

GEORGE BUSH SCHOOL OF GOVERNMENT AND PUBLIC SERVICE

# Environmental Impacts of China Outward Foreign Direct Investment

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Case Studies in Latin America, Mongolia, Myanmar, and Zambia

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## **Executive Summary**

China's rapid increase of outward foreign direct investment (OFDI) over the past decade has garnered worldwide attention for a variety of reasons. Of particular concern is the concentration of Chinese OFDI in extractive industries, especially in developing countries. Generally, developing countries have fewer and weaker regulations than developed nations, exposing them to more severe environmental degradation. As the environmental consequences of such growth and investment become more visible, governments, companies, and communities pursue better environmental management and protection policies.

Increasing environmental awareness and protection measures are evident in China's 11<sup>th</sup> and 12<sup>th</sup> five-year plans, which suggests that domestically China is pursuing a more efficient and sustainable growth than in previous decades. China plans to implement policies to increase accountability and capacity to improve environmental protection. While challenges still exist, namely China's growing demands for energy, such policies will provide a framework to advance environmental protection.

China's growing demand for and consumption of energy drives Chinese OFDI. The concentration of China's investment in extractive industries leads to substantial environmental degradation. The majority of investment takes place through large state-owned enterprises. Despite improving its domestic environmental policies, China lacks any environmental regulation of OFDI. Though it promotes corporate social responsibility (CSR) and recently released legal guidelines for OFDI, such practices rely on the initiative of the investing company. The domestic policy environment interacts with the regulations of the recipient countries, resulting in differing environmental impacts.

An examination of several countries from varying regions illustrates how investments interact with recipient countries' regulations. The increase of Chinese investment has affected the environment of South America, Mongolia, Myanmar and Zambia. Chinese investment in South America has allowed China to secure natural resources by increasing petroleum and mining production. Investment has impacted both small and established producers throughout the continent. South America, in particular Peru, shows how political development and improved financial markets can improve the regulatory environment, allowing FDI to benefit recipient countries.

Most Chinese FDI entering Mongolia is in the mining sector to meet China's growing demand for minerals. Investors in this sector include large Chinese state-owned mining enterprises that dominate Mongolia's largest deposits, as well as small and medium Chinese mining firms in the artisanal mining industry. Unlike their larger counterparts, these small and medium mining firms do not employ environmentally friendly technology to extract minerals. Hence, Chinese artisanal mining has harmed Mongolia's environment by generating excess surface water, waste rock piles, tailings, and mercury pollution, which causes air and water pollution. Inadequate law enforcement and local government corruption, coupled with the increasing influence of China, have made it difficult for Mongolia's central government to address these environmental issues.

In Myanmar, FDI in the nation's hydropower, oil and gas and mining sectors has resulted in water pollution, destruction of fisheries, loss of biodiversity and deforestation. Chinese investors and firms from other countries, whose investments predate those of China, caused these environmental issues. They can also be attributed to Naypyitaw's ineffective environmental governance, resulting from underdeveloped institutions and flouting the of its own environmental

laws. To improve environmental governance, Myanmar's government must develop its institutions, devote more resources to environmental protection and promote environmental education.

In Zambia, Chinese investments are concentrated heavily in the country's copper mining industry. In Zambia, the country's reliance on the mining sector results in air and water pollution of the surrounding areas. Though Chinese companies are by no means the largest investors or polluters in Zambia's mining sector, the rapid increase of investments has made China particularly influential. The legislative and regulatory framework exists for environmental protection in Zambia, but the country lacks capacity for enforcement and accountability mechanisms. As such, several international mining companies have no incentive to comply with environmental regulations, worsening environmental degradation.

To generate recommendations for improved environmental performance through sustainable outward foreign direct investment, we analyzed several viewpoints. Using the country report, we identified existing regulations and discovered areas where regulations or environmental awareness is lacking. One major observation from the country report is that China does not impose environmental regulations on outward foreign direct investment; instead, the government expects firms to comply with the regulations of the host countries. This raises an interesting question about whether home countries have an incentive to regulate environmentally sensitive areas. We surveyed theory and the existing literature on the pollution haven hypothesis to see if host countries avoid environmental regulations to encourage investment. Although the theory remains popular, robust evidence of the hypothesis does not exist.

After completing the theoretical approach, we chose to apply country case studies to see if any developed countries have taken the lead in imposing environmental regulations. After

studying the U.S., Canada, and Europe, we found that environmental regulations for in-country development are common. However, like China, these countries do not actively regulate OFDI. In the absence of a global regulatory environment, a collaborative effort is needed.

Through the research, we discovered a multi-tiered relationship, in which the home government, the host government, NGOs, and investors can all coordinate to improve environmental outcomes. After noting that the two-way tie between governments and investors is not always sufficient for regulations, we looked into alternative third parties that can affect environmental awareness. Through a literature review, we identified NGOs as powerful actors that can affect information availability, policy, operations, assessment and monitoring, and environmental advocacy.

The combination of country analysis, theoretical framework building, case studies, and player identification allows us to formulate recommendations from the macro to the micro level. Specifically, we identified several broad categories where improvements can occur: with local communities and NGOs, with regulatory bodies, and with investors. Some recommendations apply to China's environmental regulations; some apply to our four country regions; and others apply to investors and NGOs.

TNC can help local communities and NGOs develop institutions, increase awareness, and build capacity to enhance management of environmental resources. By partnering with regulatory bodies, TNC can work to improve monitoring of environmental regulations through additional training and providing access to accurate information. Where investors are concerned, TNC and government actors can help improve banking practices and provide incentives to encourage environmental protection.

## Country Report Introduction

China's economic achievement during the past three decades has been extraordinary. However, the focus of environmental sustainability was not incorporated into the country's earlier development plans, and the rapid economic growth has entailed a tremendous environmental cost. Increasingly the pollution and resource depletion that accompanied China's growth has raised greater awareness about the value of conservation, as a long term strategic interest and even a competitive advantage.<sup>1</sup> At the same time, with the implementation of the Going Global Strategy, China's foreign direct investment (FDI) to the rest of the world has skyrocketed.<sup>2</sup> The substantial growth in its outbound FDI has brought China's treatment of the environment to the forefront of international attention.

China's recent environmental focus—at the domestic and the international level—correlates with growing international advocacy for environmentally-friendly development. Within China, a number of non-governmental organizations (NGOs) are working to improve China's regulatory and investment policies for the environment. The Nature Conservancy (TNC) is one of the world's largest conservation organizations. TNC has been working in China since 1998. This study was undertaken by the George Bush School of Government and Public Service on behalf of TNC's China Program to analyze the environmental impacts of China's outward FDI. The ultimate objective is to formulate policy recommendations for China and related countries to improve environmental protections in FDI induced activities and to provide context and suggestions for how TNC can work with "China, Inc." in pursuit of conservation objectives and more sustainable development globally..

To understand China's environmental approach, we will start with the analysis of China's domestic environmental policies, with a focus on the environmental component of its 11<sup>th</sup> and

12<sup>th</sup> Five-Year Plans. Then we will examine environmental policies and China's FDI in four key regions (Latin America, Mongolia, Myanmar, and Zambia). TNC Beijing has identified these regions as areas in which investment requires an environmentally sensitive approach. In particular, we will analyze the interplays between Chinese FDI regulations, Chinese businesses investing abroad, and the host-countries. Ultimately, we will identify critical areas where policies and regulations of China and the host countries can be improved for environmental protections.



**PART 1: CHINA OVERVIEW**

## **Overview of China's 11<sup>th</sup> 5-Year Plan**

China's 11<sup>th</sup> Five-Year Plan, which lasted from 2006-2010, incorporated a number of objectives, including economic growth, improved employment, development of the services sector, and energy reduction.<sup>3</sup> Specifically, the plan incorporated six objectives: "expand domestic demand, optimize industrial structure, save resources and protect environment, enhance the capability of independent innovation, deepen reform and opening up, and be people-centered."<sup>4</sup> According to the World Wildlife Federation, the central cornerstones of the Plan were "resource efficiency, global responsibility, and reduced environmental destructions."<sup>5</sup> Prior to the plan, China experienced a period of rapid and substantial growth. However, with rapid growth came substantial change. As a result, policy makers decided to focus on "growing economic and social imbalances," which included "a mixed record in the improvement of environmental quality."<sup>6</sup>

## **Environmental Objectives**

China's 11<sup>th</sup> Five-Year Plan included a series of environmentally-focused objectives. The environmental objectives are influenced by a number of goals. As the State Council of the People's Republic of China observed, "with long-term unremitting efforts, we will improve eco environment, dramatically raise resource efficiency, strengthen our capacity in sustainable development and develop an environment-friendly society where man live in harmony with nature."<sup>7</sup> In the 11<sup>th</sup> Five-Year Plan China's investments to improve the environment are higher than in any previous plan. Specifically, environmental protection spending was more than two times the amount spent in the 9<sup>th</sup> Five-Year Plan, "exceeding 1% GDP for the first time."<sup>8</sup> To encourage efficient use of resources and promote a cleaner environment, the plan incorporated a

number of priorities: promoting recycling, improving policy, implementing regulations, protecting ecology, and strengthening the protection of the environment and resource management.<sup>9</sup>

A primary driver behind the focus on the environment was a desire from the government to shift economic growth away from rapid resource consumption and pollution to efficient development and sustainable resource use.<sup>10</sup> To counter the negative effects of rapid growth from previous plans, the government decided to incorporate a number of conservation goals. The goals that were specific to the five-year plan, as stated by the Minister of the National Development and Reform Commission (NDRC), were as follows: “implement...resources conservation and environment protection...protect and restore ecosystem and environment, strengthen environmental protection, improve resources management, [and] promote...a resources-conserving and environment-friendly society.”<sup>11</sup>

The greatest area of emphasis for environmental objectives was the energy sector. China imposed the goal of a 20% reduction in energy consumption per unit; the goal was essentially met, and consumption declined by 19.06% by the end of the period.<sup>12</sup> In addition to a 630 Mtce reduction in energy, the intensity of CO<sub>2</sub> emissions was reduced by 1550 MT in the period.<sup>13</sup> Also, the imposition of seven indicators for water conservation and pollution reduction marked the first time that a five-year plan made energy efficiency a quantitative goal.<sup>14</sup> A number of specific targets were related to emission reduction, water monitoring, and pollution control, as seen in Table 1 below.<sup>15</sup> Some targets were more generic, such as the improvement of institutions, regulations, and the rule of law. China also advocates international cooperation. For example, as seen in Table 2, the country is privy to a number of international environmental agreements with other nations.<sup>16</sup> However, China still has plenty areas where its environmental

regulations could be improved. For example, the World Bank noted that China could utilize fiscal and tax policy to reach environmental objectives: for example, “accelerated energy price reform would allow prices to reflect the full cost of supply, including environmental and depletion costs.”<sup>17</sup> In addition, payments for the use of environmental resources could be used to boost income in the lower-income regions of China.<sup>18</sup>

**Table 1**

<b>Major environmental protection indicators during the "11<sup>th</sup> Five Year Plan" period</b>				
	Indicator	2005	2010	Increase & reduction during the "11 <sup>th</sup> Five-Year Plan" period
1	COD (10000 t)	1414	1270	-10%
2	SO <sub>2</sub> (10000 t)	2549	2295	-10%
3	Percentage of the water sections under national monitoring program failing to meet Grade V National Surface Water Quality Standard (%)	26.1	<22	-4.1 percentage points
4	Percentage of the water sections (of 7 big waters of China) under national monitoring program meeting Grade III National Surface Water Quality Standard (%)	41	>43	2 percentage points
5	Number of days in which urban air quality of key cities is superior to Grade II National Air Quality Standard exceeding 292 days (%)	69.4	75	5.6 percentage points

Source: State Council, *The National Eleventh Five-year Plan for Environmental Protection (2006-2010)*, 5.

**Table 2**

<b>Box 8 International Environmental Conventions with China as a Party</b>
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Name of Convention	Ratifying time	Department in charge
Convention on International Trade in Endangered Species of Wild Fauna and Flora	April 8, 1981	State Forestry Administration (SFA)
Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter	September 6, 1985	State Oceanic Administration
The Vienna Convention for the Protection of the Ozone Layer	September 11, 1989	SEPA
London Amendment for Montreal Protocol on Substances that Deplete the Ozone Layer	June 14, 1991	SEPA
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	September 4, 1991	SEPA
Ramsar Convention	July 31, 1992	SFA
Convention on Biological Diversity	November 7, 1992	SEPA
United Nations Framework Convention on Climate Change	November 7, 1992	NDRC
Convention on Nuclear Safety	April 9, 1996	SEPA
Convention on the Prevention and Control of Desertification	December 30, 1996	SFA
Amendment of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	May 1, 2001	SEPA
Kyoto Protocol	August 1, 2002	NDRC
Copenhagen Amendment for Montreal Protocol on Substances that Deplete the Ozone Layer	April 22, 2003	SEPA

Stockholm Convention on Persistent Organic Pollutants	June 25, 2004	SEPA
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals in International Trade	December 29, 2004	SEPA
Cartagena Protocol on Biosafety	April 17, 2005	SEPA
1996 Amendment of the Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter	June 29, 2006	State Oceanic Administration

Source: State Council, *The National Eleventh Five-year Plan for Environmental Protection (2006-2010)*, 27.

The Economist Intelligence Unit provided a report card for China's 11<sup>th</sup> Five-Year Plan: China performed well in GDP and job growth; it promoted inclusive growth relatively well; it received average ratings in economic rebalancing; it achieved energy reduction targets; but it performed poorly in pollution reduction.<sup>19</sup> For example, although energy consumption and emissions intensity declined, total emissions actually increased 33.6%; this made China the largest greenhouse gas emitter by the end of the Five-year Plan.<sup>20</sup> The State Council of the People's Republic of China recognized a number of environmental areas that the plan failed to address: "There are also such problems as environmental protection lagging behind economic growth, poor or inflexible mechanism, insufficient input and capacity. The phenomena of no strict observation of laws, little punishment to lawbreakers, poor law enforcement and supervision are still very common."<sup>21</sup> Some strategies could be utilized to improve areas of poor performance. For example, the World Bank argues that market incentives and regulations could be used, "including the criteria used for performance evaluation of local government officials."<sup>22</sup> In other words, the conclusion from the progress during the 11<sup>th</sup>-Five Year Plan was that regulations could play a greater role in reaching environmental objectives.

In order to achieve environmental goals, the government has the option of utilizing both administrative and market measures. To promote environmental policy, China could implement policies such as environmental taxes, a mechanism for ecological compensation, and green trade policies, procurement, insurance, securities, and credit.<sup>23</sup> In 2007, the Ministry of Environmental Protection (MEP), the China Banking Regulatory Commission (CBRC), and the People's bank of China (PBOC) implemented a Green Credit Policy, which uses inter-agency collaboration to promote lending only for green business initiatives.<sup>24</sup>

### **In Transition**

The 12<sup>th</sup> Five-Year Plan shares a number of objectives with the previous plan. Both plans focus on improving the lives of the Chinese people through increased wages, increased education availability, and healthcare; also, both plans have goals for industry, but “they have fewer numerical production targets than earlier five-year plans and rely more heavily on market mechanisms to achieve these industrial goals.”<sup>25</sup> One important change in the 11<sup>th</sup> Plan that carried over to the 12<sup>th</sup> Plan was to identify targets as either restricted or expected: local government officials must meet restricted targets as a job requirement; in contrast, market forces, supported by government, must carry out expected targets.<sup>26</sup> In the 11<sup>th</sup> Five-Year Plan, eight out of twenty-two targets were restricted, and they included “energy efficiency, pollution control, and population reduction.”<sup>27</sup> The remaining targets were expected targets.

The 12<sup>th</sup> Five-Year Plan has some differences with the previous plan as well. For example, a number of priority areas have been identified: economic rebalancing, inclusive growth, and environmental policy change.<sup>28</sup> Once the 12<sup>th</sup> Five-Year Plan was announced, a number of quantitative differences emerged. For example, under the 12<sup>th</sup> Five-Year Plan,

“compulsory indicators go up from two to four, ammonia nitrogen and NO<sub>x</sub> (mono-nitrogen oxides) are included in addition to COD (chemical oxygen demand) and SO<sub>2</sub> (sulfur dioxide), the total ammonia nitrogen and NO<sub>x</sub> emissions will decrease by 10% respectively compared with that of 2010, the reduction of COD discharge and SO<sub>2</sub> emission will go down by 8%.”<sup>29</sup> In addition, environmental quality will also receive a greater focus. For example, indicators, monitoring, and assessment will receive greater emphasis, and the number of cities subject to evaluation will almost triple.<sup>30</sup> The U.S.-China Economic and Security Review Commission compared the resource and environmental targets between the 11<sup>th</sup> and 12<sup>th</sup> Five-Year Plans; as seen in Table 3, it identified actual achievements in the targets in 2010.<sup>31</sup> For example, the 11<sup>th</sup> Five-Year Plan imposed an energy intensity reduction goal of 20%, and it achieved a 19.1% reduction; however, the 12<sup>th</sup> Five-Year Plan created a goal of only 16% by 2015.<sup>32</sup>

**Table 3**



*Resources and Environmental Targets*

Target	11 <sup>th</sup> FYP (2010 Target)	11 <sup>th</sup> FYP Category	2010 (Actual)	12 <sup>th</sup> FYP (by 2015)	12 <sup>th</sup> FYP Category
<b>Reduction in energy intensity per unit of GDP</b>	20% (R)	PRE	19.1%	16% (R)	Resources & Environment
<b>Reduction of water consumption per unit of industrial value added</b>	30% (R)	PRE	36.7%	30% (R)	Resources & Environment
<b>Increase of water efficiency coefficient in agricultural irrigation</b>	0.5 (E) (+0.05)	PRE	0.5	0.53 (E)	Resources & Environment
<b>Comprehensive Utilization Rate of Industrial Solid Wastes</b>	60% (E) (+4.2%)	PRE	69%	N/A	N/A
<b>Farmland Reserves</b>	120 million hectare (R)	PRE	121.2 million hectare	121.2 million hectare <sup>vi</sup> (R)	Resources & Environment
<b>Forest Coverage</b>	20% (R) (+1.8%)	PRE	20.36%	21.66% (R)	Resources & Environment
<b>Forest Stock<sup>vii</sup></b>	N/A	N/A	13.7 trillion cubic meters	14.3 trillion cubic meters	Resources & Environment
<b>Reduction in carbon emissions per unit of GDP</b>	N/A	N/A	N/A	17% (R)	Resources & Environment
<b>Nonfossil fuel as a percent of primary energy consumption</b>	N/A	N/A	8.3%	11.4% (R)	Resources & Environment
<b>Reduction of emission of major pollutants</b>	10% (R)	PRE	CO <sub>2</sub> – 14.29%, COD – 12.45%	N/A	N/A
<i>Reduction in Chemical Oxygen Demand (COD)</i>	N/A		N/A	-8% (R)	Resources & Environment
<i>Reduction in Sulphur Dioxide (SO<sub>2</sub>)</i>	N/A	N/A	N/A	-8% (R)	Resources & Environment
<i>Reduction in Ammonia Nitrogen</i>	N/A	N/A	N/A	-10% (R)	Resources & Environment
<i>Reduction in Nitrous Oxides</i>	N/A	N/A	N/A	-10% (R)	Resources & Environment

Source: Casey and Koleski, "Backgrounder: China's 12<sup>th</sup> Five-Year Plan," 16.

