PURSUIT OF BLUE SKY AND FRESH AIR IN AFRICA: MORAL ARGUMENT AND LEGAL SOLUTION TO PROBLEMS OF ENVIRONMENTAL PROTECTION ARISING FROM CHINESE INVESTMENT IN AFRICA

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INTRODUCTION

Africa hosts the majority of the least developed countries ("LDCs"), with thirty-four out of forty total LDCs.[1] LDCs are low-income states that are "structurally disadvantaged in their development process" and are less likely than other poor countries to come out of poverty.[2] Foreign direct investment ("FDI") is much sought after and plays a critical role in post-war reconstruction in countries like Angola. Generally, FDI is crucial for the development of the LDCs in terms of "export growth, technology and

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1. UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT, STATISTICAL PROFILES OF THE LEAST DEVELOPED COUNTRIES (2005), http://perma.cc/NSM4-7K48.

2. *Id.*

skills transfer, employment generation and poverty eradication."[3] In addition, "FDI is instrumental in the rapid and efficient cross-border transfer and adoption of best practice—ranging from technological, managerial, to environmental and social standards".[4] Historically, Western companies accounted for the majority of the FDI in Africa and their investment was concentrated on areas such as mining and oil industries. In recent years, China has become a player in Africa. According to official Chinese figures, total Chinese investment in Africa amounted to nine billion U.S. dollars by 2010.[5] Chinese investment included mining, construction, manufacturing, agriculture, and financing.[6] Chinese firms are also engaged in construction and retail trade.[7] The trade between China and Africa reached 114.81 billion U.S. dollars in the first eleven months of 2010.[8] Between China and Angola alone, the trade was about twenty-five billion U.S. dollars in 2010, and crude oil took up almost all the imports from Angola.[9]

China's presence in Africa has received mixed reactions. Some regard China's expansion in Africa as "neo-colonialism," implying that China may act as the Western companies did, inter alia exploiting Africa's natural resources and generating environmental degradation.[10] Many Africans do not share this view of China implementing "neo-colonialism" in Africa. As South African President Jacob Zuma argues, "China is there discussing with the brothers and sisters in Africa to create a mutually beneficial kind of relationship … different from former western colonialists [who simply took] things by force."[11] Though some welcome China as worthy investors

3. Fourth United Nations Conference on the Least Developed Countries, Programme of Action for the Least Developed Countries for the Decade 2011-2020, ¶ 123, U.N. Doc. A/CONF. 219/3 (May 11, 2011), http://perma.cc/QA5T-4KG7.

4. XIAOLUN SUN, HOW TO PROMOTE FDI? THE REGULATORY AND INSTITUTIONAL ENVIRONMENT FOR ATTRACTING FDI, Foreign Investment Advisory Service (2002).

5. Zhang Xinyi, *Chinese Investment in Africa Cements Friendly Ties*, PEOPLE'S DAILY ONLINE (Feb. 15, 2011), english.peopledaily.com.cn/90001/90780/91421/7288802.html.

6. *Id.*

7. INDIRA CAMPOS & ALEX VINES, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES, ANGOLA AND CHINA: A PRAGMATIC PARTNERSHIP 14 (Dec. 5, 2007).

8. David Smith et al., *China Says Booming Trade with Africa is Transforming Continent*, GUARDIAN (Dec. 23, 2010), http://perma.cc/9JYV-A768.

9. *China Pledges to Help Angola in Diversifying Exports in Bilateral Trade*, XINHUA NEWS (Jan. 14, 2011), http://perma.cc/QJ9P-W4X5.

10. Michelle Chan-Fishel, *Environmental Impact,* OCNUS.NET (Dec. 19, 2006), http://perma.cc/M528-9PC2; Ian Taylor, *China's Environmental Footprint in Africa*, CHINA DIALOGUE (Dec. 1, 2011), https://perma.cc/9F37-HRA9 ("It is important not to identify China as the sole exploiter of Africa, or of being unique in its disregard for Africa's environment. The history of western involvement in the continent is not a proud one on this score. Indeed, Chinese exploitation of Africa's resources pales into insignificance when compared to western activities both past and present.").

