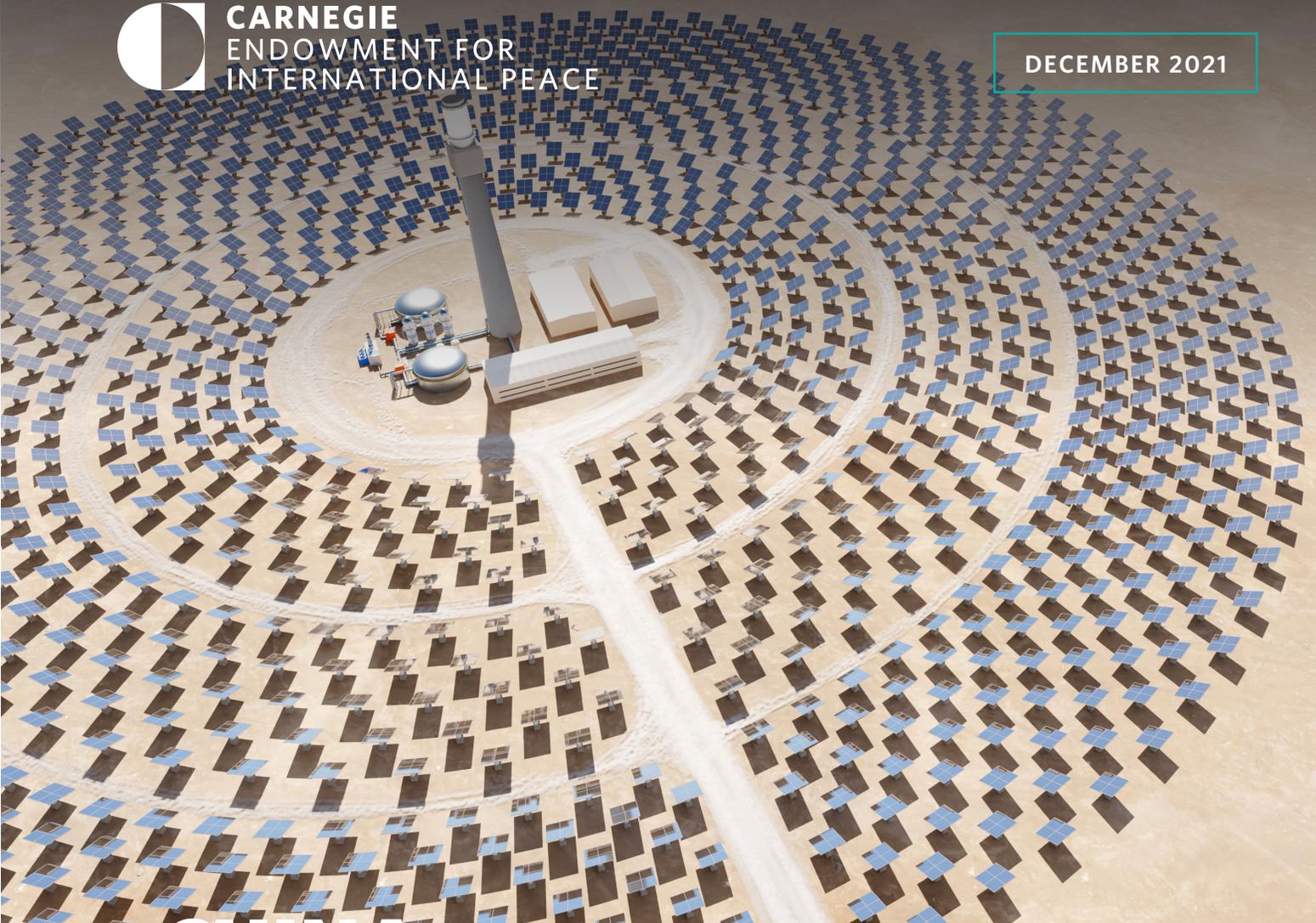




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How Argentina Pushed Chinese Investors to Help Revitalize Its Energy Grid

Juliana González Jáuregui

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China Local/Global

China has become a global power, but there is too little debate about *how* this has happened and what it means. Many argue that China exports its developmental model and imposes it on other countries. But Chinese players also extend their influence by working through local actors and institutions while adapting and assimilating local and traditional forms, norms, and practices.

With a generous multiyear grant from the Ford Foundation, Carnegie has launched an innovative body of research on Chinese engagement strategies in seven regions of the world—Africa, Central Asia, Latin America, the Middle East and North Africa, the Pacific, South Asia, and Southeast Asia. Through a mix of research and strategic convening, this project explores these complex dynamics, including the ways Chinese firms are adapting to local labor laws in Latin America, Chinese banks and funds are exploring traditional Islamic financial and credit products in Southeast Asia and the Middle East, and Chinese actors are helping local workers upgrade their skills in Central Asia. These adaptive Chinese strategies that accommodate and work within local realities are mostly ignored by Western policymakers in particular.

Ultimately, the project aims to significantly broaden understanding and debate about China's role in the world and to generate innovative policy ideas. These could enable local players to better channel Chinese energies to support their societies and economies; provide lessons for Western engagement around the world, especially in developing countries; help China's own policy community learn from the diversity of Chinese experience; and potentially reduce frictions.

Evan A. Feigenbaum

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Summary

China's modernization strategy integrates both domestic and foreign policy, especially through two complementary prongs—the so-called Going Global strategy and the Belt and Road Initiative (BRI). This push to internationalize China's development strategy has ushered in a new era in Beijing's relationships with countries and regions around the world. In Latin America, these policies have triggered a dynamic pattern of interactions between China and the region's political economy. Being rich in fuels, energy, foodstuffs, and basic products, countries in Latin America have emerged as significant suppliers for China, but they also have become important destinations for Chinese-made industrial products, and, subsequently, Chinese investment and lending.

For Latin American countries, China's rise as an influential investor, lender, trader, and builder has created an array of new challenges and opportunities. While Beijing has harnessed its engagement in Latin America to support its own development, countries in the region have sought to direct some of China's economic and financial resources to promote their own strategic sectors.

Argentina illustrates this dynamic well, particularly in the energy sector. Argentinian government officials and business leaders have attracted Chinese investment and finance into renewables and other types of energy to promote Buenos Aires's goals of taking a hybrid path to an energy transition. For its part, China has seized this opportunity to advance its own development goals and to participate in Argentina's energy transition strategy.

Though Argentina has not yet formally joined the BRI, Argentinian officials have reported publicly that Buenos Aires has already decided to endorse the initiative and is waiting for the right moment to do so.¹ Argentina has been weighing the pros and cons of signing on to the BRI. On the one hand, signing on could enhance the presence of Chinese actors in the Argentinian renewables sector, as China seeks to intertwine its engagement in Latin America with the deployment of the Green BRI, the dimensions of the initiative that are framed in terms of environmental sustainability. More broadly, joining the BRI could attract new Chinese investment and finance in alternative energy and electricity transmission infrastructure, further contributing to Argentina's goals for an energy transition. On the other hand, Argentina faces the challenge of designing and implementing a long-term national energy plan that complements its role in the BRI. This means devising an energy plan that, among broader objectives, seeks to help Argentina harness Chinese know-how on renewables and develop innovation and technological capacities of its own.

In the meantime, Argentina's lack of committed engagement with the BRI to date has not impeded the expansion of Chinese overseas investment and financing for renewables and other types of energy projects in the country. In a clear sign of political agency, the diplomatic outreach of key Argentinian national and provincial government officials, as well as corporate players' push for local associations,

has been central in the quest to increase Chinese engagement in Argentina's solar and wind power sectors and in other alternative energy projects. These interactions have allowed Argentinian policy-makers to help shape an adaptive partnership to strengthen the alignment between Chinese investments and Argentinian development objectives.

Admittedly, this engagement has at times encountered resistance due to environmental and social risks in certain localities. Even so, these concerns are part of the learning process and set a tone for future cooperation on energy projects. Renewables and alternative energy will continue to be a magnet for global investment as countries around the world strive to address climate change. Thus, local tensions are pushing both Argentinian and Chinese actors to learn from the problematic impacts of some projects and do more to address local communities' concerns jointly. Successful responses to such concerns would further enhance the basis of Argentina and China's energy-focused adaptive partnership.

Introduction

China's rise as a global economic and financial power has had a profound impact on Latin America. Chinese leaders' central goal in the region has been to assure a steady supply of commodities—such as minerals, food, and energy resources—to support China's growth and development. Beijing has sought to develop commodity-based trade and investment relationships with a select group of countries in the region, notably Argentina, Brazil, Chile, and Peru. It has leveraged the tools of economic statecraft to full effect, pouring financial and other resources into sectors most closely tied to China's development imperatives: mining, oil extraction and refining, energy, transport and logistics, and related infrastructure.

For Latin American countries, China's rise as an influential investor, lender, trader, and builder has created an array of new pressures and opportunities. Argentina, one of the largest economies in Latin America, illustrates this dynamic well.² Argentinian local leaders, national officials, and private companies alike have sought to steer Chinese investment into renewable energy projects, such as wind and solar power, and other types of energy ventures to promote the country's sustainable economic development and a hybrid pathway to an economy-wide energy transition. China has, in most cases, adapted by developing channels for bilateral cooperation and enhancing its local outreach, while in some cases Chinese actors have encountered local pushback due to the environmental and social risks that certain projects pose.

China has unique strengths in renewable energy and has set ambitious targets of its own for its energy policy. For example, Beijing has sought to demonstrate its global leadership in the spirit of the Paris Agreement by setting goals to reduce its dependence on fossil fuels, which accounted for 85 percent of China's fuel mix in 2020.³ During the 2020 United Nations (UN) General Assembly, Chinese President Xi Jinping announced Beijing's pledge to have its carbon dioxide emissions peak before 2030 and to reach carbon neutrality before 2060.⁴ Though China is the world's leading emitter of heat-trapping gases, accounting for 30.7 percent of global carbon dioxide emissions in 2020, it has also become the global leader in solar, wind, hydroelectric, and geothermal power generation as well as the largest market for electric vehicles.⁵ These ambitions are reflected in China's overseas finance priorities and strategies, with investments and loans aimed at developing renewable energy projects worldwide, mainly focusing on developing countries.

Argentina is one of the largest recipients of Chinese investment and financing in Latin America.⁶ Consequently, it is important to explore whether and how Chinese overseas finance in renewables is promoting Argentina's goals—and the degree to which Argentinian corporate players and national and local policymakers have been able to shape Chinese actions. One way to do so is to closely examine Chinese investment and loan activities in Argentina's solar and wind power sectors, while tracing the involvement of certain important actors and institutions.