One concern that arose in the 11<sup>th</sup> Five-Year Plan that carried through to the 12<sup>th</sup> Five-Year plan is the ability to enforce environmental protection. For example, a major obstacle to improvement is that management is lacking. As of 2011, it was noted that "the contents of current environmental laws and regulations for environment...remain too general. There is no

legal system or set of standards that can meet the actual needs for environment and health work,” and baseline studies are almost nonexistent.<sup>33</sup> Another critical issue is that institutional support for the environment only exists at a small scale on the national level, and few organizations exist at the local level.<sup>34</sup> The lack of environmental institutional development makes monitoring and accountability enforcement more difficult.

### **The 12<sup>th</sup> Five-Year Plan**

In 2010, the elements of the 12<sup>th</sup> Five-Year Plan, which covers years 2011 to 2015, were announced. The plan incorporates a number of key targets: economic targets, which include growth and employment objectives; economic restructuring, which includes consumption, industry, service, and urbanization objectives; innovation in research, development, and patent creation; environment and energy improvements, which include fuel and water conservation, emission reductions, and forest coverage increases; agriculture objectives related to production and coverage; livelihood improvement in the areas of population, life span, pensions, construction, and minimum wage; social management, which includes better public, legal, and social management services; and reform related to markets, business, and governance.<sup>35</sup>

Along with the targets of the plan, a number of goals were also incorporated. The goals are summarized as economic rebalancing, improving social inequality, and improving the environment.<sup>36</sup> To promote its goals, the 12<sup>th</sup> Five-Year Plan has narrowed its focus to seven priority industries, including new energy, energy conservation and environmental protection, biotechnology, new materials, new information technology, high-end equipment manufacturing, and clean energy vehicles.<sup>37</sup>

## Environmental Objectives

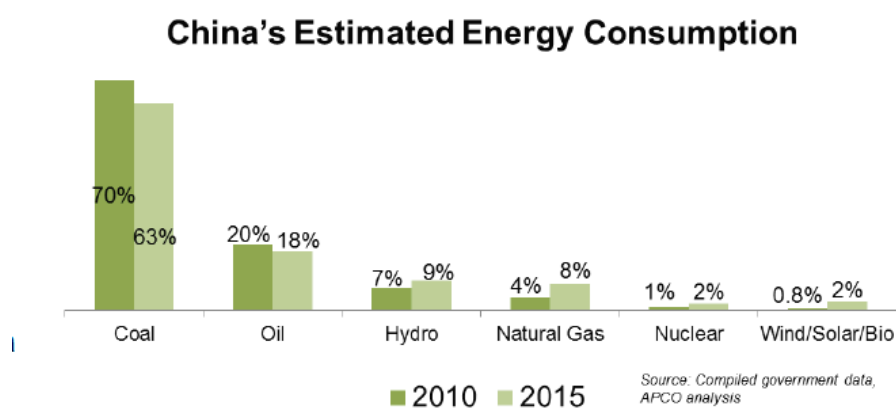
The environment takes even greater precedence in the 12<sup>th</sup> Five-Year Plan than it did in the 11<sup>th</sup> Five-Year Plan. In fact, a number of analysts have dubbed the 12<sup>th</sup> Five-Year Plan (FYP) as “China’s ‘greenest’ FYP ever.”<sup>38</sup> Among the seven priority industries in the Five-Year Plan, “three sectors align with the theme of sustainable growth: energy savings and environmental protection; new energy; and clean energy vehicles.”<sup>39</sup> Two priority areas are in energy and in improving the quality of the environment. Unlike the 11<sup>th</sup> Five-Year Plan, which had an energy emission reduction target of 20%, the current plan will only have a reduction target of 17%.<sup>40</sup> However, the focus on environmental quality will be greater. One innovation expected to stem from the current plan is the creation of a green indicator “that will hold government officials accountable for green development, such as water consumption per unit of GDP, and proportion of GDP that is invested in environmental protection.”<sup>41</sup> Some of the major objectives in 2012 are as follows: pollution reduction; safe drinking water maintenance; waste and hazardous chemicals pollution control; improvement of infrastructure; “reverse of the degradation trend of eco environment; evident enhancement of capacity in supervision on nuclear and radiation safety; further improvement of nuclear and radiation safety and environment supervision system.”<sup>42</sup>

The Ministry of Environmental Protection identified five critical tasks to improve the environment during the 12<sup>th</sup> Five-Year Plan: implement a survey for environmental issues; perform risk management; complete environmental scientific research; promote capacity building; and perform environmental publicity and education.<sup>43</sup> To ensure the implementation of the tasks, a number of measures will be utilized. Specifically, three safeguarding measures will

be used, including strengthening leadership for environmental work, improving coordination, and improving capital input for environmental work.<sup>44</sup>

A major challenge to the country is sustainably confronting energy consumption. As the country grows, energy demand is expected to soar. As a result, as shown in Table 4, China is changing the composition of energy consumption.<sup>45</sup> For example, one goal is for non-fossil fuels to account for 15% of China's energy consumption by the year 2020.<sup>46</sup> It is expected that investment in environmental protection will exceed three trillion renminbi for the current plan, in contrast to the two trillion spent in the 11<sup>th</sup> Five-Year Plan.<sup>47</sup> The spending will require roughly 1.4% of China's GDP, and approximately half of the spending will go toward eight projects that have been designated as critical to environmental development.<sup>48</sup> The eight projects consist of declining emissions; welfare and environment improvement, environmental protection focused on rural areas, "protection of eco environment, prevention of environmental risks of key fields, ensuring nuclear and radiation safety, public service of environmental infrastructure, and ensuring the capacity in environmental supervision and development of talents."<sup>49</sup>

**Table 4**



Source: APCO, *China's 12<sup>th</sup> Five-Year Plan*, 6.

To ensure progress, the plan has incorporated seven primary indicators for environmental improvement, including four indicators for pollutant reduction and two indicators for environmental quality.<sup>50</sup> The pollutants to be reduced include “COD, ammonia, nitrogen, SO<sub>2</sub>, and NO<sub>x</sub>,” and the environmental indicators are related to water and atmospheric quality.<sup>51</sup> Overall, pollution reduction is expected to range between 30 and 40%.<sup>52</sup> The primary responsibility to carry out environmental assessments lies with local governments. According to the Ministry of Environmental Protection, local governments are required to perform assessments in 2013 and 2015; to promote transparency, the results will be “made public and serve as [an] important component of the performance of local government.”<sup>53</sup> In general, FYPs follow a cycle of policy execution for the entire period, and revision occurs in the fourth and fifth years.<sup>54</sup>

To improve its environmental objectives, China has initiated cooperation with a number of organizations. A major player in China is the World Wildlife Fund (WWF). To encourage sustainability, the WWF has coordinated with China to create the China for a Global Shift Initiative.<sup>55</sup> As noted in the goals of the 12<sup>th</sup> Five-Year Plan, China hopes to develop a green indicator. In 2011, the China Centre for International Economy Exchange (CCIEE) and the WWF “signed a Memorandum of Understanding that aims, among other issues, to develop a Green Economy Indicator for China.”<sup>56</sup> The indicator, which should help shape environmentally-friendly policies, will include components such as the Ecological Footprint.<sup>57</sup> By incorporating the expertise of environmental organizations into its policy making, China will better position itself to achieve its sustainable development goals.

### **China Outward Foreign Direct Investment Environmental Policy (OFDI)**



OFDI in China has rapidly expanded since the country's accession to the WTO. In the year 2000, China implemented a trade-promotion and market access strategy called Going Global (*zouchuqu*).<sup>58</sup> In addition to resource acquisition, the plan also intends to “spur outward investment by subsidizing investment by Chinese companies in overseas natural resources acquisition.”<sup>59</sup> Since that time, investment has substantially risen. From the years 2000-2005 OFDI increased 65.6% annually.<sup>60</sup> By 2011, OFDI stock rose to over \$300 billion.<sup>61</sup> A number of factors drive China's outward expansion, including a desire for greater resource acquisition and investment opportunities. In the context of sustainability, two major challenges exist for investment: the first concern is how to invest in other countries while minimizing environmental impacts; the second concern is how to support growth and development in a way that does not substantially consume natural resources.<sup>62</sup> China is a high-growth developing country. As a result, the country's environmental standards for investment have come under scrutiny.

Despite being a large country, excess demand exists for resources in the country.<sup>63</sup> As a result, the primary driver for China's OFDI is to acquire resources. From the beginning of the 11<sup>th</sup> Five-Year Plan to the present, major commodities included fossil fuels, mineral resources, forestry and timber, and food products.<sup>64</sup> Major players in OFDI tend to be state-owned enterprises (SOEs). For example, in 2009, just under 70% of OFDI came from SOEs in sectors such as oil and mining.<sup>65</sup> In 2011, Chinese OFDI was still largely driven by the state; the combination of expanding national industries and overseas procurement reflects "a broader agenda of economic nationalism focused on energy security, geopolitics, and competitiveness."<sup>66</sup> As noted in Table 5, in 2010 and 2011, some of China's major investment deals were in the energy and metals sectors.<sup>67</sup> Consequently, some of the major production sectors that China OFDI is directed toward also produce the greatest environmental damage. For example, oil and gas, mining, hydropower, and timber are sectors that are environmentally sensitive.<sup>68</sup>

**Table 5**

## Chinese Outward Investment

Year	Month	Investor	Quantity, Millions	Partner	Sector	Subsector	Country
2010	February	Sichuan Tengzhong	\$150	Hummer	Transport	Autos	USA
2010	June	Zijin Mining	\$500	Indophil Resoures	Metals		Australia
2010	June	State Grid	\$1,200	Quadra	Metals	Copper	Chile
2010	July	Huawei	\$480	2Wire	Technology	Telecom	USA
2010	August	China Railway	\$790		Transport	Rail	Angola
2010	August	Huawei	\$1,300	Motorola	Technology	Telecom	USA
2010	August	CIC	\$690	Morgan Stanley	Finance	Banking	USA
2010	September	China Metallurgical	\$390	Cape Lambert	Metals	Iron	Australia
2010	September	CIC	\$360	Bumi Resources	Metals		Indonesia
2010	September	Zijin Mining	\$280	Copperbelt Minerals	Metals		Congo
2010	October	Wuhan Iron and Steel	\$800		Energy	Coal	Mozambique
2010	October	China Railway Construction	\$620		Transport	Rail	Saudi Arab
2010	November	Huawei and ZTE	\$5,000	Sprint	Technology	Telecom	USA
2011	February	CNPC	\$5,390	EnCana	Energy	Gas	Canada
2011	March	China Gezhoubu	\$840		Real Estate		Libya
2011	March	China Railway Construction	\$4,240		Transport	Railway	Libya
2011	March	China Metallurgical	\$820		Real Estate		Libya
2011	March	China State Construction Engineering	\$1,340		Real Estate		Libya
2011	March	Bright Food Groups Ltd.	\$2,410	Sodiall	Agriculture		France
2011	May	Guangdong Nuclear	\$1,200	Kalahari Minerals	Energy		Britain
2011	May	Hawtai Motor	\$170	Spyker-owned Saab	Transport	Autos	Netherlands
2011	June	China Overseas Engineering	\$450		Transport	Autos	Poland
2011	June	Sinosteel	\$1,990		Metals	Iron	Australia
2011	July	CITIC	\$2,600	Pilbara	Metals	Iron	Australia
2011	September	China Power Investment Corporation	\$3,600		Power	Hydro	Myanmar
2011	October	Anshan	\$170	Steel Development	Metals	Steel	USA
2011	October	Sichuan Hanlong	\$150	Bannerman	Metals		Australia
2011	November	CNOOC	\$7,100	Pan American	Energy		Argentina
2011	November	Huang Nubo	\$200		Real Estate		Iceland
2011	December	Pang Da and Zhejiang Youngman	\$140	Saab	Transport	Autos	Sweden

Source: Derek Scissors, "China Global Investment Tracker: 2012".

China supports sustainable and environmentally-friendly investment abroad. However, the standards for OFDI are not the same as home standards. For example, China's investment package "does not have benchmarks of compliance with human rights, democratic ideals and environmental protection regulations, but is built on relationships and friendship."<sup>69</sup> In this case, cultural differences may explain some of the variation between China's environmental investment policies and the policies of Western nations. Another cultural variation is that China tends to make policy decisions behind closed doors.<sup>70</sup> This makes transparency and accountability more difficult.



One topic that China is advocating abroad is corporate social responsibility (CSR). Although not explicitly related to the environment, CSR includes environmental protection within its objectives. The promotion of CSR may have positive implications for responsible OFDI, but the benefits may take time to accrue. For example, many large companies abroad utilize environmental protection policies, ““but they need to quantify and collect data. CSR is still a new concept for Chinese companies.””<sup>71</sup> In a study on responsible business in Africa, most businesses defined CSR as a combination of local growth promotion, compliance with laws, making donations, and environmental responsibility.<sup>72</sup> Therefore, any failure of Chinese foreign investors to promote environmentally-friendly growth may not be an educational issue, but may instead stem from monitoring and enforcement problems.

However, businesses are taking action to promote environmental sustainability. In addition to government support of CSR, businesses are increasingly adopting certain international standards such as the “GRI Sustainability Reporting Guidelines, and ISO environmental management system standards. In addition, by 2008, nearly 200 Chinese companies had joined the UN Global Compact, accepting its ten principles on sustainability.”<sup>73</sup> Also, training courses on CSR and environmental awareness from international institutions and NGOs such as the International Labour Organisation (ILO) and the WWF are becoming increasingly popular.<sup>74</sup> In addition, researchers from the Center for International Forestry Research noted that the Chinese government will likely play a stronger role in sustainable OFDI in the future: “we can expect that more policies concerning the social and environmental impacts of Chinese OFDI will be issued, supplementing China’s existing OFDI management system.”<sup>75</sup>

In December 2011, the National Development and Reform Commission and the State Administration of Commerce updated the Foreign Investment Industrial Guidance Catalogue.<sup>76</sup> The Catalogue, which came into effect in January 2012, promotes reform, upgrading industries, developing the service industry, and promoting the development of trade regions.<sup>77</sup> One of the primary points of the new catalog is to encourage foreign investment related to “strategic industries such as energy-saving and environmental protection, new-generation information technology, biology, high-end equipment manufacturing, new energy, new materials, and new energy vehicles.”<sup>78</sup> The emphasis on many of these industries reflects the development goals of the 12<sup>th</sup> Five-Year Plan.

### **Government Role in Environmental Protection**

On January 11, 2012, a Chinese law firm, in conjunction with Oxfam Hong Kong, released China’s legal guidelines on OFDI.<sup>79</sup> In general, China has thorough legal guidelines for environmental protection in place. For example, China’s Constitution calls for ecological environment and natural resource protection; protection laws are in place for environmental aspects such as land use, pollution, nature conservation, and excess or destructive resource use.<sup>80</sup> However, these are general rules that apply domestically within China. A common complaint in the literature pertains to the enforcement of environmental laws, not the lack of rules and regulations. OFDI is one area lacking in regulation.

Although Chinese firms abroad are increasingly adopting international environmental standards, such actions remain voluntary. In fact, China has no OFDI environmental legislation laws in effect. Instead, any reference to environmental regulation is worded in principle: “For instance, ‘Guidelines on Foreign Investment and Cooperation in Various Countries (Regions)’

issued by the Chinese Ministry of Commerce (MOFCOM) in April 2009 requires that Chinese enterprises shall protect the ecological environment of investment recipient countries and comply with local laws.”<sup>81</sup> In this sense, the primary responsibility for environmental protection lies with the recipient-country governments and not with China. However, as noted in Table 6, OFDI laws often incorporate guidelines and suggestions for sustainable development.<sup>82</sup>

**Table 6**

KEY OFDI LAWS

Opinions on Implementing Environmental Protection Policies and Rules and on Preventing Credit Risks MEP, the People's Bank of China, CBRC 2007	Regulation of the People's Republic of China on Foreign Exchange Administration SAFE 2008
Notice regarding the Prevention and Control on Credit Risks of High Energy Consumption and High Pollution Industries CBRC 2007	Notice of the National Development and Reform Commission on Issues Concerning the Improvement of the Administration of Overseas Investment Projects NDRC 2009
Guiding Opinions of the Credit Work for Energy Conservation and Emission Reduction CBRC 2007	Guidelines for Sustainable Management and Utilization of Forests by Chinese Enterprises MOFCOM, State Forestry Administration 2009
Guidelines of Corporate Social Responsibility of Central Enterprises SASAC 2007	Notice of the State Administration of Foreign Exchange on Issuing the Provisions on the Foreign Exchange Administration of the SAFE 2009
Regulations on Further Regulating the Development of Contracting Foreign Projects MOFCOM,SAFE, SASAC,NDRC 2007	Guideline for Chinese Overseas' investment and cooperation 2010 MOFCOM 2010

Source: Oxfam Hong Kong, *An Introduction to China's OFDI Legal System*, 42-43.

It is important to note that China has adopted certain standards to promote environmentally-friendly investments. For example, the Ministry of Environmental Protection's **Green Credit Policy** applies to credit provision both domestically and abroad. The policy consists of “a set of related documents containing binding and non-binding provisions linking credit to corporate environmental performance.”<sup>83</sup> In general, the government recommends that “authorities should restrict loans to polluting enterprises, adjust credit management, and prevent credit risks created by enterprises and construction projects responding to changes in environmental protection requirement changes.”<sup>84</sup>

China's Export-Import Bank (Ex-Im Bank) policies illustrate the role of finance in environmental protection. The government's Export-Import Bank of China is one of the largest lenders to companies investing abroad. All companies wishing to borrow from the bank must allow an internal review and comply with local laws—the bank states that any project that is dubbed as environmentally harmful will not receive funding.<sup>85</sup> Although the bank requires companies to comply with the policies of host countries, they do not require companies to follow international standards; however, the guidance used for the Exim bank is based both on personal experience and international recommendations such as the Equator Principles.<sup>86</sup> Therefore, international imitation for environmental regulations does occur.

Although China participates in many international agreements for environmental protection, the participation does not necessarily affect foreign investment policy. In general, “multilateral environmental conventions provide no specific instructions on OFDI, foreign assistance or credit practices other than general requirements for environmental protection.”<sup>87</sup> The observation indicates a policy gap that the government could fill to improve its environmental improvement goals.

Recently, policy makers have taken steps to improve environmental policy coordination. For example, one proposal, the “Environmental Policy Package,” incorporates mechanisms to improve management and supervision of environmental issues.<sup>88</sup> Another innovative suggestion is the creation of a cooperative alliance between governments, NGOs, and enterprises: under this system, “the government acts as the guide, enterprises provide support and NGOs design and undertake the work.”<sup>89</sup> With such a model, the key driver of environmental policy formation could lie with NGOs.

