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The Environmental Implications of China's Engagement With Sub-Saharan Africa

by Ruth Gordon

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Summary

Since the turn of the millennium, China has become an increasingly important economic and political power in Sub-Saharan Africa. Although China has unequivocally come in search of natural resources, its mission is undoubtedly deeper, broader, and more considerable, given the establishment of institutional mechanisms such as the Forum on China Africa Cooperation. China has come with new development modalities, but also with a poor environmental record. This has meant increased investment and trade for African nations, as well as serious environmental challenges that must be addressed. China is also determined to become a leader in green technologies, and Africa is one of its testing grounds. This holds the promise of modernization that does not put additional pressures on our already fragile environment; a development the international community should applaud.

Although the People's Republic of China has been investing in Sub-Saharan Africa (SSA) since the 1960s,¹ the pace, shape, and scope of this investment have increased exponentially since the beginning of the millennium.² Roads and other types of infrastructure, including energy projects, are being built, along with schools and hospitals, as China expands both trade and foreign direct investment (FDI) in SSA.³ While this development is linked to China's need for energy, minerals, and other commodities, it is much more expansive and has been accompanied by a far-reaching political and diplomatic effort to establish close ties, partnerships, and friendly relations with African governments.⁴ It may herald a new era for many African countries and will undoubtedly have many important consequences for the nations and peoples of SSA. Our focus, however, will be the environmental consequences of this growing association.

As a rising economic power, China is in search of natural resources to fuel its phenomenal growth, and it has come to Africa for those resources. This is a familiar role for SSA, which has long been a source for natural resources,⁵ as Europeans exploited the continent first as colonizers and then, with other Western nations, as developers and investors. Unfortunately, extractive industries are often environmentally sensitive, and Chinese companies may be investing in areas that were previously inaccessible or judged too environmentally problematic by Western entities. Thus, projects may sometimes be even more environmentally challenging than usual. Moreover, oil and other fossil fuels emit greenhouse gases (GHG) that are intensifying climate change, and thus oil extraction and use is particularly dubious, even if it is highly probable African

1. Formal links between China and SSA began with the Bandung Conference in 1955. Until the mid-1990s, however, aid was directed toward liberation movements and further isolating Taiwan. Since the mid-1990s, aid has increasingly been focused on broader strategic objectives, including developing relations with resource rich nations. Raphael Kaplinsky et al., *The Impact of China on Sub Saharan Africa 22* (DFID China Office, Apr. 2006); Martyn Davies, *How China Is Influencing Africa's Development 5* (Organization for Economic Cooperation and Development (OECD) Development Centre, Apr. 2010).
2. DEBORAH BRAUTIGAM, *THE DRAGON'S GIFT: THE REAL STORY OF CHINA IN AFRICA 2* (Oxford Univ. Press 2010). This continued throughout the global financial crisis, which may have only accelerated Chinese investment in Africa. In the first half of 2009, during the height of the economic crisis, Chinese investment in Africa increased 81%, compared with the same period the year before. Davies, *supra* note 1, at 5. See also Jennifer Cooke, *China's Soft Power in Africa, in CHINA'S SOFT POWER AND ITS IMPLICATION FOR THE UNITED STATES: COOPERATION AND COMPETITION IN THE DEVELOPING WORLD 27, 29* (Carola McGiffert ed., 2009).
3. Cooke, *supra* note 2, at 29.
4. *Id.* China has explicitly committed to expanding trade and investment opportunities with Africa, and it has made good on its commitments.
5. Africa contains about 30% of the world's mineral reserves, 40% of its gold, 60% of its cobalt, and 90% of global platinum reserves. See Mining and Oil Extraction in Africa, EOEARTH.ORG (Apr. 12, 2007), http://www.eoearth.org/article/Mining_and_oil_extraction_in_Africa (last visited Oct. 23, 2012) (discussing Africa's mineral wealth).

oil extracted by China would have been extracted in any event.⁶ Weak recipient governments may hesitate to insist upon, or simply lack, sufficient regulatory capabilities to impose adequate environmental laws and regulations, while as a newly industrializing nation, China may not bring the soundest environmental practices to its activities.

Perhaps, because it is currently in the midst of its own industrialization, China refuses to play by Western development rules or to be bound by international environmental standards. Instead, it is utilizing new development modalities and is employing a more respectful and cooperative mindset in its dealings with African nations.⁷ It seems these techniques may be more effective than Western methodologies, raising the prospect of some measure of modernization for a continent that had largely been written off by many commentators and scholars.⁸ Industrialization inevitably affects the environment whether positively or negatively, albeit often negatively, making it in the interests of the wider international community that this growth take place in as sustainable a manner as possible. Despite acute environmental problems in some of its current African investments, China may still be poised to help make this happen.

Even as China has become the leading emitter of GHGs, it has begun to focus on steps to reverse this trend and also to deal with domestic environmental degradation. It is determined to become a leader in green technologies to address rising GHG emissions at home and abroad, and, as part of its strategy, to overtake the West in the nascent technologies that are likely to dominate a more ecologically conscious world. China is already the leading producer and exporter of green energy technologies, such as solar, wind, and water power,⁹ and has explicitly committed to bringing this expertise to SSA. Not only is China the leading producer of large hydropower in SSA, but it has also pledged to construct 100 clean energy projects, focusing on small hydropower, wind farms, and solar power.¹⁰ Expanding SSA's potential for clean energy can play a significant role in increasing African electrification rates while simultaneously opening a development path geared toward resource conservation and climate sustainability.¹¹ If SSA becomes

a proving ground for green energy, it may become one of the most important examples of sustainable development to date, even if a looming warming climate belies the entire notion of sustainability. If the poorest countries are to modernize, meaning if they are to gain any semblance of access to the benefits and burdens of industrialization, this might be the soundest means by which this can transpire, and it should be encouraged and supported by the international community.

This Article will examine and analyze these developments. Part I explores the scope and nature of China's engagement with SSA. Although oil and other natural resources are an important part of this mosaic, China has much broader interests, as evidenced by the establishment and ever-deepening agenda and work of the Forum on China Africa Cooperation (FOCAC) and its relationships with more than 45 African nations, many of which are resource-poor.¹² China's policies in Africa are closely linked to its meteoric economic rise, the need for natural resources to fuel this growth, and its role as a rising world power. As a nation in the midst of modernization that has itself endured colonial domination, it has undertaken a decidedly different approach to African countries than that adopted by Western powers and has refused to accept Western development paradigms. This makes the China-Africa relationship much less amenable to Western pressure and interference and, given African preferences for the Chinese model, may actually pressure international financial institutions (IFIs) to change their policies, thus making China's evolving environmental policies all the more important.

Part II turns to the environmental consequences of this engagement. It begins with a brief examination of China's domestic environmental policies, which in the absence of international or strong target-country standards may have a significant effect on Chinese FDI in SSA. Moreover, a significant part of Chinese trade and FDI in SSA are state-led, and thus state policies may be especially relevant. China maintains a posture of non-interference and thus relies on domestic laws to define environmental protection parameters, rather than international standards, which it views as Western standards. Still, it may be that there is some convergence, which will also be explored. Part III turns to promising environmental possibilities regarding China's engagement in SSA. As a continent in need of energy joins forces with a nation determined to be a world leader in green technologies, the possibilities for greener development are substantial. Finally, Part IV will conclude with general observations on the potential and pitfalls of China's venture into SSA and its implications for the nations and peoples of this long-neglected region.

6. China's share of total African oil production is 9%, while the U.S. share is 32% and Europe's share is 33%. Cooke, *supra* note 2, at 30.

7. Having been on the receiving end of colonial domination may also contribute to China's viewpoint.

8. Africa has been the subject of quite positive commentary as of late. See, e.g., *Africa Rising, After Decades of Slow Growth, Africa Has a Real Chance to Follow in the Footsteps of Asia*, *ECONOMIST*, Dec. 3, 2011, <http://www.economist.com/node/21541015/> (last visited Oct. 23, 2012). See also BRAUTIGAM, *supra* note 2, at 2.

9. Chinese banks and companies are now the largest financiers and constructors of global hydropower projects, investing billions of dollars annually on large dams in developing countries. See Nicole Brewer, *The New Great Walls: A Guide to China's Overseas Dam Industry*, *INT'L RIVERS* (July 2008), available at http://www.internationalrivers.org/files/attached-files/new_great_walls_report.pdf (discussing the impact Chinese investors have had on global infrastructure development).

10. See *infra* notes 184-91 and accompanying text.

11. Bjorn Conrad et al., *Towards an Energizing Partnership? Exploring China's Role as Catalyst of Renewable Energy Development in Africa*, *Global Public Policy Inst.* 7 (May 2011), available at http://www.gppi.net/fileadmin/media/pub/2011/conrad-et-al_2011_sino-african-energy-relations.pdf.

12. The FOCAC is a collective dialogue platform for cooperation between China and African nations based on equality and mutual benefit that seeks to promote economic and social development. Chris Alden, *Background Notes on FOCAC 9-11*, in 3 *BULLETIN OF FRIDAYS OF THE COMMISSION* (Jan. 2010), available at http://www.africa-union.org/root/ua/Newsletter/EA/Fridays_of_the_Commission/2010/AUC%20Vol1%20FF%20Low%20Res.pdf.

I. The Evolving Relationship Between China and the Nations of SSA

China's rapid rise as a global economic power has been one of the most significant global economic developments of the last 20 years.¹³ China abandoned its centrally planned socialist economy in favor of a market-based system, albeit one with Chinese characteristics,¹⁴ successfully embarking on a path of rapid modernization that has transformed an agrarian nation into an industrializing colossus that is a leading global manufacturing center and one of the world's largest exporters.¹⁵ This unprecedented economic surge has had tremendous repercussions for the entire world economy, reconfiguring global trade and economic relations.¹⁶ It has also unleashed South-South economic cooperation and collaboration, which have been flourishing as middle-income Southern Tier nations increasingly undertake economic activities in poorer Southern Tier countries.¹⁷ China has been especially determined on this front, actively pursuing economic and political relationships across the Global South,¹⁸ and SSA has been an important part of this trajectory.

13. See, e.g., Ali Zafar, *The Growing Relationship Between China and Sub-Saharan Africa: Macroeconomic, Trade Investment, and Aid Links*, 22(1) WORLD BANK RESEARCH OBSERVER 103, 104 (2007).
14. BRAUTIGAM, *supra* note 2, at 7-8; F. Urban et al., *China and the African Oil Sector: Channels of Engagement, Motives, Actors, and Impacts* (IDS Working Paper, Vol. 2011, No. 374 (Sept. 2011)), at 8.
15. See, e.g., Stefanie Beyer, *Environmental Law and Policy in the People's Republic of China*, 5 CHINESE J. INT'L L. 185, 187 (2006). "The planning that once dominated Chinese trade during the 1980s has given way to a decentralized, market-determined trading system." BRAUTIGAM, *supra* note 2, at 74.
16. Zafar, *supra* note 13, at 104. In 2010, China surpassed Japan to become the world's second largest economy. Chester Dawson & Jason Dean, *Rising China Bests a Shrinking Japan*, WALL ST. J., Feb. 13, 2011, <http://online.wsj.com/article/SB10001424052748704593604576140912411499184.html> (last visited Oct. 24, 2012). Growing at an average rate of 10%, it is predicted that China will surpass the United States as the world's largest economy by 2016. Mark Weisbrot, *2016: When China Overtakes the US*, GUARDIAN U.K., Apr. 27, 2011, <http://www.guardian.co.uk/commentisfree/cifamerica/2011/apr/27/china-imf-economy-2016> (last visited Oct. 24, 2012).
17. There are other rising economic powers, and the largest, Brazil, Russia, and India, along with China, have been termed BRICs, or according to some commentators, BRICS, which includes South Africa. They have become important participants in the world economy and, given the economic woes of Europe and the United States, appear set to play an even larger role in low-income countries. They have also driven a resource boom. REZA MOGHADAM, *NEW GROWTH DRIVERS FOR LOW-INCOME COUNTRIES: THE ROLE OF BRICs 9* (Strategy, Policy, and Review Department, International Monetary Fund (IMF), Jan. 12, 2011).
18. The phrases Global South or Southern Tier refer to non-Western nations that share a history of colonialism or other forms of subjugation, have middle or low incomes, and tend to be populated by people of color. These nations are often referred to as developing countries, least-developed countries, undeveloped countries, and the like, as opposed to the industrialized, Western, and usually white, developed, or Northern Tier nations of the Global North. I have written extensively about development and prefer not to use the term "developing," although sometimes it is unavoidable. See Ruth Gordon & Jon H. Sylvester, *Deconstructing Development*, 22 WIS. INT'L L. REV. 1 (2004). Moreover, the term has become increasingly unstable with the rise of middle-income, industrializing nations, which are also referred to as emerging markets, Second World, or newly industrializing nations. This group includes Brazil, Chile, China, India, Panama, Singapore, South Africa, South Korea, Thailand, and others.

