most arid places in the world.

The future of pork farming: environmental and human health concerns

Unlike most of the cases referenced previously, China’s negotiations with Argentina to double its industrial pork population is an issue unique to the PRC’s cultural and social preferences. In its absence, the project would not be substituted by any other country. If anything, Argentina’s role as a supplier is the only interchangeable factor and a potential source of vulnerability for the country.

Negotiations between leaders of the PRC and Argentina came to the spotlight in 2020, when the news of a projected installation of 25 pig farms (of about 12,500 pigs each) started making headlines.⁹¹ The current industrial pig population in the country amounts to 350,000 animals, and this venture would almost double that number.

Concerns over the ecological footprint of this endeavor are not unfounded. The farms would extend over land in Argentina's northern provinces, which are already facing harsh drought seasons, a source of concern for local communities. In addition to increasing water demand, farming such a large number of animals would require sourcing animal feed, managing solid waste and wastewater, and would significantly raise the country's methane emissions. Moreover, pig farms worldwide have been facing insurmountable losses due to outbreaks of the African Swine Flu (ASF). Both outbreaks and ASF prevention pose risks to environmental and human health because of the zoonotic potential of the disease, insufficient capacity to deal with animal remains, or the spread of antibiotic and antimicrobial resistance.

As for the animal feed, Argentina currently sells more than half of its agricultural products—soybeans in particular—to the PRC. China relies on soy imports to feed its pork population, which constitutes half the world's swine. The water footprint of this exchange is considerable; soybeans are used to fatten pigs, and their production requires about 1,500 tons of water per ton of soybeans.⁹² As the current production of soybeans in the region is already spoken for, the new pork farms would increase the demand for soy and put additional pressure on Argentine producers and neighboring countries with arable land.

The construction of these farms would considerably raise Argentina's methane emissions, a GHG that has more than 80 times the warming potential of carbon dioxide in the short term and is released in the liquefaction of manure, a common practice in industrial animal farming.

Cattle farming is already responsible for around 25 percent of GHG emissions in Argentina,⁹³ and about 40 percent of these are linked to the Argentina-PRC trade relationship. In 2018, 550,503 tons of beef were exported by Argentina, of which 207,000 were sold to China.⁹⁴ The expansion of pork farming in the country would considerably set back any climate change mitigation goals, as farming cattle and pork is one of the main sources of GHG emissions, emitting methane and nitrous oxide.

As mentioned before, the primary concern regarding the sustainability of the China-Latin America relationship is how cumulative environmental degradation may push Latin American countries closer to their tipping points, stages from which ecosystems would be unable to bounce back.

The relationship between Argentina and China has evolved rapidly over the last few decades, with the two countries entering a commercial association agreement in 2004 that scaled up to a strategic commercial association in 2014.

The installation of 25 pig farms would ensure the reliable supply of 900,000 yearly tons of pork meat to the PRC after ASF decimated the Asian country's pork population.⁹⁵ Currently, Spain and Germany are the principal suppliers of pork meat to China, and their pig populations are affected by the same epidemic.

Given these animal health concerns, those against the project, including local environmental groups Climate Save Movement and Extinction Rebellion,⁹⁶ argue that besides outsourcing its production, China is exporting a business model with pandemic potential.

An unofficial draft of the Memorandum of Understanding between China and Argentina was published by a local newspaper in July 2021. The text contemplated installing “circular economy farms,” which would prioritize a production model that includes location, logistics, solid waste and wastewater treatment, energy, slaughtering, and refrigeration.⁹⁷ The Argentine Ministry of Foreign Affairs denied the veracity of this draft agreement.⁹⁸ The official negotiation has been carried out privately, involving high-level decision-makers from the Argentine Ministries of Agriculture, Production, and Foreign Affairs. Diplomatic sources had mentioned the agreement would be finalized by September 2021.⁹⁹ Though Argentina joined the Belt and Road Initiative in February 2022, during the meeting between presidents Fernández and Xi, there has been no official statement about the negotiations of the pork farms.

The secrecy of these negotiations raised concerns among the population, with good reason. Increasing the country’s pork production capacity entails direct and indirect effects on environmental, animal, and human health. To meet internal demands for pork, the PRC adopted unsustainable practices that cost them water and soil pollution from nutrient overload on land and in waterways,¹⁰⁰ increased GHG emissions, and suffered a loss in genetic and species diversity.