To best prepare non-government organizations (NGOs) for policy advocacy, it is important to understand the regional similarities and variations with China's outward investment. TNC has identified four critical areas of interest for environmental conservation: Latin America, Mongolia, Myanmar, and Zambia. These areas are also important regions for China's investments for resource extraction. By analyzing the available resources in the countries, as well as looking at investment trends and regulations, one can determine potential variations in China's environmental policies by region.

**PART 2: SOUTH AMERICA**

## **Assessing the environmental impact of Chinese investment in South America**

What is the impact of the Chinese state-backed investment in South America in the mining sector? China's voracious demand for oil, natural gas, iron ore, coal, nickel, aluminum are driven by government insecurity in maintaining economic growth and thus political stability. Over half of Chinese FDI in natural resources has been concentrated in Latin America in the form of equity stakes and loans to mining and petroleum.

Threats of bribery, corruption, and environmental violations of Chinese firms are of concern to Latin American policy makers. Since Chinese firms are not mandated by the Chinese government to a certain standard of environmental or social responsibility, the host country regulatory system is responsible for controlling the behavior of foreign companies.

The overall concern in Latin America is that the Chinese mandate to secure preferential access to supplies of raw materials may exacerbate problems of high prices, climbing demand, and environmental degradation. As China continues to secure resources, there remains a probability that the Chinese will gain monopoly power over the market, hindering competitive forces and proper regulation. In general, the Chinese government has difficulty regulating what Chinese firms do overseas and these firms overpower the regulatory bodies of host countries.

There are four means through which Chinese capital seeks to secure natural resources that differ in measure and should differ in policy response. First, China seeks a large equity stake in established producers. Second, China makes equity investments in smaller producers. Thirdly, Chinese companies provide loans and financing with a promise to pay via future resource use. In the fourth manner of investment, the loans and financing come from the Chinese government. The investments differ: either the investments gain claim to existing production, or they spur greater production by increasing the number of world supply sources. The first scenario

describes a zero-sum game where other consumers are worse off because of diverted supplies. In the second scenario, global markets are more competitive because of the diversified and increasing supply.<sup>90</sup> In a study by the Peterson Institute, they noted that most of the investments did not gain equity stake in the resource bases and overall had positive spillovers to the local South America economies. However, since the Chinese firms are not investing in the large, well-established producers, the firms operate on fringe projects where best-practices may not observe the social and environmental standards of larger projects.

### **A New Trend in Chinese Loans to the Region**

Since 2005, the Chinese Export-Import Bank and the China Development Bank (CDB) have loaned a sum of \$75 billion to South American countries.<sup>91</sup> Overall, these loans surpassed the total of the World Bank, Inter-American Development Bank, and US Export-Import Bank loans. Chinese loans carry fewer conditions, and have lower environmental standards than loans originating in the West. The table below lists recent loan activity from China to Latin America. This report focuses on Chinese investments in Colombia and Peru in particular.



Year	Borrowing Country	Borrower	Lender	Amount (\$m)	Purpose
2005	Brazil	Gerdau Acominas	ICBC and BNPP	201	Steel mill equipment
2005	Chile	Codelco	CDB	550	Improve company efficiency and technology
2007	Jamaica	Government	Ex-Im	45	Montego Bay Convention Center
2008	Costa Rica	Government	SAFE	300	Government bonds
2008	Peru	Chinalco Peru	Ex-Im	2,000	Mining Equipment
2008	Venezuela	BANDES and PDVSA	CDB	4,000	Funding infrastructure, other projects
2009	Bolivia	YPFB	Ex-Im Bank	60	Home gas lines, oil drilling rigs
2009	Brazil	Telemar Norte/Oi	CDB	300	Expand telecom network
2009	Brazil	Petrobras	CDB	10,000	Pre-salt business plan
2009	Ecuador	Petroecuador	PetroChina	1,000	Advance payment for Petroecuador oil
2009	Mexico	América Móvil	CDB	1,000	Telecom network infrastructure/equipment
2009	Multiple	BLADEX	CDB	1,000	Regional trade financing
2009	Peru	Cofide	CDB	50	Transportation, infrastructure
2009	Venezuela	BANDES and PDVSA	CDB	4,000	Infrastructure, including satellite
2009	Venezuela	CVG	CDB	1,000	Mining project credit
2010	Argentina	Government	CDB and others	10,000	Train system
2010	Bahamas	Government	Ex-Im Bank	58	Airport infrastructure
2010	Bolivia	Government	CDB	251	Chinese satellite
2010	Bolivia	Government	Ex-Im Bank	67.8	Infrastructure
2010	Brazil	Vale Mining Company	CDB and Ex-Im	1,230	Ships to transport iron ore to China
2010	Ecuador	Government	Ex-Im Bank	1,682.7	Hydroelectric dam Coca-Codo Sinclair
2010	Ecuador	Petroecuador	CDB	1,000	80% discretionary, 20% oil-related
2010	Ecuador	Government	Ex-Im Bank	621.7	Sopladora hydroelectric dam
2010	Jamaica	Government	Ex-Im Bank	340	Road construction
2010	Jamaica	Government	Ex-Im Bank	58.1	Shoreline reconstruction
2010	Venezuela	PDVSA	CDB and BES	1,500	Trade-related credit facility
2010	Venezuela	BANDES and PDVSA	CDB	20,000	Funding infrastructure
2011	Bahamas	Baha Mar Resort	Ex-Im Bank	2,450	Resort Construction
2011	Bolivia	Government	Ex-Im Bank	300	Helicopters, infrastructure
2011	Ecuador	Government	CDB	2,000	70% discretionary, 30% oil-related
2011	Peru	BCP	CDB	150	Finance
2011	Venezuela	PDVSA	CDB	4,000	Infrastructure
2011	Venezuela	PDVSA	ICBC	4,000	Housing
TOTAL				75,215.3	

## Activity

The tables below list recent investments in Latin America by Chinese firms.

Date	Investor	Partner	US\$ million	Country	Sector
<i>2009</i>					
February	Shougang Group	Shougang Hierro Peru	\$1,000	Peru	Iron
May	China Development Bank	Petrobras	\$10,000	Brazil	Oil
October	Baosteel	Anglo American	\$1,600	Brazil	Iron
December	Shunde Rixin		\$1,900	Chile	Iron
<i>2010</i>					
March	CNOOC	Bridas Holdings	\$3,100	Argentina	Oil
March	State Grid	Quadra Mining	\$1,050	Chile	Copper
March	East China Mineral	Itaminas	\$1,200	Brazil	Iron
April	Wisco		\$4,700	Brazil	Steel
April	CNPC		\$900	Venezuela	Oil
May	State Grid	Cobra, Elecnor and Isolux	\$1,720	Argentina	Power
May	Sinochem	Peregrino field	\$3,070	Brazil	Oil
October	Sinopec	Repsol/YPF	\$7,100	Brazil	Oil
<i>2011</i>					
January	Tierra del Fuego Energia y Quimica*		\$1,000	Argentina	Infrastructure
February	China Development Bank and China Railway Group		\$7,600	Colombia	Infrastructure
<b>Total</b>			<b>\$45,940</b>		

*Compiled from Integration and Trade Sector, "Ten Years After the Take-off: Taking Stock of China-Latin America and the Caribbean Economic Relations," Inter-American Development Bank, October 2010, p. 27; Kevin P. Gallagher, "China and the Future of Latin American Industrialization," Issues in Brief, No. 18, October 2010; and press releases.*

## Overview of Colombia

Colombia has increasingly built stronger trade relations with China over the past few years. From the Chinese perspective, Colombia is a valuable partner for trade in minerals, petroleum, and agriculture products, as well as a destination market for Chinese manufactured goods.<sup>92</sup>

Since 2005, after President Alvaro Uribe's visit to China, the partnership has expanded operations and projects in the petroleum sector. Most of Colombia's reserves are located on the

Bahia de Santa Marta on the Caribbean coast. While both Ecuador and Venezuela have discovered large reserves nearby, most of Colombia remains unexplored. The Chinese National Petroleum Company (CNPC) invested \$460 million in September 2006, representing the largest commercial venture in Colombian reserves. This, however, remains one of the few Chinese investments in Colombia.

Rumors exist in Colombia that the Chinese government is involved in infrastructure development to increase the viability of coal export projects. Columbia announced plans for a \$7.6 billion railroad that would link large open pit coal mines to Colombia's Pacific west coast, bypassing the Panama Canal. Announced in early 2011, the project is still tentative and faces many barriers to completion. If completed, the rail would dramatically change global supply chains and have significant environmental impacts.<sup>93</sup>

### **Evidence from Peru**

China's investment of \$7.2 billion in Peru is solely in the mining sector, second only to Australia's investment. Peruvian exports to China include gold, lead, silver, tellurium, tin, zinc, and copper. The Peruvian case provides insight into the behavior of Chinese firms and other OECD projects in regard to environmental standards. Over 80% of the foreign investment in Peru comes from OECD countries. By comparing OECD investments to Chinese companies in Peru, and examining differences in operations and standards, some recommendations can be made to better regulate the environmental consequences of Chinese FDI.

The Yanacocha gold mine, a large investment by an OECD firm, is operated by US Newmont Mining Corporation (51.3%), International Finance Corporation, and Peruvian Buenaaventura S.A. (43.6%) in addition to smaller domestic ownership shares. In 2000, there

was a mercury spill at this mine that poisoned 900 people and resulted in protests and lawsuits against US Newmont Mining Corporation. In attempts to improve its negative image, Newmont has started international certification processes for environmental and social standards through corporate social responsibility programs.

The Antamina mine, Peru's largest copper and zinc mine, is a joint venture by Xstrata and BHP Billiton with each holding about one-third ownership. It has a very strong reputation for its social and environmental standards. In some cases, the companies have decided on more costly and time-consuming alternative projects because of domestic contention and international observation. The Antamina mine received an "A" rating under the Global Reporting Initiative for its environmental responsibility, transparency, and sustainability.

In these two cases, both the ventures have complied with substantial environmental, labor, transparency, anti-corruption, and human rights standards. Both ventures participate in other initiatives to improve accountability, such as the Extractive Industries Transparency Initiative (EITI), which works to build a global standard for transparency within the resource extraction sector. They are both members of the International Council on Mining and Metals (ICMM) and the UN Global Compact to improve sustainable development and create responsible policies.

The companies also participate in local initiatives and invest in societies that work on transparency, sustainability, and responsible management issues. Both companies have maintained their royalty commitments and have fairly and promptly paid their national taxes with the help of watchdog groups. In addition, the companies make information available to the press and the public through their websites in English and other local languages. This information includes annual sustainability reports, environmental programs, and other CSR issues. The companies have also been certified under the ISO 14001 environmental standards.

Within its corporate structure, both companies have foundations and managers dedicated to promoting sustainability projects and accountability.

### **Chinese Investments**

The Chinese investments of interest are in the state-owned Hierro Peru by Shougang, a steel company and the purchase of the Toromocho mine by Chinalco, a Chinese aluminum firm. The investments are significant because of the size and year of investment, 1992 and 2008 respectively. Shougang's purchase occurred at a time when the *Shining Path*, a communist uprising, controlled of the region. The purchase of Toromocho took place under a democratic Peru. The different political regimes altered the impacts of investment.

Shougang failed to maintain its concession commitments of providing community support and raised questions when the purchase price was discovered to be 14 times the competitive valuation of the mine. In addition, Shougang violated labor standards by importing Chinese workers instead of using local labor, did not use social funds, and had environmental issues. Besides substandard wages, Shougang was also found to shirk health standards by not examining workers for lung conditions while operating in the mines.

Further, Shougang caused environmental damage by contaminating water supplies and pumping wastewater into a nearby bay. The local government declared an "environmental emergency" to protest the company's activities. The company has updated their website to include some environmental information, which previously had little to no sustainability reports available.<sup>94</sup> Overall, Shougang had poor public relations and low ratings in transparency, health, safety, and environmental issues.

The second and more recent case of Chinalco differs from the poor behavior of Shougang. The company held public hearings and assessed the environmental impact of its projects. In addition, Chinalco hired international firms to establish an environmental information management system. Overall, Chinalco has proceeded with more caution and transparency than Shougang.

### **Analysis of the Cases**

A key difference in the cases is a result of the different time periods of the investments. As Peru shifted toward democracy and political stability, civic society and NGOs played a greater role in the implementation of greater environmental standards. With decentralization of power, regional governments gained more influence in enforcing accountability.

Furthermore, international norms towards the protection of the environment and the evolution of Chinese policy towards South America created more opportunities to protect the environment. The Chinese government released a policy paper designed to quell the fears of governments in Latin America and promote cohesion. The report stated that the Chinese government planned to encourage responsible investment by companies that have a strong reputation and would be mutually beneficial to both the host country and China. As these relationships solidify, Chinese companies have more stake in building long-term stable relations that meet local requirements.

The source of financing for these firms is also important. As centrally directed policy filters down through the channels and regulation becomes stricter, firms accountable to the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) and the recently revised policies of the Chinese Export and Import Bank are more likely to shift their

policies in a positive direction. Both Chinalco and Shougang have recently received new loans to continue operations in Peru, the latter from various international banks that will hold the borrower to higher international accountability standards. Since the initial investment and early environmental failures of Shougang, Chinese firms have progressed up the learning curve and committed to adhering to best practices.<sup>95</sup> At first, Chinese companies may not have recognized the bottom-up form of government found in Peru, but have gradually learned the business and political culture. The climate in Peru is now demanding greater CSR and Chinese firms are adapting.

### **Policy Implications**

What actions can the Peruvian government and other actors within Latin America take to improve environmentally acceptable behavior and avoid the mishaps or some of the negative experiences of countries in Africa? Peru and most countries in Latin America are significantly more transparent than their African peers, and this factor seems to carry significant weight in determining adherence to environmental standards.<sup>96</sup>

Another important consideration is the context in which Chinese investment affects global competition in the resource markets. If the investment takes up projects that do not attract attention from leading producers, then the investment increases and diversifies overall global supply. However, high standards and accountability must still be sought to maintain high levels of transparency, environmental protection, and interaction with the local community. In those cases in which the firm has positive community relations, the trend shows an inclination towards better compliance to international standards. However, in the natural resource extraction market

the source of investment is only one of the factors that determine the environmental consequences.

### **Lessons from Peru**

First, these cases show the improvement of financial markets brings about greater accountability. Once the source of equity is under scrutiny, the borrowers are subjected to pressure to improve standards. If the Chinese Export-Import Bank becomes more transparent and carries reputational risk, then they will proactively encourage positive behavior.

Second, the regulatory environment in the host country is critical to maintaining proper environmental standards. As the business and civil society climate changed in Peru, so did the behavior of the companies. In countries with lower levels of governance ability, weak institutional capacity and the lack of political will are often the limiting factors that prevent compliance with international norms and standards.

Finally, it is evident that FDI can provide public goods and create change within the governance structure of the country. With greater investments comes the capacity to enforce environmental standards and provides watchdog groups greater incentive to expand operations. In some cases, the multi-national corporations internalize the market failures and have the capacity and leadership to initiate change given the right circumstances.

#### **APPENDICE: Recent Chinese Investment categorized by type and market impact**

Appendix I. Chinese FDI in Natural Resources: South America

Category I: Special relationship with major producer

Buyers and/or their home governments take an equity stake in a "major" producer to procure an equity share of production on terms comparable to other co-owners.

1. CNOOC and Bidas Corporation, Argentina, 2010

2. Shanghai Baosteel and Vale, Brazil, 2001

3. Chalco and Vale, Brazil, 2004

4. Chalco and Vale, Brazil, 2004



5. CNPC's acquisition of the Intercampo and Caracoles oilfields from Petroleos de Venezuela SA, Venezuela, 1997
6. CNPC and Petroleos de Venezuela, Venezuela, 2008

Category II: Special relationship with competitive fringe

Buyers and/or their home governments take an equity stake in an "independent" producer to procure an equity share of production on terms comparable to other co-owners.

7. Shandong Gold Group and Energia y Minerales Soceidad del Estado, Argentina, 2010
8. Minmetals and Vale, Brazil, 2004
9. Minmetals and Cosipar Group, Brazil, 2007
10. WISCO and EBX, Brazil, 2009
11. Wuhan Iron & Steel Co. Ltd. And MMX Sudeste Mineracao SA, Brazil, 2010
12. Sinopec and Petrobras, Brazil, 2004
13. Sinopec and Repsol YPF SA, Brazil, 2010
14. Minmetals and Codelco, Chile, 2006
15. Shunde Rixin and government of Chile, Chile, 2009
16. CNPC's development of Atacapi and Parahuacu blocks, Ecuador, 2003
17. Sinopec and ConocoPhillips, Ecuador, 2003
18. CNPC and Sinopec's acquisition of Encanna, Ecuador, 2006
19. Bosai Minerals and the government of Guyana, Guyana, 2008
20. CNPC and PlusPetrol Norte SA, Peru, 2004
21. CNPC's development of Block 6 and 7 or the Talara oilfields, Peru, 1993 and 1994
22. Shougang's acquisition of Hierro Peru, Peru, 1992
23. Zijin Mining and Monterrico Metals, Peru, 2007
24. Shougang Hierro Peru's expansion of the Marcona mine, Peru, 2007
25. Chinalco's acquisition of the Toromocho Copper Project, Peru, 2008
26. Minmetals and Jiangxi Copper's acquisition of Northern Peru Copper, Peru, 2007
27. Zibo Hongda Mining Industyr Co. Ltd.'s acquisition of Pampa de Pongo iron ore mine, Peru, 2009

Category III: Loan capital to major producer to be repaid in output

Buyers and/or their home governments make a loan to a "price maker" producer in return for a purchase agreement to service the loan.

28. China Development Bank and Petrobras, Brazil, 2009
29. Shanghai Baosteel and Vale, Brazil, 2003
30. China Development Bank and CNPC with the Venezuelan Social Development Bank and Petroleos de Venezuela, Venezuela, 2010

Category IV: Loan capital to competitive fringe to be repaid in output

Buyers and/or their home governments make a loan to a "price taker" producer in return for a purchase agreement to service the loan.

