

GLOBAL ECONOMIC GOVERNANCE

Repositioning Chinese Development Finance in Latin America: Opportunities for Green Finance

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ABSTRACT

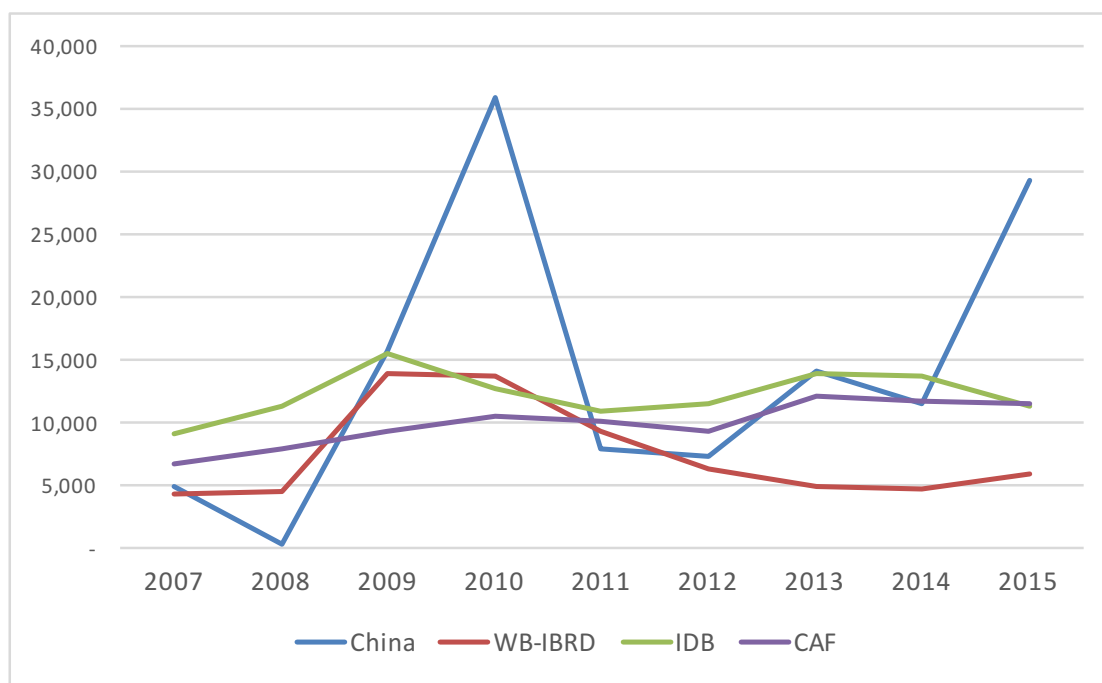
China is one of the largest creditors of Latin American and the Caribbean and has loaned the region more than \$125 billion since 2005. However, the composition of China's financing in the region has been concentrated in commodity related sectors that are currently on the decline. This policy brief notes the extent to which Chinese finance is concentrated in new green economy sectors, and finds that China is not taking full opportunity of the potential in this sector. Moreover, as the global commodity boom has declined, much of China's investments in the region have been exposed to significant risk, including prominent environmental and social risks. Despite great strides whereby the Chinese government has established a series of guidelines on greening overseas investment over the last few years, China's development banks and companies are lacking the policies and staffing to identify and fully mitigate such risks. This policy brief reviews the green profile of Chinese development finance in LAC and analyzes environment related risks and policies for Chinese overseas investment. It also outlines the opportunities of green finance in LAC and how blending instruments can mobilize green financial flows that are beneficial for both China and LAC.

China is leader in development finance for LAC

In less than one decade, China has made itself leader in development finance for Latin America and the Caribbean (LAC). Two Chinese policy banks: China Development Bank (CDB) and The Export-Import Bank of China (CHEXIM) have provided upwards of \$125 billion in development finance to LAC since 2005 (see Gallagher and Myers, 2016). China's commitments also helped fill a finance gap left by the World Bank and other International Financial institutions in the region (Yuan and Gallagher, 2015). For instance, in 2015, Chinese policy bank finance to LAC reached \$29 billion to LAC, surpassing their 2014 lending by 19 billion, and also exceeded World Bank (WB), Inter-American Development Bank and CAF-Development Bank of Latin America finance to the region combined (Figure 1).

In addition to development loans, China has also announced several regional funds to deepen the cooperation with LAC including China-LAC Industrial Cooperation Investment Fund (\$10 billion for phase one), the Special Loan Program for China-LAC Infrastructure Project (\$20 billion) and China-LAC Cooperation Fund (\$10-15 billion) (Myers, Gallagher and Yuan, 2015).

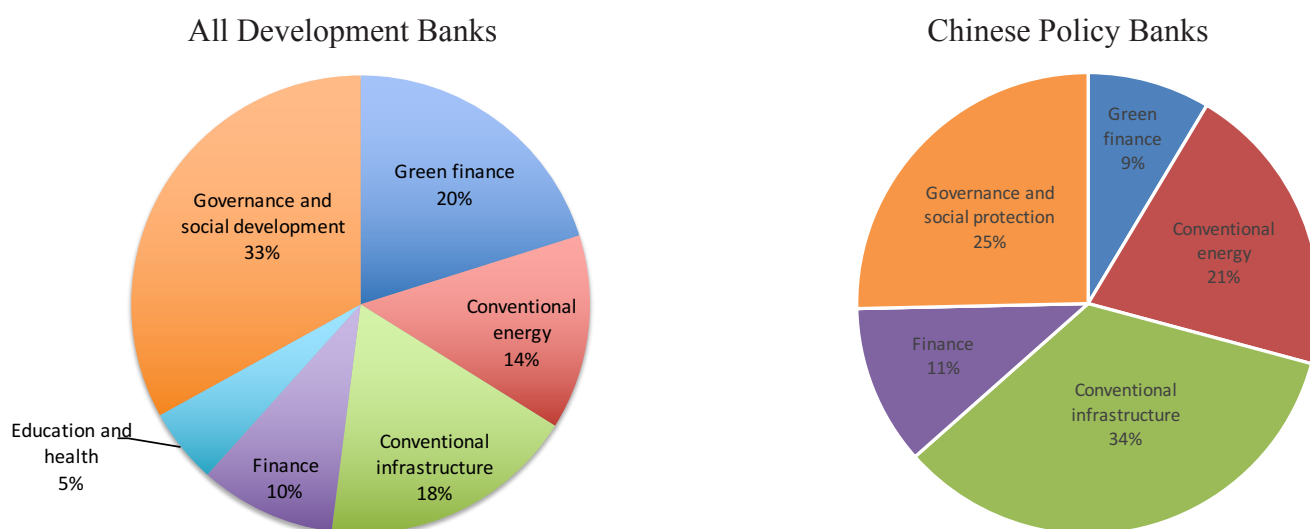
Figure 1: Development Finance to LAC 2007-15