A. The Broader Political Milieu

It is readily apparent that China's objectives in Africa are not altruistic; it is seeking resources and developing economic partnerships to fuel its growth. While resources are a priority, there is undoubtedly also a much broader dimension to China's engagement with SSA and a different approach to obtaining those needed resources. China is in Africa for the long, deep haul and seems determined to fashion a wide-ranging, enduring relationship with African nations. In 2000, President Hu Jintao launched the FOCAC to promote economic cooperation between Africa and China, and it has become a key institutional mechanism undergirding the multidimensional relationship between China and approximately 45 African nations.¹⁹ At the FOCAC's triennial meetings, China has set forth three-year plans²⁰ that frame a comprehensive set of economic cooperation policies and enable regular dialogue and high-level meetings between Beijing and African heads of state.²¹ China has undertaken an expansive range of obligations to African nations, ranging from political and international affairs²² to economic and social

19. Davies, *supra* note 1, at 6. There have been five summits, the first four held in Beijing (October 2000 and November 2006), Addis Ababa, Ethiopia (December 2003), and Sharm el-Sheikh, Egypt (2009). The FOCAC was plainly part of a larger strategy to systematically and continuously engage the Global South, as the FOCAC model has been repeated in comparable forums, such as the China-Caribbean Economic and Trade Cooperation Forum (2003), the Forum on Cooperation Between China and Arab States (2004), and the China-Pacific Islands Economic Development Forum (2006). *Id.* at 87. FOCAC IV was held in Beijing in July 2012.
20. *Id.* at 6. Martyn Davies maintains that it is only because China is engaged in state-led capitalism that it can make broad pronouncements, because it can exert control over state enterprises. Others have taken a more nuanced approach, noting that while China has more control over its private sector than most other states, there is more independence in broad swaths of the private sector than this statement indicates. Still, central and provincial State-Owned Enterprises (SOEs) have played a large role in China's FDI in SSA. See generally Raphael Kaplinsky & Mike Morris, *Chinese FDI in Sub-Saharan Africa: Engaging With Large Dragons*, 21 EUR. J. DEV. RES. 551, 555 (2009).
21. BRAUTIGAM, *supra* note 2, at 127-28. The first forum held in Beijing included nearly 80 foreign ministers from 45 African countries. The first action plan focused on intergovernmental relations, trade and investment, infrastructure, financial cooperation, debt relief, tourism, migration, agriculture, natural resources and energy, science and technology, medical care and public health, education and human resource development, the environment, and cooperation in multilateral forums. A small institutional body was established to evaluate progress on implementation. FOCAC II (Addis Ababa December 2003) brought Action Plan 2004-2006, which reorganized the extensive list of matters demarcated at FOCAC I into three main categories: political affairs; multilateral cooperation; and economic development; 44 African nations attended and economic development was the largest part of the equation with infrastructure; trade and investment; health and agriculture and energy development being priorities. The final declaration called for enhanced South-South cooperation, greater North-South dialogue to promote African development, and reforming United Nations (U.N.) agencies, such as the World Bank and the IMF. FOCAC III (Beijing November 2006) also detailed a large number of concrete tasks. Alden, *supra* note 12, at 9, 9-10.
22. Political cooperation includes high-level meetings, political dialogue and FOCAC meetings between foreign ministers in conjunction with the fall U.N. General Assembly General Debate, and other measures to promote contacts between legislatures and local governments. These meetings have been successful, the institutional mechanism to support the FOCAC has progressed, and a China-Africa Chamber of Commerce and Industry has been established. Alden, *supra* note 12, at 10-11.

development.²³ China has generally kept its promises, not only realizing its commitments, but often doing so ahead of schedule and going beyond initial promises and targets.²⁴ China has also furnished unprecedented levels of debt relief and other forms of financial assistance, including preferential loans and grants (in kind) to build public infrastructure projects.²⁵

These relationships will make it increasingly difficult for Western institutions to have a substantial influence over Chinese policies in Africa. Despite consistent and considerable criticism from Western nations, commentators, and media, many African governments view China as an alternative to Western arrogance and officiousness. Even if it is not a relationship between equals,²⁶ China is interacting with African nations within a deepening network that also encompasses numerous cultural and social ties.²⁷ Certainly, China's need for natural resources has reinforced SSA's status as a source of natural resources to fuel global manufacturing.²⁸ In this respect, China's FDI in SSA is similar to the involvement of Western governments and corporations in Africa both during and after the colonial era.²⁹ Yet, China seems more willing to pay for these resources at a fairer price, namely the modernization African nations crave. In other words, why appropriate when it is far easier and less costly to pay a reasonable price?³⁰

B. Trade and Investment

Since at least the turn of the millennium, China has built a network of trade, aid, and investment relationships with almost 50 African countries.³¹ The pace has been quite remarkable, with trade growing at a rate of 33% per year between 2000 and 2008,³² making China Africa's third largest trading partner, surpassed only by the United States and the European Union (EU).³³ Oil is becoming an increasingly important part of China's energy mix and is its leading import from SSA, with a large portion of African exports coming from the oil-producing countries of Angola, Equatorial Guinea, Gabon, Nigeria, and Sudan.³⁴ China also imports other natural resources, however, including minerals, metals, and agro-forestry products, and has trade relations with 35 countries, many of which are not oil-rich.³⁵

As trade has surged, so has Chinese FDI, which is expanding at a rate that exceeds its investment in any other part of the world.³⁶ FDI has advanced along four broad channels: energy and mineral resources; infrastructure; global production networks; and small-scale entrepreneurial ventures.³⁷ Private firms have concentrated on manufacturing and service industries, and the scale of private projects is significant and rising.³⁸ By the end of 2008, the cumulative net stock of Chinese investment reached \$7.8 billion dollars in more than 35 countries.³⁹

Manufacturing and resource-based investments have been in place since the 1980s, but 2000 marked a substan-

23. Economic cooperation is the most important category, with agriculture, investment, and business cooperation, trade, finance, infrastructure, energy resources, science and technology, information, air, and maritime transport at its core. Social development integrates development assistance and debt relief, human resources development, culture, education, medical care, environmental protection, tourism, people to people exchanges, and cooperation in news and media. *Id.* at 10.

24. *Id.* at 11.

25. These projects include ministry buildings, courts, hospitals, stadiums, and convention centers. Peter Bosshard, China's Environmental Footprint in Africa, 4, 10 (John Hopkins Univ., African Studies Program, Working Paper, 2008).

26. In 2005, China's economic size measured in terms of purchasing power was more than five times that of SSA. Zafar, *supra* note 13, at 106. Western commentators have criticized the power lopsidedness of the FOCAC and between African nations and China in general. Ian Taylor, From Santa Claus to Serious Business: Where Should FOCAC Go Next?, Quo Vadis FOCAC? The Fifth Ministerial Meeting of the Forum on China African Cooperation Beijing, 31 (Centre for Chinese Studies, July 2012), available at http://www.ccs.org.za/wp-content/uploads/2012/09/China_Monitor_FOCAC_Special_Edition_JULY_2012_FINAL.pdf.

27. African students are attending Chinese universities and are being trained as, inter alia, doctors, teachers, and engineers. There are also Chinese medical teams, teachers, and technicians assisting African governments. Cooke, *supra* note 2, at 33-35.

28. Rene N'Guettia Kouassi, *Can Chinese Pragmatism Lead the European Union to Reformulate Its Co-Operation Policy With Africa*, in 3 CHINA & AFRICA: ASSESSING THE RELATIONSHIP ON THE EVE OF THE FOURTH FORUM ON CHINA AFRICA CO-OPERATION (FOCAC IV) 3, 7 (The Bulletin of Fridays of the Commission, Jan. 2010) (noting that Africa needs a strategy, lest Africa become a Sino-European battleground for raw materials to fuel industry and markets for their manufactured goods).

29. Bosshard, *supra* note 25, at 4. See also Ruth Gordon & Jon H. Sylvester, *Deconstructing Development*, 22 WIS. INT'L L. REV. 1 (2004).

30. In some respects, China is patterning its development relationship with SSA on its former relationship with Japan and other Asian development modalities. Japan and China utilized resource-based loans, where China supplied Japan with natural resources while Japan assisted China's modernization efforts. One of many differences between Asian states and the West has been the idea of the governmental state, where state entities are a more important element of the development mix. BRAUTIGAM, *supra* note 2, at 13, 18; Conrad et al., *supra* note 11, at 24-25.

31. Zafar, *supra* note 13, at 110-14.

32. China-Africa trade increased from \$10.6 billion in 2000 to \$106.8 billion in 2008. Chinese exports reached \$5.8 billion, and imports from Africa were \$56 billion. Conrad et al., *supra* note 11, at 23.

33. Urban, *supra* note 14. China had more than \$100 billion in trade with SSA in 2008.

34. In 2005, 20% of SSA's raw materials and 15% of its fuel exports went to China. Approximately 85% of Africa's exports to China are from five oil-exporting countries, and according to some estimates, 50% of China's investments are concentrated in a handful of countries that have natural resources. Urban, *supra* note 14, at 10.

35. Urban, *supra* note 14, at 10. In 2008, 82% of Africa's exports to China included mineral products, including oil and gas. Africa & China, Cooperation for Sustainability, Briefing Note From World Wide Fund for Nature to Competent Authorities in African Countries and China in the Context of FOCAC (March 2012 World Wide Fund for Nature, formerly the World Wildlife Fund) at 2. See also Moghadam, *supra* note 17, at 13-14 (detailing that low-income countries' primary exports to BRICs are resource-based commodities).

36. Rising from \$20 million per year in the early 1990s, Chinese FDI in Africa jumped to close to \$100 million in 2000, to \$400 million by 2005, and were more than \$1 billion in 2006, a growth rate higher than Chinese FDI in any other part of the world. Zafar, *supra* note 13.

37. *Id.*

38. Moghadam, *supra* note 17, at 18. It has been estimated that there are more than 700 Chinese enterprises in more than 50 countries, employing close to 80,000 Chinese workers in a broad variety of sectors, including light manufacturing, services, agroprocessing, apparel, and telecommunications. Africa has also been on the receiving end of, inter alia, low-cost Chinese motorcycles, electronic goods, and tee shirts. Zafar, *supra* note 13.

39. Just as investment is not confined to resource-rich nations, infrastructure projects, unlike many earlier colonial projects, are not directly tied to mines and oil wells. BRAUTIGAM, *supra* note 2, at 277-79. Joanne Wagner "Going Out": Is China's Skillful Use of Soft Power in Sub-Saharan Africa a Threat to U.S. Interests?, 64 NDU PRESS 99 (2012), available at http://www.ndu.edu/press/lib/pdf/jfq-64/jfq-64_99-106_wagner.pdf.

tial change in focus as resources and infrastructure became unambiguous priorities.⁴⁰ These sectors have been dominated by central and provincial State-Owned Enterprises (SOEs), whose investments are larger and more costly than most private projects.⁴¹ Large infrastructure and resource-extraction projects are structured quite differently from traditional Western interventions. Unfortunately, infrastructure has not been a central focus of Western development agencies as of late, which have instead concentrated on free market reforms, good governance, human rights, and other matters.⁴² Yet, African nations have very much sought funding to construct infrastructure, and China, a fellow developing country, also views it as a critical component of modernization. The parties have linked China's need for resources with Africa's need for infrastructure to fashion a mutually beneficial strategy. Known as the Angola model, infrastructure is acquired by African nations through resource-based loan agreements that secure the flow of natural resources to China in return for China financing and constructing infrastructure projects.⁴³ Chinese contractors are building roads, railroads, fiber optic cables, and hydroelectric power dams, and developing soft infrastructure projects, such as schools, hospitals, stadiums, and government office buildings.⁴⁴ These projects appear to be assisting ordinary people, irrespective of the inclinations of their governments.⁴⁵

Over time, a mind-numbing aggregate of conditions were imposed to obtain International Monetary Fund (IMF) and World Bank financing.⁴⁶ By contrast, China follows a policy of non-interference in the domestic affairs of other states and does not encumber its investments with conditions and requirements.⁴⁷ Thus, while China is not funding and propping up corrupt governments, it also does not require good governance or the many other conditions imposed by Western donors. China contends that strong and sustainable economic growth and social stability will eventually result in good governance, the rule of law, environmental protection, and the observance of human rights; Western developers believe the reverse and have made these requisite conditions for funding.⁴⁸ Not surprisingly, African governments prefer China's approach, and it may prompt Western funders to reassess their policies and tenets as Chinese loans and assistance open fresh avenues of funding.