11. Smith et al., *supra* note 8.

and economic partners, others condemn China for detaching investment from human rights and making no efforts to oblige African countries to improve their human rights.[12] China, however, argues that "each country should be allowed their own definition of [human rights] and timetable for reaching them" and that "attempts by foreign nations to discuss democracy and human rights violate the rights of a sovereign country."[13]

China's singularities of government and business are noteworthy. As an emerging economy, China has developed its own ways of government and business. Leaving aside its style of government with its own character, China has different business models and employs different ways of doing business when compared with Europe and America. Chinese businesses are, for example, less bureaucratic than their European or American counterparts and may take immediate action and execute projects quickly.[14] This apparently makes business sense and fits the needs of some African countries for reconstruction. As the Sierra Leone ambassador to Beijing stated:

> The Chinese are doing more than the G8 to make poverty history . . . If a G8 country had wanted to rebuild the stadium, we'd still be holding meetings! The Chinese just come and do it. They don't hold meetings about environmental impact assessment, human rights, bad governance and good governance. I'm not saying it's right, just that Chinese investment is succeeding because they don't set high benchmarks.[15]

However, as indicated by the Sierra Leone ambassador, this prompt action may also create a variety of problems. On the business side alone, one problem is that work may not be completed up to the satisfactory standard. For example, a hospital had to be abandoned when cracks

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12. Stephanie Hanson, *China, Africa, and Oil*, WASH. POST (June 9, 2008), http://perma.cc/8652-NXEF; Richard Spencer, *China Courts Africa's Abusers of Human Rights*, TELEGRAPH (Nov. 1, 2006), http://perma.cc/WR63-AMA4. ("China is scuppering attempts to improve standards of government and to punish countries like Sudan and Zimbabwe for their records of violent suppression of opposition by insisting on "value-free" involvement."); *Don't Worry About Killing People: By Coddling Guinea's Dictator, China Again Mocks Human Rights in Africa*, ECONOMIST (Oct. 15, 2009), http://perma.cc/W2US-K8FP ("It seems that China's commercial march across Africa will continue unabated, however vile the human-rights record of the governments it seeks to befriend.").

13. Hanson, *supra* note 12.

14. Smith et al., *supra* note 8.

15. Jessica Marsh, Note, *Supplying the World's Factory: Environmental Impacts of Chinese Resource Extraction in Africa*, 28 TUL. ENVTL L.J. 393, 393 (2015).

appeared in its walls within months of its completion and use.[16] Then, the adverse impact on the environment that arises from Chinese investment is real. Chinese companies are not only engaged in mining, oil, and other industries with high environmental risks, but also undertake projects in remote, ecologically fragile regions and construct accesses, further burdening the environment.[17] Examples of damage to the environment abound in various countries. For example, in Sudan, a Chinese oil company spilled crude oil and polluted lakes.[18] In Zimbabwe, Chinese mining corporations were said to be "operating like makorokoza miners" ("a scornful term for illegal gold-panners").[19] In Gabon, Sinopec, a Chinese oil company, commenced oil production in the Loango National Park without the environmental impact study being approved by the Ministry of the Environment.[20] The company was accused of creating "mass pollution, dynamiting areas of the park and carving roads through the forest."[21] Obviously, the potential threat to rare plants and animals would otherwise be tremendous but for the subsequent order to halt the production.[22] Unregulated mining activities have caused environmental damage in the Democratic of the Congo, where state-owned companies and private Chinese entrepreneurs, both being poor performers for pollution control back in China,[23] were found to be involved in mining and other activities.[24]

China also exports its dam building capacity and know-how to Africa,[25] and the environmental impact back in China is already evident: flooding land and displacing residents, changing its ecosystem and destroying biodiversity.[26] Large-scale dam projects are believed to lead to problems such as:

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16. *The Chinese in Africa; Trying to Pull Together*, ECONOMIST (Apr. 20, 2011), http://perma.cc/3Z3S-GRPP.