Source: Gallagher, Kevin P. and Margaret Myers (2015)

Every year, development banks operating in LAC¹ including Chinese policy banks provide about 1% of annual GDP finance to support governments' development agenda in various sectors: Governance and social development (33%), Green finance (20%), conventional infrastructure (28%), conventional energy (14%), finance (10%), education and health (5%) (figure 2, left side). However, compared to their peers, Chinese policy banks finance is strongly skewed toward conventional energy and infrastructure projects, which accounted for more than half of their finance to LAC. As a consequence, green finance only has a share of 9% in Chinese finance to the region.

Figure 2: Development Finance to LAC by sector 2007-14



Source: Yuan, Fei and Kevin P Gallagher (2015)

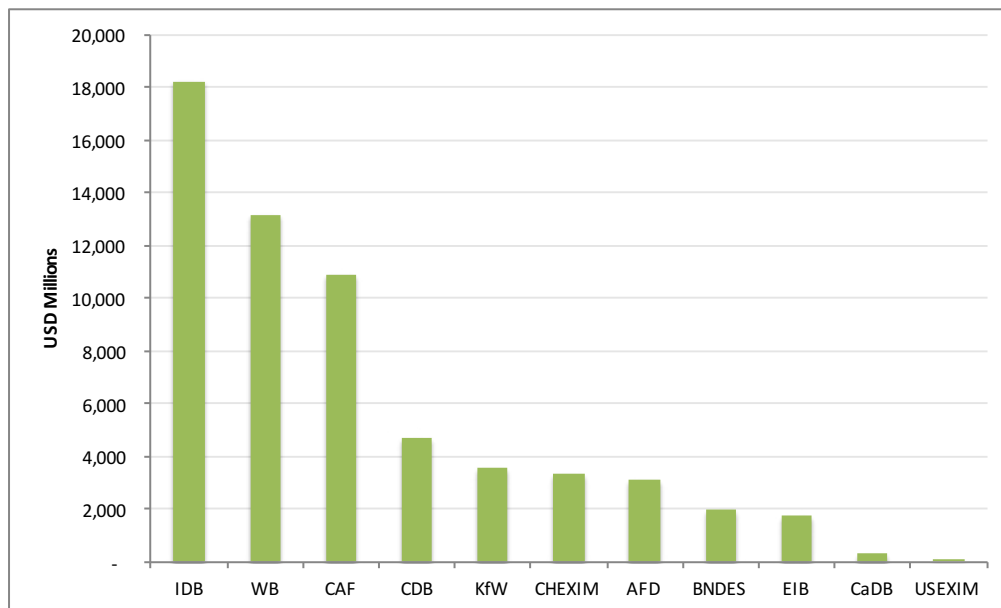
Green finance in LAC

Using the green finance tracking methodology by the International Development Finance Club (IDFC), a network of national and sub-regional development banks including the CDB, we estimate that during 2007-14 approximately \$61 billion of development finance to LAC directly and/or indirectly supported climate mitigation, adaptation, water and sanitation projects and can be labeled as “green”. About 70% of the green finance came from IDB, World Bank and CAF. Two Chinese banks provided about \$7 billion green finance to LAC governments between 2007-2014, about 12% of the total green finance the region received from eleven major development banks

¹ Development banks operating in LAC include traditional multilateral development banks (World Bank, Inter-American Development Bank), regional development banks (CAF-Development Bank of Latin America, Caribbean Development Bank, European Development Bank) and national development banks (Export-Import Bank of the US, Agence Française de Développement, KfW Development Bank, Brazilian Development Bank, China Development Bank, China Export Import Bank).

operating in LAC. In terms of absolute volume, the lending of two Chinese banks is similar to that of two European banks: KfW and AFD (figure 3); however, if we look at green finance as a percentage of total finance, the numbers of CDB (4%) and CHEXIM (22%) are relatively small.

Figure 3: Ranking International Development Banks for Green Finance 2007-14



Source: Yuan, Fei and Kevin P Gallagher (2015)

Regarding the composition of green finance in LAC, climate change mitigation projects received the bulk of the finance (39%), followed by water and sanitation (33%), climate change adaption (11%) and hydropower plants (17%). It is important to highlight that, according to the IDFC definition, hydropower plants can be labeled green, “only if net emission reductions can be demonstrated.” Indeed, if none of the hydro projects were counted, there would be just over \$4 billion in cleaner energy finance-relative to the \$14.6 billion including hydropower.

In fact, hydroelectric projects in LAC, especially those in tropical areas, have long been associated with increases in methane emissions and emissions from deforestation. Studies even have shown that tropical hydropower plants tend to emit 7 to 15 times more emissions than non-tropical hydropower due to infrastructure expansion (Barro et al, 2011; Steinhurst et al, 2012). For instance, it is estimated that the planned hydroelectric dams along Brazil’s Tapajos Rivers will indirectly trigger the deforestation of 950,00 hectares by 2032 as these new dams will spur the establishment of extensive new roads and infrastructure through the Amazon forest (Laurance et al, 2015).