Over time, Chinese players have had to adapt to local contexts, needs, and regulations. To ensure that Argentina's and China's visions of their future energy needs are mutually beneficial, it is necessary that Argentina continues to ensure compliance with local laws, regulations, and industrial policies. A group of experts and/or public officials should be designated to assess and classify whether projects support Argentina's economic growth and sustainable development needs. More broadly, a cross-cutting team of Argentinian collaborators should delineate an integral, long-term, national energy plan that addresses how to best cooperate with China on technology transfers and/or the joint development of technologies.

Subnational cooperation has been essential too. Argentina and China should work together to further promote local engagement in provinces where this type of collaboration has been scarce. These types of localized linkages can help further deepen Chinese involvement in areas identified as strategic by local and provincial government officials themselves. Since Argentina is particularly well-positioned to leverage its renewable energy sector, given the country's huge resource endowments, and because China stands as a global leader in the deployment of renewables, further engagement at the national, provincial, and local levels should continue to be promoted and encouraged.

China's Climate Priorities

Since the turn of the century, China has significantly increased its global investment and financing in energy. This trend accelerated after the 2007–2008 global financial crisis and is part of China's broader modernization strategy, which integrates both domestic and foreign policy. To achieve modernization at home, Chinese bureaucrats and corporations have embraced globalization, looking beyond China's shores to secure resources, markets, and technologies.⁷ This imperative of modernizing China through globalization helps explain why Beijing is providing development finance to countries like Argentina.

This push has included efforts to internationalize China's development strategy, especially through two complementary policies—the so-called Going Global strategy and the Belt and Road Initiative (BRI). The Going Global strategy was launched in 2001 to encourage Chinese firms to invest overseas. The unveiling of the BRI helped accelerate the implementation of this strategy. Launched in 2013, the BRI is Beijing's attempt to globalize its financing as a major source of capital around the world through offshore loans for governments and investment channeled through Chinese companies, principally state-owned enterprises (SOEs) in the energy sphere and other strategic sectors. Two major policy banks—the China Development Bank (CDB) and the Export-Import Bank of China (Exim Bank of China)—have steered this development financing.

Investing in, manufacturing, and deploying sources of renewable energy all have been part of Beijing's outward push too. At present, China stands as the world's leader in solar and wind power, as well as in lithium-ion batteries and the development of electric vehicles.⁸ However, only a small fraction of the financing provided by China's two policy banks for energy projects worldwide is being allocated for renewable power—namely wind, solar, and small-scale hydropower facilities. By contrast, large-scale hydropower projects are considered alternative energy rather than renewable because of their outsized environmental impacts.

Chinese funding for large-scale hydropower infrastructure, such as for dam construction, comprises a notable amount of China's policy bank loans for energy projects.⁹

The numbers bear out these patterns. According to Kevin P. Gallagher, the CDB and the Exim Bank of China have provided \$245.8 billion for energy projects globally since 2000, with solar and wind projects representing a mere 1.5 percent of the total; meanwhile, oil and coal account for 51.8 percent of the total, while large-scale hydropower projects make up 18 percent.¹⁰ In terms of the geographic distribution of Chinese energy finance, Latin America represents 18.7 percent, while Europe and Central Asia represent 32 percent, Asia 27.7 percent, and Africa 21.6 percent. When looking at the variation in the types of power generation, policy banks have mainly supported coal projects, whereas hydropower stands as the second-largest sector receiving Chinese financing and investment.

According to Gallagher and Bo Kong, China's policy banks aim to advance three priorities of the Chinese developmental state when choosing to finance energy projects worldwide.¹¹ First, they aim to support the Going Global strategy, which has become intertwined with the BRI, by securing resources that China needs from beyond its borders. Second, by doing so, they seek to support China's long-term energy security. Third, they aim to help diversify Chinese foreign exchange reserves.

Although the Chinese policy banks' financing has declined since a peak in 2016, it has remained to a considerable extent focused on coal-fired plants. However, as Kong and Gallagher point out, Chinese overseas funding for coal power plants is a result of the pull factor of demand from host countries and the push factor of the Chinese central government and manufacturing sector's desire to promote the country's coal-fired power plants.¹² Thus, the Chinese policy banks are pulled into foreign countries, either by requests from these countries' governments or by Chinese power companies seeking to broaden their presence in these markets. For their part, the leading Chinese state-run power firms have received significant support from the two major policy banks to invest abroad. The energy finance provided by the CDB and the Exim Bank of China supports the Chinese government's objective of diversifying its foreign exchange reserves and reducing the country's reliance on U.S. financial assets, a priority that gained momentum amid the U.S.-China trade war that intensified in 2019.

In the renewables sector, Chinese lenders provide loans for projects that align with China's climate policy and facilitate the development of low-carbon energy sources. These loans also help Chinese enterprises export the energy products and services they offer to Latin America and other parts of the world; these exports include photovoltaic equipment, wind turbines, lithium-ion batteries, advanced low-carbon technologies, and geothermal power plants. Beijing's Made in China 2025 industrial policy works in tandem with its outbound investment and financing strategies. As a part of this plan, China aims to strengthen its foray into advanced manufacturing and away from traditional heavy industries.¹³ This industrial policy also encourages Chinese firms to export their advanced technologies—including in the “new” energy sector, which is listed among the policy's “strategic emerging industries.”¹⁴

China's efforts to respond to climate change reflect both domestic and global ambitions. The most relevant policies are targets established by the central government and associated with carbon intensity, energy intensity, total energy consumption, and the share of renewables in the country's energy mix. Most of these indicators are set in the context of the five-year plans that govern China's macroeconomic trajectory.

Though Beijing has participated in international talks on climate change for decades, it has assumed a more prominent leadership role in recent years. Many of these policies were launched during the late 1990s and early 2000s, after the 1992 Earth Summit and the new international compromises on climate change. China was involved in the Montreal Protocol, participated in global negotiations to establish the UN Framework Convention on Climate Change, and increased its participation and cooperation with international organizations that address climate change, ratifying the framework convention in 1993 and the Kyoto Protocol in 2002. It is worth noting that, as a developing country, China had no formal obligations to reduce emissions and did not establish climate targets under the original UN Framework Convention on Climate Change or the Kyoto Protocol.¹⁵ China's first formal targets to support international negotiations on climate change were proposed in Copenhagen in 2009; however, that summit did not achieve the consensus needed to establish a new treaty. In 2014, Beijing established targets through the U.S.-China Joint Announcement on Climate Change, targets that were later embodied in the Paris Agreement.¹⁶ For the first time, China announced that it would limit its emissions of heat-trapping carbon dioxide and strive to reach peak emissions around 2030.

As Kelly Sims Gallagher and Xuan Xiaowei point out, China's self-assigned domestic climate change targets were not explicitly compulsory before 2005.¹⁷ As time passed, the climate issue gained greater relevance and became interlinked with domestic policy. China did not adopt formal climate targets domestically until the Eleventh Five-Year Plan; these commitments helped the Chinese government to later assume a more prominent role internationally by proposing formal targets in Copenhagen in 2009, though these negotiations failed to produce a treaty.¹⁸

Early on, the Chinese government focused on energy efficiency as a part of a sustainable development strategy. In that framework, a National Coordination Group on Climate Change was created in 1992 to support international negotiations on climate change. However, at that time, China still considered the climate to be mainly an international and scientific topic and one that was not fully addressed by domestic policy. Over the years, the climate issue increasingly merged with domestic policy. In 1998, a National Strategy and Coordination Group on Climate Change was formed, replacing the body founded in 1992. During this period of voluntary targets, China's Tenth Five-Year Plan (2001–2005) was the first to address climate change, though targets were not compulsory.¹⁹ This plan established a concession incentive for renewable energy as well as preferential tax policies for renewable energy ventures. China also passed its Renewable Energy Law in 2005 and then amended it in 2009.

During the Eleventh Five-Year Plan (2006–2010), a national energy-intensity target was set.²⁰ China's emissions intensity had begun to rise during the Tenth-Five Year Plan period because of increased output from heavy industry and manufacturing. To improve China's energy efficiency, the target called for a 20 percent reduction in the country's energy consumption levels starting in 2006, with the aim of reaching that goal by 2010. Yet many of the country's provinces failed to achieve these energy efficiency and environmental goals.²¹ The Twelfth Five-Year Plan (2011–2015) was the first to introduce a national strategy for climate adaptation.²² During this period, the 2014 U.S.-China Joint Announcement on Climate Change was unveiled, and the Paris Agreement was adopted in 2015 and entered into force in 2016.

These breakthroughs did not happen by chance, as the Chinese government had started to modify its strategy for economic development from 2011 onward. Apart from seeking to reduce its carbon intensity, China also sought to spur innovation, upgrade its manufacturing production, and move toward a services-based economy. The Thirteenth Five-Year Plan (2016–2020) further advanced the country on a path toward intensive environmental reforms. This plan set new targets of achieving at least 15 percent of the country's primary energy supply from nonfossil fuels by 2020.²³ To achieve this goal, the government promoted the expansion of hydroelectric, nuclear, solar, and wind power plants.

During this period, the concept of “ecological civilization” was launched; it emphasizes respecting and protecting nature but also proposes resource conservation, environmental restoration, and sustainable development.²⁴ The tenet of ecological civilization was introduced as central to the realization of the Chinese Dream, which refers to attaining the Chinese government's two centenary goals through a two-stage development plan. The first stage, spanning from 2020 to 2035, and the second stage, from 2035 to 2050, are concerned with the revitalization and modernization of the Chinese nation and with its positioning as a leading world power.²⁵

More recently, the Fourteenth Five-Year Plan (2021–2025) and the Long-Range Objectives Through the Year 2035 deepen many of the policies already initiated during earlier periods.²⁶ As these plans seek to continue linking the country’s energy transition to sustainable development, China’s promotion of renewable energy will keep having an impact on its overseas finance portfolio. According to the Fourteenth Five-Year Plan, efforts will focus on technological innovation and what the Chinese government calls “neo-infrastructure construction.”²⁷ Finding ways to foster low-carbon energy and reduce emissions are equally important, as the new plan contains binding targets to reduce energy intensity by 13.5 percent, lower carbon intensity by 18 percent, and reach a 20 percent share of nonfossil fuels in primary energy use by 2025.²⁸

These targets came after Xi’s September 2020 announcement that China aims to reach carbon neutrality by 2060.²⁹ A few months later at the UN’s Climate Ambition Summit in December 2020, China updated its national determined contributions for 2030 (its commitments under the Paris Agreement), the originals of which had been submitted to the UN Framework Convention on Climate Change in 2015.³⁰ With these documents, China marked an important new era of climate change compromises. In this update, Beijing set the goals of increasing its share of nonfossil fuels in primary energy and enlarging its installed capacity of wind and solar power to 1,200 gigawatts by 2030.³¹