17. Lucy Corkin, *China, Africa and the Environment, A Briefing Paper on the Forum on China-Africa Co-operation*, INT'L RIVERS, (Nov. 5, 2009), http://perma.cc/JKA9-FY6E.

18. *The Chinese in Africa, supra* note 16.

19. *Id.*

20. Taylor, *supra* note 10.

21. *Id.*

22. Howard W. French, *Commentary: China and Africa*, 106 AFR. AFF. 127, 132 (2007).

23. *See* Hua Wang & Yanhong Jin, *Industrial Ownership and Environmental Performance: Evidence from China*, 36 ENVTL. & RES. ECON. 255, 271 (2007) (finding that both state owned companies and privately owned companies in China have poor pollution control performance when compared with collectively or community owned companies or wholly foreign owned companies).

24. Stephanie Nieuwoudt, *Pros and Cons to Huge Chinese Investment in DRC*, INTER PRESS SERV. (Oct. 28, 2009), ipsnews.net/africa/nota.asp?idnews=49031.

25. Peter Bosshard, *China's Environmental Footprint in Africa*, SAIS WORKING PAPERS IN AFRICAN STUD. 2, 6–7 (2008), https://perma.cc/QF98-WHJR; Shai Oster, *China: New Dam Builder for the World*, WALL ST. J. (Dec. 28, 2007), http://perma.cc/9DZ2-Y26M.

26. Jim Yardley, *Damn Building Threatens China's Grand Canyon*, N.Y. TIMES (Dec. 1, 2011), http://perma.cc/4KFU-YAZF; *See* Michaek Casey, *UN Study Advises Caution Over Dams*,

> [f]ragmentation of river channels; loss of flood plains, riparian zones, and adjacent wetlands; deterioration of irrigated terrestrial environments and their surface waters; deterioration and loss of river deltas and estuaries; aging and reduction of continental freshwater runoff to oceans; changes in nutrient cycling; impacts on biodiversity; methyl mercury contamination of food webs; and greenhouse gas emissions from reservoirs.[27]

Furthermore,

> [t]he impoundment of water in reservoirs at high latitudes in the northern hemisphere has even caused a small but measurable increase in the speed of the earth's rotation and a change in the planet's axis. Moreover, the millions of people displaced by reservoirs such as the one behind China's Three Gorges Dam have their own environmental impacts as they struggle to survive in unfamiliar and often unsuitable places.[28]

It is no surprise, and indeed credible enough, that the 2.2 billion Gibe III dam on Ethiopia's Omo River—ninety percent completed as of early 2015[29]—will inflict disastrous impacts on the habitat of birds and hippos, and the Ghana's 729 million Bui project on the Black Volta River—when completed in 2013—will flood a quarter of the Bui National Park and displace 2,600 people.[30] China is financing and undertaking both projects.[31] Among other things, nature is a "genetic library" filled with genetic diversity and genetic traits that fight against bacteria and diseases, and with plants and micro-organisms having the potential to yield new drugs, destroying them is synonymous with "burning a library of volumes that have not even been read."[32]

What is particularly worrying is that most LDCs in Africa do not have an adequate framework in place to address the issue of environmental

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GUARDIAN (May 22, 2009), http://perma.cc/7KSD-TLE4 (observing that dam development in China causes "changes in river flow volume and timing, water quality deterioration and loss of biodiversity").

27. David Enrenfeld, *The Environmental Limits to Globalization*, *in* ENVIRONMENTAL ETHICS: THE BIG QUESTIONS 552 (David Keller ed., 2010).

28. *Id.* (internal citations omitted).

29. *Gibe III Dam, Ethiopia*, INT'L RIVERS, https://perma.cc/2ERZ-3CSX (last visited Nov. 2, 2015).

30. Lauren Van Der Westhuzian & Randall Hackley, *Africa's Friend China Finances $9.3 Billion of Hydropower*, BLOOMBERG BUS., (Sept. 9, 2011, 12:18 PM), http://perma.cc/E3FH-UZLG.