Beyond emissions contributing to climate change, hydroelectric power plants have also been shown to be the source of other environmental and social problems such as loss of water, biodiversity and habit, involuntary resettlement, displacement of local and indigenous livelihoods,

etc. If these potential risks are not well mitigated, it might result in massive protests and destruction, and in turn, lead to delayed projects and huge economic loss. Hence, there is always controversy surrounding the sustainability and “greenness” of hydroelectric projects. If hydroelectric projects were not included in China’s green investment profile to LAC, Chinese finance in the region would be among the least green of all development banks operating in the region.

Specifically, in the case of Chinese green finance in LAC, hydroelectric projects have a dominant share of 93%, with another 4% in sustainable transport and 3 % in renewable energy. Indeed, concerns have been raised over hydroelectric projects financed by Chinese banks. For example, the Coca-Coda Sinclair project, on one hand is to be credited for increasing the amount of renewable energy in Ecuador’s power supply; However, on the other hand, the dam will partly dry Ecuador’s largest waterfall, the San Rafael Falls which is located in the UNEXO Sumaco Biosphere Reserve (International Rivers, 2015).

Table 1: Chinese ‘green’ projects in LAC 2007-14

Country	Year	Lender	Project	Amount (USD Million)
Argentina	2014	CDB (with ICBC and BOC)	The Nestor Kirchner& Jorge Cepernic dam	4,700 (2,499 by CDB)
Ecuador	2011	CDB	Delsitanisagua, Mazar-Dudas, Bulu Bulu hydroelectric dams	680
Ecuador	2014	CHEXIM	Finance the power transmission system for Coca-Codo-Sinclair hydropower plant	509
Ecuador	2013	CHEXIM	Minas-San Francisco hydroelectric dam	312
Ecuador	2010	CHEXIM	Coca-Codo-Sinclair hydroelectric dam	1,683
Ecuador	2010	CHEXIM	Sopladora hydroelectric dam	571
Argentina	2012	CDB	Renewable energy projects	200
Argentina	2014	CHEXIM	Purchase 150 cars for Metro Line A	162
Costa Rica	2012	CDB	Replace public transportation vehicles to use more eco-friendly fuels	101

Source: Gallagher, Kevin P. and Margaret Myers (2015)

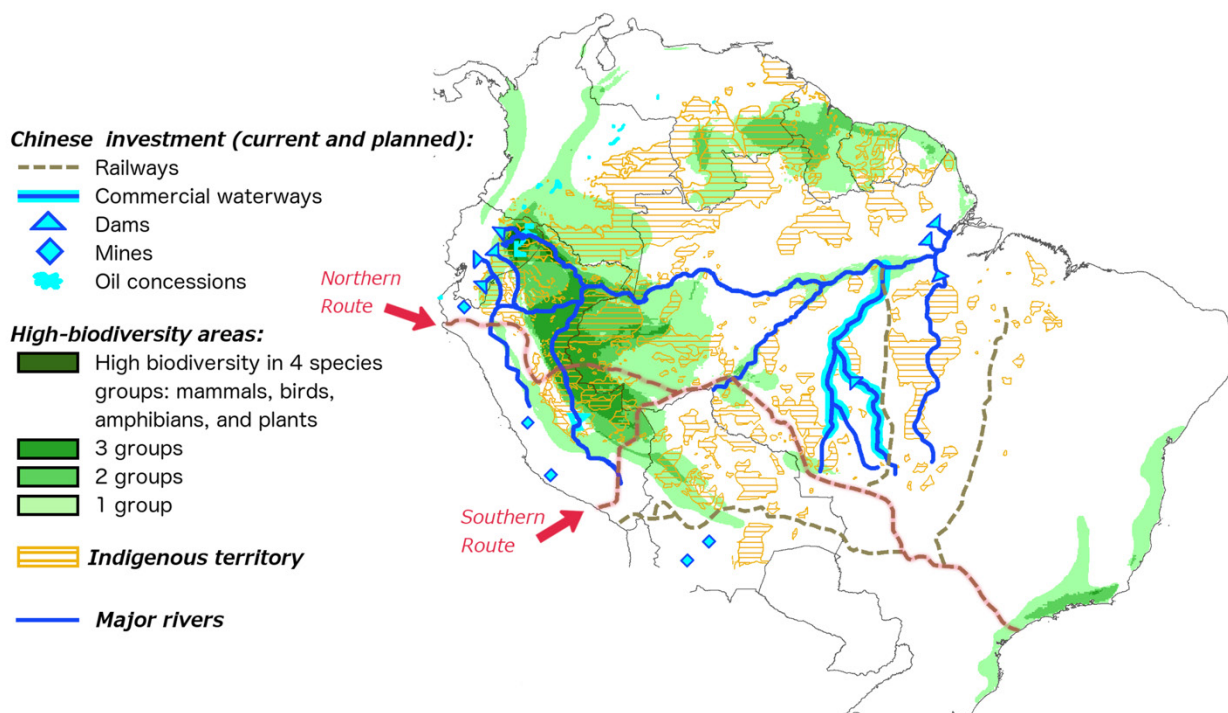
Regarding investment destinations, Chinese green investments are highly concentrated in Argentina and Ecuador, except a small sustainable infrastructure loan to Costa Rica in 2013. The Nestor Kirchner & Jorge Cepernic hydro project at a cost of 4.7 billion, jointly financed by CDB, ICBC and BOC has been the largest Chinese green project in LAC. CHEXIM have financed several hydropower projects in Ecuador, including the Coca-Codo-Sinclair dam, Minas-San Francisco dam and Sopladora dam. In addition, the EXIM bank also provided a loan of \$162 million to the city of Buenos Aires for purchasing metro cars, while CDB granted a loan to the BICE bank of

Argentina to support renewable projects.