Even though China has expressed commitments to diversify its energy mix, Beijing still has supported the construction and financing of carbon-intensive energy infrastructure domestically and overseas, especially through BRI projects. According to the author’s calculations based on a database from Boston University’s Global Development Policy Center, as of 2021, China has been involved in the construction of more than 56 gigawatts worth of coal-fired energy stations worldwide since 2000.³² The same database shows that these coal-fired plants account for more than 42 percent of the total global power capacity that Chinese policy banks and companies have invested in and financed between 2000 and 2021.³³ In terms of regional distribution, Chinese overseas finance and investment in coal-fired plants have mainly focused on Southeast Asia, South Asia, and Africa, while Latin America is a key recipient of investment and finance in hydroelectric and renewable power.³⁴

Powerful Chinese SOEs predominate when it comes to coal-fired power and hydroelectric projects, while the leading Chinese enterprises for renewable power that are competing globally tend to be smaller, privately owned firms.³⁵ And although most BRI energy projects focus on coal, oil, and gas, the number of renewable energy projects and investments overseas is starting to grow.³⁶ In particular, foreign direct investment (FDI) in the form of greenfield ventures as well as mergers and acquisitions account for most of the overseas, low-carbon energy projects that Chinese actors have invested in.³⁷ China’s policy banks provide loans for these projects through the BRI, while Chinese companies are offering both types of FDI to bankroll renewable energy projects around the world.³⁸

The Chinese government's recent initiatives reflect this increasing focus on green development through the BRI. Chinese officials have promoted new initiatives—such as the BRI International Green Development Coalition, the BRI Green Cooling Initiative, the BRI Green Light System, and the BRI Environmental Big Data Platform, as well as the adoption of the BRI Green Investment Principles. The Second BRI Forum in Beijing in April 2019 reinforced all these initiatives. In 2017, China's Ministry of Environmental Protection (now known as the Ministry of Ecology and Environment) published documents in support of these goals, including the “Belt and Road Ecological and Environmental Cooperation Plan” and the “Guidance on Promoting Green Belt and Road.”^{39,40}

Like in other parts of the world, Chinese projects across Latin America have been criticized for their adverse environmental and social impacts. Three such projects are the China-funded Coca Codo Sinclair Dam project, a hydroelectric dam east of the Ecuadorian capital of Quito; the Rositas Dam project, a controversial dam that was meant to be a joint venture between the Bolivian energy agency and a Chinese consortium; and the Kirchner and Cepernic hydropower dams in Argentina.⁴¹ In these and other countries, protesters have mobilized to exert pressure on Chinese investors to strengthen their compliance with host countries' laws and regulations on environmental protection.

In response, a variety of Chinese actors and institutions have strived to implement this top-level policy guidance. For instance, the BRI International Green Development Coalition convened a group of Chinese and international advisers and experts, whose recommendations were included in a December 2020 report. These experts proposed a system to categorize China's overseas investments, so as to consider their impacts in terms of pollution, the climate, and biodiversity.⁴² The proposal states that BRI investments should be classified as red, yellow, or green projects, according to whether they cause irreversible environmental harm, moderate impacts, or no significant negative impact and whether they support the climate goals of the Paris Agreement.

Furthermore, more than thirty centrally controlled SOEs have set targets and action plans in response to climate change. The Chinese regulators of the State-Owned Assets Supervision and Administration Commission are expected to provide policy implementation guidance for these firms soon.⁴³ In addition, Chinese national oil companies have already begun to formulate strategies to respond to climate change and adapt to the energy transition.⁴⁴ To complement its commitments to countering climate change, China has updated its 2015 catalogue of eligibility terms for green bonds and has restricted projects classified as “clean coal” from applying for these bonds—meaning that green finance will no longer be provided for “clean coal” and secondary oil and gas extraction projects. Instead, such funding will be channeled to efforts to replace coal with cleaner forms of energy, including projects involving renewable energy; carbon capture, utilization, and storage; and clean heating in rural zones, among others.⁴⁵ Meanwhile, the Industrial and Commercial Bank of China (ICBC) has declared that it will elaborate strategies to disengage from coal financing.⁴⁶ Additionally, in November 2021, the State Council announced that it would provide a new lending mechanism

worth \$31.4 billion to support what it bills as clean coal projects and to help Chinese actors reduce emissions and pursue carbon neutrality.⁴⁷

There have been other developments as well. In July 2021, the Ministry of Commerce and the Ministry of Ecology and Environment issued the “Guidelines for Green Development in Foreign Investment and Cooperation.” The document encourages Chinese firms to integrate green development in their overseas investment, including for projects under the BRI, and to adhere to relevant international rules and standards.⁴⁸ In September 2021, the Bank of China proclaimed that it would no longer provide financing for new coal mining and coal power projects outside China, starting in the fourth quarter of 2021.⁴⁹ The announcement follows Xi’s pledge at the 2021 UN General Assembly that China would not build any new coal-fired energy projects abroad.⁵⁰

In this same spirit of helping combat climate change, China shifted focus and began investing more in renewable projects than in fossil fuels for the first time in 2020.⁵¹ Still, as Kong and Gallagher have noted, the international demand for development financing from the two major Chinese policy banks for solar and wind power remains quite limited.⁵² Requests to finance solar and/or wind projects still are low priorities compared to those for coal-fired power or large-scale hydropower projects. In this complex environment, Argentina has become a relevant recipient of Chinese investment and finance in Latin America to deploy solar and wind power. For its part, China has seized this opportunity to participate in Argentina’s energy transition strategy.

China–Latin America Economic Ties and the Case of Argentina

The demand for fuels, energy, foodstuffs, and basic products has been a key driver of China’s engagement in Latin America in the twenty-first century. Being rich in natural resources, Latin American countries have emerged as significant providers of these resources and products for China, but they also have become important destinations for China’s industrial products and, more recently, its investment and lending.⁵³

Trade between China and Latin America has grown by leaps and bounds in the past two decades, from \$12 billion in 2000 to around \$315 billion in 2020.⁵⁴ In 2019, Latin American countries collectively shipped \$141.5 billion in goods to Chinese buyers and imported \$161.7 billion in Chinese exports.⁵⁵ Due to the coronavirus pandemic, in 2020, Latin American exports to China totaled \$165 billion, while China exported around \$150 billion in goods to countries in the region.⁵⁶ Because of the global economic downturn, aggregate gross domestic product (GDP) in Latin America and the Caribbean fell 6.8 percent in 2020, registering as the worst economic performance in the developing world.⁵⁷ These trends notwithstanding, as trade with China held steady, the region’s trade flows grew to encompass higher levels of the region’s GDP: exports and imports rose 3.2 percent and 3.8 percent, respectively, as a share of regional GDP.⁵⁸

Most of South America's exports to China have been raw commodities, especially soybeans, copper ores and concentrates, crude petroleum oil, and iron ores and concentrates, while the region mainly imports industrial products.⁵⁹ As a result, most Latin American countries show negative merchandise trade balances with China—except for Brazil, Chile, and Peru.⁶⁰ China ranks as a leading source of these countries' imports and is also one of their top export markets.⁶¹ Amid U.S.-China trade tensions, China's demand for South American commodities has accelerated since 2017, especially for beef and soybeans.⁶² Soybeans are one of Argentina's major exports—in fact, they are produced almost exclusively to be exported—and China is the principal destination for this product and is Argentina's second-largest trade partner.⁶³ Notably, China's leading state-owned food and agribusiness conglomerate is a leading buyer of Argentina's grain exports and is one of the main purchasers of soybeans and biodiesel.⁶⁴

Moreover, Latin American nations have become sizeable recipients of Chinese global investment too, accounting for nearly \$160 billion between 2000 and 2020.⁶⁵ Consider the case of the Community of Latin American and Caribbean States (CELAC), a regional cooperation forum that China has prioritized to enhance its relations with Latin American countries and advance their engagement with the BRI. In Beijing, at the first ministerial meeting of the China-CELAC Forum in 2015, Xi ambitiously pledged that, between 2015 and 2025, Chinese firms would aim to invest \$250 billion in Latin America.⁶⁶ According to Enrique Dussel Peters, Chinese investments in Latin America totaled \$79.8 billion between 2015 and 2020.⁶⁷

The drop in international prices of raw materials due to lower demand in China, together with the economic recession of 2015 and 2016 in Latin America (mainly in Brazil), adversely affected the trajectory of Chinese capital flows to Latin America. In 2016, Chinese investment registered its lowest level in some time, accounting for 4.7 percent of the region's total investments.⁶⁸ By 2019, this figure had rebounded to 10.8 percent of Latin American total investments. However, in 2020, because of the pandemic and its economic fallout, Chinese investments fell again, accounting for an estimated 9.8 percent of the region's total investments.

Meanwhile, announcements of Chinese companies' greenfield investments in Latin America fell dramatically due to the pandemic-triggered economic downturn, from more than \$13.4 billion in 2019 to \$2.5 billion in 2020.⁶⁹ From a sectoral perspective, extraction and processing represented \$1.4 billion, infrastructure accounted for \$700 million, and manufacturing comprised a good share of the remaining amount.⁷⁰ Of late, Chinese investment has begun to be concentrated in mergers and acquisitions, or brownfield investments, a trend that reflects changes in ownership as Chinese firms have increasingly bought existing assets outright around the world, including in Latin America.

Between 2010 and 2014, Argentina and Brazil accounted for 61.2 percent of Chinese investment in Latin America, but this figure fell to 17.6 percent in 2020.⁷¹ Conversely, Chile, Colombia, Mexico,

and Peru have gained relevance since 2017, with Chile, Colombia, and Mexico accounting for 76.9 percent of Chinese investment in the region in 2020. Between 2005 and 2009, Chinese investment flows to Latin America and the Caribbean concentrated in raw materials, accounting for 94.7 percent of the total amount, but this figure plummeted to 58.9 percent between 2015 and 2020.⁷² Notably, the proportion of Chinese investment that went to services and domestic-oriented ventures rose from 1.3 percent from 2005 to 2009 to 25.8 percent from 2015 to 2020.⁷³ Between 2000 and 2020, Chinese investment in energy, telecommunications, automotive parts, and electronics vaulted ahead of Chinese investment in metals, minerals, and mining in Latin America.⁷⁴ Nonetheless, infrastructure projects continue to dominate both mergers and acquisitions as well as greenfield deals, particularly in the electricity sector.