31. *Id.*

32. ROBIN ATTFIELD, THE ETHICS OF THE GLOBAL ENVIRONMENT 136 (1999).

protection. Currently, environmental standards in Africa are "weak."[33] For instance, in Angola, the law of environment requires that foreign investors be licensed to engage in petroleum, mining, road construction or power stations.[34] To obtain such a licence, they must complete an environmental impact study for approval by the Angolan Ministry of Environment.[35] Failure to obtain a licence or to comply with the terms of the licence incurs the liability of a fine.[36] However, the penalty in the form of a fine only addresses the issue of non-compliance with the terms of the licence, but that does not sufficiently address the issue of compensation for any future damage to the environment arising from the investment. Then even the success of the fine itself largely depends on chance.

In June 2002, Chevron Texaco was fined two million U.S. dollars after its offshore oil pipeline leakage resulted in pollution to beaches and damage to the fishing industry in Cabinda, Angola.[37] It is questionable to what extent the fine reflects the actual environmental damage. In fact, the local press and environmentalists in Angola had blamed Chevron for oil spills for years.[38] Apparently, Chevron and the government did not take action before the spills. Furthermore, there is no indication whether the one-off fine would be sufficient to reimburse the cost for the long-term environmental damage. One may also consider uncommon the government's success in claiming the compensation in this case in the same way as with the BP Deepwater Horizon oil spill in the Mexican Gulf: "Had a small firm, rather than BP, been responsible for the spill, the public would have been left with a huge bill. In that perverse sense, we should perhaps consider ourselves lucky."[39] Indeed, with respect to a small- or medium-sized firm, it is uncertain whether the government is able to claim compensation for environmental damage and whether the firm is able to meet the demand out of its limited resources. Furthermore, as is to be seen later, there is an issue with the polluters which have declared bankruptcy, are insolvent, or those

33. Cosima Cassel et al., *Building African Infrastructure with Chinese Money*, BARCELONA GRADUATE SCH. OF ECON., 17 (June 22, 2010), http://perma.cc/6Y6F-8G7A.

34. Bureau of Econ. & Bus. Affairs, *2013 Investment Climate Statement-Angola*, U.S. DEP'T OF STATE, (Mar. 2013) http://perma.cc/46UT-74TZ.

35. *Environmental Assessment on Angola*, S. AFR. INST. FOR ENVTL. ASSESSMENT, 2–3 (2009), http://perma.cc/8JSB-EZQQ.

36. *Id.* at 8.

37. KRISTEN REED, CRUDE EXISTENCE: THE POLITICS OF OIL IN NORTHERN ANGOLA 120–21 (Univ. Of Cal. Press, 2009), http://perma.cc/GC7N-SQDH; *Angola Fines Chevron for Pollution*, BBC NEWS (July 1, 2002), http://perma.cc/4PM9-UGND.

38. *Angola fines Chevron for Pollution*, *supra* note 37.

39. Joshua Linn & Nathan Richardson, *Instilling a Stronger Safety Culture: What Are the Incentives*, 177 RESOURCES 31, 33 (2011), http://perma.cc/PBV9-9F2P.

which no longer operate in the jurisdiction many years later when the environmental damage shows up.

In this article, I first conduct moral arguments for environmental protection. I intend to show the moral grounds for the protection with the ultimate goal of achieving environmental justice globally. Then, I offer a legal solution for the African governments to address the issue of environmental damage by overseas investors, namely, the bonding requirements. The bonding requirements refer to the obligations required of companies to post bonds to satisfy possible future environmental damage; they are used in the United States predominantly in the oil and mining industries and other industries with high environmental risks. It shall be evident that the conventional bonding requirements are stricken with problems which would become particularly acute in the context of Africa. However, I argue that the requirements can be modified with the participation of the home government of the investors, which would provide a sound framework for African countries.