Environmental Safeguards in LAC

Development bank projects, regardless of whether they are “green” or “conventional”, could generate negative impacts if environmental and social risks are not fully mitigated and well managed. These impacts can lead to project delay, modification and even cancellation, which in turn, will cause huge economic loss and harm the reputation of investors. Chinese investments in LAC are all exposed to these risks, especially those projects located in environmentally sensitive areas. For instance, figure 4 shows that China has a number of infrastructure, mining and oil projects undergoing and planned in the Amazon, the most biodiverse and indigenous areas in LAC (Ray et al, 2015). In fact, in 2012 Bolivia revoked a highway project through the Amazon rainforest financed by the Brazilian National Development Banks (BNDES) due to the massive protests from indigenous people (Achtenberg, 2012), putting millions of dollars in jeopardy. Several oil concessions and the potential transcontinental railway that China is interested in will become megaprojects once finalized. To successfully implement these projects and well protect investors’ interests, it is essential to apply appropriate environmental assessments and community consultations in early stages of project planning.

Figure 4: China in the Amazon



Source: Ray, Rebecca and Kevin Gallagher (2015).

Unfortunately, the current safeguard policies of CDB and CHEXIM on paper might not be comprehensive or strong enough to protect their investments from those environmental and social risks. Compared to other development banks, Chinese banks adopt a “deferential recognition” approach to safeguard policies. They use country systems as project compliance standards and less often impose international standards and/or best practices on host countries (Table 3). For example, in their policy documents, CDB and CHEXIM do not require project-level grievance mechanism and independent monitoring and review. In addition, public consultation with affected communities is not addressed by CDB either.

Table 3: Global Development Bank Safeguards

Nature of safeguards	Characteristics	International Development Banks
Conditional Harmonization	<ul style="list-style-type: none"> *Conditional thematic, operational and procedural standards *Performs compliance work itself and/or provides technical assistance 	World Bank European Development Bank Inter-American Development Bank Export-Import Bank of the US
Capability Enhancing Recognition	<ul style="list-style-type: none"> *Recognizes borrowing country standards *Ensures project compliance with country systems and some international standards *Provides technical assistance to meet standards 	CAF-Development Bank of Latin America KfW Development Bank Agence Française de Développement Caribbean Development Bank
Deferential Recognition	<ul style="list-style-type: none"> *Recommends that projects comply with national country systems *Seldom ensures compliance or assists in meeting standards 	The Brazilian Development Bank China Development Bank Export-Import Bank of China

The advantage of deferential recognition is to save assessment costs and time in the initial design and planning stages, but this approach might increase uncertainties and risks for project implementation. Nevertheless, when World Bank and other multilateral development banks require all the projects comply with a set of international standards and procedures, they also receive strong critics because their environmental and social safeguards are perceived as contributes to project delay and impositions on borrowing countries (Yuan and Gallagher, 2015).

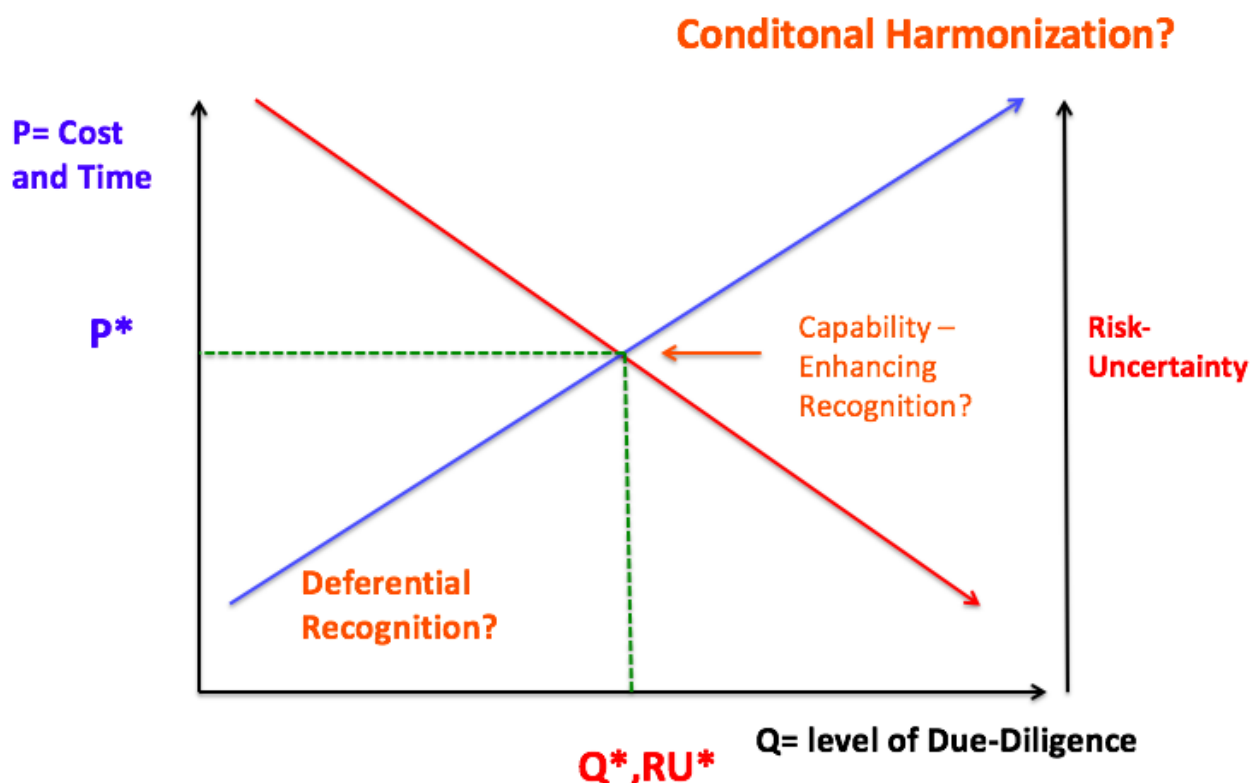
Table 4: Operational Procedures Requirements