By providing additional financing options and outpacing World Bank and IMF credit levels, China is undercutting the overwhelming influence and domination these institutions have long exercised over African governments,⁴⁹ and the international community is not pleased with this turn of events.⁵⁰ Many concerns have been raised about China's role in Africa, including its negative influence on governance, human rights, local employment, labor conditions, product quality, and the sustainability of the continent's debt burden.⁵¹ China is also charged with environmental degradation and the depletion of finite natural resources.⁵²

There is undoubtedly some merit to these claims.⁵³ China's need for natural resources has reinforced SSA's position as a supplier of natural resources for global manufacturing, and in this respect, its FDI is no different than that of Western governments and corporations both during and after the colonial era.⁵⁴ Moreover, there have been serious environmental problems with a number

40. Resources are important, but relations have been instituted with almost all African countries, whether or not they are oil- or mineral-rich. The relationship between China and Africa is also more focused on mutual benefit, and while Chinese companies definitely profit, China has been more willing to focus on projects African countries desire. BRAUTIGAM, *supra* note 2, at 277-81.

41. Kaplinsky & Morris, *supra* note 20.

42. Beginning in the 1980s, the Washington Consensus began to dominate development policy. It proposed 10 policy prescriptions including, inter alia, fiscal discipline, tax reform, reordering public expenditure priorities away from subsidies, privatization and market deregulation, trade liberalization, and easing barriers to FDI. STEFAN HALPER, *THE BEIJING CONSENSUS: HOW CHINA'S AUTHORITARIAN MODEL WILL DOMINATE THE TWENTY-FIRST CENTURY* 57 (Basic Books 2010); JOHN E. STIGLITZ, *GLOBALIZATION AND ITS DISCONTENTS* 59-61, 31-34 (2003). In the early post-colonial era, infrastructure was a priority for development agencies. The shift began in the 1970s, when the focus became basic needs, which was followed by a series of other priorities, and accelerated with the advent of the Washington Consensus, which stressed free-market reforms, good governance, and other matters. Gordon & Sylvester, *supra* note 18, at 33-49.

43. HELMUT ASCHE & MARGOT SCHULLER, *CHINESE ENGAGEMENT IN AFRICA—OPPORTUNITIES AND RISKS FOR DEVELOPMENT* 36-37 (GTZ 2008); CHRIS ALDEN & ANA CRISTINA ALVES, *CHINA AND AFRICA'S NATURAL RESOURCES: THE CHALLENGES AND IMPLICATIONS FOR DEVELOPMENT AND GOVERNANCE* 9-10 (South African Inst. of International Affairs Occasional Paper No. 41, Sept. 2009), <http://www.saiia.org.za/occasional-papers/china-and-africa-s-natural-resources-the-challenges-and-implications-for-development-and-governance.html> (last visited Oct. 24, 2012); Zafar, *supra* note 13, at 120; Conrad et al., *supra* note 11 at 17-18.

44. Kouassi, *supra* note 28, at 6.C. For example, Chinese companies are mining oil in Angola and Sudan, building roads in Ethiopia, are an active part of the electricity sector in Kenya, building infrastructure and developing the tourism industry in Sierra Leone, and servicing mobile phone networks in Kenya and Nigeria. Throughout the entire Sub-Saharan continent, Chinese companies are constructing much-needed infrastructure, including dams, ports, and roads, and are helping to renovate government offices. Zafar, *supra* note 13, at 105.

45. Cooke, *supra* note 2 at, 39-41. "By the end of 2009 China finished more than 500 infrastructure projects, including the completion of over 2000 km of railroads, more than 3000 kilometers of roads, 11 bridges, dozens of hydropower stations and ports." Huang Meibo & Qi Xie, Forum on China-

Africa Cooperation: Development and Prospects, FOCAC Fifth Ministerial Meeting, *supra* note 26, at 10.

46. Kouassi, *supra* note 28, at 9-10.

47. The one consistent exception has been conditioning assistance on nonrecognition of Taiwan. Mario Esteban, *Diplomatic Battle Between Beijing and Taipei in Latin America and the Caribbean*, 25 CHINESE (TAIWAN) Y.B. INT'L L. & AFF. 65, 74-75 (2007).

48. Kouassi, *supra* note 28, at 6.

49. In 2006, China extended nearly three times the sums offered by these institutions. Alden, *supra* note 12.

50. For a critique of this discourse, see Barry Sautman & Yan Hairong, *Trade, Investment, Power and the China-in-Africa Discourse*, ASIA-PACIFIC J., 52-3-09, (Dec. 28, 2009), <http://www.japanfocus.org/-Yan-Hairong/3278> (last visited Oct. 24, 2012).

51. Western scholars and the media contend that China's methodology is neo-colonial because it discourages unions, creates limited job opportunities for local African workers, and the few jobs that are sometimes generated are low-skilled, low wage, and may involve unsafe working conditions. Bossard, *supra* note 25, at 5.

52. Urban, *supra* note 14, at 12.

53. For example, assistance is tied and Chinese corporations rely on Chinese workers, even if those workers live a much more Spartan existence than Western aid workers, who are paid huge salaries. BRAUTIGAM, *supra* note 2, at 157.

54. Bossard, *supra* note 25, at 4. Kouassi, *supra* note 28, at 7 (noting that Africa needs a strategy if it is not to become a Sino-European battleground for raw materials to fuel industry and markets for their manufactured goods).

of Chinese investments in SSA, including projects undertaken by central and provincial SOEs. But there are also several implicit assumptions at work in these assertions. First, Western critiques assume that Western interests are more progressive and therefore better for Africans and poor people in general. Unfortunately, while post-Cold War⁵⁵ Western governments may attempt to encourage policies that endeavor to take the environment, human rights, and other such concerns into account, Western-based multinational corporations are not as conscientious, especially when it comes to oil and other extractive industries.⁵⁶ Second, these appraisals and assessments assume that Western commentators should and can influence, and even monitor, relations between other members of the international community. This speaks to the status of poor and perhaps particularly African nations in the global hierarchy; they are deemed in need of our counsel and protection. Yet, it is not apparent that China or African nations remain quite as willing to accept Western prerogatives or guidance in an era where funding is coming from non-Western sources and the policies being pursued appear to be more effective and in line with the needs and goals of African nations. Thus, as Western influence wanes, Chinese environmental policies and strategies become ever more important if we are to discern the environmental impact of China's engagement with SSA.⁵⁷

II. Undesirable Environmental Consequences

There are three possible sources that might determine the environmental parameters of Chinese FDI: China's domestic policies; the laws of the nation where investment takes place; or international standards governing FDI. As countries industrialize, economic growth frequently takes priority over environmental regulation, and China's experience is no exception.⁵⁸ While China is now focused on enacting and implementing environmental laws and regulations, the road has been difficult and success sometimes tenuous. China's policies are not the most promising, which is

reflected in some of the environmental problems and lack of standards found in their foreign investment policies and strategies. African nations generally have not complained very much, nor have they vigorously pressed for greater environmental protection. While these nations may have domestic environmental protection policies, the laws and their enforcement may be weak and environmental concerns may be near the bottom of a long list of priorities. Finally, international environmental standards might be utilized to govern investment in SSA, but Beijing generally views them as proxies for Western policies. Although it has been somewhat more receptive of late, China has resisted incorporating them into its "going out" strategy, citing its policy of non-interference.⁵⁹ Yet, non-interference may mean relying on weak national standards that governments feel too weak to insist upon.

A. China's Domestic Environmental Paradigm

I. Environmental Calamity

Beijing has made economic development and growth its overriding priority and in the process neglected environmental standards, with negative consequences.⁶⁰ China has managed to lift millions out of poverty, but it lacks sufficient natural resources to sustain this growth.⁶¹ Resources are being overutilized and as China's economy continues to expand at a rate of 10% or more each year, the demand for natural resources—coal, oil, timber, natural gas, and potable water—will only intensify and place enormous pressures on ecological services.⁶² Current pollution levels are severe and almost one-third of China's territory is affected by acid rain.⁶³ In addition, coal is China's primary source

55. During the Cold War, such concerns were often secondary; they have now been replaced by seeing the world through a national security post-9/11 lens, HALPER, *supra* note 42, at 76-77.

56. See, e.g., James Vicini, *U.S. Court to Hear Shell Nigeria Human Rights Case*, REUTERS, Oct. 17 2011, <http://www.reuters.com/article/2011/10/17/us-royaldutchshell-nigeria-lawsuit-idUSTRE79G42Z20111017> (last visited Oct. 24, 2012); Terry Macalister, *Shell Must Face Friends of the Earth Nigeria Claim in Netherlands*, THE GUARDIAN, Dec. 30, 2009, <http://www.guardian.co.uk/business/2009/dec/30/shell-oruma-alleged-pollution-claim/> (last visited Oct. 24, 2012).

57. While the policies of African nations are also important, a survey of such policies would be monumental and are beyond the scope of this Article.

58. The environment was not an issue in most domestic systems or internationally until after the Second World War, despite the environmental havoc sometimes wrought by the industrial revolution since the 18th century. While international environmental management can be traced to early 19th century conservation treaties, the modern international environmental movement is widely viewed as commencing in 1972 with the U.N. Conference on the Human Environment held in Stockholm. See Declaration of the United Nations Conference on the Human Environment, U.N. Environment Programme, available at <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503>.

59. China has a policy of noninterference and purports not to prescribe any particular development model for other nations. Cooke, *supra* note 2, at 32-33. On the other hand, such export is inevitable. Bosshard, *supra* note 25, at 14.

60. Roda Mushkat, *Compliance With International Environmental Regimes: Chinese Lessons*, 34 WM. & MARY ENVTL. L. & POL'Y REV. 493, 494-95.

61. China has sustained an average annual growth of about 10% over the past two decades, significantly increasing the standard of living for millions of its citizens. It is the world's largest nation, with an estimated population of 1.3 billion people. Yet, China has a relatively small area of cultivated land and few water resources. Economic development has dramatically increased the demand for energy and natural resources, such as water and land. China's natural resources are also among the most exploited and polluted in the world. Beyer, *supra* note 15, at 187. For an exhaustive examination of the environmental impact of modernization on China, see COST OF POLLUTION IN CHINA ECONOMIC ESTIMATES OF PHYSICAL DAMAGES, WORLD BANK xii (Rural Development, Natural Resources and Environment Management Unit 2007), available at http://siteresources.worldbank.org/INTEAPREGTOPENVIRONMENT/Resources/China_Cost_of_Pollution.pdf [hereinafter COST OF POLLUTION].

62. For instance, groundwater is so overexploited that it is placing severe stress on lakes and other freshwater sources. Indeed, China faces water shortages, water pollution, and flooding. In addition to raw sewage, modern toxic industrial waste and pesticide runoff from agricultural activities have worsened water pollution. COST OF POLLUTION, *supra* note 61, at xi-xvii.