31. CITIC's investment to build a pig iron plant, Brazil, 2004
32. China Development Bank and the government of Ecuador, Ecuador, 2009
33. CPEB and Petroecuador and the Ecuadorian Ministry of Energy and Mining, Ecuador, 2003
34. Shandong Gold Group and Corporacion Venezolano de Guyana, Venezuela, 2003

Sources: FDiMarkets.com; RHGroup

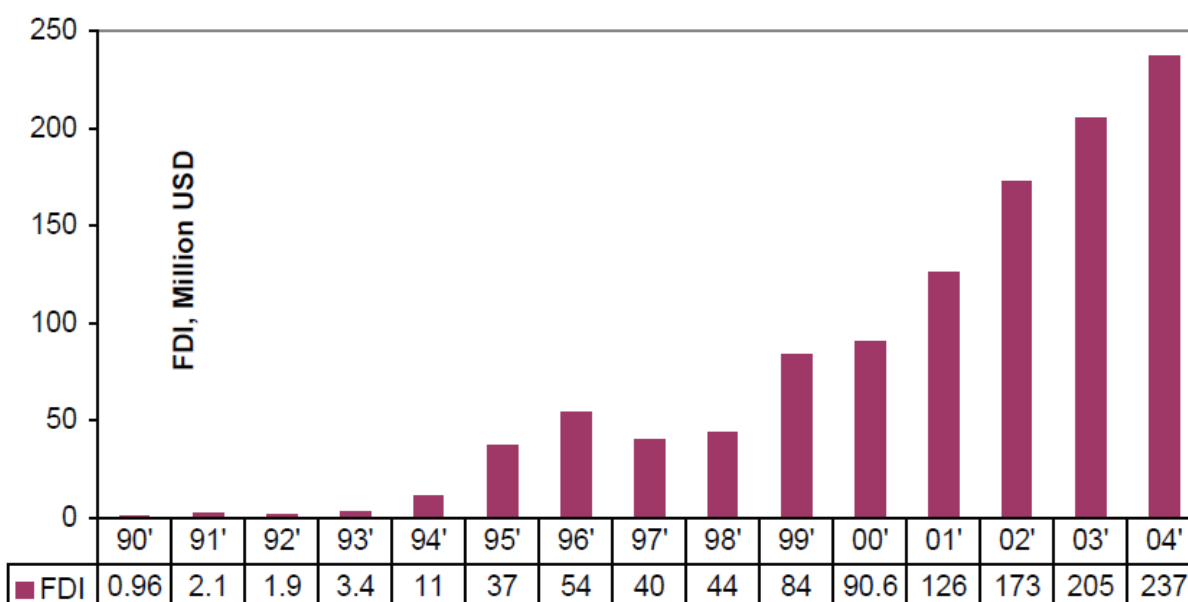
## **PART 3: MONGOLIA**

### **Introduction**

Mongolia is one of the most environmentally rich countries in the world. It has a variety of geographical features that can be divided into six zones: desert, mountain, mountain taiga, mountain forest steppe, arid steppe and taiga, as well as 3000 rivers, over 3000 big and small lakes, 6,900 springs, 190 glaciers and 250 mineral water springs.<sup>97</sup> Unfortunately, this diverse rich environment is now facing a severe threat as the country undergoes unprecedented economic development.<sup>98</sup>

The environmental situation in Mongolia is deteriorating. Although some of the deterioration is natural—Mongolia suffers from harsh winter, hot summers, and low rainfall—much of the deterioration is a result of human activities.<sup>99</sup> In its attempt to transition from a centrally planned economy to an open market economy, the Mongolian government has exploited its natural resources heavily. With much of its population living below the poverty line, the Mongolian government has taken the opportunity to capitalize on its mineral resources in order to improve the country's economic prosperity.<sup>100</sup> To that end, the government has set laws and regulations to establish an attractive environment to foreign direct investments in all sectors and businesses.<sup>101</sup> The government's efforts are engendering a worldwide interest in Mongolia's industrial, mining, trade and service sectors.<sup>102</sup> Although, according to the UN Conference on Trade and Development (UNCTAD) 2003, global FDI declined in 2001-2003, FDI inflow into Mongolia continued to increase.<sup>103</sup>

**Figure 1 FDI Inflows by Year**



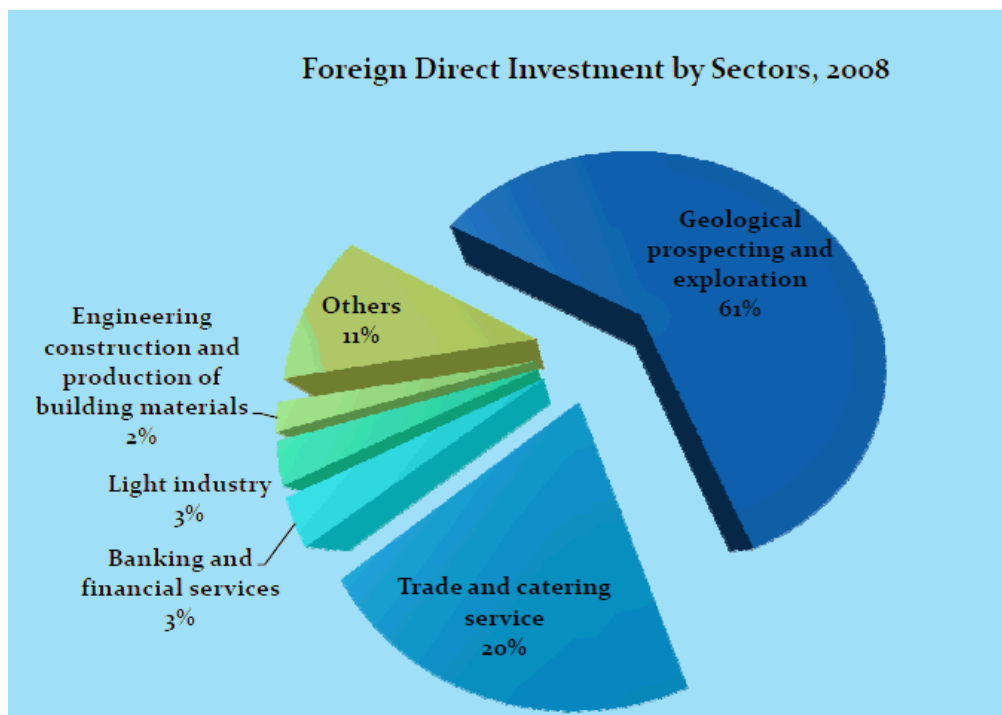
Source: Nachin, Dashnyam. *Trends in International Investment Flows: Foreign Direct Investment in Mongolia*. Universite du Havre.

However, Mongolia lacks the economic infrastructure to attract investment in manufacturing and services sectors. Therefore, the main target of FDI has traditionally been the natural resources sector.<sup>104</sup> Ergo, according to the Foreign Investment and Foreign Trade Agency of Mongolia (FIFT), the mining industry received 61% of FDI in 2008.

### **The Environment**

The mining sector is a major contributor to the Mongolian economy, accounting for about 17% of GDP, 65% of industrial value added, and 58% of export earnings.<sup>105</sup> The formal mining sector employs over 12,000 people and the informal (artisanal) mining sector involves many times this number.<sup>106</sup> The mining industry in Mongolia is largely based on copper and gold and it provides almost 25% of government revenues.<sup>107</sup> In order to develop this sector, the government enacted the 1997 Minerals Law, abolished a 10% gold tax, and widely publicized discovery of

the Oyu Tolgoi mine in 2001, the world's largest undeveloped copper-gold mine project. These policies contributed to the rapid rise in mineral exploration in early 2000s.<sup>108</sup>



Source: FIFTA of Mongolia

However, this sector is considered “the main source of environmentally harmful economic activity in the country.”<sup>109</sup> According to a World Bank Report “*Mongolia A Review of Environmental and Social Impacts in the Mining Sector*,” the mining sector in Mongolia is responsible for the following environmental problems:

- **Changes in Hydrological Regime:** Changes in hydrological regimes remain a significant problem, particularly for placer gold. On balance, current mining practices are inefficient and use excessive process water, overtaxing surface waters and underground supplies, and generating excessive effluent, which is difficult to manage and poses a threat of uncontrolled discharges of slurry. The water pumped from mines of all types and discharged into open

surface water bodies may also cause flooding, leading to the formation of new, transient wetlands, which generally fall dry once the mine ceases to operate.

- **Deterioration of Water Quality:** Increasing artisanal and small-scale gold mining ASM activities are impacting water quality in several rivers across the country. An increased risk exists of water-related infectious diseases due to unsanitary conditions of thousands of artisanal miners living by the rivers and streams, as well as toxic poisoning from gross pollution of surface and underground water by the uncontrolled burning of dung and rubber tires in order to melt the permafrost.

- **Waste-Rock Piles and Tailing Repositories:** Waste-rock piles and tailing repositories are a significant concern at large- to medium-scale mining operations. In Mongolia, most waste-rock piles from industrial mining are unstable and prone to erosion. Rainfall washes gravel and soil down into valleys, where valuable grazing land can become polluted. In some cases, waste-rock piles and tailings are reworked by private miners under unsafe conditions and risk injury or loss of life.

- **Mercury Pollution:** Mercury pollution is a mounting problem. Mercury was banned from gold mines in the former Soviet Union in 1982 and today is used illegally in only a few placer and hard-rock mines in Mongolia. However, illegal mercury usage is ubiquitous amongst artisanal hard-rock gold miners in Mongolia and has begun to spread to artisanal placer gold miners. The advantages of using mercury can often be eliminated by proper use of low-cost gravitational methods.

- **Air Pollution:** Lower air quality from ASM is posing a growing health threat. Dust generated by placer ASM—by shoveling, scraping, chiseling, bagging, and spillages in a confined space with poor ventilation—causes eye injuries, bronchial complaints, and

silicosis. Even more dangerous is the smoke from fires to melt permafrost, particularly black smoke from tires, which contains carbon particles, carbon monoxide, polyaromatic hydrocarbons, benzene, phenol, and cyanide.

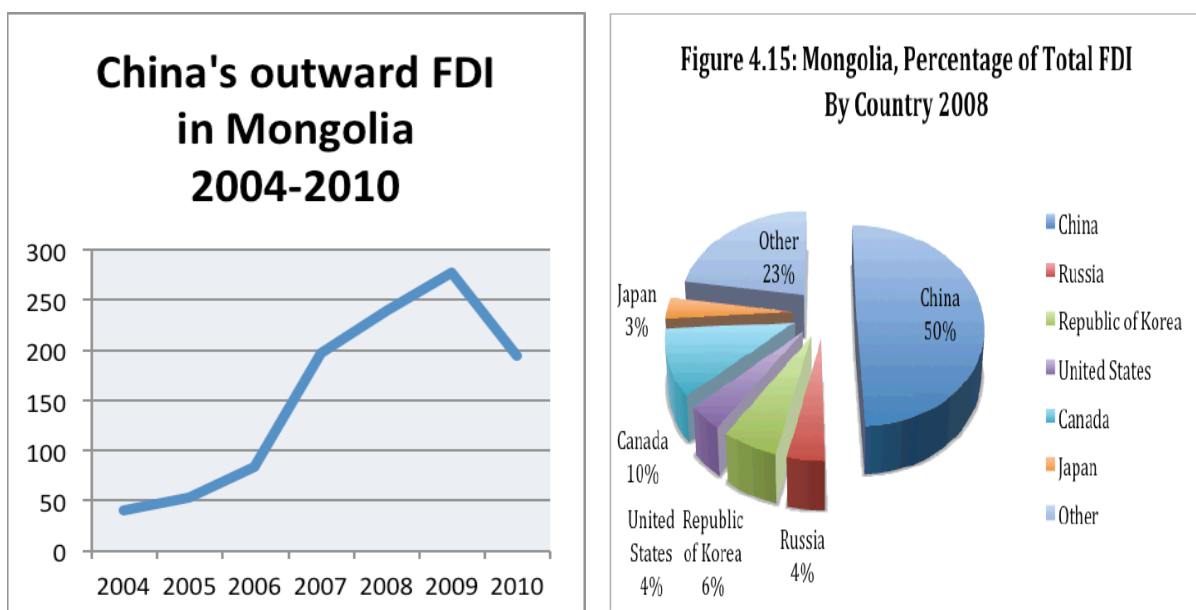
- **Mining Exploration in Protected Areas:** Issues related to the possibility of some protected areas being declassified for mining purposes remain unresolved. The Ministry of Nature and Environment has twice considered the declassification of several protected areas, partially on request of Mineral Resources and Petroleum Authority of Mongolia MRPAM of the Ministry of Industry and Trade. Yet no regulations or legal procedures currently exist to adequately govern the declassification procedure.

In regards to the mining in protected areas, in 2003 the situation was further complicated when the government proposed to Parliament for them to remove protected status from some 3.1 million hectares, about 15% of the protected-area system in four protected areas: the Small Gobi, Great Gobi Special Protected Area, Mongol Daguur Special Protected Area, and Onon Balj National Park. The government argued that illegal mining activities became widespread in these areas, and therefore, removing protection to allow formal mineral exploration and mining to take place would restore legal control and regulation of these activities.<sup>110</sup>

Although this proposal was rejected in January 2004 by the Standing Committees on Economic Protection and Environment and Rural Development, it illustrates that enough protection is not being provided by the government to these areas. Furthermore, since the exploration activities near the protected areas are increasing, the possibility of discovering potential mineral deposits in the protected areas increases, which in turn would place more pressure on the government to declassify them and attract more illegal mining activities within these areas. As a result, greater monitoring and enforcement of concerned laws are needed.

### Chinese outward FDI in Mongolia

China is considered a significant source of FDI in Mongolia. From 1990-2010, China's share of the FDI implemented in Mongolia was 50% and 49% of the companies registered in the country, over this same period time are Chinese.<sup>111</sup> Moreover, Mongolia and China have a bilateral investment agreement that has been in effect since 1993.<sup>112</sup>



Source: 2011 Mongolia Investment Climate Statement; Reeves, J. Mongolian State Weakness, Policy, and Dependency on the people's Republic of China

This large Chinese presence is attributed to the China's need for natural resources and the attractiveness of Mongolia's abundant natural resources and proximity to China.<sup>113</sup> In addition to the mining and oil exploration sectors, according to the European Bank of Reconstruction and Development, China is investing in textiles/clothing/cashmere, trade services, and construction. However, the mining sector is of priority to Chinese investors; 50% of China's FDI in Mongolia goes to this sector.<sup>114</sup> State-owned Chinese large mining firms like Shenhua Group Corp. and Aluminum Corp. of China (Chinalco) have dominated Mongolia's largest deposits, while the small scale and artisan mining industry has been significantly penetrated by small medium sized

Chinese firms<sup>115</sup>. According to Altantsetseg, an in-resident economist for the World Bank in Mongolia, “the number of ‘Mongolian’ small and medium size firms either partly or totally Chinese financed most likely make up the majority of active Mongolian mining companies.”<sup>116</sup> It is important to emphasize here that the small scale mining mines are causing most of the environmental damages in Mongolia. Large mines are operated by large firms that use developed technology to protect the environment, while small and medium sized firms lack such technology.<sup>117</sup>

As a result of this economic dependency, China has become the engine of Mongolia’s domestic growth, which in turn increased the Chinese leverage over the Mongolian government. It has also allowed China to develop an “unconscious power” over Mongolia’s environmental sector.<sup>118</sup> This unconscious power manifests itself in the Mongolian government’s inability, or unwillingness, to resist the Chinese investments in environmentally harmful activities. Jeffery Reeves, research fellow with the Griffith Asia Institute, argues that “Chinese unconscious power and Mongolian state weakness are mutually reinforcing. As China exerts greater influence through its unconscious power over Mongolia’s environmental security, Ulaanbaatar’s ability to attenuate the negative effects of this erodes. The weaker Ulaanbaatar becomes, the more unconscious power Chinese actors have over Mongolia’s environmental security.”<sup>119</sup> This imbalance in the relationship between the two countries has posed a dilemma on the Mongolian government: Sacrifice the economic growth for the sake of environment, or sacrifice the environment for continuing economic development?

### **Environmental laws of Mongolia**



Mongolia does not lack a legal framework to protect its environment. In addition to a long list of environmental laws, the government of Mongolia has regulated mineral exploration and extraction under the Foreign Investment Law of 1993. This law includes clauses to protect the environment from the harm that this sector causes. Foreign investors, according to this law, shall implement measures to ensure the protection and restoration of the natural environment. Also, no license shall be granted to a project before examining its impact on the nature. On the other hand, the Environmental Protection Law of 1993, states that business entities and organizations are required to keep the ecological passport of the area in accordance with procedures approved by the central State administrative body. In the event of a breach of the environmental obligations, these business entities and organizations shall be liable to fines.

Unfortunately, the environmental problems in Mongolia cannot be simply resolved by enacting laws. The Mongolian government needs to be more effective in enforcing these laws. The situation is further complicated as the responsibility of enforcing these laws lies on the local governments, “who often have financial stakes in regional mining operations, corruption leading to environmental degradation commonly occurs.”<sup>120</sup> Rather than trying to reduce corruption on the regional levels, in 2009, the Mongolian parliament passed the Law on the Prohibition of Minerals Exploration in Water Basins and Forested Areas, which empowers local governments even more by giving them the right to determine the actual areas that can be mined. In effect, the local officials can extend the 200 meter minimum at their discretion. The corruption at the local levels prompted the Mongolian president in 2010, to suspend the issuance and processing of both mining and exploration licenses. The president justified his action by saying that the Mineral Resources Authority of Mongolia is corrupt and disorganized.<sup>121</sup>

## TNC's involvement in Mongolia

In order to reduce the environmental damages in Mongolia, the Nature Conservancy is partnering with national and regional governments, other conservation organizations and local people in creating a lasting natural legacy. Mongolia's government faces a dilemma: it must find a balance between economic development and environmental protection. TNC realizes that, in order to solve the dilemma, the Mongolian government needs to

“combine science-based methods with a people-focused approach to **create regional plans that balance the interests of conservation with sustainable economic development, social welfare and nomadic traditions.** By gathering, assessing and integrating environmental, social and economic information, the sustainable development plans will have government and popular backing while protecting Mongolia's unique natural treasures.”<sup>122</sup>

TNC works with the Mongolian government and people to apply the development by design planning that will enable them to conserve ecosystems by minimizing the environmental impact of natural resource exploitation, especially in the extractives industries.

## PART 4: MYANMAR

*Administrative Map of Myanmar/Burma According to the 2008 Constitution*



Source: *Myanmar/Burma: Inside Challenges, Outside Interests*, 2010.

## **Introduction**

By ending its support towards the Burmese Communist Party and establishing full diplomatic relations with Myanmar's junta shortly before the end of the Cold War, China has developed a close economic relationship with Myanmar. This relationship has enabled Myanmar's government to defy Western sanctions and has subjected China to Western criticism for overlooking the military regime's ignominious human rights record amid its investment and trade with its Southeast Asian neighbor.

Even though China has augmented its investment in Myanmar's natural resources and hydropower sector, several other countries such as France and Canada invested in these sectors prior to the increase in Chinese investment. The resource-seeking foreign direct investment (FDI) of these countries along with China harmed Myanmar's environment because the Southeast Asian nation lacks the institutional mechanisms to preserve its environment. Myanmar's undeveloped institutions for environmental governance will play a key role in determining policy recommendations to address the environmental impacts of FDI from China. This country report on Myanmar will delve into its environmental issues and the sectors that contribute to these issues, pinpoint Chinese FDI in those sectors and examine the plumbing behind Myanmar's environmental governance.