	World Bank	IADB	US EXIM	AFD	KFW	EIB	CAF	CaDB	CHEX IM	BND ES	CDB
Ex-ante Environmental Impact Assessments	X	X	X	X	X	X	X	X	X	X	X
Project Review of Environmental Impact Assessments	X	X	X	X	X	X	X	X	X	X	X
Industry-specific Social and Environmental Standards	X	X	X	-	-	-	X	-	-	X	-
Require Compliance with Host Country Regulations	X	X	X	X	X	X	X	X	X	X	X
Require Compliance with Int'l Environmental Regulations	X	X	X	X	X	X	-	-	-	-	-
Public Consultations with Affected Communities	X	X	X	X	X	X	X	X	X	-	-
Project Level Grievance Mechanism	X	-	-	X	-	X	-	-	-	-	-
Independent Monitoring and Review	X	-	X	-	-		-	-	-	-	-
Establishing Covenants Linked to Compliance	X	X	X	X	X	X	X	X	X	X	X
Ex-post Environmental Impact Assessments	-	-	-	X	-	X	X	X	X	-	X

Source: Fei Yuan and Gallagher, Kevin P Gallagher (2015).

The relationship between the harmonization level of safeguards and the costs and time of project preparation can be illustrated in an equilibrium graph (figure 5). There is a trade-off between costs and risks, and banks need to balance these factors to maximize their benefits, both economic and social. Having high levels of safeguards may reduce the level of uncertainty relative to a project, but may be overly costly in terms of time to completion. Solely relying on country systems can be equally costly however, as the level of uncertainty due to social protest, environmental cost, and cost overruns is high. ‘Capability enhancing recognition’ is a strategy that attempts to balance the two, and may be the next step for China’s banks. Here, banks like CAF and KfW have chosen to recognize country systems while also promote and help borrowing countries to meet some international standards, which could be more practical in terms of cost and benefit.

Figure 5: Safeguarding risks



However, whereas China’s banks and firms have weaker safeguards on paper, recent studies have shown that in some cases, projects financed by Chinese banks perform better respect to environmental and social safeguards. (Ray et al, 2015). In fact, China has put great efforts into greening its banking system. In 2012, CBRC issued the Green Credit Guidelines providing clear operational guidance to implement green banking in three aspects: E&S risk management, green lending products and services, and greening banks’ own operations. Targeting for overseas projects, MOFCOM and MEP jointly released “The Guideline of Environment Protection for Overseas Investment and Cooperation. This guideline articulates that “the banking institutions shall make promise in public that appropriate international norms will be followed as far as such overseas projects are concerned, so as to ensure alignment with good international practices (MOFCOM, 2013).”

This top-down approach has generated some impacts on the banking sector of China. For instance, China Development Bank has chaired the Special Committee of Green Credit, China Banking Association, which has the aim to enhance banks’ capacity of integrating environmental and social sustainability in banking operations. We were also told by CDB staff that “green screening” had been embedded in every procedure of their operations, although no detailed document could be disclosed. They also mentioned that banks had received pressure on increasing green credit and greening their operations from the central bank, CBRC, etc.

Nevertheless, banking practitioners also expressed their concerns and difficulties in following the guidelines. The major obstacles include lack of implementation instruments and being short of for example, professional staff in green finance. Some progress has been made in the implementation regard. CBRC launched the Green Credit Statistics System in 2014 and classified green credit loans into 12 categories with sub-categories. In 2015, CBRC further introduced the Green Credit Key Performance Indicators (KPIs) to strengthen monitoring and evaluation of green banking. However, unlike most Western banks, the vast majority of Chinese banks still do not have professional staff working on environmental issues, which directly affects the quality of safeguard implementation.

In fact, in China, overseas business involves more institutions other than banks, companies and contractors. Before 2014, Measures for Overseas Investment Management required all business activities to be approved MOFCOM, NDRC and SAFE before they “went”. To get the approval, investors were requested to submit detailed project information including assessment of business environment. Once had the paper, investors could apply for loans and sign contract with their business partners. To improve institutional efficiency, this directive has been simplified since 2014 as investors only have to register online for their overseas activities and do not need to wait for the approval, except for very few cases that involve protected industries and technologies.

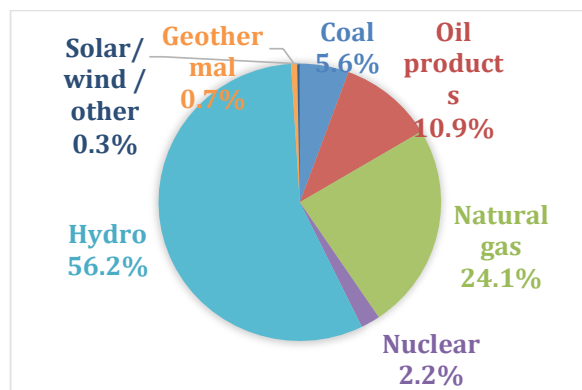
This simplification on one hand promotes overseas investment by reducing bureaucratic procedures; on the other hand, it transfers more responsibility to investors and banks. Not surprisingly, many Chinese investors are not capable of well managing their business risks, especially the environmental and social ones, even though they are aware of the consequences. The Measures for Overseas Investment Management require all investors to “comply with host country’s regulations, respect local customs, fulfill social responsibility and protect environment, labor and promote local integration.” In regard to environmental and social issues, based on our interviews, most investors do conduct independent EIAs following host country’s regulations. However, if projects are located in environmentally sensitive and/or indigenous territories, the complexity of interacting with local stakeholders is usually underestimated due to limited understanding of local community and culture. For example, there has been relentless protests from local people against the Las Bambas mining projects in Peru, owned by China Minmetals, despite the fact that the project has all required environmental documents. The shut down of mining operations has caused the loss of millions of dollars. In addition, influenced by their domestic experiences, Chinese companies tend to address business related concerns and conflicts with governments instead of local communities, which in a lot of cases increases the discontent of affected people.