The prophylactic overuse of antibiotics throughout the production cycle has raised public health concerns about the emergence of antibiotic-resistant strains of disease-causing organisms that compromise the ability of medicines to treat disease in both humans and other animals.¹⁰¹ As for the three main ways in which livestock can harness antibiotic resistance and constrain environmental and human health, Mindi Schneider said that “drugs fed to animals are excreted in manure, and are then carried into the environment via runoff from feeding operations;”¹⁰² antibiotics in soil and water can then kill microorganisms and leave resistant bacteria to spread. Finally, this process can happen in the digestive systems of animals and get transferred to the soil when manure is applied as fertilizer. “Similarly, gene-sharing can occur across different species, for instance through fecal bacteria found in meat products.”¹⁰³

For Argentina, achieving the goal of producing and exporting nearly a million tons of pork meat per year would severely increase pressure over land and water, present solid waste challenges, and pose public health concerns.

But for China, securing a steady supply of pork may be an issue of social and political stability. Pork is the chief source of protein for the Chinese population, and “when the price of pork rises, discontent is often not far behind.”¹⁰⁴ This was the case in 2019-20 after the ASF ravaged the country’s herd.

A different kind of unrest troubled the PRC in 2021 when the price of pork plummeted more than 54 percent in the first half of the year, “driven mainly by panic selling because of new African swine fever outbreaks.”¹⁰⁵ The instability of the “pig cycle” has been attributed to smaller, less efficient farms and the alterations caused by ASF outbreaks.

In any case, the volatility of this market, together with the environmental and public health risks that the new Argentine herds would pose, makes the future of pork farming a relevant concern for Latin America’s development plans.

COMMON THEMES AND TAKE-AWAYS: INCREASING CHALLENGES UNDER CLIMATE CHANGE

As adequately put, “the key issue is not whether a company is Chinese, or of any other nationality, but rather the willingness and ability of host countries to regulate them appropriately.”¹⁰⁶ Many Latin American countries are running out of non-deforested land for farming. Others are brewing socio-environmental conflict around extractive industries and land-use change.

Most Latin American countries have inadequate regulations or have shown an unwillingness to enforce their existing environmental provisions; therefore, failing to adapt to the context of growing demand and urgency to implement sustainable strategies.

China has been an important driver in the expansion of agriculture and extraction; Latin American countries' agriculture and extractive exports to China as a share of GDP have been rising, while exports to the rest of the world have remained stagnant or fallen.¹⁰⁷ This is to be expected when it comes to developing countries. As per capita income increases, global south countries will struggle to satisfy their internal demand for resources, the traditional developed economies' demand, and the growing demand of other developing and middle-income countries, such as China.

While unsurprising, the problem with this phenomenon is that the increased demand arrives in Latin America when the region and its countries lack consensus on their local development plans and priorities. There is no evidence that China can be held responsible for Latin America's failure to diversify the region's export markets and expand economic activity outside of the natural resource sectors. However, in practice, Latin American countries are diverting their most productive soil, water, and overall environmental health to producing commodities for the rest of the world, often to the detriment of their populations' local food systems and health.

Argentina and Brazil, two of the countries in our case studies, are among the world's biggest net exporters of soil.¹⁰⁸ When exporting to world markets, Latin American countries are not only selling grains, meat, fossil fuels, or minerals, they are also exporting the environmental goods and services employed to produce these commodities, causing both immediate and long-term effects on local communities. For example, Chilean lithium production is fueling the world's renewable energy transition while depriving its local communities of adequate water for growing food.

Both Latin America and China are reproducing the roles assigned to them in international markets. Food and minerals are what Latin American countries have historically relied on for trade. At the same time, China's consumption levels are not beyond expectations for a middle-income country. What is concerning is that Latin America is not adopting practices to maintain this relationship sustainably at a time when the world is getting closer to its tipping point, thresholds beyond which an ecosystem reorganizes, often abruptly or irreversibly.¹⁰⁹ Once this point is reached, certain environmental impacts can no longer be avoided, even if remediation is implemented later.

The factors contributing to this phenomenon should not be understood as isolated from one another. Climate change is a complex ongoing process with multiple inputs. Ecosystems are subject to various interconnected drivers, and the continuing trends of deforestation and land conversion in the Amazon "may have important consequences for the sustainability of the region's remaining natural vegetation"¹¹⁰ and, with it, its biodiversity, critical ecosystems, food sources, water availability, and air quality.

Replacing forests with pastures reduces ecosystem services on which biodiversity and weather depend. First, the loss of habitat for wildlife prompts interactions with domestic animals and people, posing a public health risk. Second, loss of shade, refractive capacity, and other thermoregulatory services to which forest coverage contributes (such as evapotranspiration and albedo) increase the heat flux and dryness at surface level, affecting the stability of local ecosystems and their ability to self-regulate and recover from environmental damage. Argentina and Uruguay are already feeling the effects; both have experienced lower harvest yields in 2019 and 2020 due to drought.¹¹¹

The impact of land conversion has been studied in the Brazilian Amazon and Cerrado regions.¹¹² By substituting local ecosystems with crops for pasture, the result is warming at the replacement site and nearby locations. An increase in local temperature can add up to extreme heat, which, in turn, can damage many economic and social activities, including agricultural productivity, as crops get exposed to maximum temperatures¹¹³ for longer periods.