63. Mushkat, *supra* note 60, at 496-97. Pollution levels in major Chinese cities are among the highest on earth. Beyer, *supra* note 15, at 187. Srinivasan, *Regulating the Belching Dragon: Rule of Law, Politics of Enforcement, and Pollution in Post-Mao Industrial China*, 18 COLO. J. INT'L ENVTL. L. & POL'Y 267, 276 (2007). Inadequately regulated industries and household emissions generate water and air pollution. More than 75% of the water

of energy and it is now the world's largest emitter of carbon dioxide (CO₂), accounting for 14% of the total global carbon output.⁶⁴ Current projections indicate that China's reliance on coal could expand to 77% by 2020, which will only aggravate worsening atmospheric pollution and accelerate the pace of global climate change.⁶⁵

2. Domestic Environmental Regulation⁶⁶

As it has become increasingly apparent that growth at any price has immense costs for public health, the environment, and ultimately the economy, Beijing has taken steps to impose environmental regulations.⁶⁷ Since the late 1970s, and particularly since 2004, wide-ranging domestic environmental regulations and policies addressing a multitude of environmental issues have been enacted.⁶⁸ A provisional Environmental Protection Law (EPL) was promulgated in 1979, and updated in 1989,⁶⁹ and the State Environmental Protection Administration (SEPA) was created in 1984.⁷⁰ These efforts have continued with new

environmental commitments covering energy intensity, pollution, water, forests,⁷¹ and more general policies, such as prevention,⁷² environmental impact assessments,⁷³ and land use planning.⁷⁴ The Green Credit Policy⁷⁵ and other measures adopted by SEPA have promoted compliance by domestic polluters.⁷⁶

Still, China's environmental regime has faced implementation difficulties, due to deficiencies in the laws themselves,⁷⁷ staffing and technical shortcomings,⁷⁸ and the urgency still accorded to economic development.⁷⁹ Moreover, national laws are made by SEPA, but often enforced by Environmental Protection Bureaus (EPBs) whose allegiance is to local governments with few incentives to impose environmental laws they often view as inimical to their economic interests.⁸⁰ Local governments

supply in urban areas is unsuitable for drinking or fishing, while automobile exhaust emissions produce dense urban smog. Sulfur dioxide (SO₂) concentrations in one-half of the 88 Chinese cities monitored by the World Health Organization (WHO) substantially exceeded WHO safety parameters. In 2003 alone, more than 21 tons of SO₂ were discharged into the atmosphere, up nearly 12% from the previous year. Air pollution costs \$25 billion annually in health care costs and lost work hours. Sitaraman, *supra*. Acid rain endangers forests, crop growth, and aquatic life. Recent estimates suggest that direct economic losses resulting from acid rain pollution are about US \$13.3 billion. *Id.*

64. China is both the largest producer and consumer of coal, accounting for more than one-quarter of the total global coal consumption. Coal's share of its energy mix is decreasing (72.2 % in 1980, to 69.4% in 2007). China's Policies and Action for Addressing Climate Change (Information Office of the State Council of the People's Republic of China (October 2008) at 27. See INFORMATION OFFICE OF THE STATE COUNCIL OF THE PEOPLE'S REPUBLIC OF CHINA, CHINA'S POLICIES AND ACTIONS FOR ADDRESSING CLIMATE CHANGE (2008), available at <http://www.ccchina.gov.cn/WebSite/CCChina/UpFile/File419.pdf> [hereinafter POLICIES AND ACTIONS]. But of course, in that same 25 years, production has grown and thus emissions remain extraordinarily high. Moreover, China has 114 billion tons of proven coal reserves.
65. Sitaraman, *supra* note 63, at 278.
66. The breadth and scope of China's efforts and failures to confront the alarming environmental destruction wrought by modernization are beyond the scope of this Article.
67. Bosshard, *supra* note 25, at 14. The World Bank has documented the alarming price China pays for its air and water pollution. *Id.* See generally COST OF POLLUTION, *supra* note 61.
68. Sitaraman, *supra* note 63, at 295. Between 1979 and 2004, Beijing passed 59 major environmental laws, focusing on such issues as wildlife preservation, conserving endangered species, addressing air and water quality, and preventing soil erosion, desertification, and atmospheric and marine pollution. China also promulgated administrative decrees regarding land administration, city planning, urban conservation, electric power regulations, protecting cultural relics, urban reforestation, promoting clean production, and protecting aquatic resources. *Id.*
69. The 1979 Environmental Protection Law was significantly revised and amended by 1989. Xin Qiu & Honglin Li, *China's Environmental Super Ministry Reform: Background, Challenges, and the Future* 39 ELR 10152, 10153 (Feb. 2009). The statute encompasses a broad variety of environmental issues and furnishes basic principles for preventive and rehabilitative measures. It also includes regulatory measures addressing water, air, solid waste, and noise pollution, and a system for environmental management, monitoring, liability, and enforcement, and is considered a watershed in the evolution of the statutory response to the ecological challenge. Mushkat, *supra* note 60, at 521.
70. Qiu & Li, *supra* note 69, at 10153. In March 2008, the Chinese National People's Congress elevated the former State Environmental Protection Administration to the Ministry of Environmental Protection. *Id.*
71. Nagle, *supra* note 28, at 614. China banned the logging of old growth forests in 1998 and strengthened water laws in 2002. Bosshard, *supra* note 25, at 14.
72. The "prevention first policy" emphasizes preventive measures to manage and mitigate the negative effects on natural resources and to realize sustainable development by linking environmental protection and economic development. Beyer, *supra* note 15.
73. Environmental impact assessments were mandated in 2003 for a range of projects, and the law was updated in 2006 to require public participation. Bosshard, *supra* note 25, at 14-15.
74. Beyer, *supra* note 15, at 203. China is attempting to integrate environmental protection into designs and strategies to construct cities, towns, and villages and to plan industrial, infrastructure, and agricultural projects. Incorporating environmental protection measures from the outset is also part of the "prevention first policy." See also Edward H. Ziegler, *China's Cities, Globalization, and Sustainable Development: Comparative Thoughts on Urban Planning, Energy, and Environmental Policy*, 5 WASH. U. GLOBAL STUD. L. REV. 295 (2006).
75. The Green Credit policy obliges Chinese banks and financial institutions "to provide low-interest loan rates to businesses that develop pollution control facilities, engage in ecological protection through the development of energy conservation mechanisms, green manufacturing, eco-agriculture, and similar initiatives. Credit may be denied to companies with poor environmental records." Thus, credit is linked to corporate environmental performance in an effort to strengthen the enforcement of environmental laws. Kate Swartz & Guan Linal, *Taming the Dragon: How Corporations in China Can Be Employed to Further Environmental Risk Management*, 13 VT. J. ENVTL. L. 97, 98, 110 (2011). In August 2007, SEPA confirmed an earlier decision to inspect companies in polluting sectors—including coal, petroleum, thermal power, chemicals, and textiles—as a condition for approving their stock listing. In October 2007, SEPA and the Ministry of Commerce announced they would ban companies from exporting for up to three years if they were found to seriously violate environmental rules. Bosshard, *supra* note 25, at 13.
76. Beijing has indicated that it strongly supports more stringent environmental regulations and has incorporated environmental protection and other ecological considerations in recent Five Year Plans. Bosshard, *supra* note 25, at 15.
77. Chinese laws can be general, vague, and include aspirational language that encourages rather than requires specific activities. When duties are imposed, procedures and specific goals may be lacking. Mushkat, *supra* note 60, at 524.
78. Besides a lack of staff, financial resources, and technical expertise, SEPA poorly coordinates with other administrative agencies as well as its own subordinate agencies. As a result, SEPA often is unaware of local developments, thus limiting its capacity to implement national laws, which leaves enforcement to local officials. Mushkat, *supra* note 60, at 525-30.
79. Beyer, *supra* note 15, at 205-07. Nagle, *supra* note 28, at 621.
80. Although China is a centralized state, it is also divided into provinces, autonomous regions, and municipalities that are under the control of the central government. Legislation and directives emanate from Beijing and are followed by subnational governmental units. In practice, however, this high degree of administrative cohesion may not exist as China becomes increasingly decentralized and functions are shared by the central government and

sponsor or own industries and compete with other entities to attract business and commerce.⁸¹ Most regard environmental regulations as incompatible with economic growth and thus seek to undermine them.⁸² Moreover, local governments may also own and control entities that invest abroad, including in SSA.

B. African Policies: Impact and Pushback

Historically, the most lucrative FDI in SSA has been environmentally sensitive, so foreign investment has often come at a high environmental cost. A significant part of Chinese FDI entails oil and mineral resource extraction, which are environmentally problematic sectors.⁸³ Thus, to the extent that China is investing in extractive industries, it is replicating previous Western FDI in environmental terms. Moreover, China often goes where westerners have not bothered to tarry, which may raise additional environmental concerns.⁸⁴ There are also fears that as environmental regulation increases at home, Chinese companies with poor environmental track records may be tempted to invest in nations with weak regulatory regimes, such as the nations of SSA.⁸⁵

Pressure from African governments for stronger environmental regulation has perhaps not been strong enough. To the extent that there are misgivings about aspects of

Chinese investment policies, they have tended to focus on other concerns.⁸⁶ Some projects have been environmentally problematic, however, with several resulting in local protests, and in some countries, the government has required stronger environmental due diligence.⁸⁷ For its part, the African Union has called for adherence to environmental regulations in Chinese projects.⁸⁸ But the general tendency has been to welcome China's growing presence, the economic boost it is generating, and its pragmatic and rapid method of establishing aid projects irrespective of conditions concerning corruption, good governance, or environmental impact.⁸⁹ African governments can and should insist on better environmental standards, for ultimately it is they who are responsible for the environmental stewardship of their nations.⁹⁰ It may also be that they are beginning to do so.

C. International Standards

"Since the 1980s, multilateral development banks have adopted policies that address the social and environmental effects of their projects."⁹¹ In December 2001, the export credit agencies of the Organization for Economic Cooperation and Development (OECD) adopted Common Approaches to the Environment, establishing joint environmental guidelines, whereby "export credit agencies have committed to evaluating projects against country standards, one or more relevant environmental standards and guidelines published by the World Bank or other multilateral development banks."⁹² China is not a member of the OECD, however, and the China Export-Import Bank (China Exim Bank) has refused to join the Common Approaches initiative. International and Western financial institutions worry that Chinese banks will fund projects Western institutions have rejected as presenting intolerable environmental risks, and there is at least anecdotal evidence that borrowing governments *are* using the availability of Chinese funding to pressure Western financiers to weaken or ignore environmental standards.⁹³ There are also

local institutions. EPBs are responsible for environmental protection within their jurisdiction and have wide discretion in addressing environmental concerns. But they are funded, controlled, and under the direction of local entities that themselves have considerable power, discretion, and autonomy. Beyer, *supra* note 15, at 188-90. EPBs answer to local governments and SEPA, yet SEPA supervision is nominal, while EPBs are part of local governments. Their budgets are funded by local governments that themselves may have special connections to local industries. Beyer, *supra* note 15, at 207. Predictably, China has had difficulties enforcing environmental regulations adopted by the central government. Nagle, *supra* note 28, at 623.

81. Local governments have considerable administrative and fiscal autonomy, which has generated considerable pressure to attract and promote commerce and to build local economies. They often sponsor or own industries and consider environmental regulations incompatible with economic growth. Beyer, *supra* note 15, at 189. EPBs frequently evade and circumvent national policies and environmental laws because of local economic considerations and, at times, corruption. EPBs must enforce SEPA policies without disrupting industrial output, employment creation, or economic growth. Sitaraman, *supra* note 63, at 311.
82. National policies may beget local countermeasures to evade and exploit loopholes in national laws. Local governments and EPBs have colluded to help polluters evade or circumvent environmental regulations; waived pollution discharge fines; and suppressed reports documenting the poor environmental performance of local industries. Sitaraman, *supra* note 63, at 309, 311.
83. Astrid B. Akoyoko, *Africa, China, and the "Green" Factor*, CONSULTANCY AFRICA INTELLIGENCE (Nov. 2011) http://www.consultancyafrica.com/index.php?option=com_content&view=article&id=899:africa-china-and-the-green-factor-&catid=58:asia-dimension-discussion-papers&Itemid=264 (last visited Oct. 24, 2012).
84. For example, in Gabon, Sinopec, a Chinese company, explored for oil in Loango National Park until the National Park Service ordered exploration to stop in September 2006. Conservation groups noted that oil exploration in Loango threatened rare plants and animals, and that the environmental impact study had not been approved by the environment ministry. In January 2008, Sierra Leone banned timber exports because Chinese and other logging companies were plundering forests and not respecting the law.
85. For instance, after old growth logging was banned in 1998, Chinese timber companies quickly moved abroad, and China soon became the world's largest timber importer. Bosshard, *supra* note 25, at 15.

86. Chinese projects have been charged with devastating local textile (and other) industries and criticized for preferring Chinese over African workers, or not complying with local labor laws. *Id.*

87. Cooke, *supra* note 2, at 42-43.

88. In September 2006, an African Union task force urged all participants to ensure that China gives more attention to protecting the environment in its investment practices. Bosshard, *supra* note 25, at 9.

89. Maxwell M. Mikwerzalamba, Foreword, *The Bulletin of Fridays of the Commission African Union Commission 5-6* (Jan. 2010). Bosshard, *supra* note 25, at 8. Akoyoko, *supra* note 83, at 2 (critiquing the lack of regulation in SSA countries).