In the case of Argentina, Chinese investment in the soy industry covers all stages of the production chain from the provision of inputs (including agrochemicals, fertilizers, and seeds) to storage facilities, as well as pressing and processing plants (including those for producing biodiesel), transportation (through the ownership of ports), and commercialization.⁷⁵ This increasingly diversified Chinese investment in Argentina now also includes sectors and industries like finance, meat, automotives, retail, fishing, and telecommunications. Chinese companies have invested in strategic Argentinian economic sectors as well, such as oil and gas, mining, construction, logistics and transportation, and (more recently) alternative energy.

As part of its new global strategy, China has become a leading source of financing for Latin American countries. From 2005 to 2019, the CDB and Exim Bank of China provided the region with more than \$137 billion in loans, exceeding the combined financing of the World Bank, the Inter-American Development Bank, and the CAF–Development Bank of Latin America.⁷⁶ Compared to financing from the World Bank and the International Monetary Fund (IMF), these two Chinese policy banks' lending is less concessional: they offer higher interest rates, shorter maturity windows, and shorter grace periods.⁷⁷ However, since almost all Chinese loans have some degree of concessionality, and the interest rates and grace periods that the Chinese policy banks apply to borrowing countries vary according to their ability to repay the loans, the attractiveness of Chinese lending is higher than market sources of finance, especially for developing countries.⁷⁸

This is particularly unusual in Latin America, where governments often have historically sought to attract concessional loans. Chinese loans have focused mainly on energy, mining, and infrastructure projects. China's policy banks provide financing to various countries in the region, but a specific subset of nations—Argentina, Brazil, Ecuador, and Venezuela—have been the focus since 2005.⁷⁹ However, in 2020, for the first time in many years, neither the CDB nor the Exim Bank of China committed new loans or credit lines to Latin American countries. Instead, these Chinese lenders focused on renegotiating existing debts, particularly with Ecuador and Venezuela.⁸⁰ As for Argentina, a bilateral currency swap agreement worth \$18.2 billion was renewed in August 2020.⁸¹

Though state-to-state financing to the region has been decreasing, China has begun to expand and test other sources of bilateral and regional lending.⁸² Additionally, China's four major commercial banks—the ICBC, the Bank of China, the Agricultural Bank of China, and the China Construction Bank—have also become relevant players in Latin America, as they provide commercial and trade financing as well as retail banking services.⁸³

The 2013 launch of the BRI has intensified this new era of economic engagement between China and Latin America. Nineteen Latin American countries had signed BRI-related memorandums of understanding (MOUs) as of July 2020, not long after Beijing formalized Latin America and the Caribbean as a “natural extension” of the BRI's maritime route in 2017.⁸⁴ Argentina, Brazil, Colombia, and Mexico have not yet formally signed such MOUs.⁸⁵ Jointly, these four countries along with Chile and Peru make up the six largest economies in Latin America.⁸⁶ That said, the Argentinean ambassador to China announced that the country has decided to formally join the BRI during a still-to-be-confirmed presidential state visit to China.⁸⁷ Between 2019 and 2021, Argentina, Brazil, Ecuador, and Uruguay also became members of the Beijing-backed Asian Infrastructure Investment Bank, a multilateral development bank that formally opened for business in 2016.⁸⁸

Of all the opportunities that the BRI could open for Argentina, enhanced bilateral relations with China is the most salient one for further deepening the countries' comprehensive strategic partnership.⁸⁹ This could help Argentina attract further Chinese involvement on national and regional projects, such as financing for railways and roads to connect rural and urban parts in the country and bioceanic corridors and roads to link Argentina to other countries in South America.⁹⁰ In addition, Argentina's move to sign on to the BRI could help Argentina diversify the range and possible destinations of its exports to China and other countries participating in the BRI.⁹¹

Nonetheless, there are challenges to Argentina's joining the BRI, namely the strategic rivalry between China and the United States. The U.S. government has repeatedly expressed its concerns about Argentina's potential involvement in the BRI, the deployment of 5G and other advanced technologies by Chinese high-tech companies, the provision of financing for Argentina's fourth nuclear plant with Chinese technology, or further Chinese aid in public health through the Health Silk Road.⁹² These diplomatic tensions have put pressure on Argentina, as the country has obtained financing from both the IMF and Chinese policy and commercial banks. The challenges of joining the BRI also involve facing further trade imbalances, economic inequities, and financial dependence on China.⁹³

Chinese Involvement in Argentina's Solar and Wind Power Sectors

Though Argentina's efforts to embark on an energy transition began in the late 1990s, this push has become a major priority in the twenty-first century and especially since 2015. Argentina has set

specific policies to shift its energy usage by seeking foreign investments in its wind, solar, small-scale hydroelectric, and bioenergy sectors, as well as the development of alternative energies, such as nuclear plants, large hydropower facilities, and hydrogen power. According to the Argentinean Ministry of Environment and Sustainable Development's latest report, the country will, in the run-up to 2030, further promote energy efficiency, renewable energy, and distributed generation while using natural gas as a transition fuel.⁹⁴

Thus, Argentina is committed to a hybrid energy transition that combines different elements—gas, renewable energy, and added efficiency—through the expansion of its traditional, centralized production system and the incorporation of alternative energy sources.⁹⁵ Argentinian leaders want to decrease the country's reliance on fossil fuels (and its carbon footprint) and deploy more nuclear power, hydroelectric power, and renewables. The Argentinian government envisions an energy matrix characterized by social inclusiveness, macroeconomic stability, energy sovereignty, dynamism in energy generation, efficient transport and consumption, geographical diversification, and environmental sustainability.⁹⁶ To achieve those goals, Argentina will seek to reduce its electricity and gas consumption by as much as 8.5 percent by 2030 and expand the country's installed power-generation capacity between 2022 and 2030. "Low-emission energy sources" will make up 90 percent of this new installed capacity.⁹⁷ In addition, energy consumption that is now met by liquid oil derivatives will instead use natural gas, while measures will be taken to promote the production and exporting of hydrogen.

The share of renewables in Argentina's total energy generation has increased since 2015. Even so, 61.4 percent of the country's total electricity generation is still derived from fossil fuels, while 21.7 percent comes from large hydropower stations, 7.5 percent from nuclear power, and 9.5 percent from renewable sources (including wind, solar, bioenergy, and small hydropower facilities).⁹⁸ According to a study by Diego Calvetti and four co-authors, Argentina has already made an important step forward, since renewables' installed capacity represented less than 2 percent of the country's primary energy grid before 2015. As the country's installed capacity of renewables has expanded since then, the country has been able to supply 10 percent of its demand for electricity using renewables.⁹⁹

Argentina has already installed more than four gigawatts in energy-generating capacity from renewable sources.¹⁰⁰ According to a recent report issued by the Secretariat of Energy, there are two potential paths for expanding the country's installed energy-generation capacity by deploying more renewables in the run-up to 2030. In the first scenario, Argentina would need to add 8.7 gigawatts of installed capacity to reach a goal of depending on renewables for 20 percent of its energy-generating capacity by the end of 2030, a task that would require \$422 million annually.¹⁰¹ In the second scenario, renewables would be deployed more quickly. Argentina would need to add more than 11.8 gigawatts of installed capacity to reach a goal of generating 30 percent of its energy from renewables by the end of 2030, a feat that would require \$751 million annually.¹⁰²

In this spirit, in Glasgow at the 2021 UN Climate Change Conference, Argentina introduced its long-term energy strategy to reduce heat-trapping gas emissions and reach carbon neutrality. The country also updated its national determined contributions, adding a 2 percent target to the commitments it assumed in 2020, according to Argentinian Minister of Environment and Sustainable Development Juan Cabandié.¹⁰³ Additionally, President Alberto Fernández proposed a debt swaps mechanism for climate action and announced Argentina's commitment to crafting an energy grid that embodies the aforementioned values listed in the Secretariat of Energy's October 2021 report.¹⁰⁴

As for Argentina and China's cooperation on the energy transition, Argentinian officials' decision to sign on to the BRI could enhance the presence of Chinese actors in the Argentinian renewable energy sector, as China seeks to intertwine its engagement in Latin America with the deployment of the Green BRI. More broadly, this decision could help Chinese actors get more involved in Argentina's alternative energy sectors and invest in the country's hybrid strategy to navigate its energy transition. Furthermore, the promotion of Chinese investment in Argentina through the BRI has the potential to facilitate an economic recovery from the pandemic based on goals for sustainable development and the energy transition.

That said, Argentina faces the challenge of designing and implementing a long-term national energy plan, one that addresses local and provincial needs too. Argentina must determine how much its role in the BRI and cooperation with China will align with Argentinian policymakers' vision for the energy transition, adhere to its domestic standards and capabilities, and enhance China's participation in the country's renewable energy sector in ways that allow Argentina to harness Chinese know-how, to innovate, and to develop technological capacities of its own.

Argentina's nonengagement with the BRI to date has not impeded increasing Chinese overseas investment and financing for renewable energy projects in the country. The diplomatic outreach of Argentinian national and certain provincial officials, as well as corporate players' push for local associations, has been central to attracting Chinese interest in Argentina's solar and wind power sectors. The inclusion of renewable energy as a target for Chinese investment reflects this newfound Argentinian agency, both at the central and local levels.

The promotion of renewables in Argentina began in 1998 with the adoption of Law 25.019, which stated that it was in the national interest for the country to generate electric power through solar and wind energy.¹⁰⁵ This law also established the first capital investment regime for the installation of solar and wind power plants and equipment. Later, based on the compromises brokered at the 2004 International Conference for Renewable Energies in Bonn, Germany, the Argentinian government enacted Law 26.190 in 2006, creating a regime to promote the use of renewable energy.¹⁰⁶ According to a report issued by the Secretariat of Energy, Law 26.190 again declared that the country had a national interest in generating electric power with renewables. The law also promoted research on the

development of technology and the local manufacturing of equipment designed to harness these energy sources.¹⁰⁷ Law 26.190 set the additional goal of generating 8 percent of the country's total electric power consumption through renewables by the end of 2017.

To accomplish these goals, in 2009 the Argentinian government established a new national program called *Generación por Energías Renovables* (GENREN). It sought to encourage the provision of electricity from renewable sources through supply contracts involving a complex array of state administrative bodies and companies. Its partner companies included an Argentinian company known as the *Compañía Administradora del Mercado Mayorista Eléctrico S.A.* (CAMMESA) and an SOE called *Energía Argentina S.A.* (ENARSA).¹⁰⁸ Although some public tenders were issued, the program was plagued by recurring problems that limited its effectiveness.