## **Myanmar's Environmental Issues**

Myanmar is endowed with a plethora of natural resources that have sustained the livelihood of its indigenous population; these natural resources include biodiversity, forests, coastal areas, freshwater sources, oil and gas and minerals. While Myanmar is home to 300 identified mammals and 7,000 plant species, many of which are endangered,<sup>123</sup> it has a diverse

array of forest ecosystems, including Delta mangroves, low tropical rainforest, teak forests, semi-deciduous forests and sub-alpine forests.<sup>124</sup> Myanmar's coastal areas are habitats for mangroves and aquatic animals that provide food for the local communities.<sup>125</sup> Its freshwater rivers host the Irrawaddy dolphin and Blyth's river frog,<sup>126</sup> and they are a source of hydropower potential and irrigated agriculture for regional and foreign investors.<sup>127</sup> As for oil, gas and minerals, Myanmar is replete with 500 million and 100 million barrels of onshore and offshore oil reserves, respectively,<sup>128</sup> 0.57 trillion cubic meters of natural gas reserves,<sup>129</sup> and metal ore, fossil fuel and gemstone deposits.

Because Myanmar possesses such a vast array of natural resources, it attracted large amounts of investment from foreign investors, whose extraction of the resources has degraded the local environment. This environmental degradation has manifested itself in the form of water pollution, destruction of fisheries, loss of biodiversity and deforestation. The culprit that polluted Myanmar's waterways and contaminated the local soil is the mining sector, whose extractive processes have dumped arsenic, mercury and sulfuric acid into the soil and coal waste into creeks.<sup>130</sup> While the 2009 construction of China's crude oil port at Madaya Inland in the Bay of Bengal has destroyed local fisheries,<sup>131</sup> flooding from hydropower dam construction and mercury disposal from extracting gold has killed the local flora and fauna.<sup>132</sup> Logging carried out by Chinese and Thai loggers and ethnic armed opposition groups along with forest clearing for open pit copper mining has contributed to Myanmar's high deforestation rate, which is among the highest in the world.<sup>133</sup>

**Figure 1****Table 3** Approved FDI Inflows to Myanmar (as of March 31, 2006)

<i>Fiscal Year (April–March)</i>	<i>Enterprises/ Projects</i>	<i>Yearly Amount (US\$ Million)</i>	<i>Cumulative Amount (US\$ Million)</i>
1989	18	449.49	449.49
1990	22	280.57	730.06
1991	4	5.89	735.95
1992	23	103.79	839.74
1993	27	377.18	1,216.92
1994	36	1,352.30	2,569.22
1995	39	668.17	3,237.39
1996	78	2,814.25	6,051.64
1997	56	1,012.92	7,064.56
1998	10	54.40	7,118.96
1999	14	58.15	7,177.11
2000	28	217.69	7,394.80
2001	7	19.00	7,413.80
2002	9	86.95	7,500.75
2003	8	91.17	7,591.92
2004	15	158.28	7,750.20
2005	5	6,065.68	13,815.88
<b>TOTAL</b>	<b>399</b>	<b>13,815.86</b>	

Note: The figures include those already terminated.

Sources: Myanmar Investment Commission. Some figures are also cited from Myanmar journals and newspapers.

### Affecting Sectors Contributing to Myanmar's Environmental Issues

Myanmar's environmental degradation from resource extraction accelerated once the military seized power in 1988, and it continued as the State Peace and Development Council (SPDC) opened the country's economy by legalizing border trade with neighboring countries and inward FDI (IFDI).<sup>134</sup> Since that opening, annual IFDI rose gradually until 1996, and it stagnated until 2004 (**Figure 1**) due to the Asian financial crisis and the Myanmar government tightening its controls over foreign capital.<sup>135</sup> \* In 2006, the 12 countries that contributed the most FDI to Myanmar's economy included its Southeast Asian neighbors like Thailand, European Union nations such as France and the East Asian countries of China, Korea and Japan (**Figure 2**).

\*\* Current statistics on FDI into Myanmar tend to be inaccurate.

Among the top 11 sectors in Myanmar that received the most FDI in 2006, electricity, which includes hydropower,

## Figure 2

**Table 4** Approved FDI to Myanmar by Country (as of March 2006)

	<i>Amount (US\$ Million)</i>	<i>Share (%)</i>	<i>No. of Project</i>
1 Thailand	73.8	55.3%	57.0
2 UK	15.7	11.8%	40.0
3 Singapore	14.3	10.8%	70.0
4 Malaysia	6.6	5.0%	33.0
5 Hong Kong	5.0	3.8%	31.0
6 France	4.7	3.5%	3.0
7 USA	2.4	1.8%	15.0
8 Indonesia	2.4	1.8%	12.0
9 The Netherlands	2.4	1.8%	5.0
10 Japan	2.2	1.6%	23.0
11 P.R. of China	1.9	1.5%	26.0
12 Korea	1.9	1.4%	34.0

Source: Myanmar Investment Commission (MIC).

## Figure 3

**Table 5** Approved FDI to Myanmar by Sector (as of March 2006)

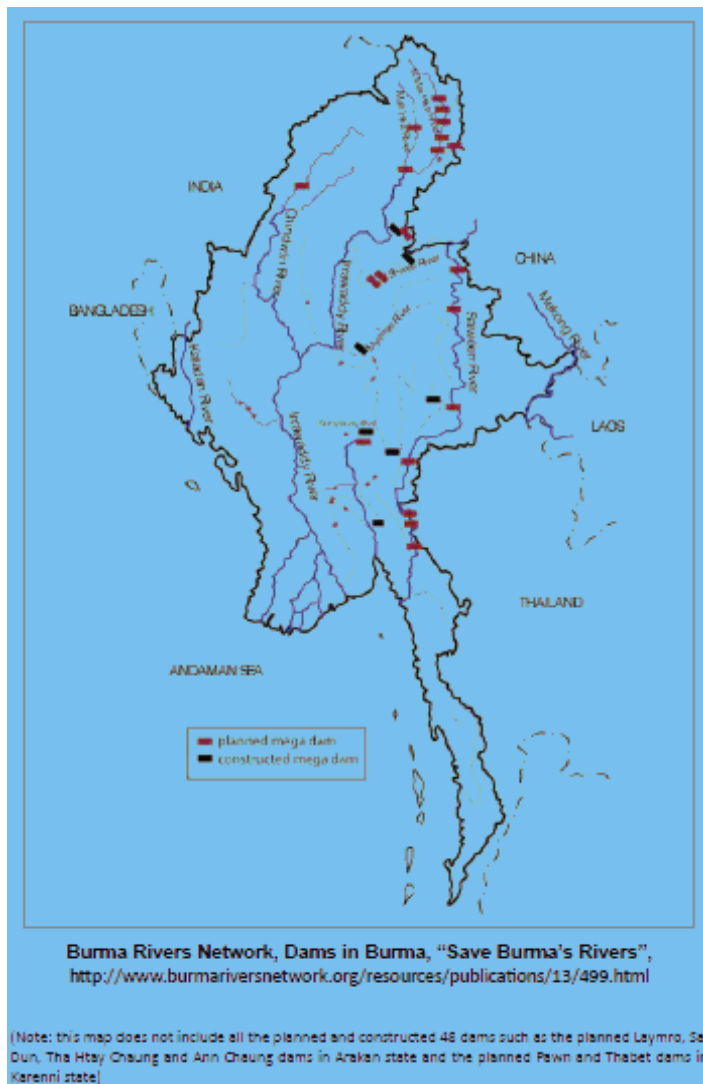
<i>Sector</i>	<i>Amount (US\$ Million)</i>	<i>No. of Project</i>
1 Electricity*	6,054	7
2 Oil and Gas	2,635	71
3 Manufacturing	1,610	152
4 Real Estate Development	1,056	19
5 Hotel & Tourism	1,035	43
6 Mining	535	58
7 Transport Telcommunication	313	16
8 Fishery	312	24
9 Industrial Estate	193	3
10 Construction	38	2
11 Agriculture	34	4
Total	13,816	399

Note: \*expressed as "other service" in MIC classification.

Source: Myanmar Investment Commission (MIC).

was ranked number 1, followed by oil and gas at number 2 and mining at number 6 (**Figure 3**). As pointed out in the section on Myanmar's environmental issues, hydropower, oil and gas and mining have been the largest contributors to the country's environmental damage.

**Figure 4 – Map of Hydropower Dams Completed or Under Construction in Myanmar**



Much activity has occurred recently in Myanmar's hydropower sector, including the planning and construction of hydropower dams, human rights violations with those dam projects and the signing of agreements with foreign corporations and governments. Right now, about 48 hydropower projects are undergoing planning, construction or completion along Myanmar's



major rivers like the Irrawaddy and their tributaries (see **Figure 4** for map of hydropower dams in Myanmar).<sup>136</sup> FDI for these projects has come from China, India, Thailand and Bangladesh's governments and contractors while Swiss contractor Colenco Power Engineering has agreed to provide engineering consulting services.<sup>137</sup> The local ethnic groups that reside near those projects will not receive any hydroelectric power since the dams will siphon 90% of the electricity to Myanmar's neighbors.<sup>138</sup> Even worse, construction of these dams will subject these ethnic groups to gruesome human rights violations by the Myanmar military or *tatmadaw*, including forced relocation and labor, torture, rape and execution.<sup>139</sup>

Like the hydropower sector, Myanmar's oil and gas industry has seen much activity, but this activity has been carried out since the junta opened the country's economy in 1988. Throughout the early 1990s, foreign petroleum firms Total from France, Unocal and Texaco from the United States and PTT Exploration and Production from Thailand partnered with Myanmar's state-owned oil firm, the Myanmar Oil and Gas Enterprise (MOGE), to develop the Yadana and Yetagun gas fields in the Andaman Sea.<sup>140</sup> Most of the gas from those fields has been exported to Thailand since 1998, and it provides little benefit to Myanmar's populace.<sup>141</sup> These exports generated ample amounts of foreign reserves for the military regime. These reserves jumped two-fold from US\$239 million to US\$440 million in August 2001 and reached US\$939 million in June 2006; most of these reserves were allocated to the regime's administrative organizations and state-owned economic enterprises (SEEs).<sup>142</sup> What enabled Thailand to procure most of the gas was the gas' passage through the Yadana and Yetagun pipelines in Tenneserim Division, which were jointly constructed in the 1990s by a partnership between MOGE and French, American, Thai, Malaysian and Japanese oil firms. Because these gas pipelines ran through regions controlled by armed Karen and Mon ethnic groups, Myanmar's

government sent in its *tatmadaw* as security forces, which cleared land for the pipelines through land confiscation, forced labor, torture and killings.<sup>143</sup> Besides the Yadana and Yetagun gas fields, MOGE has initiated exploration of the Shwe and Shwephyu (collectively known as the ‘A1-Block’) gas fields along with South Korea’s Daewoo International Corporation, the Korean Gas Corporation, the Gas Authority of India Limited (GAIL) and India’s Oil and Natural Gas Corporation (ONGC) Videsh.<sup>144</sup> Despite having several foreign partners for the joint exploration of the A1-Block field, MOGE is entitled to 50% of the extracted gas in this joint venture.<sup>145</sup>

Unlike the hydropower and petroleum sector, less is known on Myanmar’s mining sector, especially on its IFDI trends since Myanmar’s economy opened up in 1988. However, the water pollution and soil contamination from this sector’s extractive activities is well-documented. Even though Chinese FDI has poured into the mining sector since 2005, the sector has received FDI from other countries including Russia, Italy and Canada. In 2010, Russia’s Tyazhprom Export Company and Italy’s Danieli Company have invested in an iron mine excavated at Shan State’s Pinpet Mountain, which is rich in the iron ores of hematite and limonite. Like the Yadana and Yetagun gas pipeline construction, the *tatmadaw* made this excavation, along with the construction of an iron factory, possible by forcibly evicting ethnic Pa’Oh and Shan villagers that resided at the mountain.<sup>146</sup> In addition to the Pinpet Mountain iron mine, the Monywa Copper Project in central Myanmar’s Sagaing Division, which is the country’s largest mine, began operations in 1999; it is jointly run by Canada’s Ivanhoe Mines and Myanmar’s state-owned Number One Mining Enterprise (ME1).<sup>147</sup> The mining project’s activities have forced Monywa’s locals to switch from farming to artisanal mining because high levels of sulfuric acid from copper mining have contaminated the soil and water.<sup>148</sup> The sulfuric acid derives from tailings, which is toxic waste created from treating applying an organic solvent and electricity to a

copper-rich solution to produce 45-kilogram sheets of 99.999% pure copper. The copper-rich solution came about by treating copper ore with a leaching solution containing sulfuric acid.<sup>149</sup> Justification for Ivanhoe Mines and MEI to apply this polluting method of copper extraction (called the solvent extraction-electro winning (SX-EW) method) is legal protection from Myanmar's 1994 Mining Law. This law grants immunity from liability, prosecution and fines to mining companies that operate in Myanmar.<sup>150</sup>

### **Chinese Foreign Direct Investment in Myanmar**

Even though the West has criticized China for investing in Myanmar's economy amid the junta's egregious human rights violations, the East Asian country is considered a latecomer as a source of FDI for its Southeast Asian neighbor. While the trends of Chinese FDI entering Myanmar prior to 2005 are unknown, what is known is that this FDI has eclipsed that of Myanmar's traditional largest investors of Singapore and Thailand.<sup>151</sup> Chinese FDI stood at US\$194.221 million for 26 projects in 2005.<sup>152</sup> The official estimate of Chinese FDI in 2005 is likely to fall below the actual volume since many hidden Chinese investments and business ventures are registered under the names of relatives who are Myanmar citizens or with local SEEs.<sup>153</sup> The reason why many Chinese and even other foreign investors register as Myanmar SEEs is that partnering with those SEEs provides those investors numerous advantages such as access to resource-rich areas and goodwill from the government (see **Figure 5** for the number of SEEs relative to private enterprises in 2002).<sup>154</sup> Like its FDI forerunners, China invested overwhelmingly in energy and mining and little in manufacturing.<sup>155</sup>

Energy security and rising natural resource demand from China's rapidly expanding economy has prompted the country into diverting much of its FDI toward Myanmar's

hydropower, oil and gas and mining sectors. In 2010, Myanmar received US\$8.2 billion of Chinese FDI in the resource sector, with US\$5 billion going into hydropower, US\$2.15 billion earmarked for oil and gas and about US\$1 billion committed to mining.<sup>156</sup>

**Figure 5**

**Table 6** Form of Organization of FDI (as of March, 2002) (Billion Kyat)

	<i>No. of Enterprises</i>	<i>Investment</i>	
		<i>Local</i>	<i>Foreign</i>
1 Wholly Foreign-owned	154		157.4
2 Joint Venture	138	72.5	169.8
(a) State-owned Economic Enterprises	76	30.9	120.3
(b) Myanmar Economic Holdings Ltd.	19	3.4	20.6
(c) YCDC	1	.1	.1
(d) Private Enterprises	36	37.1	27.5
(e) Co-operatives	4	.4	.4
(f) JV Corporation	1	.0	.0
(g) Myanmar Economic Corporation	1	.6	.9
3 Production Sharing	70	.0	122.9
Total	362	72.5	450.0

Note: YCDC stands for Yangon City Development Committee. The amounts are Kyat-based only.

Source: CSO, *Statistical Yearbook* (2002: 257).

In the hydropower sector, Chinese FDI has resulted in the completion of six hydropower dams in Myanmar from 1996 to 2005, with more in the planning and construction stage. Among those six dams completed between 1996 and 2005, the most notable is the Paunglaung Hydropower Project: constructed by the Yunnan Machinery Import and Export Corporation in March 2005, it cost US\$160 million, it generates 280 megawatts (MW) of electricity and it was China's largest hydropower plant in Southeast Asia.<sup>157</sup> Since 2006, Chinese state-owned enterprises (SOEs) have invested into 11 major ongoing hydropower projects, including Hutgyi Dam, Yeywa Dam and Myitsone Dam. While Sinohydro was awarded the contract to build the 600-MW Hutgyi Dam and the 790-MW and US\$700-million Yeywa Dam,<sup>158</sup> China Power

Investment Corporation and Myanmar's Asia World Company have partnered together to construct the 6,000-MW and US\$3.6-billion Myitsone Dam.<sup>159</sup> In September 2011, Myanmar President Thein Sein abruptly suspended the Myitsone Dam's construction, citing concerns about the environment and the locals' welfare.<sup>160</sup> Among the dams completed so far, most of the electricity they produce is sold and siphoned off to China, which explains why the country diverted most of its resource-seeking FDI to the hydropower sector.

Within Myanmar's oil and gas sector, Chinese FDI has gone into field exploration and construction of a petroleum pipeline linking Myanmar's coastal Arakan State with Kunming, Yunnan Province, China. While China National Petroleum Corporation (CNPC) and its subsidiary Chinnery Assets were awarded contracts to upgrade four old onshore oilfields in central Myanmar,<sup>161</sup> PetroChina signed an agreement with MOGE to purchase 6.5 trillion cubic feet of gas from MOGE's portion of the A1-Block field for 30 years starting in 2009.<sup>162</sup> As for the 2,380-kilometer oil and gas pipeline connecting Arakan State to Kunming, its construction by CNPC has been ongoing since 2009, with the pipeline scheduled to operate in 2013. The US\$1.5 billion pipeline will transport Middle Eastern and African oil from Arakan State's Madaya Island to China at a rate of 12 billion cubic meters of oil per year, enabling Chinese oil tankers to bypass the Strait of Malacca.<sup>163</sup> Even though CNPC commissioned and executed a quantitative social impact assessment (SIA) for parts of the pipeline route, the Myanmar authorities compromised the SIA's methodology and objectivity by restricting the surveyors to places where land confiscation had already taken place and closely monitoring the surveyors as they interviewed local villagers.<sup>164</sup>

Myanmar's mining sector not only has received the smallest portion of Chinese resource-seeking FDI but also has the least information on Chinese investments in that sector. What is

known so far is that China invested in Myanmar's nickel and copper mines. Recently, China's Taiyuan Iron and Steel Group teamed up with the China Nonferrous Metal Mining Group to develop a large nickel mine for US\$800 million in Tagaungtaung, Mandalay Division.<sup>165</sup> From 2004 to 2005, Myanmar's government approved China Non-Ferrous Metal Mining and Construction Group and Kingbao Mining Limited's contracts to survey for nickel and invest US\$500 million in nickel mining operations near the Myanmar-China border and the Ayeyarwady River. Meanwhile, China Hainan Jiayi Machine Import and Export Company Limited has surveyed Kachin State and Sagaing Division for copper and other minerals.<sup>166</sup>

### **Environmental Governance in Myanmar**

Myanmar's environmental governance has been severely underdeveloped and ineffective since the junta opened up the economy in 1988. Though Myanmar's government has drafted policies to address its environmental issues and signed international commitments concerning the environment, its ability to enforce those policies and meet those commitments are hampered by its lack of institutional mechanisms and failure to uphold its own laws. The regulatory bodies and environmental policies that have been rendered ineffective by the regime's hollow institutions and flaunting of its own laws include the National Commission on Environmental Affairs (NCEA), Forest Department, National Environmental Policy (NEP) and 1992 Forest Law.