Seizing the Green Finance Opportunities

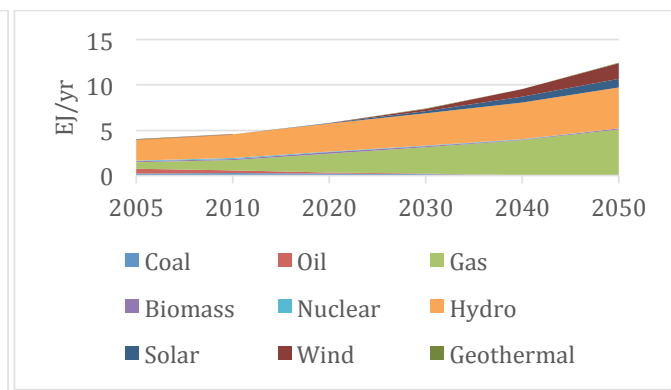
The demand for power in LAC will triple by 2050, as a result of population growth and improvements in quality of life. This requires the region to double its installed power at a cost of approximately 430 billion dollars (Vergara et al, 2013a). Hopefully, along with the anticipated expansion of demand, the power sector will continue to decarbonize the current power matrix. It is projected that coal and oil will disappear from LAC's energy matrix by 2050, even under the business-as-usual scenario (Figure 6) and natural gas will become the primary energy source, supplemented by hydropower. However, to achieve the 2 degrees Celsius goal, LAC countries need to reduce the current emissions levels by 40% (Vergara et al, 2013b). Furthermore, the region also has to curb the reliance on hydropower as the output is highly vulnerable to hydrologic alterations resulted from climate change. Fortunately, LAC has abundant renewable energy resources which allow it to diversify the power matrix through non-hydro renewable technologies: solar, wind, geothermal, advanced bio-energy and improvements in energy efficiency. In fact, exploiting 4% of the available technical potential can meet the full electricity demand by 2050 (Vergara et al, 2013a).

Figure 6: LAC Power Matrix

Electricity generation in Latin America in 2010



Projected Evolution of LAC Power Mix to 2050



Author's calculation based on IEA 2010, World Energy Balances *Author's calculation based on GEA Scenario database*

However, although the costs of non-hydro renewable energies have been constantly decreasing and become a cost-effective option in many cases, in times of economic contraction, LAC governments are less likely to increase investment in renewable energies due to more fiscal constraints. From the perspective of private sectors, low-emission energy is always perceived riskier and financially less attractive as long as fossil fuel subsidies exist. Hence, financing renewable energy projects is still challenging for many countries in LAC despite of the high demand and market potential.

On the other side of the Pacific Ocean, the story is quite different. China has been the largest investor in clean energy in the world for years. In 2015, China spent a record of \$111 billion on clean energy infrastructure, as much as the US and the EU combined (Randall, 2016). At the same time, Chinese wind and solar energy installations both surpassed their old records. Nevertheless, partially due to the economic slowdown, China's National Energy Administration has set a lower target for new solar PV capacity for 2016 (Clover, 2015). The clean energy sector will also encounter the overcapacity problem in the near future as many other sectors in China and need to look for new markets.

In fact, LAC could be a promising market for Chinese low-carbon energy investors if a set of appropriate development financial instruments are provided. In the current project finance structure, lower outputs and policy distortions (subsidies, tax incentives or trade restrictions) are primary factors that constitute the financial viability gap of clean energy projects. Taking a wind farm case as an example, the project has a present value of revenues of \$60 million and present value of costs of \$170 million, leaving a viability gap of \$110 million. This gap can be balanced by rebalancing policy distortions and monetizing the reduction of GHG emissions and air pollution (Figure 7).

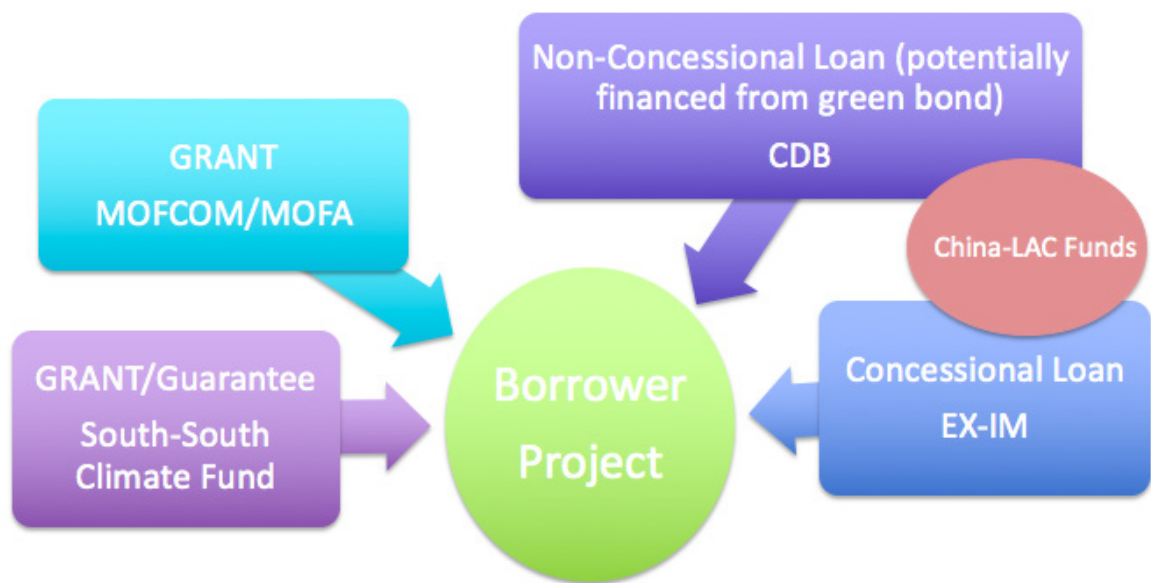
Excitingly, financing green finance projects is completely feasible by exploring the existing development financial resources between China and LAC. Figure 8 shows one financing solution that MOFCOM/MOFA and/or South-South Climate Fund provide support for adjusting policy distortions and introducing market mechanism of GHG emissions, while banks and region-wide funds finance the clean energy infrastructure and technologies through loans. If this does happen, China and LAC will successfully achieve the green production capacity cooperation, which will be extremely significant for bilateral cooperation in the "New Normal".