The GENREN program failed for several reasons. Of the roughly 1,000 megawatts in projects awarded under the program, only 10 percent were completed due to Argentina's high indebtedness and scarce access to foreign finance.¹⁰⁹ In addition, investors could not get the needed guarantees to make such investments in renewable energy projects.¹¹⁰ Export controls also made it more difficult for Argentina to import necessary technologies and equipment from abroad, hampering the development of renewable energy in the country.¹¹¹

By 2015, the Argentinian government had enacted Law 27.191, creating a national regime for promoting electricity generation from renewables and introducing important changes to the regulations enshrined in Law 26.190. This new law was in line with the government's goals of developing clean energy resources, diversifying the country's national energy grid, and improving energy efficiency by using renewables for electricity generation. The purpose of this new energy regime was to ensure that energy generation from renewable sources accounted for 20 percent of Argentina's total national energy consumption by the end of 2025, with intermediate targets of 8 percent by the end of 2017, 12 percent by the end of 2019, 16 percent by the end of 2021, and 18 percent by the end of 2023, respectively.¹¹² (As mentioned earlier, Argentina already meets 10 percent of its demand for electricity with renewables.¹¹³)

Based on Argentina's commitments under the Paris Agreement, which the government ratified through Law 27.270 in 2016, the country pledged to adopt measures against climate change and further advance the country's overall energy transition through renewables.¹¹⁴ Argentina launched the *RenovAr Program*—a national program involving regular, open calls for auctions in several rounds through which national and multinational corporations could present investment proposals for renewable energy projects.¹¹⁵

These laws, particularly the last one, opened the door for Chinese investment in renewables in Argentina. As Argentinian officials pushed forward on renewable energy, attracting foreign invest-

ment became a major focus, and China was viewed as a promising investor. At the national level, the Argentinian government launched auctions for renewable energy projects. According to data published by the Argentinian Secretariat of Energy, a diverse range of Chinese companies participated in the official calls for auctions under RenovAr in 2016, in rounds 1 and 1.5.¹¹⁶ All told, Chinese firms were awarded 29 percent of the total renewable energy projects in these rounds.¹¹⁷

Wind power projects were a particular focus in round 1, with the Argentinian government awarding a contract to the Chinese enterprise Envision Energy to construct the Los Meandros wind farm in Confluencia in Neuquén Province; this farm would generate 75 megawatts of power and would later be expanded.¹¹⁸ Envision was also awarded contracts to construct other wind farms, including the García del Río wind farm in Bahía Blanca in Buenos Aires Province (inaugurated in December 2019 with a 10-megawatt power-generating capacity), the Vientos Del Secano wind farm in Villarino in Buenos Aires Province (inaugurated in November 2020 with a 50-megawatt power-generating capacity), and the Cerro Alto wind farm in Pilcaniyeu in Río Negro Province (with a 50-megawatt power-generating capacity).¹¹⁹ Originally, the Cerro Alto project was supposed to be co-financed by the Inter-American Development Bank, but (as addressed below) it was later merged with Los Meandros. Additionally, in round 1.5, the Sinohydro Corporation was awarded the bid to construct the Pampa wind farm in Buenos Aires Province (with a 100-megawatt power-generating capacity).¹²⁰

Out of the total of 1,472 megawatts in wind-power contracts awarded in rounds 1 and 1.5 of the RenovAr auctions, two Chinese companies captured 285 megawatts (19 percent).¹²¹ However, this enthusiasm was short-lived: by 2018, Envision Energy had suspended the Cerro Alto project and merged it with Los Meandros.¹²² Although this increased the project's size to 125 megawatts of power capacity and while construction began in February 2019, it has not yet been inaugurated.¹²³ Meanwhile, Argentina canceled the project it had awarded to Sinohydro because of noncompliance with commitments assumed in the contracts stemming from delays in the start of the construction phase.¹²⁴

As for Argentina's foray into solar power, various Chinese companies have participated in rounds 1 and 1.5 of the RenovAr auctions. For instance, as a result of the first round, an Argentinian state-owned firm called Jujuy Energía y Minería Sociedad del Estado (JEMSE) was awarded the tender to construct a three-part solar park complex in Cauchari in Jujuy Province, with a total power-generating capacity of about 315 megawatts.¹²⁵ And while JEMSE is the designated contractor on this project, the design, construction, and operation of the park is slated to fall to two Chinese companies, the Power Construction Corporation of China (also known as PowerChina) and the Shanghai Electric Power Generation Group (also known as Shanghai Electric), with Talesun providing the panels.¹²⁶

As in the case with certain dams in Patagonia (addressed below), a temporary bloc of enterprises including JEMSE, PowerChina, and Shanghai Electric was selected to develop the park. A total of \$331.5 million was financed by the Exim Bank of China, while the provincial government additionally

issued a green bond for \$210 million.¹²⁷ The total cost of the Cauchari solar park was calculated to be around \$540 million.¹²⁸ The park was inaugurated in October 2019, with commercial operations beginning in September 2020; it is the biggest solar project in all of South America.¹²⁹ In April 2021, JEMSE announced the signing of a precontract with Power China and Shanghai Electric to expand the Cauchari solar park to 500 megawatts.¹³⁰

In addition, during round 1.5 of the solar auction, Jinko Solar was awarded a contract to construct the Iglesia Estancia Guafizuil solar park in San Juan Province (with 80 megawatts of power-generating capacity), a project that was inaugurated in May 2019. For this project, IDB Invest (a private-sector affiliate of the Inter-American Development Bank) provided about \$10.8 million, while other international lenders granted loans for around \$39.4 million.¹³¹ Out of the 916.2 total megawatts awarded in rounds 1 and 1.5 of the solar power auctions, Chinese enterprises through direct and indirect participation captured 45 percent of the projects for constructing solar parks in the country.¹³² It is important to note that in rounds 1 and 1.5, 97 percent of the projects awarded were for solar and wind power generation, while the remaining 3 percent was distributed between biogas, biomass, and small-scale hydroelectric power projects.¹³³ Of the 97 percent of projects awarded for solar and wind power generation, China accounted for 29 percent, followed by Spain, which garnered 17 percent; the remaining 54 percent was distributed among sixteen firms from Argentina and other countries.¹³⁴

In Argentina's wind-power sector, Chinese firms have focused on not just tenders but mergers and acquisitions too. In 2017, the private Chinese firm Goldwind acquired the Loma Blanca I, II, and III wind farms (with 50 megawatts of power-generating capacity each), as well as the Loma Blanca IV wind farm (with 100 megawatts of power-generating capacity). These parks are located in Rawson and Trelew in Chubut Province.¹³⁵ Goldwind's acquisition streak has extended to other projects too, such as the Miramar I wind park (with 96 megawatts of power-generating capacity) in Miramar in Buenos Aires Province.¹³⁶ Goldwind contracted with Power China on an engineering, procurement, and construction contract to build the facilities of the five plants. In April 2021, the three wind farms of the Loma Blanca complex, as well as Miramar I, began operating.¹³⁷

Nor was Goldwind the only Chinese player that stepped up during this period to meet Argentina's intensifying wind power needs. In 2015, the Argentinian enterprise CAMMESA; the then Ministry of Federal Planning, Public Investment, and Services (now called the Ministry of Public Works); and the Chinese government signed an agreement with Sinowind Technologies for the development of the El Angelito wind park (with a 200-megawatt power-generating capacity) in Chubut Province, a project that would be entirely financed by Chinese entities (although this project has not been executed nor has it moved beyond the aspirational phase).¹³⁸ Likewise, Canadian Solar, the owner of Argentina's Cafayate solar park (with 100.1 megawatts in power capacity) in Salta Province, contracted with Power China as well to make the Chinese firm the engineering, procurement, and construction partner on its project. This park was inaugurated in July 2019.¹³⁹

China's expanding investment and financing for renewable energy projects in Argentina has led to a much larger corporate footprint in the sector over the last five years. Chinese firms are now core investors in the country's renewable power plants. Even when Chinese entities are not the principal financiers, many renewable projects in Argentina rely on the deployment of cutting-edge Chinese technologies, such as wind turbines, photovoltaic cells, and modules. Chinese energy companies, through the Going Out strategy, have merged their expansion interests with Argentina's own aim of advancing toward a more diversified and sustainable energy grid and fuel mix. Based on these achievements, it is vital to enhance future cooperation with China—through the BRI, for instance—in ways that let Argentina harness Chinese know-how in renewable energy and develop innovative scientific and technological expertise of its own.

Argentina and China also need to cooperate more on transmission infrastructure. As addressed below, Chinese counterparts have shown interest in such collaboration, but further efforts are needed. For example, round 3 of the RenovAr auction did not attract the interest of large Chinese companies or other global firms that had submitted proposals in previous rounds due to the scale of the projects. RenovAr's third round focused on taking advantage of local distributors' available capacities in medium-voltage networks, since the country's electricity transmission system presented obstacles to new auctions—this problem was practically the same as it was in 2015. The main reason leading to the suspension of larger projects in round 3 of the RenovAr program was that Argentina had insufficient transmission infrastructure, especially in medium- and high-voltage grid lines. Since little investment has been made in transmission infrastructure in recent years, these difficulties will continue to be pressing until the network is expanded.¹⁴⁰

Unlike many other countries where China has invested in renewable power, Argentina has attracted all this investment without yet formally joining the BRI, although Argentinian officials have reported publicly that the country has already decided to do so in time.¹⁴¹ Argentina has sought all this investment not only by cultivating ties involving national decisionmakers but also by developing extensive local linkages with Chinese entities. This has been the case for Chinese investment and financing in Argentina's renewable energy sector and on other nonrenewable projects.

China's Role in Argentina's Broader Political Economy of Energy

China not only has become a relevant actor in Argentina's renewables sector but also has expanded its investment and financing to other types of energy and industrial projects, which include nuclear plants, transmission lines, major hydropower dams, and lithium mining. These ventures reflect China's interest in diversifying markets around the world, but they also are a result of Argentina's own desire to attract Chinese capital to advance its energy transition.