Due to global awareness and initiatives taken by the United Nations, the SPDC founded the NCEA in 1990. The commission's roles include "educating the public about environmental awareness" and "putting together a 'comprehensive national environmental strategy' in keeping with a 'modern and developed nation.'"<sup>167</sup> This environmental strategy manifested itself as the 1994 NEP, whose objectives include "establishing sound environmental policies in order to

conserve the environment and prevent its degradation” and “integrating environmental considerations into the development process to enhance its [Myanmar’s] citizens’ quality of life.”<sup>168</sup> Despite the NCEA’s founding and its drafting of the NEP, both the regulatory body and the policy’s efficacy have been stymied because the SPDC did not grant the NCEA formal independence to draft and implement policies.<sup>169</sup> Also, the SPDC imposed serious budget and staff constraints upon the NCEA, with the 2004–2005 budget limited to US\$12,000 and going mostly to staff pay.<sup>170</sup> Evidence of the NCEA’s limited effectiveness can be seen in its composition of the Myanmar National Environmental Performance Assessment (MNEPA), which failed to mention the environmental fallout associated with mine tailings disposal, dam and pipeline construction and gas field development.<sup>171</sup>

Like the NCEA and NEP, the 1992 Forest Law and Forest Department’s efficacy is severely constrained, which is attributed to hollow institutions. The 1992 Forest Law, ratified by the junta for national forest conservation, stresses “‘conservation and protection’ to meet the needs of the public and the ‘perpetual enjoyment of benefits’ from the forest.”<sup>172</sup> Despite the high level of technical competence and dedication of Forest Department personnel, their efforts to enforce the 1992 Forest Law have been obstructed by the junta’s top-level officials and their cronies taking bribes from logging companies that flout the law.<sup>173</sup>

Myanmar has also drafted mining laws that are supposed to address environmental concerns associated with the mining sector. However, unlike the NEP and 1992 Forest Law, the 1994 Mining Law does not even consider those concerns and instead blatantly reflects the Myanmar Ministry of Mines’ sole purpose, which is “to boost up present production, to fulfill the growing domestic demand and to increase foreign exchange earnings.”<sup>174</sup> This law not only lacks clarity and logic but also sanctions the seizure of lands above mineral deposits without

compensation or resettlement and lacks specific measures requiring an environmental impact assessment (EIA) or SIA by the mining permit holder or independent third party.<sup>175</sup> As mentioned in the section discussing foreign investment in Myanmar's mining sector, the 1994 Mining Law grants mining companies with legal immunity from liability, prosecution or fines.<sup>176</sup>

**Figure 6 – International and Regional Treaties Concerning the Environment to Which Myanmar is a Party**

	Name
1	Plant Protection Agreement for the Southeast Asia and Pacific Region
2	Treaty Banning Nuclear Weapons Tests in the Atmosphere in Outer Space and Under Water
3	Outer Space Treaty: Treaty on Principles Governing the Activities of States in the Exploitation and Use of Outer Space including the Moon and other Celestial Bodies
4	Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea-Bed and Ocean Floor and in the Subsoil there of (Seabed Treaty)
5	Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons, and their Destruction
6	Vienna Convention for the Protection of the Ozone Layer
7	Montreal Protocol on Substances that Deplete the Ozone Layer
8	MARPOL: International Convention for the Prevention of Pollution from Ships
9	MARPOL: International Convention for the Prevention of Pollution from Ships as amended 1978
10	Agreement on the Networks of Aquaculture Centers in Asia and the Pacific Region
11	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer
12	United Nations Framework Convention on Climate Change (UNFCCC)
13	Treaty on the Non-Proliferation of Nuclear Weapons
14	ICAO: ANNEX 16 Annex to the Convention on International Civil Aviation Environmental Protection Vol. I, II, Aircraft Noise
15	United Nations Convention to Combat Desertification
16	Vienna Convention for the Protection of Ozone Layer
17	Montreal Protocol on Substances that Deplete the Ozone Layer
18	London Amendment to the Montreal Protocol
19	Convention Concerning the Protection of the World Cultural and Natural Heritage
20	Convention on Biological Diversity (CBD)

Source: Burma Environmental Working Group, 2011.



**Figure 7 – International and Regional Treaties Concerning the Environment to Which Myanmar is a Party – Continued from Figure 6**

	Name
21	United Nations Convention on the Law of the Sea
22	International Tropical Timber Agreement (ITTA)
23	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
24	ASEAN Agreement on the Conservation of Nature and Natural Resources
25	Catagena Protocol on Biosafety
26	ASEAN Agreement on Transboundary Haze Pollution
27	Kyoto Protocol to the United Nations Framework Convention on Climate Change
28	Convention on the Prohibition of the Development, Production, and Stockpiling and Use of Chemical Weapons and on their Destruction
29	Stockholm Convention on Persistent Organic Pollutants
30	Ramsar Convention on Wetlands
31	Copenhagen Amendment to Montreal Protocol on Substances that deplete the Ozone Layer

Source: Burma Environmental Working Group, 2011.

These statutes have enabled foreign mining firms like Canada’s Ivanhoe Mines to dispose acidic copper mine tailings without bearing the risk of punishment.

When it comes to international environmental treaties, Myanmar’s government signs and adheres to these treaties in the same half-hearted manner as its NEP. As of 2011, the Southeast Asian nation has ratified 31 international environmental treaties, which include the Convention on International Trade of Endangered Species (1979), the International Tropical Timber Agreement (1996), the Framework Convention on Climate Change (1994) and most notably, the Convention on Biological Diversity (CBD) (1994)<sup>177</sup> (see **Figures 6 and 7** for the complete list of treaties). The drive for the regime to sign these treaties is that it aware that it must develop its environmental governance; it wants to show the world that it is ‘greening’ its policies to shore up its legitimacy and international reputation.<sup>178</sup>

Amid the regime's constraints on effective environmental governance, it has followed up on the CBD by writing and releasing all three mandatory reports on national biodiversity. January 2006 saw the United Nations Environment Program Regional Office of Asia-Pacific in Bangkok, Thailand pledge its support to the Myanmar NCEA's development of the National Biodiversity Strategy Action Plan (NBSAP).<sup>179</sup> CBD signatories are required to assemble this plan by incorporating conservation and sustainable use of biological resources into national policymaking, especially for the economy.<sup>180</sup> However, like the MNEPA, the junta has deliberately excluded advice from Myanmar's indigenous ethnic groups and environmental organizations that represent these groups. This exclusion of advice goes against the principles of the CBD and NBSAP guidelines.<sup>181</sup>

Despite the regime's half-hearted approach to environmental governance, three cases of limited environmental success by non-governmental organizations (NGOs) exist. Between 1992 and 2000, the Smithsonian Institution successfully trained staff to preserve the Chatthin Wildlife Sanctuary's ecosystem, which was made possible by the NGO's good relations with the Forest Department.<sup>182</sup> Maintaining a good relationship with the Forest Department has enabled the Wildlife Conservation Society's (WCS) to conduct a complete and highly needed scientific assessment on 22 out of 31 official protected areas in Myanmar.<sup>183</sup> What has also contributed to the Smithsonian Institution and WCS's success is consistent leadership from the local wildlife sanctuary superintendent and respecting the junta's limits on environmental projects – the generals want to show that they can run such projects without outside help to shore up their claim as protectors of Myanmar's sovereignty that are independent from foreign influence.<sup>184</sup> Since 1994, the United Nations Development Programme (UNDP) has convinced the regime to establish community forests that promote sustainability and micro-income opportunities; so far,

764 acres have been designated for community forests with another 1,335 acres under consideration.<sup>185</sup> Unlike the Smithsonian Institution and WCS, the UNDP has greater political acceptance and legitimacy among Myanmar's government and people; however, the UNDP is often subject to criticism by the international community.<sup>186</sup>

Though Myanmar has carried out positive political developments with the recent by-election in April 2012, the country has a long way to go to address the challenges for its environmental governance, including institutional development, resource or budget capacity and environmental education. The regime continues to hamper the development of its environmental institutions by not granting autonomy and enough power to the NCEA relative to other government bodies like the Ministry of Mines. While the regime needs to increase its resource or budget capacity for environmental governance, it also must devote greater efforts to educating its citizenry and staff at relevant ministries in environmental protection.<sup>187</sup>

### **The Nature Conservancy's Involvement in Myanmar**

So far, the Nature Conservancy (TNC) has no environmental conservation activities going on in the Southeast Asian nation. Nonetheless, the NGO has made a handful of short, scoping visits to the country and coordinated with the agencies of WCS, Fauna & Flora International (FFI) and the Biodiversity and Nature Conservation Association (BANCA).<sup>188</sup> Also, TNC's Jack Hurd has posted two articles analyzing how Myanmar's gradual political liberalization will affect its environment, which are titled "Mission of Burma<sup>189</sup>" and "More on Myanmar: Taking Care of Teak."<sup>190</sup>

## **Conclusion**

Since Myanmar's military government opened the economy in 1988, the country's environment has deteriorated through water pollution, destruction of fisheries, loss of biodiversity and deforestation. This environmental degradation is attributed to FDI entering the nation's hydropower, oil and gas and mining sectors. Even though the volume of Chinese FDI to those sectors has recently surpassed that of Singapore and Thailand, who were traditionally the largest investors, foreign investors from other countries contributed to Myanmar's environmental problems long before China became a major investor. But these foreign investors are not the only culprits. Myanmar's environmental issues are also the product of the regime's ineffective environmental governance from underdeveloped institutions and overt flouting of its own environmental laws and commitments. To improve its environmental governance, the government must tackle the challenges of institutional development, resource or budget capacity and environmental education. Also, a critical strategy to resolving Myanmar's environmental problems involves granting the population the right to voice their opinion over resource-seeking investment projects that impact their local environment and livelihood. Now that Myanmar President Thein Sein has set the country on the path of political liberalization with the April 2012 by-election, there is hope that the government will increase its commitment to saving the environment. However, much work and many challenges lay ahead for international environmental agencies in Myanmar.

**PART 5: ZAMBIA**

## **Introduction**

Chinese outward foreign direct investment has increased substantially worldwide. The country's investment activities in Africa receive particularly harsh criticism for its concentration in extractive industries. Scholars and citizens express concern about Chinese investment because of their reputation with poor working conditions, disregard of regulations, and lack of environmental preservation policies.<sup>191</sup>

Zambia provides a particularly interesting and representative case of the trends and impacts of Chinese investments, because it holds the third largest concentration of Chinese FDI in Africa.<sup>192</sup> Zambia's long-standing relationship with China allows a close examination of the recent changes. The stable democracy of Zambia and its existing regulatory framework provide opportunities for recommendations to mitigate further environmental degradation. The following report will detail the environmental problems facing Zambia, identify the particular industries involved, and finally examine Zambia's existing environmental regulations in preparation for policy recommendations.

## **The Environment and Its Problems**

Despite Zambia's relatively small size, the country is well endowed with natural resources, providing its population with their livelihoods and the country with economic growth. Zambia's Sixth National Development Plan (2011-2015) identified land, wildlife, forest, minerals, natural heritage and wetlands as the country's natural resources.<sup>193</sup> The diversity of resources allows the country to benefit in a variety of ways, contributing an average of 5.5% economic growth per year.<sup>194</sup> Uses of the environment include subsistence farming, mining,

forestry, and tourism, encompassing the services, manufacturing, and agriculture sectors.<sup>195</sup> Zambia's dependence on the environment creates a critical need for conservation policies.

### **Past and current environmental issues**

Since the population depends heavily on the land, most productive activity results in environmental degradation. The country's energy demand for fuel wood has led to the second highest per capita deforestation rate in Africa.<sup>196,197</sup> The search for alternative sources of energy – such as hydropower – has also caused the degradation of the Kafue Flats, a wetland area in Zambia. Hydropower dams have altered the flow of water, overwatering some areas and leading to water scarcity in others.<sup>198</sup> Zambia hopes to develop the hydropower sector primarily to serve as a power source for Zambians, but also to export energy to South Africa.<sup>199</sup>

Zambia's substantial mining sector has generated and continues to generate air and water pollution, referred to as legacy pollution.<sup>200</sup> The environment has had to bear wastewater and sediment discharge leading to pollution and lack of potable water.<sup>201</sup> The refining processes have resulted in air pollution of the surrounding areas. Land erosion and toxic dumps have caused land pollution.<sup>202</sup> Mineral production results in large amounts of waste known as slag and tailings, which must be destroyed or stored.<sup>203</sup> As demand for mineral resources – such as copper – increases, Zambia's economy will continue to grow, further straining the environment.

### **Affected Sectors: Mining**

Mining has played an integral role in the Zambian economy since the first commercial mine opened in 1928.<sup>204</sup> Production and output has fluctuated with the price of copper, coinciding with Zambia's economic cycles.<sup>205</sup> The volatility of copper prices also impacts the

levels of incoming investments. Multinational corporations, such as the Anglo American Corporation, have long dominated the industry.<sup>206,207</sup> This trend is common to many extractive industries in the developing world, due to the large initial capital investment required. Even when the copper industry was nationalized in 1969, two multinational corporations remained as minority stakeholders.<sup>208,209</sup> In 1980, the nationalized companies were merged into Zambia Consolidated Copper Mines (ZCCM).<sup>210</sup> After nationalization, the company started to invest in public goods, such as schools, hospitals and roads.<sup>211</sup> As the price of copper declined, the government of Zambia and ZCCM could no longer support their various commitments and soon looked toward privatization.

The industry started the process of privatization in the 1990s, under the direction of the International Monetary Fund and the World Bank. In 1992, the privatization act created the Zambia Privatization Agency (ZPA), which included the Investment Act and the Mines and Minerals Act of 1995.<sup>212</sup> The Mines and Minerals Act – in an effort to encourage private investment – granted tax concessions to new mine owners, reduced income and royalty taxes, provided a stability period of 20 years, and exempted companies from paying customs and excise duties for the first five years.<sup>213</sup>

These conditions, which largely benefited the private companies, were incorporated into the development agreements made between the state and the investors. Development agreements also exempted private companies from covering ZCCM's liabilities, including paying employee benefits and assuming responsibility for environmental pollution.<sup>214</sup> Despite the agreeable conditions provided by the Zambian government, many companies pulled out of talks to buy Zambian mines due to the low price of copper. At this point, China entered the mining sector,



acquiring Chambishi mines in 1998 through NFC-Africa, a subsidiary of China Nonferrous Metal Corporation (CNMC).<sup>215</sup>

In order to maintain the involvement of the Zambian state and absorb the liabilities from ZCCM after privatization in 2001, ZCCM-Investment Holdings (ZCCM-IH) was created.<sup>216</sup> It retains minority stakes in several mines. Investment in the industry has increased as the price of copper has risen, largely due to the increase in Chinese demand for copper. Studies have concluded that China accounted for 47.6% of the international price change of copper from 2000-2005, an increase of 23.4%.<sup>217</sup> The copper industry today reports investments from Switzerland, Australia, India, China, Canada and the Netherlands.

The US Geological Survey Service categorizes copper production by ore and concentrate, and metal. As of 2009, eight companies produced copper ore and concentrate and another seven companies produced copper metal.<sup>218</sup> There was a total annual production capacity of 60.1 million metric tons in ore and concentrate, and 1.57 million metric tons in copper metal.<sup>219</sup> Currently, Zambia is Africa's largest copper producer.<sup>220</sup> Copper mining has provided the majority of Zambia's foreign exchange earnings, ranging from 70-80% (Table 1).<sup>221,222</sup> Mining as a sector has contributed 6-9% of GDP, fluctuating with the price of copper (Table 2).<sup>223</sup>

**Table 1.** Breakdown of Zambia's Total Exports, 2010

<i>By commodity group:</i>	
Agricultural products	6.8
Fuels & mining products	83.2
Manufactures	8.9
<i>By main destination:</i>	
Switzerland	51

China	20.2
South Africa	9.1
Congo, Dem Rep of	4.6
European Union (27)	4.4

**Table 2.** Sectoral Contribution to GDP, 1993-2005.

Sector	1993	1994	1995	1996	1997	1998	1999	2000	2005
Mining	9.4	16.7	12.4	11.9	11.8	10.7	6.6	6.4	8.6

Source: Muneku (2009)

### Chinese Involvement

As previously mentioned, Chinese involvement has expanded over time. This trend not only describes investment, but also migration, tourism, diplomatic visits, aid and trade.<sup>224</sup> In terms of investment, Zambia holds the 19<sup>th</sup> largest stock of Chinese FDI in the world and the third largest stock in Africa.<sup>225,226</sup> The population of Chinese living in Zambia has increased from approximately 3,000 during the 1990s to a reported 20,000 in 2010.<sup>227</sup>

Though the growth of Chinese activity in Zambia is relatively recent, China's involvement traces back to Zambian independence. Zambia was the first country in southern Africa to establish diplomatic relations with China in 1965.<sup>228</sup> In 1970, China granted Zambia a large loan to complete the TAZARA railway between Zambia and Tanzania.<sup>229</sup> Generally, scholars categorize the relationship into three phases: diplomatic support (1949-1979), a period of dramatic change in each country (1979-1999), and a period of political equality and economic

partnership (1999-present).<sup>230</sup> Economic partnership clearly captures the recent increase in investment, which has generated a heated debate of the impacts in Zambia, explored below.

Accurate and reliable figures concerning China's investment in Zambia are not readily available. Figures from the Chinese Ministry of Commerce (Table 3) provide a general picture, without providing sector-specific information or the details of the investment terms. Conversely, data provided by Zambian Development Agency (ZDA) enumerates pledges of investment, inflating the figures.<sup>231</sup> Some sources state that investors fulfill approximately 30% of pledges based on Bank of Zambia and ZDA data.<sup>232</sup> On the other hand, the ZDA states that 70% of pledges are completed.<sup>233</sup> Other investments take place without the knowledge or licensing from ZDA, which the data cannot measure. Such businesses gain registration under a Zambian citizen, but are *de facto* Chinese, through management of the business.<sup>234</sup>

**Table 3.** China's outward FDI flows by country and region, 2004-2010 (millions of USD)

Country	2004	2005	2006	2007	2008	2009	2010
Zambia	2.23	10.09	87.44	119.34	213.97	111.8	75.05
Africa	317.43	391.68	519.86	1574.31	5490.55	1438.87	2111.99
% of Africa	0.70%	2.58%	16.82%	7.58%	3.90%	7.77%	3.55%
Total	5497.99	12261.17	17633.97	26506.09	55907.17	56528.99	68811.31
% of total	0.04%	0.08%	0.50%	0.45%	0.38%	0.20%	0.11%

SOURCE: Statistical Bulletin of China's Outward Foreign Direct Investment. Ministry of Commerce

The above table illustrates the growth and magnitude of Chinese outward FDI flows since 2004. Zambia represents only a small portion of total outward FDI, but when compared to total FDI inflows into Zambia, one discovers the influential role played by China. Table 4 below

presents the ten largest investors in Zambia from 2004-2007, providing a context in which to assess the magnitude of Chinese investment. Following that, another table presents the percentage of Chinese investments in Zambia over the same period of time (Table 5).