Figure 7: Green Finance for a Wind Energy Project



Source: AUTHOR’S CALCULATIONS BASED ON World Bank (2012)

Figure 8: Blending Instruments for Green Finance from China to LAC



Interestingly, China could finance some of these projects through its growing green bond market. Although China's share in green finance in LAC is relatively small, its domestic green credit market has dramatically expanded in recent years. China started to build the green credit framework in 2007, and according to China Banking Regulatory Commission (CBRC), the balance of green credit reached ¥6 trillion (about \$950 billion) by 2014 in broad terms (CBRC, 2015). To further mobilize financial resources toward sustainable development, the People's Bank of China (PBoC) and National Development and Reform Commission (NDRC) consecutively released Green Financial Bond Directive by the end of 2015 and early 2016. To date, Shanghai Pudong Development Bank Co. and China Industrial Bank have issued green bonds of ¥20 billion and ¥10 billion respectively. Prior to that, Agriculture Bank of China raised \$1 billion through green bonds listed on the London Stock Exchange in October 2015.

Green bonds are defined as “bonds or debt securities specifically issued to finance environmental protection, sustainability or specific climate mitigation and adaptation measures (Climate Bond Initiative, 2014).” Projects in areas including energy efficiency, renewable energy, climate change, water and sanitation, and sustainable urban development all can be financed by the capital mobilized by green bonds. Since the financial features and yields of green bonds are identical to normal ones, they can significantly crowd-in private capital in green investments. The European Investment Bank (EIB) issued the world's first green bonds in 2007 with a value of €600 million. In 2008, the World Bank issued its own green bonds. In the later years, more multilateral and national development banks have started to issue their green bonds and corporates have also joined the market since 2013. By the end of 2015, \$95 billion green bonds had been issued globally.

China has a 6 trillion bond market, the third largest in the world. Considering the high demand for green finance and the huge potential in China's bond market, “China could become a major green bond issuer in the World” as Ma Jun, the chief economist of PBoC indicated (Bloomberg, 2016). Indeed, CDB is also considering issuing its first green bond in the near future and the issuance value might hit a new record given the fact that CDB is one of the largest bond issuer in China. Furthermore, the New Development Bank has raised \$450 million (¥3 billion) through RMB denominated green bonds in last July to finance green projects in BRICS countries (Sputnik, 2016).

New financial flows opened by green bonds will be essential to tackling climate change (World Bank, 2015). However, no bank or financial institution in LAC has issued green bonds, despite an increasing demand for sustainable development. If a Chinese bank or corporate finances its investment in LAC through green bonds, it will bring new dynamics to the bilateral cooperation.

Conclusion

China may possess the best tool kit for green finance in the world economy. China's policy banks are well capitalized and experienced in providing overseas finance that offer benefits to both creditor and borrower countries. What is more, China has numerous institutions it can draw from that could blend instruments to green financial flows. After 15 years of implementing the "go out" strategy, two Chinese policy banks have become indispensable lenders for LAC governments and can reposition themselves to be leading financiers of a greener. There are indications that China will sustain the leadership in development finance in LAC in the next few years as World Bank and IDB continue reducing their commitments to the region due to the region's gloomy economic outlook and China needs overseas markets to export its production capacity. The available financial sources are promising for LAC and can play a significant role in reviving the economy if they are deployed in a strategic way.

China's development finance in LAC has demonstrated a demand-driven pattern. The majority of finance supported strategic infrastructure and energy projects in borrowing countries. However, this approach can be very risky for both sides. For LAC countries, reliance on natural resources and extractives-linked infrastructure will further peg the region's economy to the commodity cycle that has restricted LAC's development for decades. For Chinese investors, in the unique political and social context of LAC, investment can be easily in jeopardy if risks such as social and environmental risk are not adequately addressed and mitigated. The current safeguard systems of CDB and CHEXIM need to be upgraded in order to protect their overseas investment from potential risks. Although China Banking Regulatory Commission issued Green Credit Guidelines to address environment-related concerns in overseas investment, most banks and companies still lack the capacity to manage such risks. With increasing focus on the "going out" strategy, more and more Chinese companies will look for overseas opportunities and need more than guidance to make profitable investments.

Cited Works

Achtenberg, Emily (April 16, 2012). New Twist for TIPNIS Road: Bolivia Cancels Highway Contract. *NACLA*. Retrieved from <https://nacla.org/blog/2012/4/16/new-twist-tipnis-road-bolivia-cancels-highway-contract>

Baros, N, Cole J.J., Tranvik, L.J (2011), Carbon Emissions from Hydroelectric reservoirs linked to Reservoir Age and Latitude. *Natural Geoscience*, 4, 593-596.

Bloomberg News (February 3, 2016). “China’s \$230 Billion Green Bond Thirst to Supercharge Market”. *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/articles/2016-02-04/china-s-230-billion-green-bond-thirst-to-supercharge-market>

Cipoletta Tomassian G., Rozas Balbontín P., Sánchez R. and Tromben V., (2010), “Políticas de Infraestructura y Transporte en América Latina: Restricciones al Desarrollo y a la Integración”, *Mundo Nuevo*.

Calderón, César and Luis Servén (2010). “Infrastructure in Latin America”. Policy Research Working Paper 5317. Washington DC: World Bank.