Chinese investment in the Argentinian energy sector dates back to 2010, when two of the three major Chinese state-owned oil and gas conglomerates, the China National Offshore Oil Corporation (CNOOC) and the China Petroleum and Chemical Corporation (Sinopec), invested in the country's oil and gas sector. In 2010, CNOOC acquired a 50 percent stake in the Argentinian company Bidas, which had jointly created Pan American Energy in 1997 with Amoco (which is now part of BP after a merger with British Petroleum).¹⁴² In 2017, Bidas, BP, and CNOOC announced an agreement to merge their operations, thus creating the Pan American Energy Group.¹⁴³ The joint venture also began participating in fracking operations in the shale oil and gas field at the Vaca Muerta formation. After the agreement was implemented, the Pan American Energy Group became the largest privately owned oil and gas firm in Argentina (in terms of production capacity) and the second-largest of any such firm in the country, after the state-owned Argentinian company known as Yacimientos Petrolíferos Fiscales.¹⁴⁴

There were other acquisitions too. In 2010, Sinopec acquired the Argentinian subsidiary known as Occidental Petroleum, which is now the fifth-largest oil and gas enterprise operating in the country.¹⁴⁵ In June 2021, the Argentinian enterprise Compañía General de Combustibles acquired the Argentinian business of Sinopec, including operations in the San Jorge Gulf Basin in Patagonia and holdings in the Cuyana Basin in the province of Mendoza. The deal also involves Sinopec's stakes in Termap, which is in control of two oil port terminals in southern Patagonia.¹⁴⁶

More recently, Argentina has sought Chinese support to promote the deployment of infrastructure for several types of energy generation. China is set to invest in the construction of multiple natural gas pipelines in several Argentinian provinces, including one project named after former president Néstor Kirchner. The plan is to connect the Vaca Muerta field in Neuquén Province and Buenos Aires Province; in a second phase, the project is designed to link Vaca Muerta and the Brazilian city of Uruguaiana before continuing on to the city of Porto Alegre to connect with pipelines in southern Brazil.¹⁴⁷ In August 2021, the Argentinian government decided to assign more than \$1.5 billion from the national coffers to begin the construction of some of these projects, until negotiations with China on providing further financing are concluded.¹⁴⁸ Over the next three years, these natural gas projects will require an estimated total investment of around \$3.5 billion; the pipeline named after Kirchner would cost about \$2.5 billion, and the project will require additional funding beyond what the government has already allocated.¹⁴⁹

Argentina's Secretariat of Energy signed an MOU in May 2021 with PowerChina and Shanghai Electric to study the feasibility of building a set of major gas pipelines to help transport gas across the country and as far as southern Brazil.¹⁵⁰ The project would be led by the two aforementioned Chinese companies and financed by Chinese banks. In addition, Argentina and China signed new agreements in December 2020 to renovate the Belgrano Cargas railway (in northern Argentina) and the San Martín Cargas railway, as well as an MOU to obtain financing for the Norpatagónico rail-

way. The China Railway Construction Corporation and the China Machinery Engineering Corporation would lead these projects.¹⁵¹ These railways are vital to the transport of oil and other resources from Argentina's provinces to its ports.

China has also demonstrated interest in investing in electric transmission lines in the metropolitan area of Buenos Aires, as the Secretariat of Energy announced that it has signed a contract with the State Grid Corporation of China for this project.¹⁵² Chinese firms may also participate in the renovation of a high-voltage power line that connects the Futaleufú Dam with the city of Puerto Madryn in Chubut Province.¹⁵³ This hydroelectric plant supplies electricity for the Aluar aluminum factory near Buenos Aires. Among many other potential projects is the installation of the Manuel Belgrano II Thermal Power Plant in Buenos Aires Province, which would provide additional power to the electrical system.

Notably, there have been two controversial energy projects in Argentina involving Chinese companies. The first one concerns a potential engineering, procurement, and construction contract between the Argentinian company Nucleoeléctrica Argentina S.A. and the China National Nuclear Corporation; Nucleoeléctrica would operate the plant and would be the owner.¹⁵⁴ Preliminary agreements for the construction of two nuclear plants—Atucha III and IV—in Argentina had been signed during the presidency of Cristina Fernández de Kirchner in 2014 and 2015.¹⁵⁵

The plans have since gone through many twists and turns. At first, the plan was for Atucha III to be constructed in Zarate, in Buenos Aires Province, and to feature a nuclear reactor with Canadian technology known as a Canada Deuterium Uranium (CANDU) reactor, which uses natural uranium; this technology has been employed for more than forty years in one of Argentina's three existing nuclear plants, the Embalse plant in Cordoba Province.¹⁵⁶ As for Atucha IV, the original plan was to build it using a Chinese reactor called the Hualong One, which uses enriched uranium, in the province of Rio Negro; but this location was later discarded when the province prohibited the installation of nuclear reactors.¹⁵⁷

Though an MOU was signed in 2016 to move forward with both nuclear plants, the government of former president Mauricio Macri decided to advance the negotiations on the plant that would employ Chinese technology (Atucha IV), while discarding the plans for the other one (Atucha III) to reduce fiscal spending amid Argentina's economic crisis.¹⁵⁸ Under the current Fernández presidency, the negotiations were rekindled. Argentina's fourth nuclear power plant will be built in Lima, in Buenos Aires Province, and will generate 1,200 megawatts of power.¹⁵⁹ According to the agreement, the ICBC will finance 85 percent of the project, with a grace period lasting until the plant is finished and a ten-year window of repayment, while the National Treasury will finance the remaining 15 percent.¹⁶⁰ In June 2021, Nucleoeléctrica approved a plan of action to restart negotiations to sign the commercial contract by the end of 2021 and begin construction by mid-2022.¹⁶¹ Meanwhile, Nucleoeléctrica announced that it would advance negotiations with Canada to build the fifth nuclear plant.¹⁶²

This project has been controversial for several reasons. For one thing, there has been a good deal of back and forth on whether to build one plant or two, as originally planned in the multiple agreements reached with China. According to Ricardo Bernal Castro, a former technician at the Argentinian National Commission of Atomic Energy, the two plants should be constructed simultaneously and be linked for financial and industrial reasons.¹⁶³ The acquisition of a Chinese light-water pressurized reactor, which uses enriched uranium for fuel, would not promote Argentina's industrial or technological sectors, as it is a turnkey project that uses technology the Argentinian nuclear sector has scarcely used before. By contrast, Argentina's three existing nuclear plants—Atucha I and II and Embalse—all use heavy-water pressurized reactors and have mainly used natural uranium for fuel.¹⁶⁴

Moreover, the project has proven controversial in light of the U.S.-China rivalry. The U.S. government has repeatedly expressed concerns about the technology that would be used in the Chinese-built nuclear plant and the financing of the project. During an April 2021 visit to Argentina, two high-ranking U.S. officials in President Joe Biden's administration reiterated these misgivings about the transparency of Chinese economic activities in Argentina.¹⁶⁵ The cancelation of one of the plants that Argentina and China had committed to building in 2014 and 2015 agreements, reportedly due to the budgetary constraints during Macri's presidency, came after the approval of a 2018 IMF rescue package for Argentina.¹⁶⁶ Third, though Argentina seeks to use nuclear energy as part of its energy plan, civil society organizations have expressed concerns about the environmental risks such projects may pose.¹⁶⁷ This helps explain why the provincial government of Río Negro canceled the proposed installation of the plant after local communities rejected the idea.¹⁶⁸

The second controversial case involves two ongoing hydropower projects in Santa Cruz Province: the Kirchner Dam (capable of generating 950 megawatts of power) and the Cepernic Dam (capable of generating 360 megawatts of power).¹⁶⁹ The two dams are being financed by the CDB, the ICBC, and the Bank of China. A temporary joint venture was formed between the China Gezhouba Group and the Argentinian companies Electroingeniería and Hidrocuyo to develop the dams.

The project has been widely criticized for its negative environmental and social impacts. Critics include several environmental organizations—such as the Fundación Ambiente y Recursos Naturales (FARN) and Aves Argentinas (Argentine Birds), among others—as well as Indigenous communities, local residents, and members of the scientific community. They point out that the dams could alter nearby flood valleys and lake levels, imperil the region's biodiversity, and put at risk historically significant archeological sites, while affecting the rights of nearby Indigenous communities that have not been previously consulted.¹⁷⁰

In 2017, the National Congress held a public hearing on the project at the request of the Supreme Court of Justice of the Argentine Nation. Although activists and scientists had warned the authorities not to go ahead with the project, the government decided to lift the precautionary measure presented

by concerned nongovernmental organizations (NGOs) and approve the environmental impact assessment (EIA). The NGOs requested that the project's EIA be nullified in 2017. After many twists and turns, in October 2020, the court recognized their claims and asked the national government to issue its opinion through three institutions, the Administration of National Parks; the Argentine Institute of Nivology, Glaciology and Environmental Sciences; and the National Institute for Seismic Prevention. Although they had thirty days to respond, as of December 2021, only two of them—the Administration of National Parks and the National Institute for Seismic Prevention—have submitted their reports.¹⁷¹ The environmental management plan for the dams has been suspended due to the pandemic, but the construction has moved forward without having the basic scientific information needed to weigh these environmental risks.

The successive delays due to these judicial, political, and technical issues went on for so long that the initial grace period (before loan repayment) elapsed. China had suspended the disbursement of the remaining loan amount—about \$1.7 billion of the \$4.7 billion total has already been disbursed—and the Chinese banks required Argentina to begin repaying the debt, although the dams remain uncompleted due to various errors and setbacks.¹⁷² According to the original agreement, Argentina was expected to begin making payments when the projects were finished and had begun selling electricity to generate income. In late October 2021, the Argentinian government negotiated an addendum to the contract and an extension of the payment period.¹⁷³ Meanwhile, in August 2021, the Argentinian government allocated \$170 million in funds for the joint venture in charge of the project to continue with the construction, until negotiations for the addendum to the contract were concluded; Chinese counterparts later pledged that the Chinese banks would restore the funds provided by CAMMESA and an infrastructure trust fund known as the Fondo Fiduciario de Infraestructura Hídrica.¹⁷⁴

As regrettable as the problems with the nuclear plant and the hydropower dams are, they have helped Argentina and China learn important lessons as they seek to address them. China has adapted to the back and forth on the potential construction of Argentina's fourth nuclear plant and has continued expressing its interest in financing and building the project. Chinese actors have also adapted to the successive delays in the construction of the hydropower dams in Patagonia; though they suspended the disbursement of the remaining loan amount due to breached contractual commitments, they proved willing to renegotiate and eventually extended the payment term.

As in other countries, the challenges that Argentina and China have encountered in these cases will continue to inform bilateral cooperation on energy projects. As noted above, Chinese actors and institutions are striving to address these adverse impacts and striving to improve their approach based on new policy guidelines. For its part, Argentina is continuing to deploy multiple sources of energy in pursuit of its national energy goals; these problems are part of the learning process that the country's overall push for a more diversified energy grid entails.