90. Akoyoko, *supra* note 83, at 2.

91. Bosshard, *supra* note 25, at 9.

92. *Id.*

93. The Merowe Dam in Sudan is a case in point. Canada, Malaysia, European and Arab countries refused to fund the project. Bosshard, *supra* note 25, at 6, 9. China has also been criticized more directly. The president of the European Investment Bank (EIB) noted that, "the competition of the Chinese banks is clear. They don't bother about social or human rights conditions. The Chinese snatched projects from under the Bank's nose in Africa and Asia, after offering to undercut EIB conditions on labor standards and the environment." *Id.* at 10.

fears of a race to the bottom regarding the environmental standards employed by IFIs.⁹⁴

The Chinese government has rejected criticism of its environmental record in Africa. In response to World Bank accusations that it was undermining environmental standards, Chinese officials insisted that its foreign relations entail non-interference in the internal affairs of other nations, and just as China does not accept other countries imposing their values, social systems, or ideologies upon China, it will not impose its system upon others.⁹⁵ Indeed, China regards international standards as Western standards, which they do not consider binding.⁹⁶ Nonetheless, intergovernmental organizations and nongovernmental organizations have continued to pressure Beijing to accede to international standards, and their efforts have yielded a few modest concessions.⁹⁷

D. *Compromise and a Modicum of Convergence*

Non-interference notwithstanding, ignoring workers' and human rights, displacing populations, and causing environmental destruction can lead to instability, and instability is not good for business. After difficulties in several countries, Beijing became increasingly aware that the environmental damage caused by Chinese ventures could have undesirable repercussions.⁹⁸ Strategies adopted by the State Council, the Ministry of Commerce, China Exim Bank, and other agencies suggest increasing sensitivity to the environmental footprint of Chinese companies abroad.⁹⁹

94. Bosshard, *supra* note 25, at 10. The head of the EIB recommended that international financial institutions (IFIs) lower their standards in response to Chinese competition, arguing that IFIs should avoid excessive conditions and had to think about the degree of conditionality they impose.

95. Bosshard, *supra* note 25.

96. I think this is basically accurate. Western interests have systematically dominated the international institutions they created and have consistently and steadfastly ignored the views of Southern states, especially the poorest nations. What masquerades as international is often Western, as a reluctant South is ignored or forced to go along. *See generally* Gordon, *supra* note 19. Of course, with truly international environmental problems such as ozone depletion and climate change, this equation has shifted. Ruth Gordon, *Climate Change and the Poorest Nations: Further Reflections on Global Inequality*, 78 COLO. L. REV. 1559, 1600-09 (2007).

97. Bosshard, *supra* note 25, at 10. Despite China's refusal to accede to OECD guidelines, the OECD published its first Environmental Performance Review in 2007 and formulated recommendations for adjustments. It argued for stronger governmental efforts to ensure that Chinese corporations operating overseas, particularly in such environmentally sensitive industries as forest products and mining, are part of China's professed goal of an international reputation for sound environmental management and sustainable development. It recommended improved government oversight and environmental performance in the overseas operations of Chinese corporations.

98. Bosshard, *supra* note 25, at 11. Cheng Siwei, a leading member of the People's Congress warned that "irresponsible practices" had prevented Chinese companies from expanding overseas and predicted that even in developing countries, foreign companies that turn a blind eye to their social responsibilities will be kicked out of the market. President Jintao repeatedly urged Chinese businesses to respect local laws during his February 2007 visit to Africa. *Id.*

99. In October 2006, the State Council issued nine principles to regulate foreign investments by Chinese companies. They included attending to environmental protection. Bosshard, *supra* note 25, at 12. China established the China Export Import Bank in 1994 to promote Chinese exports; it reports directly to the State Council, although the goal is to eventually transform the bank into a commercial institution. BRAUTIGAM, *supra* note 2, at 79-80. The bank is more than the administrative arm of China's export promo-

A series of project guidelines cover such themes as workers' rights, product safety, community relations, and environmental impact assessments. Concessional loans from China Exim Bank are an integral part of official development assistance, and the bank often finances large government-owned projects.¹⁰⁰ China Exim Bank policies are an important indicator of broader government policies, and the bank has adopted requirements that incorporate Chinese norms, but first and foremost hinge on host country standards.¹⁰¹ Moreover, while China Exim Bank does not recognize a legal or political obligation to support or accede to standards drafted by international bodies,¹⁰² it has signed two memoranda of understanding with the World Bank and the International Finance Corporation to cooperate on African energy and transport projects.¹⁰³ While these obligations are not mandatory, it does indicate the political intentions of the Chinese government, at least with respect to large projects undertaken by government-owned and financed entities.¹⁰⁴

Accordingly, it seems local laws will be the most salient in these projects. That said, there are also strong indications that all parties are more interested in taking environmental costs into account. Infrastructure and extractive ventures are largely within the purview of Chinese government-owned corporations and are financed by the China Exim Bank.¹⁰⁵ Thus, these entities can more easily incor-

tion, however, and enjoys relative autonomy in its project evaluation and approval processes. It provides export credits to Chinese and foreign companies; foreign government loans for projects in China; offers foreign exchange guarantees; and administers the Chinese government's concessional loans to foreign governments. For an extended discussion of Chinese institutions for development, see Ashe, *supra* note 43, at 32-35.

100. Ninety percent of China Exim Bank export credits go to SOEs and to large projects (of more than 100 million renminbi (RMB) each). As part of China's "going global strategy," China Exim Bank offers strategic overseas investors an interest rate discount. At the end of 2007, the outstanding loans on China Exim Bank's balance sheet amounted to RMB 321 billion. Bosshard, *supra* note 25, at 3.

101. Bosshard, *supra* note 25, at 12. The policy also stipulates an active role for China Exim Bank in monitoring environmental impacts throughout the project cycle and reserves the right to cancel a loan if environmental effects are not adequately addressed. According to the OECD, Chinese officials will discuss changes in project-related governance to ensure loan repayment, but it is not entirely clear if financiers also apply this assertiveness to the social and environmental appraisal of projects. *Id.*

102. In September 2005, the Chinese Ministry of Commerce suggested that the OECD and China cooperate on issues of corporate social responsibility and that the OECD further explain its *Guidelines for Multinational Enterprises* to Chinese companies. Bosshard, *supra* note 25, at 12.

103. Bosshard, *supra* note 25, at 13. Under these Memoranda of Understanding, financial institutions will cooperate in World Bank African energy and transport projects, IFC equity investments, and advisory services on environmental issues.

104. Control over the numerous provincial, municipal, and private Chinese enterprises that establish businesses, export goods, or invest in SSA, however, may be more limited and thus some Chinese ventures may contradict government appeals for improved corporate social responsibility. Bosshard, *supra* note 25, at 13. *See generally* SIMON ZADEK ET AL., RESPONSIBLE BUSINESS IN AFRICA: CHINESE BUSINESS LEADERS' PERSPECTIVES, available at http://www.hks.harvard.edu/m-rcbg/CSRI/publications/workingpaper_54_zadeketal.pdf.

105. Kaplinsky & Morris, *supra* note 20, at 554-55. The Chinese Development Bank (CDB), one of China's policy banks, is also becoming increasingly involved in financing overseas energy projects, including in SSA. Kristen McDonald et al., *Exporting Dams: China's Hydropower Industry Goes Global*, 90 J. ENVTL. MGMT. S294, S297 (2009).

porate environmentally friendly mechanisms into their corporate policies and strategies, which is the course the central government is attempting to take at home. Projects can be structured in an environmentally responsible versus irresponsible manner as a matter of government policy, and if environmental impact statements are a standard part of corporate policy at home, they can be standard operating procedure abroad. This should square with China's policy of non-interference, as all enterprises would routinely employ these procedures across the board.

There have been environmental problems and protests by local communities, as well as calls for more observance of environmental standards. Therefore, it seems highly unlikely that governments would resist additional environmental protection, especially if it is built into projects and is an integral part of corporate policy. Like human beings everywhere, African peoples and their governments would prefer cleaner water and air, the preservation of natural resources, and the other benefits of a sustainable environment. It is one thing not to insist on environmental safeguards if to do so might put nations at a competitive disadvantage for FDI and funding. It would seem to be a win-win situation, however, when the investor is ready, willing, and able to invest in a more environmentally favorable manner and there is little or no risk of losing out to nations that do not insist on high environmental standards. Poor countries are highly unlikely to resist, and at least central SOEs can afford to take this important step.

III. Potential Constructive Consequences: Linking China's Green Leap Forward to Africa's Need for Energy

As China begins implementing environmental policies to clean up its water, air, and soil, it is also taking account of the implications of climate change, a global problem to which it is now the world's largest contributor.¹⁰⁶ Beijing is cognizant of the nation's vulnerability to the consequences of climate change and thus has a stake in reducing GHG emissions domestically and internationally, even if thus far it has been a laggard in global efforts to address this quandary.¹⁰⁷ As China attempts to improve energy efficiency at home, it also plans to export these technologies and is positioning itself to become an international leader

in renewable energy and a more sustainable development that encompasses "green growth that will hopefully create greener economies."¹⁰⁸ This "green leap forward" could dovetail with the needs of SSA, an area also attempting to modernize and a region in dire need of modern energy. Renewable energy solutions could play a significant role in avoiding future emissions and preventing carbon lock-in, which is costly to reverse.¹⁰⁹ China appears ready, willing, and able to provide the necessary funding and technology to bring these possibilities to SSA.

A. Africa's Energy Needs

I. The Energy Deficit

While China is the largest emitter of GHGs, Africa's contribution to climate change is negligible, accounting for only 2.5% of global GHG emissions.¹¹⁰ This is largely because SSA has the world's lowest rate of access to modern energy¹¹¹; only about one-quarter of its 800 million inhabitants have electricity.¹¹² In total, Africa's generating capability is 47 gigawatts (GW) of electricity,¹¹³ which is less

108. The OECD has defined green growth as "promoting economic growth while reducing pollution and GHG emissions, minimizing waste and inefficient use of natural resources, and maintaining biodiversity." The U.N. Economic Commission for Africa defines a "green economy" as "enabling economic growth and human development without exposing future generations to significant environmental risks and ecological scarcities while creating new opportunities for green growth and employment creation." Akoyoko, *supra* note 83 at 1, citing *Investment for Green Growth*, OECD, <http://www.oecd.org>. A 2008 Chinese White Paper, *Policies and Actions for Addressing Climate Change*, committed to working toward global sustainable development with other countries. McElwee, *supra* note 107; POLICIES AND ACTIONS, *supra* note 64, at 46-50. Guidelines adopted by the State Council, the Ministry of Commerce, China Exim Bank, and other agencies also suggest that China intends to address the environmental footprint of Chinese FDI.

109. YONG CHEN, SUSTAINABLE ENERGY FOR EQUITABLE DEVELOPMENT 3 (Bank Information Centre, WB Group Apr. 2010), available at http://siteresources.worldbank.org/EXTESC/Resources/BIC_Contribution_to_WBG_Energy_Strategy_ReviewFINAL_April23_2010.pdf.

110. Conrad et al., *supra* note 11, at 24-25. Net emissions from deforestation, however, are a problem that renewable energy solutions could help mitigate. *Id.* The Clean Development Mechanism funds projects to reduce GHG emissions in non-Annex 1 or developing countries. Gordon, *supra* note 96, at 1608-11. In 2008, total CO₂ emissions from the African continent were approximately 600 million tons, less than German emissions of 800 million tons. Most SSA emissions reductions are from South Africa, which is the only country emitting significant amounts of GHGs. *Id.*

111. WORLD WILDLIFE FUND, CHINA AND RENEWABLE ENERGY IN AFRICA: OPPORTUNITIES FOR NORWAY? 14 (Mar. 2012), available at http://awsassets.wwf.no/downloads/china_and_renewable_energy_in_africa/opportunities_for_norway.pdf [hereinafter World Wildlife Fund]. Unless significant changes are made in policies and the pace of investments, more people in SSA will be without energy services in 2030 than today, given projected rates of population growth. Chen, *supra* note 109, at 2.

112. Roula Yazigi, Africa's Development in a Changing Climate, The International Bank for Reconstruction and Development/The World Bank (2009), available at <http://siteresources.worldbank.org/INTWDR2010/Resources/5287678-1252586925350/Africa-WDR-2010-booklet.pdf>.

113. Electricity is measured in watts. Watts are very small units, so the terms kilowatt (kW), megawatt (MW), and gigawatt (GW) are employed. One kW equals 1,000 watts. One MW equals 1,000 kW or one million watts. One GW equals 1,000 MW or 1 million kW or 1 billion watts. To put this in context, one MW typically powers 1,000 households at any given moment in time, roughly speaking. MW and more particularly GW are most commonly used to describe the capacity of generating units like wind turbines or other power plants. The entire power-generation capacity of the

106. To sustain its precipitous economic growth, China must adjust its economic model and shift from labor-intensive manufacturing to fostering innovation and producing globally competitive goods; green technology has become a critical aspect of efforts to accomplish this conversion. As China confronts climate change at home and abroad, it is becoming the model for developing and investing in renewable energy and low-carbon ventures. Akoyoko, *supra* note 83.