**Table 4.** Ten largest investors in Zambia, 2004-2007 (USD millions)

Rank	2004		2005		2006		2007	
1	Zimbabwe	21.2	Zambia	63.4	China	209.0	China	284.1
2	Switzerland	17.3	India	60.5	France	104.0	Zambia	184.1
3	Zambia	16.8	China	40.8	Zambia	91.3	S. Africa	11
4	China	14	Kenya	25.1	Cyprus	68.7	Singapore	10
5	Peru	6.9	Zimbabwe	20.5	G. Britain	45.7	G. Britain	9.6
6	G. Britain	5.1	G. Britain	15.2	S. Africa	28	Australia	6.0
7	S. Africa	3.7	S. Africa	9.6	Tanzania	27.3	Botswana	4.6
8	Australia	3.7	Lebanon	5.5	USA	21.4	Lebanon	3.9
9	Botswana	2.3	Canada	3	Virgin Islands	14.7	New Zealand	2.9
10	Mauritius	2	Virgin Islands	2.2	Denmark	14.1	India	2.6

**Table 5.** Chinese Investment in Zambia as a share of total investment (USD millions)

	2004	2005	2006	2007
Chinese Investment	14.0 (5.85%)	40.8 (15.88%)	209.0 (30.07%)	284.1 (18.94%)
Total investment flow	239.0	257.0	695.0	1,500.0

Source: Chileshe (2010)

From 2004 to 2007, the proportion of Chinese investments increased relative to other countries for many reasons. China facilitated investment through the establishment of the Bank

of China in Lusaka, Zambia in 1997.<sup>235</sup> It provides financing for Chinese companies and its assets have increased to 507 billion kwacha in 2007 from 14 billion kwacha in 1997.<sup>236</sup> Zambia has enabled more trade through the creation of the Zambia Development Agency (ZDA) in 2006. It serves as a connection between Zambia and foreign investors and is the only Zambian institution allowed to license FDI.<sup>237</sup> As evidenced by table 6 below, Chinese companies invest widely throughout the entire economy, but account for a large share of investment in each sector.

**Table 6.** China's share of pledged FDI (US\$ millions), 2007

Sectors	China	Total	China's share (%)
Manufacturing	900	1743.2	51.6
Mining	220	441.5	49.8
Telecommunications	150	275.1	54.5
Total	1270	2701.5	47.0

Source: Mwanawina (2008).

Since Chinese investments target all sectors of the economy, they vary considerably in magnitude and type.<sup>238</sup> Investments enter the Zambian market through state-owned enterprises, semi-private firms, private firms, and Chinese entrepreneurs. They are involved as market traders, medical doctors, owners of large-scale farms, and in construction and manufacturing.<sup>239</sup> Some of China's substantial investments include the privately owned construction company, China Hainan Zambia Ltd., and Huawei, a telecommunications company that started independent operations in 2002.<sup>240</sup> The portion of China's investment in Zambia conducted through companies tied to the state has access to low-cost capital, giving them a distinct advantage over competitors.<sup>241</sup> Most notable are China's state-led investments in the mining sector.<sup>242</sup>

Though many figures, including tables presented in this section, show large investments in manufacturing, many are mining-related. Such manufacturing investments include the Chambishi Copper Smelter Ltd., Jinchuan Group Mining Corporation Zambia, Sino Metals Leach Ltd., and BGrimm Explosives Ltd., investments ranging from \$5.6 million to \$220 million.<sup>243</sup> As such, the majority of China's investment in Zambia goes to the mining sector, accounting for 88% of total Chinese investments.<sup>244,245</sup> The following table (Table 7) presents Chinese investments categorized by sectors, and includes number of projects, proposed employment figures, and amount of the investment.

**Table 7.** Chinese Investment Commitments for 1993-2007 by sector

<b>Sector</b>	<b>No. of Projects</b>	<b>Investment US\$</b>	<b>Employment</b>
Agriculture	23	10,032,866	1,093
Construction	23	41,580,151	1,773
Engineering	1	476,000	12
Financial	1	3,000,000	8
Health	7	647,969	42
Manufacturing	89	539,294,587	6,369
Mining	5	34,918,899	550
Services & Retail	9	16,398,000	924
Tourism	7	19,447,300	451
Transport	1	456,000	40
<b>Total</b>	<b>166</b>	<b>666,251,772</b>	<b>11,226</b>

Source: ZDA data, Muneku (2009).

As previously stated, Chinese involvement in the mining sector started with CNMC's acquisition of Chambishi mines in 1998,<sup>246</sup> marking China's first overseas mine.<sup>247</sup> At privatization, after being inactive for 13 years,<sup>248</sup> Chambishi mines employed 143 workers.<sup>249</sup> Under Chinese ownership employment expanded to 2,000 Zambians and 168 Chinese, representative of many Chinese investments in Zambia's mining sector.<sup>250</sup> Though still centered on Chambishi mines, Chinese companies have expanded to Baluba, Chibuluma and Kabwe.<sup>251</sup> China has invested over \$35 million in companies like Tian Heng Mining and Minerals Ltd.<sup>252</sup> Zambia's copper industry also hosts smaller investments by an unknown number private Chinese companies, which do not provide information on the scale of operations.<sup>253</sup>

Initially, China relied on South African companies to process the copper concentrate, or exported it to Namibia.<sup>254</sup> Through increased investment, China has come to control the all steps of copper processing. As of 2009, Chinese-owned copper mines accounted for 5.32% of the annual capacity of copper ore and concentrate, and 10.94% of annual capacity of copper metal production.<sup>255</sup> It should be noted that while China has become an influential investor, NFC-Africa (a CNMC subsidiary) remains a minor player in the copper industry.<sup>256</sup>

The establishment of the Special Economic Zone (SEZ) in the Chambishi zone illustrates the importance of mining to China-Zambia relations. The Forum on China-Africa Cooperation (FOCAC) in 2006 set up a China-Africa Development Fund to establish preferential trade and investment zones throughout Africa.<sup>257</sup> Chinese President Hu Jintao inaugurated the zone in February 2007, demonstrating Chinese commitment to the undertaking.<sup>258</sup> It was the first Chinese SEZ established in Africa<sup>259</sup> and is currently the only operating Chinese SEZ in Africa.<sup>260</sup> In January 2009, the creation of a sub-zone in Lusaka for light manufacturing further expanded and diversified Chinese investment in Zambia.<sup>261</sup> Its location near the Lusaka

international airport facilitates additional imports, since raw material, capital goods and machinery are duty-free.<sup>262</sup>

CNMC has established 13 subsidiaries in the zone, related to mining and the processing of minerals.<sup>263</sup> The zone hopes to draw in investment of \$800 million USD,<sup>264</sup> attracting forty Chinese companies and ten from other countries through graduated tax incentives.<sup>265</sup> The SEZ is managed by a Chinese development company, which decides what investments to allow.<sup>266</sup> As of 2009, eleven active companies occupied the zone, with another five preparing to start operations.<sup>267</sup> As intended the zone has brought other forms of investment, such as Chinese investment in infrastructure.<sup>268</sup> In return, much of Africa enjoys China's Generalized System of Preferential Status for their exports.<sup>269</sup>

**Table 8.** Overview of China's official African trade and economic cooperation zones.

Country	Size	Planning initiated	Status as of late 2010	Developers	Industry focus
Zambia Chambishi and Lusaka subzone	11.58 km <sup>2</sup> (7.98 km <sup>2</sup> ) startup 2km <sup>2</sup> Lusaka: 5km <sup>2</sup>	2003	In operation & under construction Lusaka: planning	China Nonferrous Mining Group (CNMC)	Copper and cobalt processing Lusaka: garments, good, appliances, tobacco, electronics

Source: Brautigam & Xiaoyang (2011).

### Impacts of Investment

Ill effects as well as benefits have accompanied Chinese investment, similar to large amounts of FDI entering any developing country. Chinese traders have increased Zambian purchasing power by providing cheaper alternatives.<sup>270</sup> Studies have shown that Lusaka and the Copperbelt regions have experienced the largest reductions in poverty in recent years.<sup>271,272</sup>



These same goods, however, have crowded out Zambian goods at market and other local enterprises.<sup>273</sup> Beyond the personal impacts of Chinese investment in Zambia, it has brought improved infrastructure and an alternative to Western aid.<sup>274</sup>

In the mining sector, in particular, Chinese investment has promoted economic growth. It has improved well-being by expanding employment in the mining sector, as previously mentioned. A report by Britain's Department for International Development (DfID) found that Chinese companies employ relatively more local workers, opposed to importing them from China.<sup>275</sup> Though employment has increased the recent rise in copper prices rarely benefit Zambian citizens.<sup>276</sup>

As with other extractive industries, any increase in production leads to an increase in environmental degradation, unless mitigated. Two Chinese-owned mines have closed due to unmet safety and environmental standards.<sup>277</sup> While this showcases the adverse environmental impacts of increased Chinese investment, the environmental degradation due to mining – presented in the section on Zambia's environmental problems – are not solely caused by Chinese companies.<sup>278</sup> Rather it can be attributed to the structure of development agreements during privatization, which allowed companies to bypass environmental regulations.<sup>279</sup>

As Chinese investment continues to increase, the community of Chinese companies and emigrants also grows, creating both formal and informal networks to promote continued investment.<sup>280</sup> The network system that exists in Zambia is particularly supportive. In a survey of Chinese investors, they identified 'government support' as the second most important reason for choosing to invest in Zambia.<sup>281</sup> Economic and Commercial Counselors (ECC), located within the Chinese embassies, help identify investment opportunities<sup>282</sup> and connect Chinese investors with each other.<sup>283</sup> In addition to the ZDA, Zambia's own center for investment information,

Chinese investors can join the Association for Chinese Companies in Zambia (ACCZ). Established by the Chinese Ministry of Commerce in 2006, it is equivalent to a chamber of commerce.<sup>284</sup> Prior to the ACCZ, the Chinese Center for Investment Promotion and Trade (CCIPT) was established by political decree to identify investment projects and support new companies.<sup>285</sup> The growing Chinese population in Zambia remains unconnected to the Zambian population, causing political and economic tension.<sup>286</sup>

### **Interaction with regulations**

Governance of FDI in Zambia has neglected Zambian firms and citizens, since they have not ensured that they gain the benefits of investment. Much of the regulations and management practices in place resulted from pressure by Western donors.<sup>287</sup> Instead the government has guaranteed that Zambia remains an attractive center of investment. Though the creation of the ZDA placed stricter requirements on investors regarding minimum investment and employment creation, it still favored the investor.<sup>288</sup> Under the ZDA, investors do not have to use local content, use subcontractors, or transfer technology. They can repatriate any capital investments; send home profit, interest, dividends, and wages earned by foreign nationals.<sup>289</sup> Several scholars account for poor enforcement of regulations by the lack of environmental regulations and corporate social responsibility within Chinese companies, as well as the lack of free press and a strong system of NGOs in recipient countries, like Zambia.<sup>290</sup> Due to the central role of the government in China's economy, Zambia's government bears the responsibility of regulating FDI.

In many developing countries, the parent company bears the responsibility of meeting regulations and must self-report. For China's many SOEs, the responsibility lies with the Department of Foreign Economic Cooperation, under the Ministry of Commerce.<sup>291</sup> Though

sanctioning mechanisms exist, it is difficult to regulate actions from afar. The corporate governance structure of Chinese investors makes it difficult to strengthen Zambian regulation given the weak regulatory environment, which further endangers sustainable development.<sup>292</sup> The centralization of Chinese actors does not ease regulation and enforcement. Since Chinese investments include many different actors there is no consensus about its involvement in Africa, but rather a continuing debate.<sup>293</sup>

### **Zambian environmental regulation**

Zambia has a legacy of formally including the environment in its political life and legislation. The Constitution of Zambia includes mention of environmental preservation and the management of natural resources.<sup>294</sup> Not until 1990, did Zambia create overarching legislation to oversee environmental management: the Environmental Protection and Pollution Control Act (EPPCA).<sup>295</sup> In 1992, the Environmental Council of Zambia (ECZ) was created.<sup>296</sup>

The ECZ implements environmental policies under the Ministry of Tourism, Environment, and Natural Resources (MTENR), which develops environmental policy and legislation.<sup>297</sup><sup>298</sup> The ECZ relies on 11 different ministries for certain functions, since Zambia's environmental law spreads over 33 sets of legislation.<sup>299</sup> Separation by sector requires a substantial amount of coordination, making regulation more difficult.<sup>300</sup> Capacity constraints limit the effectiveness of ECZ's enforcement of regulations.

Environmental legislation and regulations were created with international support, from several international NGOs, multilateral lending agencies, and bilateral development organizations.<sup>301</sup> With the help of the Canadian International Development Agency (CIDA), Zambia formed the regulations for conducting environmental impact assessments in 1997.<sup>302</sup>

Though international support offers technical assistance, it has led to further confusion among Zambia's environmental legislation, which includes the 21 international treaty agreements.<sup>303</sup>

The mining sector comes under the purview of the ECZ and the Ministry of Mines and Minerals Development (MMMD).<sup>304</sup> A potential investor must prepare a project brief for the Director of Mines Safety stating the activities and environmental impact.<sup>305</sup> If satisfied with the information, the Director forwards the brief to ECZ with his recommendation, and an environmental impact statement is prepared.<sup>306</sup> On the basis of the environment impact statement, ECZ decides whether to require an environmental impact assessment (EIA).<sup>307</sup> The ability to grant mining licenses and prospecting rights to potential investors lies with the Minister of Mines for large mining projects, and the Director of Mines for small-scale mining.<sup>308</sup> The Director of Mines Safety oversees the safe working environments of the mines.<sup>309</sup>

Throughout the process, investors can apply for exemptions with the appropriate ministry. In order to limit the number of exemptions requested, a company that applies must contribute to an Environmental Protection Fund, used to address environmental degradation caused by mining.<sup>310</sup> The regulatory context in Zambia suffers from political interference,<sup>311</sup> and the sheer magnitude of Chinese investments combined with the historical relationship between the two countries, makes China politically influential. In theory, the ECZ and Mines Safety Department monitors an environmental management plan for pollution control and safety issues, respectively.<sup>312</sup> Since 1997, seventeen project briefs have been submitted in the mining sector, seven of which resulted in EIAs.<sup>313</sup> Many of these have taken place in more developed areas where the technical capacity exists.<sup>314</sup>

The presence of Zambia's established regulations for investment, labor and the environment, does not ensure adequate enforcement.<sup>315</sup> Environmental law is overlapping,

confusing, and disjointed, making it largely unenforceable.<sup>316</sup> Legislation lacks a mechanism for public participation – the district council or local chief seldom contribute feedback prior to the granting of mining licenses or prospecting rights – and a plan for mine decommissioning.<sup>317</sup> Lack of regulation did not begin with Chinese investment, but engulfs the entire mining. Environmental policies were not enforced during the period of ZCCM, resulting in air and water pollution of local communities.<sup>318</sup> In 2006, Konkola Copper Mines, owned by ZCCM-IH and a private Indian company,<sup>319</sup> released effluents in the Kafue River and was never held accountable.<sup>320</sup> Zambia's two most recent development plans (2006-2010; 2011-2015) aim to improve management of natural resources, by evaluating current regulations and making necessary changes.<sup>321, 322</sup> However, the plans maintain the sectoral separation, and cannot enhance capacity without appropriate funding.

## **Conclusion**

As a developing country, Zambia must continually balance the use and preservation of its natural resources with its need for economic growth and development. Commonly the argument heard is that it is difficult to save the environment, when people are dying from poverty. However many of gains from recent economic growth generated by the mining sector has not benefited regular Zambians. The government first has to be accountable to the people in order to effectively balance the advantages of FDI and proper management of its environment. Zambia represents other African countries, and as such provides an illustrative case study of Chinese investment in the continent.

## **Policy Recommendations**

### **Introduction**

China's environmental focus in recent years indicates significant improvements in sustainable growth, and the potential for progress remains, particularly with outward foreign direct investment. In this report, our focus is on the policy side of environmental affairs. We surveyed the existing regulations—or lack thereof—for domestic and foreign environmental investments. We find that China is increasingly placing recommendations or standards for environmental sustainability within the country. However, abroad, no outward foreign direct regulations exist. Instead, host countries are expected to place regulations on investors, and China's government requires host-country regulation compliance. Chinese businesses abroad play a role as well; they have the option of adopting voluntary international standards related to the environment. Using the theory behind the pollution haven hypothesis, we explain the challenge faced by host countries wishing to attract investment in an environmentally-friendly way. We also use a study on developed country regulations as a benchmark to determine policy ideas or examples for improving environmental growth. Drawing on the lessons from China and our four country regions in the country report, we develop recommendations to incentivize—and improve upon—environmentally-friendly growth and investments. We provide recommendations under three broad categories: targeting local institutions, targeting regulatory bodies, and targeting investors.

## *Part I: Environmental Regulation and FDI Debate*

### **Pollution Haven Hypothesis**

Globalization makes pollution and environmental concerns an international problem. The “Pollution Haven Hypothesis” (PHH) posits that pollution-intensive multinational firms relocate to developing countries where there are few environmental standards. Yet, when looking at the effects of FDI, one must consider a variety of influential factors that may have a greater influence on the distribution of FDI than environmental regulations (ER); the host country’s infrastructure, strength of institutions, and rates of corruption. When taking into account other intervening variables, statistical analysis has not shown convincing evidence of the PHH being true. A detailed review of existing studies looking into the PHH shows that there is little evidence that the US and other OCED members demonstrate PHH habits. On the contrary, studies show that US ER do not encourage MNCs to “go permit shopping” in less developed regions.