Lithium has been another major focus of Chinese investment in Argentina. This is not only because China seeks access to the country's lithium supply but also due to Argentina's interest in promoting energy efficiency through electric vehicles; to advance this cause, Minister of Productive Development Matías Kulfas recently presented a draft law before the Argentinian Economic and Social Council.¹⁷⁵ The Chinese firm Ganfeng Lithium, one of China's leading lithium producers, has invested in lithium extraction in northwestern Argentina. The company owns 51 percent of the Cauchari-Olaroz project in Jujuy Province jointly with Lithium Americas, which owns the remaining 49 percent.¹⁷⁶ The project remains on schedule, and production of battery-quality lithium carbonate is projected to begin by mid-2022.¹⁷⁷ Meanwhile, Ganfeng Lithium also owns the Mariana project in Salta Province, located in the Salar de Llullaillaco salt flat; the International Lithium Corporation has recently announced the sale of its remaining roughly 8.6 percent stake in the project.¹⁷⁸ Similarly, the Chinese enterprise known as the Hanaq Group is in charge of multiple projects involving lithium exploration and extraction in Salta and Jujuy.¹⁷⁹

These projects are important for China's electric vehicle ambitions. In February 2021, the Argentinian Ministry of Productive Development and Jiangsu Jiankang Automobile—an affiliate of the privately owned Guoxuan Group (one of China's largest lithium battery companies)—signed an MOU to produce urban electric vehicles and lithium batteries in Jujuy Province.¹⁸⁰ In May 2021, Argentina's minister of productive development and Jujuy Governor Gerardo Morales signed an MOU between Argentina's national government, the provincial government, and Ganfeng Lithium to install a lithium battery factory in Jujuy to promote electric vehicles in northern Argentina.¹⁸¹ In October 2021, the Zijin Mining Group announced an agreement to acquire the Canadian firm Neo Lithium, which owns the Tres Quebradas lithium project in Tinogasta in Catamarca Province.¹⁸² Another project involves a partnership between the French mining firm Eramet (with a 50.1 percent ownership stake) and the Chinese firm Tsingshan (49.9 percent), the largest maker of stainless steel worldwide. The project centers on a lithium site in Salta Province, with Tsingshan slated to inject \$400 million. The plant is projected to open by the end of 2023.¹⁸³

To promote the production of lithium batteries in Argentina, Kulfas, Secretary of Mining Alberto Hensel, and Yacimientos Petrolíferos Fiscales Chief Executive Officer Pablo González held a November 2021 meeting with Chen Junwei, the vice president of a Chinese firm known as Contemporary Amperex Technology Company Limited (CATL). In this meeting, they agreed to advance negotiations to associate Yacimientos Petrolíferos Fiscales' lithium subsidiary with CATL to jointly develop projects on lithium batteries production in Argentina.¹⁸⁴

These agreements and investments show how China and Argentina have encountered ways to cooperate in the development of a sector that both parties consider strategic. However, as addressed below, this partnership has encountered resistance, particularly at the local and provincial levels.

Local Linkages in Argentina-China Energy Engagement

In certain cases, links between Argentinian provincial and local governments and companies, on the one hand, and subnational Chinese counterparts, on the other, have been central to the two countries' agreements on energy projects, including ones involving lithium mining. Argentina's constitution grants provincial governments a significant degree of authority to make foreign policy.¹⁸⁵ In the spirit of enhancing local cooperation with Chinese counterparts, the Argentinian embassy in China has set a Subnational Federal Program that aims to further promote links between Argentinian and Chinese localities and provinces, based on mutual complementarities in terms of resource endowments and production profiles.¹⁸⁶

Both Argentinian policymakers and entrepreneurs at the subnational level—such as those in the provinces of Chubut, Jujuy, and Salta—have sought out Chinese financing. These actors have pushed for a more prominent Chinese presence in their localities to help spur economic development and aid in their respective energy transitions (in some cases) by harnessing solar and wind energy and (in others) by promoting lithium extraction and processing. However, in some cases, Chinese firms have encountered resistance to their presence from Indigenous communities who claim that projects involve environmental and societal risks that have not been fully considered.

Jujuy stands out as a prime example. Jujuy-based actors' interactions with Chinese counterparts have been a key driver of China's growing presence in the province, which includes partnerships and deals with Chinese companies. Apart from the Safe City project by the Chinese technology company ZTE, other prominent examples are the Cauchari solar parks project and the Cauchari-Olaroz lithium project.

As Jujuy's governor, Morales has been one of the strongest supporters of these ventures. Morales began to cultivate special relations with China immediately after becoming governor in December 2015. The first official meeting occurred in February 2016, when then Chinese ambassador to Argentina Yang Wanming visited Jujuy, after which Morales in turn visited China to discuss the development of the Cauchari solar park project.¹⁸⁷ These initial interactions nudged along the signing of an agreement between JEMSE, Shanghai Electric, and Power China in April 2016 for the financing and installation of a solar plant in Jujuy.¹⁸⁸

In June 2016, Morales' son, Gastón Morales, and multiple local entrepreneurs and policymakers visited China to advance collaboration on energy and technology projects.¹⁸⁹ In November 2016, the elder Morales and local authorities visited China; these initiatives helped promote the signing of the agreement between JEMSE, Shanghai Electric, Power China, and Talesun in May 2017 for the construction of the solar park, after JEMSE was awarded the bid in the RenovAr auction in 2016.¹⁹⁰ This development took place in the context of Macri's state visit to China in 2017; Morales and a

delegation of local policymakers and entrepreneurs, jointly with other governors, accompanied the president to seek further cooperation between China and Jujuy Province. The goal of enhancing the Chinese presence in Jujuy was achieved as, during this visit, the province's delegation secured the project's financing by the Exim Bank of China.¹⁹¹

Similarly, engagement between China and Jujuy was further extended by a burgeoning relationship with the Chinese province of Guizhou in 2018. A delegation from Guizhou visited Jujuy in November 2017, while Morales traveled to the Chinese province in May 2018—which is when the two provincial governments signed the agreement that established Jujuy and Guizhou as sister provinces.¹⁹²

The establishment of sister province ties between Jujuy and Guizhou was an important step toward the Jujuy government's objective of enhancing Chinese investment in the province's digital sector. In fact, once the agreement was signed, Jujuy's Secretary of Modernization Carlos Alfonso traveled to Guizhou in July 2018 with a delegation of local entrepreneurs to discuss further cooperation in strategic sectors such as technology.¹⁹³ By late 2018, Jujuy's ties with China had become so pronounced that the elder Morales joined the welcoming entourage for Xi when he visited Argentina for the G20 summit.¹⁹⁴

Local cooperation continued to grow stronger throughout 2019 and 2020, as Morales visited China to secure funding for the expansion of the Cauchari solar project in March 2019, while several virtual meetings were held in 2020 due to the pandemic.¹⁹⁵ These initiatives helped facilitate the April 2021 signing of the aforementioned precontract to enlarge the Cauchari solar plants and the May 2021 signing of the agreement with Ganfeng Lithium to install a lithium battery factory in the province. This outreach also promoted the agreement with Sinopharm for the provision of COVID-19 vaccines, with Jujuy being the first province in Argentina to achieve such a goal.¹⁹⁶

As for the environmental and social tensions due to the growing Chinese commercial presence in Jujuy, two cases are significant: the Cauchari-Olaroz lithium extraction project and Cauchari solar park. In the case of Cauchari-Olaroz, Jujuy is one of three Argentinian provinces to mine lithium, along with Catamarca and Salta.¹⁹⁷ At present, two projects produce lithium in Argentina for export: the first is in the Salar del Hombre Muerto salt flat on the border of Catamarca and Salta, while the second project is Sales de Jujuy in the Salar de Olaroz flats in Jujuy.¹⁹⁸ Meanwhile, the Cauchari-Olaroz project (the country's third) is located in the same salt flat as the Sales de Jujuy project; this venture is still under construction and is due to begin production in 2022.¹⁹⁹ The Cauchari-Olaroz project is operated by Minera Exar, which is co-owned by the Canadian firm Lithium Americas and Ganfeng Lithium.²⁰⁰

The area where the Cauchari-Olaroz project is being constructed is home to six Indigenous communities that belong to the Atacama ethnic group.²⁰¹ These communities have expressed concerns about

new lithium mining projects. They point out that they are being forced to move due to shortages of potable water, as these projects use irritants in the production process that deplete water resources and affect flora and fauna; meanwhile, soil erosion, the construction work, and the presence of trucks also have had an impact on the area's water supply, animals, and plants.²⁰²

Indigenous communities have claimed that the companies involved have violated their right of free, prior, and informed consent and that the government has not protected their rights; this requirement is enshrined in the International Labour Organization's Convention 169, which Argentina ratified in 1992.²⁰³ The Argentinian government also recognized the ethnic and cultural preexistence of Indigenous peoples in its 1994 national constitution; this means that Indigenous communities have the right to use, develop, and control their lands, territories, and resources.²⁰⁴

Many Indigenous communities oppose lithium extraction in Jujuy based on these commitments, and public opposition has grown as production in the area has increased.²⁰⁵ All lithium projects require an EIA; however, according to a report by Pía Marchegiani, Jasmin Hoglund Hellgren, and Leandro Gomez, local communities have claimed that foreign firms involved in extraction and production processes in the area have not complied with this requirement.²⁰⁶ The report also remarks that, although the government must implement the process for free, prior, and informed consent and guarantee that communities can exercise their rights, governmental representatives were absent during the whole process.²⁰⁷

To adapt to local demands, the Canadian and Chinese companies have signed agreements with all the impacted Indigenous communities. These agreements involve investments and donations to cover a wide range of expenses including the restoration of a school roof in Huancar; the construction of a community center in Pastos Chicos; communal libraries; internet access, computers, and printers for community centers; and construction materials. These agreements also cover the provision of employment to members of the communities, as well as training and monetary compensation.²⁰⁸

Interactions between these communities and Minera Exar began in 2009 when company representatives began visiting the communities. According to Marchegiani, Hellgren, and Gomez, the first meetings were frequent and informative, as the firm told the communities about the existence of the area's lithium deposits, the extraction process, and the company's plans, while they also presented an environmental impact study.²⁰⁹ However, once the communities approved the project, the firm's visits became less frequent. Furthermore, the communities have claimed that the firm had confirmed the project would not affect water resources in the area, but they have noted the pollution and scarcity of water that has followed.²¹⁰

The Cauchari solar park is the first case in Argentina where local communities have received a percentage of the profits from such an enterprise.²¹¹ The solar plant, which has an expected shelf life

of about twenty years, has been projected to generate an estimated \$400 million in net profits.²¹² The provincial government announced that 2 percent of that amount will be given to the nearby Indigenous community of Puesto Sey.²¹³ In addition, a share of the profits will be used to improve education, healthcare, and public services while also otherwise benefiting the local communities.²¹⁴

However, problems emerged concerning environmental disclosures and consent processes regarding land use in the area around the Cauchari solar park. Though the provincial government informed local communities that there was a months-long process for free, prior, and informed consent that included the local communities expressing their approval, the NGO FARN reported that the environmental impact study was issued without comprehensive and timely information.²¹⁵ According to the FARN report, local communities did not have previous access to the environmental impact study; moreover, meetings between the firms and local communities took place in February and August 2017, after the 2016 approval of the declaration of environmental feasibility.²¹⁶