107. Charles R. McElwee, Featured Guest, *Economist Debates* (Nov. 25, 2009), <http://www.economist.com/debate/days/view/421> (last visited Oct. 24, 2012). Unfortunately, China has provided more leadership on climate change than the second largest emitter, the United States, which has been unable to cure its addiction to oil and is unlikely to be a leader in this sphere in the immediate future. Nevertheless, as the leader of the developing country negotiating block, China has continued to demand significant carbon reductions, financial assistance, and technology transfers from industrialized countries.

than 0.6% of the global total and the equivalent of Norway's total output.¹¹⁴ Thus, the need is great and the consequences of this insufficiency are profound.¹¹⁵ Remedying the region's dearth of adequate supplies of electricity will require an estimated 93 billion dollars.¹¹⁶ Africa's electricity-generating capacity is expected to triple by 2030, with more than 200 GW of new capacity¹¹⁷; an important question for all of us is the means by which this electricity will be generated.

2. Energy Realities and Possibilities

Currently, small-scale biomass¹¹⁸ provides one-half of SSA's energy.¹¹⁹ In some nations, it accounts for up to 70-80% of total energy consumption,¹²⁰ and thus many countries

have devised regional or national bio-energy programs. There is also largely untapped commercial energy—including hydropower, oil, and gas, which are significant, but unevenly distributed.¹²¹

With the exception of large hydropower, renewable energy sources remain underutilized due to a lack of financing and expertise.¹²² Yet, SSA possesses immense potential for solar, wind, and in some regions, geothermal energy.¹²³ For example, solar thermal appliances have a distinct role in the African market, and solar water heaters suggest a particularly promising alternative to the ubiquitous practice of burning wood and charcoal for fuel, and could reduce deforestation, which would also reduce Africa's modest contribution to climate change.¹²⁴ Renewable energy use is often limited to remote off-grid applications, and thus there has been some progress regarding solar home systems, household- and facility-scale biogas digesters, improved cook stove projects, and LED lanterns.

Substantial stretches of SSA have year-round sunlight¹²⁵ and tropical zones enjoy a vast potential for solar photovoltaic (PV) electricity.¹²⁶ Six hundred million people could have electricity based on PV potential alone, yet Africa only accounts for 15 megawatts (MW) of the world's 15 GW of total installed global solar PV capacity.¹²⁷ There is also significant potential for wind power, although as of 2009, the continent produced less than 600 MW of installed wind capacity, mostly in East Africa, where Ethiopia, Kenya, Tanzania, and others were planning or are currently utilizing this resource.¹²⁸ Geothermal energy uses the earth's heat as an energy source¹²⁹; its use in SSA is also concen-

continent of Africa currently stands at 124 GW, of which only 30 GW is in SSA (excluding South Africa).

114. Creamer Media Reporter, *Africa's Energy Problems Threatens Growth, Says Nepad CEO*, ENGINEERING NEWS (Nov. 12, 2009), <http://www.engineeringnews.co.za/article/africas-energy-problems-threatens-growth-says-nepad-ceo-2009-11-12> (last visited Oct. 24, 2012). Norway currently has a production capacity of 30 GW, but its population is only 5 million people, compared to SSA's 650 million (excluding South Africa's population of 50 million). Seventy percent of Africans lack access to electricity, and the 30% of Africans with access to electricity pay \$20 billion per year for low-quality, fuel-based lighting. ENERGY SECTOR MANAGEMENT ASSISTANT PROGRAM, MEETING AFRICA'S ENERGY NEEDS AND WIDENING ACCESS TO SUSTAINABLE ENERGY IN SUB-SAHARA AFRICA 5 (May 2012), available at http://www.esmap.org/esmap/sites/esmap.org/files/AFREAIntro_Brochure.pdf.

115. The paucity of modern energy services and technologies has wide-ranging consequences.

Lack of access to electricity means no refrigeration for medicines or food, limits on what type of businesses can be developed, as well as any effective lighting. As a result, children cannot easily study in the evenings. Most Africans, even in urban areas, still use firewood, crop residues or charcoal for cooking and cook on inefficient stoves, resulting in a high incidence of respiratory diseases because of smoke. Many women and girls have to spend hours collecting firewood, and cutting trees contributes to deforestation.

MEETING AFRICA'S ENERGY NEEDS: COSTS AND BENEFITS OF HYDROPOWER, WORLD WILDLIFE FUND 8 (2010), available at <http://tinyurl.com/WWFHydropower06>.

116. Christian K.M. Kingombe, Mapping the New Infrastructure Financing Landscape, Overseas Development Institute 5 (Apr. 2011), available at <http://www.odi.org.uk/resources/docs/6311.pdf>. Its infrastructure needs are in the range of \$250 billion over the next 10 years. *Id.* at 2. To meet demand and keep pace with projected growth, the energy sector in Africa has to install approximately 7,000 MW of new generation capacity each year. Jade Davenport, *Sub-Saharan Africa Needs to Spend \$41bnly to Meet Power Needs*, ENGINEERING NEWS (Mar. 14, 2011), <http://www.engineeringnews.co.za/article/sub-saharan-africa-needs-to-spend-41bnly-to-meet-power-needs-2011-03-14> (last visited Oct. 24, 2012). SSA's energy sector needs an investment of \$41 billion each year, approximately 6.4% of the region's gross domestic product, to address the region's significant shortfall in electricity supply.

117. MEETING AFRICA'S ENERGY NEEDS, *supra* note 115.

118. *Id.* at 8.

119. Randall Spalding-Fletcher, *The Clean Development Mechanism: Energy Projects for Africa*, Energy & Dev. Research Ctr. 64 (2010). South Africa produces 52% of Africa's electricity. Total African generating capacity excluding South Africa is only one-twentieth of Europe. MEETING AFRICA'S ENERGY NEEDS, *supra* note 115.

120. In some rural areas, the figure can be as high as 90-100%, where energy generally consists of gathering wood from nearby woods and whatever sources are available; this can also result in deforestation. *Africa's Renewable Energy Future*, FOCAC (May 2012), available at <http://www.focac.org/eng/xxxx/t822360.htm>. "Biomass is biological material derived from living, or recently living organisms." Biomass for energy usually refers to "plant-based material," but can also pertain to animal- and vegetable-derived material. Basic categories of materials include virgin wood and its byproducts; agricultural

residues (from harvesting or processing); food waste (including from food and "drink manufacturing, preparation and processing, and post-consumer waste"); and industrial waste and co-products (from manufacturing and industrial processes). Biomass Energy Centre, *What Is Biomass?* http://www.biomassenergycentre.org.uk/portal/page?_pageid=76,15049&_dad=portal (last visited Oct. 24, 2012).

121. Rising commodity prices may make coal and oil too costly over the long term. Kingombe, *supra* note 116.

122. Yazigi, *supra* note 112.

123. According to the World Wildlife Federation, Africa's potential is second only to Asia's for generating energy from renewable sources. Their study estimates that Africa could produce 42,000 terawatt-hours (TWh) (i.e., 42 trillion KWh) annually from renewable energy sources by 2050. World Wildlife Fund, *supra* note 111, at 15.

124. Conrad et al., *supra* note 11.

125. In most parts of the continent, this amounts to an average irradiation of about 2,200 kWh/m²/yr. *Africa's Renewable Energy Future*, *supra* note 120.

126. Six hundred million people could be served with electricity based on its PV potential. Ira Flatow, *Could Africa Leapfrog the U.S. in Solar Power?*, SCIENCE FRIDAY, June 6, 2008, <http://www.sciencefriday.com/blogs/06/06/2008/could-africa-leapfrog-the-u-s-in-solar-power.html> (last visited Oct. 24, 2012).

127. *Africa's Renewable Energy Future*, *supra* note 120. At the end of 2011, total global solar PV capacity had grown to 67,400 MW, representing 0.5% of worldwide electricity demand. The total power output of the world's PV capacity is equal to 80 billion kWh of electricity over one calendar year.

128. Wind energy development has been rather limited in SSA, with only a few nations, mostly in coastal areas, making extensive use of this technology. *Africa's Renewable Energy Future*, *supra* note 120.

129. Geothermal energy uses heat from the earth as an energy source. It can be used in a variety of ways, from powering large power stations to fueling small pumping systems. It can be found all over the world and is being tapped in more than 24 countries as an "affordable and sustainable solution to reducing dependence on fossil fuels." UNION OF CONCERNED SCIENTISTS, HOW GEOTHERMAL ENERGY WORKS, http://www.ucusa.org/clean_energy/

trated in East Africa, where it represents 4% of East African power, totaling approximately 10,000 MW.¹³⁰ Other African countries are also committing to making renewable energy a priority.¹³¹ For example, although Egypt, Morocco, and Tunisia in North Africa are currently the only African countries with wind farms of more than a few MW, projects in Ethiopia, Kenya, South Africa, and Tanzania are on the drawing board.¹³²

3. Hydropower

Whereas other forms of renewable energy still play a much lesser role,¹³³ large hydropower is currently the dominant component of SSA's energy mix,¹³⁴ and there is still abundant potential beyond current usage levels.¹³⁵ SSA has 290 GW of economically feasible hydropower capacity, of which only 8% has been developed.¹³⁶ Accordingly, large and small hydropower projects are expected to expand current capacities in a number of countries. This is also an arena where China has focused both at home and abroad.¹³⁷

Hydroelectric power has many positives that are only mounting in the age of climate change. Rather than exploiting climate-damaging fossil fuels, such as coal, hydroelectric power relies on water, a renewable resource, to create electricity.¹³⁸ Yet, to ensure a continuous, depend-

able source of energy, hydropower requires damming rivers, streams, and canals to channel water from higher to lower elevations, allowing it to reach a velocity that turns turbine blades to produce electricity.¹³⁹ As would be expected, larger dams generate more electricity at a lower cost than smaller dams.¹⁴⁰ Moreover, while the initial cost of constructing dams is rather high, the actual cost of generating electricity is inexpensive, and energy produced by hydroelectric dams is more reliable and predictable than other renewable sources, such as wind and solar.¹⁴¹

Historically, dams were favored by both the North and South as a means to create sustainable, renewable hydroelectric power.¹⁴² They are found throughout the industrialized world and have been financed by IFIs such as the World Bank for over 50 years.¹⁴³ At its peak, the World Bank loaned approximately \$2 billion annually to construct enormous hydropower projects.¹⁴⁴ Dams can buttress flood control on rivers that are prone to flooding,¹⁴⁵ create jobs and sometimes tourism, and increase irrigation for agriculture.¹⁴⁶ But dams can also have negative environmental and societal drawbacks. Dams can negatively affect river ecosystems and cause flooding that destroys agricultural acreage.¹⁴⁷ They can disrupt river habitats, displace naturally flowing sediment, and create stagnant reservoirs that facilitate the growth and spread of water-borne diseases like malaria.¹⁴⁸ Just as disquieting, hydroelectric dams can significantly and adversely affect populations living within

our-energy-choices/renewable-energy/how-geothermal-energy-works.html (last visited Oct. 24, 2012).

130. Kenya and Ethiopia rely upon 10,000 MW of geothermal power, accounting for about 4% of East Africa's power. *Africa's Renewable Energy Future*, *supra* note 120.
131. *Africa's Renewable Energy Future*, *supra* note 120. At the September 2011 African Energy Ministers' meeting, increasing Africa's renewable energy capacity was at the top of the agenda. WORLD WILDLIFE FUND, *supra* note 111, at 15.
132. WORLD WILDLIFE FUND, *supra* note 111, at 10.
133. *Id.* at 12. The energy market in SSA can be divided into large hydropower versus other forms of renewable energy, and South Africa, an industrialized country, versus the other nations on the continent. Outside of large hydropower, however, renewable energy use is mostly limited to remote off-grid applications, such as solar home systems and facility-scale biogas digesters.
134. "Twenty two of Africa's 47 countries generate more than 50% of their power from hydropower, and for eight countries, it is more than 90%." WORLD WILDLIFE FUND, *supra* note 111, at 12.
135. WORLD WILDLIFE FUND, *supra* note 111, at 15. Africa's water resources account for 10% of the world's total (1,100 TWh), but its water utilization rate is only 8%—approximately 93 TWh. *Africa's Renewable Energy Future*, *supra* note 120.
136. MEETING AFRICA'S ENERGY NEEDS, *supra* note 115. The entire installed generation capacity of 48 SSA countries is 68 GW, which is about the same as the generation capacity of Spain. Davenport, *supra* note 116.
137. SSA is expected to establish additional hydropower generation capacity of at least 20,165 MW by 2014 and yet currently, only 8% of Africa's hydropower potential has been developed. Moreover, medium-scale hydropower development is increasing, with more than one dozen countries having 20-60 MW hydropower plants, and even some recent Clean Development Mechanism projects approved for medium-scale projects. China is financing 10 major hydropower projects with a combined capacity of 6,000 MW that will increase SSA's total hydropower generation capacity by 30%. Alden, *supra* note 43, at 17.
138. See Karlie Shea Clemons, *Hydroelectric Dams: Transboundary Environmental Effects and International Law*, 36 FLA. ST. U. L. REV. 487, 490 (discussing hydropower as a renewable resource). Hydroelectric power is created by moving water that turns the blades of a turbine, which then turns the rotor of a generator that converts the energy created by the turbine into electricity. See U.S. Department of the Interior (DOI), *Hydroelectric Power: Managing Water in the West* (July 2005), available at <http://www.usbr.gov/power/edu/pamphlet.pdf>.