Climate change experts have warned that increased deforestation and carbon emissions could drive the Amazon to its tipping point: a state beyond which the drier climate would make the rainforest unable to support itself, starting a process of transformation into a savannah ecosystem. The Amazon is already releasing more carbon than it absorbs;¹¹⁴ curbing emissions is more urgent than ever.

According to the Climate Action Tracker,¹¹⁵ global climate policies are putting the planet on track to increase from 2.7 to 3.1 degrees Celsius above preindustrial levels. This rise in temperature alone would be enough to trigger the Amazon's savannization.¹¹⁶ However, the process can be accelerated by the confluence of multiple factors, like tree cover loss. A reduction in precipitation and humidity is predicted to become more evident when deforestation exceeds 40 percent of the original forest extent,¹¹⁷ with different outcomes expected from patchy small-scale deforestation to large-scale forest cover loss.

Compared to other exports and overall economic activities, products sold from the Latin American region to China have caused more net GHG emissions and used more water per dollar of output.¹¹⁸

In addition, the industries producing commodities to trade with China are often embedded in social conflict for natural resources—particularly access to water sources. Therefore, there is reason to believe production for the Chinese markets is more likely to be associated with socio-environmental conflict if not managed appropriately by Latin American countries.

The main concern remains that Latin American countries have been unable or unwilling to adapt sustainable production practices, despite the evidence mentioned above and the urgency to implement mitigation strategies. There is not enough evidence to argue that Chinese demand for natural resources is uniquely unsustainable or that China's foreign direct investments adopt worse practices than other actors in these industries. Some maintain that Chinese firms have not performed significantly worse relative to domestic or other international firms. In fact, "Chinese firms outperform their competitors, especially with proper incentives from governments and civil society."¹¹⁹

The way in which Latin American countries have approached their trade relationship with the PRC, maintaining outdated production practices or weakening environmental protections, has led the economic collaboration to imperil local ecosystems, reaching unsustainable conditions. As their failure to adapt impacts the global climate, the nature of China-Latin America cooperation will continue to raise concerns of environmental justice across borders.

Takeaways

- (i) The practices of Chinese companies vary greatly depending on the sector. Most of their impact is caused by the characteristics of the resources under extraction, the availability of arable land, or the standard practices of the industry. One thing in common is that China demands large volumes of products from countries already at capacity to serve their domestic and foreign markets. Legal loopholes, market incentives, and weak oversight create the conditions for Chinese demand to push the expansion of the agricultural frontier for the production of commodities such as beef and soy. This indirect effect could be prevented with a robust and adaptable legal system and the adoption of sustainability standards within the private sector. In addition, China could reduce its deforestation risk in the beef supply chain by enforcing better sourcing standards, such as those related to animal welfare and tracking indirect deforestation.
- (ii) Latin American countries need to pay special attention to investments in highly concentrated markets and the decisions of foreign antitrust authorities that may influence local project management. Both the lithium and copper cases covered in this report involved Chinese companies that acquired a participation in mining concessions that were already operating. The frameworks governing environmental impact assessments are often insufficient to ensure adequate communication with local communities and prevent the risk of conflict. Ensuring transparency and public participation in extractive projects is the first step toward preventing conflict and reaching consensus over management decisions, thus ensuring sustainable operations over time.

- (iii) The scarcity of agricultural land is a real threat to conservation, food security, and climate change mitigation. Though the allegations of land grabbing have not been substantiated with data on property transfers, the agricultural industry is increasingly adopting rental and production agreements as a strategy to secure land use. These strategies could contribute to the dispossession of local communities if the rental or production agreements are not carefully negotiated between companies and landowners. Latin American countries need to pass clear policies for the development of these agreements, prioritizing rural livelihoods and Indigenous communities' development goals.

- (iv) The policies that traditionally worked for Latin American countries need revision in light of climate change. Water scarcity, methane emissions, and deforestation tipping points are not only threatening local livelihoods but affecting the global climate. Countries committing to expanding their production of commodities are doing so at the cost of human and environmental health. Plans to duplicate industrial pork farming in Argentina create multiple threats and expose the country to a highly vulnerable arrangement with unclear advantages for the local population. Pork farming in Asia and Europe is affected by recurring epidemics that decimate their production; without clear animal welfare standards, the Argentine herds will also be vulnerable. If these projects were to move forward, Argentina would need to reassess its climate change mitigation commitments and update its methane budgets to manage emissions and animal waste. In turn, China would need to pass better sourcing standards to prevent antibiotic resistance and health concerns. All of Latin America would need to watch for an increased demand for soy for animal feed and the risk of deforestation that comes with it.

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