Based on these reported findings, the Indigenous communities' rights to free, prior, and informed consent based on international and national rules were not fully respected. These claims could be corroborated through a public draft of the contract between JEMSE and the Exim Bank of China, which was signed before the process of consultation to local communities was complete.²¹⁷ For the construction of the park, the government estimated that 600 jobs would be created and that 60 percent of the contracted construction staff would be members of local communities.²¹⁸ According to FARN, public procurement policies were modified to promote employment, though this modification included a rule that workers would not be paid overtime.²¹⁹ During the construction phase, conflicts arose as workers raised concerns about the number of working hours, delayed salary payments, and precarious working conditions on the solar installations.²²⁰

More fundamental land use disputes have arisen too. According to FARN, Jujuy's Provincial Law 5915 was enacted to let companies occupy lands for a given project without formally expropriating the lands from local communities, as long as the companies give local residents a 2 percent share of the project's profits, provided that the residents avoid claiming the use of the affected territory.²²¹ But representatives of local communities claim that Provincial Law 5915 is unconstitutional, as it concedes to foreign companies the right to use and exploit Indigenous territories; they point out that they were not consulted during the drafting of the law, an obligation stated in both the International Labour Organization's Convention 169 and Argentina's 1994 constitution.²²²

Though several public demonstrations involving Indigenous communities and civil society have taken place, no formal legal case has appeared before Argentina's court system; according to Melisa Argento and Florencia Puente, the provincial government has refused to engage in dialogue with the affected communities.²²³ Conversely, representatives of one of the communities that live in the area have remarked that Jujuy has historically been a focal point of several projects with no benefits for local inhabitants, while the Cauchari solar park has generated employment and resources for them.²²⁴

Meanwhile, in Chubut Province, Governor Mariano Arcioni has promoted Chinese overseas finance in the province's wind sector. In April 2021, Arcioni signed a letter of intent with China Gezhouba Group for the construction, installation, and operation of the El Escorial wind park, with 200 megawatts in potential power capacity.²²⁵ Local collaboration has also been vital to strengthening the Chinese commercial presence in Salta's lithium mining. When a national delegation from Argentina visited China in October 2018, the municipal governments of Salta and Xuzhou signed an MOU to advance mining cooperation.²²⁶ Since then, several events and mutual visits have further deepened cooperation, including the creation of a Joint Center of Biomining Research and Ecological Soil Restoration between the Catholic University of Salta and the Chinese University of Mining and Technology.²²⁷ In June 2021, the two cities' respective mayors—Bettina Romero and Zhuang Zhao-lin—signed an agreement to formalize Salta and Xuzhou's sister city relationship.²²⁸

It is worth noting that, in the cases of both Jujuy and Salta, engagement with Chinese counterparties has been the result of an overarching approach. The realization of projects where Chinese actors have provided investment and financing has been prompted by comprehensive relationships that include cooperation on culture, education, tourism, and people-to-people bonds as ways of promoting mutual understanding.²²⁹ Local elites have shown a growing interest in amplifying their knowledge and understanding of China, and this willingness to learn more about Chinese civilization has promoted the establishment of local ties that go beyond economics alone.

These close subnational relations have been instrumental in helping Argentina attract Chinese overseas financing to develop renewable energy plants in certain localities and provinces, advance the country's energy transition, and help parts of Argentina harness local solar and wind resources. Close relations are not exclusively economic but are framed in terms of holistic, all-encompassing engagement. Though these advances have been vital to promoting outreach between Argentinian and Chinese actors, the Chinese presence in Argentina still faces environmental and social tensions in certain localities where further efforts are needed to address local concerns. China has responded to local claims regarding lithium and solar projects through the provision of investments and donations. As in the case of major hydropower and nuclear plants, these serve as learning experiences and set the tone for future cooperation between China and Argentina on energy projects.

Conclusion and Recommendations

As China continues to deepen its economic ties with Latin American countries like Argentina, it is also internationalizing its strengths in renewable energy. Chinese energy companies, through the Going Out strategy and the BRI, have merged their expansion interests with Argentina's own aims of making its energy grid more diversified and sustainable.

Unlike many other countries where China has invested in renewable power, Argentina has attracted all this investment without yet formally joining the BRI, though Argentinian policymakers have indicated the country will join in time. The progressive consolidation of a multilevel engagement strategy has been fundamental in this process: national, provincial, and local governments and an array of bureaucratic and corporate actors have sought to channel a growing portion of China's overseas financing to solar and wind projects as well as other types of energy projects in the country.

The auctions for renewable projects that Argentina's national government launched have served as the main means of attracting foreign investment to those sectors, and Chinese firms have emerged with major solar and wind power deployment contracts. At the subnational level, governors, mayors, and other state and entrepreneurial actors in certain provinces, cities, and localities have played a central role in crafting a productive Argentina-China relationship. In the provinces of Chubut, Jujuy, and Salta, local players have sought Chinese overseas financing in renewables and lithium to develop their respective regions by harnessing their renewable and other resource endowments. Local engagement has been holistic and has gone beyond economics.

Chinese players have been active participants in Argentinian strategic sectors like renewable energy and in other types of energy projects. Chinese actors have become key investors and financiers in Argentina's solar and wind sectors by participating in auctions and by carrying out mergers and acquisitions. Adaptation has also been vital to how Chinese actors respond to local investment and policy environments. In some cases, they have formed temporary joint ventures with local companies, while in others they have participated in projects through engineering, procurement, and construction contracts.

Even when Chinese actors are not the principal financiers on certain projects, they have provided cutting-edge technologies, such as wind turbines, photovoltaic cells, and solar modules. As for cutting-edge innovations, the case of photovoltaic technology stands out. Chinese solar panels are highly competitive globally, and there are not many alternative providers, with few competitors offering similar prices; their global positioning as leaders in the solar market has allowed them to pull down production costs and global prices, keeping competitors behind.²³⁰ Thus, even when Chinese players are not the principal investors in solar power projects in Argentina, they have acquired a central role as major technology suppliers.

Chinese players' adaptive approach has also further promoted local engagement through the establishment of partnerships between Argentinian and Chinese provinces and cities. Chinese actors have expanded their presence in existing projects (like the Cauchari solar park) or created opportunities to participate in new ones (like the renewable parks in Chubut and the lithium projects in Jujuy and Salta).

Renewable energy will continue to be a magnet for global investment as countries around the world strive to address climate change. Amid the pandemic and in its aftermath, renewable energy also offers ways to help countries recover economically. Argentina is particularly well-positioned to leverage its renewable energy industry, as its resource endowments are huge.²³¹ As a global leader in the deployment of renewables, China can play an important role in Argentina's sustainable economic recovery.

As for the aforementioned challenges and opportunities, Argentinian policymakers should consider the following recommendations.

First, Argentina must continue to ensure Chinese actors' compliance with local laws, regulations, and industrial policies. A group of experts and/or public officials should be designated to assess and classify whether projects support Argentina's economic growth and sustainable development needs. This group should also press for much greater participation of Argentinian firms and technologies in these Chinese-funded projects.

Second, future renewable auctions that include Chinese bidders should prioritize small-scale hydro-power and wind generation. These are the sectors where Argentina's national industrial players and technologies are most strongly positioned and thus can provide parts, components, and engineers. Technology transfer from China in the solar sector and/or joint development of technologies should be emphasized because Argentina's solar sector is less competitive than China's. That said, technology transfer and/or joint development of technologies in the wind sector and for other renewable and alternative energy sources is also recommended.

Third, Argentina's medium- and long-term national plans need to better translate into the priorities reflected in the national auction programs. The focus of the federal plans should be on further harnessing provinces' endowments of renewable and alternative resources. Argentina must keep Chinese players focused on and committed to the design and enforcement objectives for an integral, long-term national energy plan, coordinated by private actors but with government administration, control, and supervision.

This plan should be cross-cutting in terms of institutional collaboration, and it should incorporate the expertise of policymakers from multiple bodies, including the Ministry of Economy (and the Secretariat of Energy), the Ministry of Environment and Sustainable Development, the Ministry of Foreign Affairs, and the Ministry of Productive Development, as well as private actors such as the Argentine Chamber of Renewable Energies, the Association of Metallurgical Industries, and others. This national plan should also be cross-cutting in technical terms, including a roadmap on how to cooperate with China on technology transfer. Argentina's national energy plan needs to include diverse energy sources and specifics on the deployment of renewables and alternative energy sources while also striving to integrate the country's industrial, scientific, and technological capabilities.

Fourth, relevant actors can further promote local engagement in provinces where this type of collaboration has been scarce. Local engagement should not only be enhanced as an avenue to complement national engagement but also to contribute to localities and provinces' development, based on their competitive advantages. For example, the provinces in Patagonia, the southern Atlantic coast of Buenos Aires Province, and La Pampa Province have huge wind power endowments that should be further harnessed.²³² Several provinces in the country, such as those in the Cuyo region or northwestern Argentina, have salient solar energy endowments.²³³ Furthermore, there are plenty of water sources coming from rivers across the country that should be harnessed through small-scale hydro-power facilities. Local engagement can help attract further Chinese involvement in areas that local and provincial government officials themselves identify as strategic.

Fifth, Argentina needs to strengthen its strategic assessment related to renewable energy, and alternative energy sources more broadly, by making sure that all proposed Chinese overseas finance through auctions or any future Argentinian role in the BRI adhere to Argentina's standards and capabilities. This includes further alignment of Chinese overseas finance with Argentina's environmental and social sustainability goals. As local engagement has been instrumental in recent years, Argentinian and Chinese actors should do more to address local communities' concerns about environmental and social risks and find joint ways to respond to their demands.

Sixth, Argentina should seek to harness Chinese contributions to the expansion of its national electricity transmission system. Alternative and renewable energy resources in Argentina, as in most Latin American countries, are located in areas far from urban centers where demand is high. To extend their scope, medium- and high-voltage transmission lines need to be expanded. The completion of projects such as the extension of electricity transmission lines in metropolitan Buenos Aires, or the restoration of the lines connecting Futaleufú and Puerto Madryn in Chubut Province, is critical; such projects are important for helping transport electricity from existing and future renewable plants to urban centers. The country's insufficient transmission infrastructure—especially in high-voltage power lines, a major Chinese comparative advantage—is one of the reasons that the development of larger energy projects has been suspended in recent auctions, such as the third round of the RenovAr auctions. As part of their post-pandemic economic recovery policies, Argentina and China should consider increasing the proportion of development finance and investment focused on electricity transmission infrastructure.

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