139. See U.S. DOI, *supra* note 138.

140. See *id.* Currently, there are approximately 45,000 large dams in the world, representing 16% of the world's energy production. See Clemons, *supra* note 138, at 489.

141. See Clemons, *supra* note 138, at 490.

142. For example, for a short history of the use of hydroelectric power in the American West, see U.S. DOI, *supra* note 138.

143. By 1994, the World Bank had loaned approximately \$58 billion to 93 countries to construct 600 dams, although the World Bank claims a much lesser role. See Erin K. MacDonald, *Playing by the Rules: The World Bank's Failure to Adhere to Policy in the Funding of Large-Scale Hydropower Projects*, 31 ENVTL. L. 1011, 1012 (2001). According to the World Bank's website, it only funded construction of eight dams per year in the 1970s and 1980s, and since 1986, has only financed 33 hydropower projects. It also asserts that it has played a role in funding only 3% of all dams in developing countries. See The World Bank Group, *World Bank Lending for Large Dams: A Preliminary Review of Impacts* (June 13, 2012), <http://Inweb90.worldbank.org/oed/oeddoelib.nsf/> (last visited Oct. 24, 2012) (noting that the World Bank's involvement in funding large hydropower projects differs from other reports).

144. See MacDonald, *supra* note 143, at 1018.

145. See Clemons, *supra* note 138, at 491.

146. See MacDonald, *supra* note 143, at 1018. The World Bank justified approving loans for large-scale hydropower projects based on cost-benefit analyses. See The World Bank Group, *World Bank Lending for Large Dams: A Preliminary Review of Impacts* (June 13, 2012), <http://Inweb90.worldbank.org/oed/oeddoelib.nsf/> (last visited Oct. 24, 2012).

147. While damming rivers can mitigate the damage from harmful river flooding, it may also have a negative impact on a river's ecosystem. See Clemons, *supra* note 138, at 493. Dams have also tended to destroy agricultural lands that are a major source of food and income for rural, poor communities. See MacDonald, *supra* note 143, at 1018.

148. A dam blocks sediment and nutrients from flowing downstream, which may be essential for a river's ecosystem and can erode riverbeds. Upstream effects include a lack of sediment displacement, because as sediment builds in the dammed segment, it reduces oxygen levels that may result in the loss of biodiversity. See Clemons, *supra* note 138, at 495. See MacDonald, *supra* note 143, at 1018.

close proximity of a dam site.¹⁴⁹ Besides losing farmland, upstream flooding has forced the relocation of towns, villages, and communities.¹⁵⁰ Hydrologists estimate that the damaging environmental effects of large-scale hydropower dams have adversely affected approximately 472 million persons worldwide.¹⁵¹

B. The China Factor

I. Large Hydropower

China has been building large hydropower projects both at home and abroad, including in SSA.¹⁵² Indeed, many SSA infrastructure projects have been large hydropower ventures,¹⁵³ making China a major large hydropower player on the continent. Building on its domestic experience and expertise in constructing large hydropower projects, China has either already supplied or plans to provide financial and construction capabilities for more than 70 projects in 29 African countries.¹⁵⁴ Yet, China's domestic environmental record in this arena has been problematic, if judged by contemporary international standards, and some of their African dam projects have also presented environmental and other problems.¹⁵⁵ Nonetheless, with many pending projects, Chinese involvement in large SSA hydropower is assured for many years to come.¹⁵⁶

Still, there are also indications that large hydropower projects are being supplemented by other forms of renewable energy as water resources become more unstable (due in part to climate change). For example, the Ethiopian Genale Dawa and Chemoga Yeda hydropower projects also included an agreement with China HydroPower to develop several wind farms with an installed capacity of 51 MW each.¹⁵⁷ Moreover, while large hydropower projects will undoubtedly continue to play a major role in electrifying Africa, China's resolve to export green technologies to Africa and beyond may prove to be a valuable addition to the mixture.

2. Beyond Large Hydropower

China is expanding its wind and solar PV industries in international markets, with lenders providing financial support for ventures that include Chinese wind and solar energy manufacturers.¹⁵⁸ Environmental collaboration and assistance are new arenas for Chinese foreign aid, but as China turns to green technologies to close its technology gap with the West, progress on renewable energy in SSA strongly coincides with efforts to establish Chinese companies as leading green technology suppliers in global markets.¹⁵⁹ Africa has long been both a laboratory and catalyst for Chinese companies initiating global expansion strategies, and thus entering the African renewable energy sector is a particularly logical move. In addition, China views its deployment of clean energy in SSA as both providing electricity for Africa's development and reducing its dependency on imported fuels.¹⁶⁰ From the African perspective, China can deliver both the money and technology to unleash its immense potential to utilize renewable energy. Indeed, this is already beginning to take place.¹⁶¹

Chinese companies are expanding wind, the solar PV industry, and other renewables in emerging markets, with financial support from China Exim Bank and other

149. See Karlie Shea Clemons, *Hydroelectric Dams: Transboundary Environmental Effects and International Law*, 36 FLA. ST. U. L. REV. 487, 497 (discussing harms associated with hydroelectric dams).

150. See Int'l Rivers, *Infrastructure for Whom? A Critique of the Infrastructure Strategies of the Group of 20 and the World Bank* (May 2012), available at http://www.internationalrivers.org/files/attached-files/infrastructure_for_whom_report.pdf.

151. See *id.*

152. China has more than 45,000 large dams. It has gone through four waves of dam-building: the third period (1980-2000) and the last, beginning in 2000, parallel its economic reforms. The projects, which are almost all hydropower ventures, have become increasingly complex as China began to import technologies and cooperate with foreign engineers and suppliers. The fourth wave followed government efforts to streamline and decentralize the process, and it has led to the corporatization of China's hydropower sector and a surge in domestic and overseas dam-building. McDonald, *supra* note 105, at 294, 297.

153. Vivien Foster et al., *Building Bridges: China's Growing Role as Infrastructure Financier for Africa* (World Bank, July 2008), available at http://siteresources.worldbank.org/INTAFRICA/Resources/Building_Bridges_Master_Version_wo-Embg_with_cover.pdf (discussing and detailing Chinese infrastructure projects in general and large hydropower installations in particular).

154. By the end of 2007, China was making \$3.3 billion available toward constructing 10 major hydropower projects with 6,000 MW of installed capacity. Once completed, these undertakings will increase the total available hydropower generation capacity in SSA by around 30%. Conrad et al., *supra* note 11.

155. For example, the Kongou Dam, proposed to power the Belinga iron ore project, could negatively impact the forests of Ivindo National Park. In Ghana, the Sinohydro's Bui Dam, financed by China Exim Bank, floods about one-quarter of Bui National Park. In Zambia, the Lower Kafue Gorge Dam, a Sinohydro project financed by China Exim Bank, will put additional pressure on the ecologically important Kafue Flats and its national parks. The Merowe dam in Sudan has been the focus of severe criticism for doing business with the government of Sudan, which has engaged in egregious human rights abuses, and because of the dam itself, which has had severe social and environmental consequences. Bosshard, *supra* note 25 at 6.

156. "The database maintained by International Rivers reports more than 70 hydropower projects with Chinese involvement in Africa. These include

some of the largest power developments on the continent, such as Ethiopia's Gibe II (1,870 MW), Nigeria's Mambila (2,600 MW) and Sudan's Merowe (1,250 MW)." WORLD WILDLIFE FUND, *supra* note 111, at 13. For a list of international dam projects undertaken by Chinese companies, see McDonald, *supra* note 105, at 297.

157. Conrad et al., *supra* note 11, at 33. "In September 2009, the Ethiopian Electric Power Corporation (EEP) signed a major power construction deal with several Chinese companies" to build the Genale Dawa and Chemoga Yeda hydropower projects. Interestingly, these contracts included an agreement with China HydroPower to build several wind farms with an installed capacity of 51 MW each. "Ethiopia's electricity sector is almost completely dependent on large hydropower and droughts have led to recurrent shortages." Thus, expanding wind power has been identified as a possible alternative to diversifying power generation. These wind farms will be financed through China Exim Bank.

158. WORLD WILDLIFE FUND, *supra* note 111, at 12.

159. Conrad et al., *supra* note 11, at 31.

160. Luke Patey & Lars Engberg Pedersen, *Exploring China-Denmark Development Cooperation in Africa*, Danish Institute for International Studies 11 (Jan. 2012), available at <http://um.dk/en/-/media/UM/English-site/Documents/Danida/Partners/Research-Org/Research-studies/Exploring%20China-Denmark%20Development%20Cooperation%20in%20Africa%202012.ashx>.

161. Conrad et al., *supra* note 11, at 7-8.

Chinese lenders,¹⁶² whose most significant condition is that ventures include Chinese wind and solar energy manufacturers.¹⁶³ The business motive is comprised of three elements: exporting renewable energy equipment; investing in local African manufacturing capabilities; and developing renewable energy capacities. The renewable energy equipment industry is set to establish a presence in foreign markets that includes and then surpasses increased exports, and China Exim Bank is prepared to provide financing.¹⁶⁴ Renewable energy equipment manufacturers are attempting to establish a toehold in African markets and then expand their exports of renewable energy products.¹⁶⁵

For example, China's Suntech Power, one of the leading PV producers in the world, has undertaken a 20 MW solar PV project with South African developer Yingli Green Energy International Trading Company Ltd.¹⁶⁶ In April 2010, Tanzania's leading solar power equipment contractor, Rex Investment Limited (RIL), announced a comprehensive partnership agreement with Suntech, whereby RIL will be the exclusive distributor of Suntech solar panels, supplying solar power equipment to the Tanzanian market and neighboring countries in East and Central Africa. RIL and Suntech are focusing on "untapped demand in rural communities that are not connected to national power grids."¹⁶⁷ While China's initial attempt at a joint venture to build Kenya's first PV manufacturing plant failed, Chinese efforts to establish PV production capacities in Africa are likely to continue.¹⁶⁸ Suntech has also committed to developing a 100 MW solar power plant in South Africa with Chinese companies as the leading suppliers of PV and other solar panels.¹⁶⁹ Although renewable solar energy proj-

ects are initially costly, solar energy will likely be harnessed free of cost.

With a saturated domestic market and facing fierce competition in Europe and America, Chinese wind turbine manufacturers have turned to African markets.¹⁷⁰ Goldwind, one of the world's largest wind turbine producers, has secured a turbine deal in Ethiopia and opened an office in South Africa.¹⁷¹ In conjunction with Tanzania's National Development Corporation, the Dalian International Economic and Technical Cooperation Group has undertaken the Singida Wind Power Project with a \$100 million China Exim Bank loan.¹⁷² Hydrochina Engineering Corporation will develop a renewable energy research and development center at one of Tanzania's universities,¹⁷³ and China has recently begun showing interest in the renewable energy market in South Africa, investing in both wind and solar.¹⁷⁴ China Longyuan Power Group Limited (Longyuan Power), the largest wind power producer in Asia, is part of a South African joint venture to develop African wind power and has also announced plans to build a modern blade and turbine manufacturing facility.¹⁷⁵ Mulilo Renewable Energy (MRE) and Longyuan Power will develop six South African wind parks that in total comprise 1,500 MW of capacity.¹⁷⁶ Longyuan Power has also pledged to transfer wind turbine technology to South Africa by means of a blade and turbine manufacturing facility in South Africa's Western Cape.¹⁷⁷

There have also been projects beyond wind and solar. China Exim Bank financed Tanzania's \$700 million funding for the Mnazi Bay gas-for-electricity project, which is projected to generate 160 MW in the Mtwara region. China Exim Bank is also funding 90% of the \$1 billion natural gas pipeline from Dar es Salaam to Mnazi Bay.¹⁷⁸ Small-scale projects are also becoming more common, as Africa's lack of infrastructure induces small-scale renewable energy projects to generate electricity and other energy commodities for local communities.¹⁷⁹ Proposals with various African countries have included biogas technology, hydropower, and solar and wind power. China has also offered training on "clean energy, climate change, forestry management, and desertification treatment and prevention."¹⁸⁰ An example of training and joint cooperation includes an alliance with Kenya to develop a range of

162. WORLD WILDLIFE FUND, *supra* note 111, at 13. China Exim Bank now makes loans for African clean energy projects, and is willing to offer credit for wind power ventures that employ Chinese wind power generators and equipment. *China's Wind Power Equipment Makers Eye Overseas Market*, PEOPLE'S DAILY ONLINE, Oct. 22, 2009, <http://english.people.com.cn/90001/90778/90860/6791271.html> (last visited Oct. 24, 2012).