CBRC (May 14, 2015). “银监会2014年报显示21家银行绿色信贷超6万亿元”. Retrieved from <http://www.cbrc.gov.cn/chinese/home/docView/EB59736AC343438784C1AE4D71C6815F.html>

Clover, Ian (December 30, 2015). China sets slightly lower solar target for 2016. *PV magazine*. Retrieved from http://www.pv-magazine.com/news/details/beitrag/china-sets-slightly-lower-solar-target-for-2016_100022589/#axzz45v9oFEjM

Economic Commission for Latin America and the Caribbean (ECLAC) (2011), “The Economic Infrastructure Gap in Latin America and the Caribbean,” Bulletin FAL, Issue No. 293 - Number 1 / 2011. Retrieved from <http://www.cepal.org/transporte/noticias/bolfall/6/42926/FAL-293-WEB-ENG-2.pdf>

Gallagher, Kevin P and Amos Irwin (2015), “China’s Economic Statecraft in Latin America: Evidence from China’s Policy Banks” *Pacific Affairs* Volume 88, No. 1 March 2015, 98-121.

Gallagher, Kevin P. and Margaret Myers (2014) “China-Latin America Finance Database,” Washington: Inter-American Dialogue.

Gallagher, Kevin P (2016), *The China Triangle: Latin America’s China Boom and the Fate of the Washington Consensus*. New York: Oxford University Press.

Humphrey, Christopher (2015), *Developmental revolution or Bretton Woods revisited?* London:

Overseas Development Institute.

Inter-American Development Bank (2012), *The Climate and Development Challenge for Latin America and the Caribbean: Options for Climate Resilient Low Carbon Development*, Washington, Inter-American Development Bank.

International Monetary Fund (2014), *World Economic Outlook, 2014*, Washington: International Monetary Fund.

International Rivers (2015), “Ecuador’s most spectacular waterfall threatened by Chinese-funded hydroelectric project,” Washington, International Rivers, <http://www.internationalrivers.org/resources/ecuador-s-most-spectacular-waterfall-threatened-by-chinese-funded-hydroelectric-project>.

Laurance, W. F., Peletier-Jellema, A., Geenen, B., Verweij, H. K., Dijck, P. V., Loverjoy, T. E., et al. (2015).

Reducing the global environmental impacts of rapid infrastructure expansion. *Current Biology* , 25, R1-R4.

Mesquita-Moreira, Mauricio, Mauricio; Blyde, Juan S.; Volpe Martincus, Christian; Molina, Danielken (2013), *Too Far to Export: Domestic Transport Costs and Regional Export Disparities in Latin America and the Caribbean*, Washington, Inter-American Development Bank.

MOFCOM (2013), “Guidelines for Environmental Protection in Foreign Investment and Cooperation”, Retrieved from <http://english.mofcom.gov.cn/article/policyrelease/bbb/201303/20130300043226.shtml>

Myers, Margaret, Kevin P. Gallagher and Fei Yuan (2015). Chinese Finance to LAC in 2015: Doubling Down. Washington: Inter-American Dialogue. Retrieved from <http://1m1nttzbhl3wbhghahbu4ix.wpengine.netdna-cdn.com/wp-content/uploads/2016/02/Dialogue-LoansReport-v4-lowres.pdf>

Randall, Tom (January 14, 2016). Solar and Wind Just Did the Unthinkable. *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/articles/2016-01-14/solar-and-wind-just-did-the-unthinkable>

Ray, Rebecca, Kevin P. Gallagher, Cynthia Sanborn, and Andres Lopez (2015), *China in Latin America: Lessons for South-South Cooperation and Sustainable Development*. Boston, Global Economic Governance Initiative, Boston University.

Ray Rebecca and Kevin Gallagher, 2015. “2015 China-Latin America Economic Bulletin.” Boston: BU GEGI.

Rozas, P. and Sánchez R. (2004), “Desarrollo de infraestructura y crecimiento económico: revisión conceptual”, Recursos naturales e infraestructura series, ECLAC.

Serebrisky, Tomás. SUSTAINABLE INFRASTRUCTURE FOR COMPETITIVENESS AND INCLUSIVE GROWTH. Inter-American Development Bank, Washington 2014

Sputnik (July 12, 2016). Brics Bank To Issue First 5-Year \$450min Green Bonds in Interbank Market. Sputnik News. Retrieved from <http://sputniknews.com/business/20160712/1042815835/brics-bank-green-bonds.html>

Steinhurst, W., Knight, P., Schultz, M., (2012). Hydropower Greenhouse Gas Emissions: State of the Research. Synapse Energy Economics, Inc., Cambridge, Massachusetts, USA 24 pp. Retrieved from <http://www.cusli.org/Portals/0/files/conference/2014/Hydropower-GHG-Emissions-Feb.-14-2012.pdf>

UNEP, “G20 Financial Leaders Commit to Exploring Green Finance Options”, February 27, 2016. <http://www.unep.org/newscentre/Default.aspx?DocumentID=27058&ArticleID=36081&language=en>

Vergara, Walter, Claudio Alatorre and Leandro Alves (2013a), *Rethinking Our Energy Future: A White Paper on Renewable Energy for the 3GFLAC Regional Forum*. Inter-American Development Bank, Washington 2013.

Vergara, W., Rios, A. R., Galindo, L. M., Gutman, P., Isbell, P., Suding, Samaniego, J.L. (2013b). The climate and development challenge for Latin America and the Caribbean: Options for climate-resilient, low-carbon development Washington, DC. Inter-American Development Bank.

World Bank (June 10, 2015). Green Bond Attract Private Sector Climate Finance. World Bank. Retrieved from <http://www.worldbank.org/en/topic/climatechange/brief/green-bonds-climate-finance>

World Bank (2012), “Green Infrastructure Finance: Framework Report”. World Bank, Washington DC.

Yuan, Fei and Gallagher Kevin P (2015), Greening Development Finance in the Americas, Global Economic Governance Initiative, Boston University.



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