Research shows that inter-state differences in environmental regulations do not influence the geographical locations of US plants or distribution of FDI.<sup>323</sup> Studies that show evidence of PHH are usually criticized for small sample sizes and weak robustness.<sup>324</sup> After analyzing trade and investment data, it is clear that US FDI in pollution intensive industries has not increased in developing countries compared to developed countries. When studies introduce other control variables, environmental regulations have a negative and significant effect on the probability of firm location. This suggests that countries avoid having to “clean up” later so they resist investing in countries with low environmental standards.<sup>325</sup> MNCs are generally more productive than domestic firms and the MNCs adopt the clean technology of their home countries. The technology transfer from the home plants to the multinational plants is easy and

cost effective and almost always is implemented even if the host country does not require those certain standards.<sup>326</sup>

### **Pollution Haven Hypothesis and the CAAA**

A recent study by Rema Hanna analyzed the effect of the CAAA legislation and determined it did increase the outbound FDI of US-based MNCs in dirty industries, but it did not disproportionately increase production in developing nations relative to developed countries.<sup>327</sup> Interestingly, Hanna finds “firm specific factors are an important determinant of FDI, and therefore, estimates of the regulation effect using cross-sectional data, where it is difficult to control for unobserved factors across firm by industry groups, may overstate the effect of environmental regulation on FDI.”<sup>328</sup> Economic theory does not necessarily predict that firms will disproportionately increase investment to developing nations. Environmental regulations in the US do not alter conditions such as interest rates and costs of production across foreign nations. Therefore, it is not likely that a firm would automatically expect a change in the distribution of a firm’s foreign portfolio.<sup>329</sup> Firms are not investing in more countries in response to the CAAA; firms merely increase the activity at existing plants and choose not to *enter* developing markets.<sup>330</sup> Ultimately, Hanna argues that foreign substitution effects are small relative to total existing MNC production in the US.<sup>331</sup>

## ***Part II: Case Study Comparisons of OFDI Environmental Legislation and Challenges***

### **United States OFDI Regulations**

The North American Free Trade Agreement (NAFTA) is the first trade agreement to openly incorporate environmental provisions. NAFTA expanded environmental provisions in the US Clean Air Act (USCAA) passed in 1967, to Mexico and Canada. The USCAA is a US



federal law enforced to control air pollution nation-wide. In 1970, amendments to the USCAAA required federal and state regulations for industrial pollution and mobile sources of pollution such as cars. Amendments in 1990 introduced the “Responsible Corporate Officer” doctrine, which was a way for the US government to federally enforce criminal liability for environmental damage by corporations.<sup>332</sup> This was a major move towards strict liability of environmental crimes of US corporations.

The USCAA established separate national air standards for different locales with a minimum level of quality that all US counties are required by law to meet. Each year, counties whose air qualities are more polluted than federal standards require are labeled nonattainment counties; those that do are labeled attainment counties.<sup>333</sup> According to those two designations, manufacturing plants that emit one of the four criteria pollutants in a nonattainment county are held to more stringent environmental regulations than those manufacturing plants in attainment counties. When a county is designated as nonattainment, the CAAA requires that state to develop a State Implementation Plan (SIP) which outlines specific regulations for the source of each pollutant that is in nonattainment in the country. The SIPs require that new investments or plant renovations in nonattainment counties incorporate the installation of state-of-the-art pollution abatement equipment. Existing plants must install reasonably available control technologies.<sup>334</sup> On the contrary, large-scale investments in attainment counties do not require the shift to more expensive equipment and the plants are left almost unregulated.<sup>335</sup> The CAAA has proven effective and enforceable as air pollution concentrations have declined at a faster rate in nonattainment counties after the enforcement of regulations than in attainment counties.<sup>336</sup>

### **Other High Income Country Regulation Policies**

Canada and Europe have also adopted similar environmental regulations for in-country production. Both Canada and the United Kingdom impose criminal liability for corporate officers in charge of environmental regulation. In addition, the European Union has adopted widespread environmental regulations. In 1957, six European countries signed the Treaty of Rome and established the European Economic Community (EC).<sup>337</sup> In the 1970s, the Environmental Action Plans (EAPs) were passed, but there was no active enforcement of these acts until 1986. In 1986 the Single European Act was passed, which included several structural changes: majority voting, harmonization of laws, and guidelines to govern environmental policy, but it was not until the Maastricht Treaty of 1992 that the policy-making process of the EU was revolutionized.

### **Challenges in Global Environmental Regulation**

The international community has yet to successfully implement global environmental standards; each country is responsible for enforcing their individual regulations. Ultimately, regulations and environmental protection must be the passion and responsibility of the corporation for the mindset of the organization to shift to environmental protection.

The first obstacle to international environmental regulations is the failure to negotiate the implementation of international environmental standards. Negotiations of the Multilateral Agreement on Investment (MAI) in 1998 left countries without any international mechanism to regulate FDI, the negotiations concluded that regulating FDI on a global scale would give governments too much power. The Trade-Related Investment Measures (TRIMS), the widest accepted trade agreement, is limited in scope and is an agreement among states. It does not directly affect investors nor deal specifically with environmental regulations.

Another major obstacle to environmental regulation is the concept of *investor protection* and *expropriation*. Some countries are wary of introducing more restrictive environmental regulations or a regime to enforce them out of fear of being financial liable from an investor challenging the regulations. The concept of expropriation has grown; now government efforts to enforce their environmental regulations are subject to arbitration since companies can declare the regulations “tantamount to expropriation.”<sup>338</sup> If the investor’s properties were taken or their profits were impeded due to the introduction of an environmental regulation, the government may be forced to compensate for the company’s lost money.

Ultimately, to protect the environment, the individual corporations must internalize the desire to establish and enforce environmental regulations. There are no adequate international corporate environmental regimes or international environmental laws to constrain corporate activities. Corporate governance regimes must make environmental impact a primary concern and the director must be responsible to ensure compliance. Environmental protection cannot be another external regulation; environmental protection must be the heartbeat of the boardroom for a corporation.<sup>339</sup>

### ***Part III: NGO Literature Review***

Governments have the tendency not only to be poor providers of governance, but they also may be or become instruments of repression, environmental degradation, and bureaucratic paralysis.”<sup>340</sup> NGOs can play the role of leading social and political change to improve the acceptance of the role of NGOs within the governing process.

Opinion differs on the impact that NGOs have on environmental protection. In accordance with the positive group, environmental NGOs play “five key roles”<sup>341</sup> in the global

environmental governance system. The first one is **information-based duties**. NGOs play a critical role in the collection of information, dissemination and analysis.<sup>342</sup> Secondly, **input into policy development**. Environmental NGOs have successfully participated in the process of negotiating and implementing Multilateral Environmental Agreements (MEAs) and have pursued good relationships with states to influence their environmental policy-making. The third role is **operational functions**. As the organizational structure of NGOs are more informal and less bureaucratic and hierarchical, compared with governments, they can “make the impossible possible by doing what governments cannot or will not do”<sup>343</sup> **The fourth is assessment and monitoring**: “NGOs are . . . capable of making sensitive or politically important information public – something that intergovernmental organizations often are reluctant or loathe to do because of their dependence on member states for resources”.<sup>344</sup> The last one is **advocacy for environmental justice**; despite some negative opinion, NGOs have been successful in bring attention toward environmental protection.

NGOs have used international conferences to directly help shape international laws and institutions, even though the conferences have brought little consensus between countries. In some cases, NGOs have been successful in collaborating with underdeveloped countries to promote conserving policies against developed countries and have successfully lobbied multi-lateral banks to include environmental costs within their project calculations. NGOs must provide vision to teach society how to learn its way out of the environmental crisis. To perform this role, NGOs must be established as independent actors with legal, financial, and political support. They also must avoid the fate of governments and corporations that focus on short-term decisions, the mandate to constantly grow, and the tendency to creatively externalize costs. Within this challenging task, NGOs must build up bargaining assets while bringing

consciousness from local levels to global leaders. Again, NGOs must retain the ability to tell hard truths without the fear of losing customers or constituents.

#### ***Part IV: Recommendations***

Environmental protection can be improved in South America, Mongolia, Myanmar, and Zambia through a variety of mechanisms. As evidenced by the country reports, multiple actors regulate and monitor the environmental performance of foreign investments in extractive industries. As such, TNC and the involved governments can promote environmentally sustainable practices by partnering with local communities and NGOs, regulatory bodies, and investors. Each partnership entails different activities, ranging from training to incentives. The following recommendations are presented by partner and accompanied by country specific examples to account for particular characteristics of each region and their investment environment. Though many recommendations can be implemented by TNC, several recommendations also apply to government actors and local NGOs in each country.

#### **Recommendations for Local Communities and NGOs**

In China and in host countries, local communities and institutions play a powerful role in information awareness, education, and capacity building. When environmental regulations are lacking, a demand gap is often found at the local level. As a result, we recommend improving institutions and promoting services to promote environmental sustainability. Both the government and local NGOs can play a role in this area. TNC particularly can play a role in the provision of awareness and education.

One problem with environmental regulations is that institutional support for the environment exists only at a small scale on the national level, and few organizations exist at the

local level.<sup>345</sup> The lack of environmentally-focused institutions makes monitoring and enforcement more difficult. The government could use local institutions to build trustworthy relationships, increase education and awareness about environmental issues, and improve monitoring. The local institutions can also serve as information sources for the national level institutions, providing support for macro environmental strategy development. Local institution building would be useful in all four country regions.

Awareness is a powerful tool to stimulate demand for environmental protection. By providing information to individuals, businesses, and governments, people can make well-informed judgments to improve investments. The Mongolia case provides an example of how to improve awareness. In Mongolia, programs could be provided to raise society's awareness of mining environmental impacts, environment protection laws, and mining monitoring process. Such programs could include TV shows, social media, local forums, and workshops. Also, given TNC's current cooperation with the Mongolian government, organizing joint meetings between local communities and local governments will help create direct dialogue channels between the parties and popular demand will be created for environmental sustainability.

Education is another critical area for providing interest—and stimulating demand—in the environmental sector. Countries and companies alike would benefit from education targeted at two areas: training and monitoring. Zambia has critical areas where education can assist in promoting sustainability. As previously explored, Zambia has the existing legislation and regulations needed to protect the environment. However, the country lacks the human capital to adequately enforce such regulations. TNC can promote environmental protection by partnering with the government and appropriate ministries in Zambia to provide locals with training in environmental monitoring, specifically environmental impact assessments. Zambians could then monitor the environmental performance and impacts of mining companies. Currently, the TNC office in Zambia is working with

Zambians in the Kafue ecosystem, helping them implement conservation practices. The proposed effort would be similar, but would also require technical training.

Capacity building provides an important venue for supporting environmentally-friendly activities. In Mongolia, capacity building would greatly improve efforts targeted at sustainability. For example, Mongolia could form a working group that is responsible for conducting an evaluation report on the local governments' enforcement of environmental laws. The report should be based upon fieldwork that gathers accurate data to analyze legal practices of companies and local governments' responses to these practices. The report should be made public to hold accountable any corrupted officials and companies.

Monitoring and accountability at the local level are critical to ensure regulation compliance. NGOs play a powerful role in this area because they can act as an independent party for evaluating the fulfillment of environmental protection laws. NGOs can also improve accountability between local governments and companies. At times, coordination between information-based, advocacy-based, and legal-based NGOs may be useful to ensure comprehensive advocacy.

### **Recommendations for Regulatory Bodies**

TNC and other NGOs can actively assist regulatory bodies by providing recommendations for enhanced regulations to governments. The presence of TNC and other environmentally-focused NGOs can provide developing areas such as South America, Mongolia, Myanmar, and Zambia with needed expertise to maintain and manage each region's environmental wealth. To benefit from such resources, these organizations must have working relationships with the government and relevant ministries.

Building strong connections with regulatory bodies is extraordinarily valuable. In the case of Myanmar, addressing Myanmar's half-hearted environmental governance and worsening environmental problems would be useful. TNC could establish and build strong relationships with the leadership of the National Commission on Environmental Affairs (NCEA) and Forest Department, which comprise Myanmar's regulatory institutions for environmental affairs. Though this strategy will require much patience and time to bear fruit, initiating and maintaining these strong relationships is highly important because personalized "policy" trumps laws in Myanmar. Personal relationships override the efficacy of institutional relationships, the institutions themselves and the continuity of implementing institutional policies.<sup>346</sup> Developing these relationships with the NCEA and Forest Department will enable the leadership of these regulatory bodies to gradually adopt environmental preservation into the formula for regime legitimacy, a constant concern for the government's ex-military rulers. Strong relationships with the Forest Department have allowed environmental NGOs like the Smithsonian Institution and Wildlife Conservation Society to successfully achieve their environmental goals of wildlife sanctuary staff training and assessment of protected areas.<sup>347</sup> However, TNC should prepare for setbacks in building relationships with the NCEA and Forest Department because their leadership can be swapped overnight by decree from Myanmar's senior leaders. These senior leaders change the regulatory bodies' leadership unpredictably and arbitrarily because their top position gives them the moral authority to intervene at any level of government out of personal whim to achieve their own national ends.<sup>348</sup>

At the local level, monitoring is critical. For proper regulation to occur, government officials must be trained in assessment and monitoring. One strategy that TNC can employ to tackle Myanmar's environmental challenges is provide training to NCEA and Forest Department staff members in public environmental education, environmental empirical assessment methods and sanctuary management. Raising the ability of these two regulatory institutions to preserve



Myanmar's environment and promote environmental awareness among the public instead of delegating these tasks to TNC addresses the problems facing environmental governance in the country. Most importantly, this training of local environmental protection staff helps the regime show its citizenry that it, rather than foreigners, can competently manage Myanmar's environmental issues, which can boost its governing legitimacy.<sup>349</sup> Despite these possible positive outcomes of training NCEA and Forest Department staff in proper environmental management, TNC should be aware that both regulatory bodies' low status in the Myanmar government gives their staff the incentive to manipulate their data and falsify their reports to the senior leadership. What drives this incentive is the Burmese cultural concept of *a-na-de*, which is reluctance to embarrass the senior leadership or superiors with negative news so that their authority and power is enhanced.<sup>350</sup> *A-na-de* has been intensified by Myanmar's military hierarchy and compromises potential progress in environmental governance from training of local staff in this field.

To provide proper monitoring and accountability, information provision is essential. Accurate data collection needs to identify and improve upon problem areas related to environmental development and regulations. However, information transparency remains a significant barrier to measuring progress. A substantial improvement in the realm of sustainable growth would be to increase monitoring of firms. The Chinese government could incorporate a government-sponsored division to track firms operating abroad. However, because compliance is based on the host country laws and not on China's laws, it may be more feasible to place monitoring and enforcement power in the hands of the host country. If China chose to play a greater role in ensuring environmentally sustainable outward foreign direct investment, it faces a number of options.

In the case of Mongolia, TNC and other NGOs could form surveillance teams that are responsible for monitoring Artisanal Mining Sector. Regular reports should be presented to local

governments to help them develop mechanisms to control this growing sector based on accurate data. These reports should also be made public to create popular support for regulating the AMS.

### **Recommendations for Investors**

To ensure that investors are investing in sustainable ways, the government and NGOs may need to intervene, either directly through regulations, or indirectly through advocacy and information provision. Specifically, incentives and training should be used to ensure that investors pursue a path that has long-term environmental objectives.

Incentives play a critical role in shaping demand and influencing behavior. Incentives include components such as government taxation, subsidies, targets, and green bank credit loans. In general, trade tools and regulations can affect firm behavior. To improve environmental regulation compliance, China could establish a tax that targets the use or import of environmentally-sensitive goods. Alternatively, China could offer credits for sustainable production or other rewards for pursuing responsible investment behavior abroad. China could also decide to establish eco-friendly trade policies. However, even the United States does not regulate environmental outward foreign direct investment. In these cases, environmental regulation may have to occur domestically with the goal that sustainable expansion behavior will translate into firm investments abroad. Another option is to promote more inter-agency collaboration. In 2007, the Ministry of Environmental Protection (MEP), the China Banking Regulatory Commission (CBRC), and the People's bank of China (PBOC) implemented a Green Credit Policy, which promotes lending only for green business initiatives.<sup>351</sup> In this circumstance, China can indirectly regulate environmental regulation compliance through access to finance. A recent collaborative proposal is the creation of an "Environmental Policy

Package,” which would incorporate mechanisms to improve management and supervision of environmental issues.<sup>352</sup>

In South America, incentives could be improved through loans and finance provision. A critical institution for ensuring environmental compliance is the banking sector. China’s Export-Import Bank (Ex-Im Bank) uses finance to stimulate environmental protection. By lending only to businesses that show a certain degree of environmental compliance, the bank is restricting the number of firms that can invest abroad. These objectives are applied for Chinese firms that apply for funding to invest abroad. Banks in South America could adopt similar provisions.

In terms of training, a number of strategies are available. To improve its environmental objectives, China has initiated cooperation with a number of organizations. A major player in China is the World Wildlife Fund (WWF). To encourage sustainability, the WWF coordinated with China to create the China for a Global Shift Initiative.<sup>353</sup> As noted in the goals of the 12<sup>th</sup> Five-Year Plan, China hopes to develop a green indicator. In 2011, the China Centre for International Economy Exchange (CCIEE) and the WWF “signed a Memorandum of Understanding that aims, among other issues, to develop a Green Economy Indicator for China.”<sup>354</sup> The indicator, which should help shape environmentally-friendly policies, will include components such as the Ecological Footprint.<sup>355</sup> By incorporating the expertise of environmental organizations into its policy making, China will better position itself to achieve its sustainable development goals.

Training courses on CSR and environmental awareness from international institutions and NGOs such as the International Labour Organisation (ILO) and the WWF are becoming increasingly popular.<sup>356</sup> Researchers from the Center for International Forestry Research noted that the Chinese government will likely play a stronger role in sustainable OFDI in the future:

“We can expect that more policies concerning the social and environmental impacts of Chinese OFDI will be issued, supplementing China’s existing OFDI management system.”<sup>357</sup>

Zambia illustrates the need for greater training and enforcement. Currently Zambia lacks adequate enforcement of environmental regulations, which places the responsibility on investing companies to self-report. TNC Beijing can work with Chinese SOEs involved in Zambia to promote environmentally sustainable practices in current investments. Promotion of such practices includes training on monitoring and reporting environmental performance. Prior to receiving practical training, TNC can work to encourage awareness of the negative consequences of environmental degradation and the benefits of environmentally practices.

Myanmar also needs change. To address resource extraction pollution, Myanmar could work with Chinese SOEs on environmentally sustainable practices. With the Myanmar authorities reluctant to assist TNC in tackling resource extraction pollution due to their mistrust of foreign NGOs and fears that the pollution could harm their legitimacy, TNC should team up with China’s state-owned enterprises (SOEs) to mitigate the pollution. This approach will involve training SOE executives and project managers on environmental sustainable practices such as pollution monitoring and cleanup and introducing SOE staff to environmentally sound resource extraction technologies. The success of this strategy depends on the SOE’s willingness to adopt these practices and technologies.

If the SOE wants to build up its international image as a responsible investor to gain access to resources in developed countries, then its executives and managers need to work with TNC to “green” its extraction activities. The SOE has ample resource profits to invest in environmentally sound practices and green extraction technologies. However, the SOE has reasons to turn down cooperation with TNC on minimizing environmental degradation from resource extraction. First, China’s soaring demand for energy and natural resources puts pressure on the SOE to lower its

contract bidding price to increase access to resource deposits; adopting green measures and technologies will raise that price. Second, the security provided by Myanmar's military forces or *tatmadaw* to Chinese SOEs from local ethnic groups that oppose their extraction projects incentivizes the SOEs to shirk responsibility over the environmental damage generated from their projects. Third, extracting resources in Myanmar outside of Chinese jurisdiction and far from Beijing encourages SOE project managers to keep their executive superiors and China's central government in the dark about the environmental fallout from their extraction. To address this possible resistance by SOEs to "greening" their practices, TNC should prepare to persuade these SOEs on the benefits of such "greening" and work with SOE heads to improve environmental reporting mechanisms between project managers and executives.

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