163. WORLD WILDLIFE FUND, *supra* note 111, at 18. For example, the Chinese wind power company, Ming Yang, secured a \$5 billion loan from the China Development Bank for 2011-2015 to support expansion plans in China and abroad. Chinese turbine producer Goldwind, one of the world's largest turbine producers, secured a deal with Ethiopia in 2011 and has opened an office in Cape Town, South Africa. *Id.*

164. Conrad et al., *supra* note 11, at 7. Of course, not everyone agrees with this assessment. For example, some maintain that by investing in green projects in Africa, China is more interested in business opportunities than green growth, which is something only African governments can deliver. Akoyoko, *supra* note 83. African governments must compel China to add "green growth" to their investment strategy and portfolio because investors are unlikely to be concerned with such goals. Thus, the countries where that investment is taking place must insist upon it. *Id.*; Bosshard, *supra* note 25, at 14. Western investors eagerly embraced this model, which allowed them to evade stricter social and environmental regulations at home.

165. Conrad et al., *supra* note 11, at 15, 31. There have been increased exports by China's rapidly growing solar water heater manufacturing sector, and there has been some interest in off-grid renewable energy uses in rural areas.

166. Conrad et al., *supra* note 11, at 15.

167. *Id.* at 31. Patey & Pedersen, *supra* note 160.

168. Conrad et al., *supra* note 11, at 32-33.

169. For instance, China Suntech Power Holding signed a Memorandum of Understanding with Umsimbithi Holdings to jointly seek opportunities to develop solar power in South Africa; Suntech also confirmed plans to build a 100-MW solar power plant. *Id.* at 40.

170. *Id.* at 30.

171. WORLD WILDLIFE FUND, *supra* note 111, at 15.

172. The cement-clinker automatic production line introduced by China during the 2010-2011 expansion of the Twiga Cement Factory in Tanzania provides pollution-free production with low-energy consumption.

173. Sino-Tan Renewable Energy Ltd. of Tanzania, MCC 20-Hainan International (China), and Norsk Vind Energy (Norway) constructed a 100 MW power generator in Tanzania.

174. Conrad et al., *supra* note 11, at 76.

175. *Id.*

176. *Id.* at 40.

177. *Id.*

178. The project is led by the China Petroleum and Technology Development Company—a China National Petroleum Corporation subsidiary—the Tanzania Petroleum Development Corporation, and Siemens, and is scheduled to be completed by December 2012. *Id.*

179. WORLD WILDLIFE FUND, *supra* note 111 at 13.

180. Patey & Pedersen, *supra* note 160, at 10.

solar products to harness solar energy.¹⁸¹ This joint research project is focused on finding ways to adapt solar panels designed for China's topography to Kenyan conditions. Partners include an electronic technology company from Kenya and the Natural Energy Resource Research Institute based in Gansu, China. The Chinese government has already approved the joint research program, allocating \$386,000 for the project. Once completed in 2012, it will fuel schools, homes, health facilities, and tourism destinations.¹⁸² Kenya depends largely on hydropower and imported oil to generate electricity, but if this project is successful, it will be able to exploit the vast amounts of available solar energy and bring power to a large rural population that is still dependent on wood and coal for cooking and heating.

3. One Hundred Clean Energy Projects

At FOCAC IV,¹⁸³ held in November of 2009 at Sharm el-Sheikh, Egypt, Premier Wen Jiabao announced that China would construct 100 clean energy projects across the African continent. While large hydropower projects have generally been financed by resource-backed loans that are tied to China's efforts to secure its energy and natural resource needs, the clean energy pledge signals a fresh and fundamentally different pattern of Chinese engagement that encompasses direct investment in wind, solar, biogas, and small hydropower.¹⁸⁴ It excludes large hydropower; is driven by green technology development and manufacturing, which are also part of China's long-term economic policy planning¹⁸⁵; and indicates an expansion of China's approach to expanding renewable energy beyond large hydropower.

Following FOCAC IV, China began to implement a wide variety of Conference undertakings, including the 100 clean energy projects initiative.¹⁸⁶ At the October

28, 2011, China-Africa Think Tank Forum, a representative of the Chinese Ministry of Foreign Affairs disclosed that China has worked out country-specific plans for setting up projects in 11 SSA countries,¹⁸⁷ as it attempts to provide clean energy that is based on its own experience with clean technologies. China is expanding its engagement in solar and wind power stations,¹⁸⁸ and although it has yet to be fully implemented, biogas, solar, and small hydro are also on the drawing boards and commitments have already been made.¹⁸⁹ Given China's efforts to reduce domestic poverty on a monumental scale and bring energy to hundreds of millions in impoverished rural areas, this is a decidedly constructive development and may represent South-South cooperation at its very best. A nation in the midst of modernization is taking what has worked, albeit with appropriate modifications, to other countries with many of the same problems, and that is also attempting to undergo the same transition. These methods are much more likely to be effective as they are strategies undertaken in partnership with a nation that has recently and successfully utilized them. This is in marked contrast to the various theories propounded, perhaps with the best of intentions, by institutions dominated by nations that are long past these struggles.

IV. Conclusion

Although China's role in Africa is often criticized by Western commentators, I believe this is a very good story for Africa and perhaps for the rest of the world. While there have indeed been problems, both environmental and otherwise, and there are bound to be more glitches and stumbles, China's engagement with SSA may truly mark a new beginning for the region. The relationship is wide-ranging and deep and marks a new turn for South-South cooperation that is not among equals, but is surely more equal than the almost neocolonial role that has evolved to govern the relationship between the nations of SSA and IFIs, such as the World Bank and the IMF. There is at least a semblance of respect and mutual benefit in the FOCAC, and it is much more likely than not that African governments will increasingly turn to their new partner. This, in turn, is likely to elicit changes in the conventional modalities of these institutions. Perhaps, this is for the best, as China is itself in the midst of modernization and is better suited to help African nations discern the appropriate modalities for African modernization.¹⁹⁰ China may also

181. *China and Kenya Setting Up a Joint Venture for Solar Energy Products*, CHINA-NAFRICA.ASIA, June 19, 2009, <http://www.chinafrica.asia/tag/clean-energy> (last visited Oct. 24, 2012).

182. *Id.*

183. The eight-point plan focused on improving the living standards of the African people and covered agriculture, environmental protection, investment promotion, debt reduction and cancellation, wider market access, education, and medical care and public health. *China-Africa Trade*, *supra* note 180.

184. Conrad et al., *supra* note 11, at 7. WORLD WILDLIFE FUND, *supra* note 111, at 13. A commitment to small-scale energy projects in Africa's infant renewable sector differs from China's customary role with its focus on major infrastructure projects, such as railways, highways, or bridges. It also differs from the previous pattern of China's engagement in the renewable power sector, which has emphasized constructing large hydropower plants. China is also helping South Africa, which is the major emitter of GHGs on the sub-Saharan continent, transition from coal to cleaner technologies.

185. Conrad et al., *supra* note 11, at 7.

186. WORLD WILDLIFE FUND, *supra* note 111, at 17. This included initiating the China-Africa Science and Technology Partnership Plan as well as the China-Africa Joint Research and Exchange Plan. China also signed framework agreements on concessional loans with some countries, and exchange of letters with a majority of the least developed countries on increasing the number of items that receive zero-tariff treatment. It also agreed to send some countries agricultural technology teams, and to provide medical equipment and anti-malaria medicine. China began constructing agricultural technology demonstration centers, 50 China-Africa friendship schools, small-sized

well digging projects for water supply, and made progress on providing human resources training for Africa. In addition, China kicked off "African Culture in Focus 2010" activities, officially launched the 20+20 Cooperation Plan for Chinese and African Institutions of Higher Education, and held the China-Africa Modern Agriculture Cooperation Forum in Beijing.

187. WORLD WILDLIFE FUND, *supra* note 111, at 18. Elizabeth C. Economy, *China's Green Energy and Environmental Policies*, Council on Foreign Relations (Apr. 8, 2010), available at <http://tinyurl.com/chinagreenenergy> (last visited Oct. 24, 2012); Patey & Pedersen, *supra* note 160.

188. Patey & Pedersen, *supra* note 160.

189. Meibo & Xie, *supra* note 45, at 10.

190. The Angola model stems from China's experience with Japan, where it was on the receiving end of modern technologies and supplier of natural re-

be in the best position to alter the development policies of IFIs, if only because Chinese strategies are more effective. Indeed, it is difficult to perceive why the Angola model is not an improvement on more traditional FDI, when it has resulted in the construction of desperately sought infrastructure to the benefit of millions across the continent. If these policies succeed, and are desired by African governments and populations, it makes little sense not to adopt them across the board.

Matters on the environmental front are mixed, but I believe they are more positive than not. China is extracting fossil fuels whose use will undoubtedly lead to more GHG emissions and thus contribute to global warming. Yet, it is almost certain that this would have transpired with or without China, as it is very likely these resources would have been extracted in any case. Thus, while this is a negative, perhaps it is not distinctly Chinese. There have also been other environmental missteps, which is not surprising given the environmental record of public and private Chinese corporations at home and now unfortunately abroad. But it has led to a different kind of accommodation, as both China and African countries eschew international standards and work out strategies between themselves. This may signal a maturing of African governments, something Western commentators would be slow to recognize, much less encourage or nurture, but something China seems to be encouraging and assisting and that may be taking place nonetheless. Moreover, as China attempts to correct its domestic environmental missteps, it will also be more likely to incorporate these standards into its “going out” strategy. If nations do not believe they will lose FDI by insisting on environmental protection, they are unlikely to resist cleaner projects in favor of polluting ones, and Chinese SOEs can deliver on this.

On the constructive side, China is exporting green energy technologies, and SSA is greatly in need of energy. This has the potential to be a perfect marriage and an example of something that has been quite elusive: sustainable development, or at least more sustainable develop-

ment. If the peoples of Africa are to possess the benefits and burdens of modern life, they will need energy, and if China is willing and able to bring that capability to the continent in the form of renewable energy, this is a win for China and its corporations, for African nations and their firms, and for the international community as a whole. It means that development, something we purportedly have been assisting the people of SSA with for the last 60 years, may actually materialize in some form, and it will be without more of the GHG emissions that are destroying our planet. The signs of this transformation are already there, and it is why Africa is clearly progressing.

Of course, this is the most optimistic scenario. If could be that China will abandon its efforts in SSA, will revert to failed development policies, or that the ravages of climate change will be too severe to overcome with the assistance of just one power, even one as rich as China. But even in the event of this unlikely scenario, there are other Southern Tier countries on the horizon, and South-South cooperation in its entirety is unlikely to disappear. In any case, we in the West—and especially in the environmentally conscious and concerned West—should applaud these efforts and add our voices to discerning techniques that might make renewables more sustainable, for example, best practices regarding dams and innovations and experiences in bringing power to rural communities. But even as we add our voices, perhaps we can take a cue from the Chinese and approach this emerging discourse as peers to the parties already at the table, rather than as experts who are there to speak but never to listen, and to better appreciate that there may be different priorities and solutions to the daunting problems facing poor nations. Without a bit more deference, I fear we, meaning those who care about the environment and the poor, will no longer be useful parts of the conversation, just when there is finally a bit of good news, for it seems Africa is indeed developing and on a more sustainable course than we could have ever predicted. In this author’s opinion, this is exceptionally good news.

sources. It believes this exchange was ultimately beneficial. See also BRAUTIGAM, *supra* note 2, at 12.