I conduct the discussion with particular reference to Chinese investment. However, just because the debate is conducted with reference to Chinese investment does not mean that Chinese companies alone may disregard environmental protection in their investment and need to be regulated. In fact, any company, be it Chinese or Western, may behave irresponsibly in the absence of strong and enforceable measures. As seen above, Chevron Texaco disregarded protests and warnings for years and eventually caused its large-scale oil leak. This poses the question: to what extent the modified version of the bonding requirements, if workable with reference to Chinese investors, have any wider application? In addressing this question, the article argues that the modified bonding requirements be made mandatory for any investors.

I. MORAL OBLIGATIONS FOR ENVIRONMENTAL PROTECTION

The following discussion addresses two issues: first, the moral obligations of mankind for environmental protection; and second, pursuant to the moral obligation, the pursuit of intergenerational and global justice from Rawls's perspective.

A. Morality for Environmental Protection

To begin, human beings have the moral obligations to treat nature and environment well, just as they do one another. Philosophers, Chinese and

foreign, share similar views with respect to the importance of mankind maintaining harmonious relationships with nature.[40] Wang Yangming (1472–1528) was one of them. To him, everything on earth, both animate and inanimate, comprises the integral whole; it is immoral not to take care of them:

> Man is the mind of the universe: at bottom Heaven and Earth and all things are my body. Is there any suffering or bitterness of the masses that is not disease and pain in my own body? Those who are not aware of disease and pain in their body are people without the sense of right and wrong. The sense of right and wrong is knowledge possessed by men without deliberation and ability possessed by them without their having acquired it by learning. It is what we call innate knowledge (liang zhi).[41]

He extends ren (jen) to animals and plants and makes no distinction between them and humans. He says,

> When one hears the cry of birds and animals, one will have compassion, because the jen (benevolence: other five virtues – filial piety, loyalty, orderly love among spouses, orderly love among brothers, trust between friends) is one with the birds and animals. If one says that animals have senses, then one will have compassion when one sees the grasses and trees faded and broken because the jen is one with the grasses and animals . . . .[42]

Wang Yangming's discussion of ren reflects the Confucian ideology. Blakeley argues that the Confucian tradition of the ultimate pursuit of ren includes respect both for human beings and for animals and other natural phenomena.[43] Indeed, it is the Neo-Confucian doctrine that extends ren to mean "man's forming one body with Heaven, or the unity of man and Nature."[44] Confucius further extends our obligations toward conservation

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40. Xu Guangqing, *Rethinking Systems Thinking: From a Perspective of Chinese Philosophy and Sustainable Development*, 6TH EUROPEAN SYS. SCI. CONG. 4–5 (September 19–22, 2005), https://perma.cc/3MS5-X537?type=image.

41. FIFTY KEY THINKERS ON THE ENVIRONMENT 1472–1528 (Joy Palmer ed., 2001).

42. *Id.*

43. Donald N. Blakeley, *Listening to the Animals: The Confucian View of Animal Welfare*, 30 J. OF CHINESE PHIL. 137, 138 (2003).

44. A SOURCE BOOK IN CHINESE PHILOSOPHY 40 (Wing-Tsit Chan trans., Princeton U. Press, 1963) ("'I transmit but do not create. I believe in and love the ancients. I venture to compare myself to our old Peng.'. . . This is often cited to show that Confucius was not creative. We must not forget, however, that he 'goes over the old so as to find out what is new.' Nor must we overlook the fact

for the future generations; when asking himself "Who am I?", Confucius states that "I am the child of my parents and the parent of my children."[45] Miller understands the above as indicating that "Confucianism begins from the proposition that human beings are defined by kinship networks that span the centuries. From this perspective the interests of the individual are bound up with the interests of the kinship group as it extends forward and backward across the generations."[46] Then one generation has the moral obligation to the next in respect of any aspect of life including environmental protection.

Today in China, the debate on harmonious society and ecological protection draws from those ancient philosophers. In a rapidly developing and quickly commercializing China, man's duty toward each other and toward nature is not only important in resolving immediate problems but also in moderating other social conflicts and issues. A Chinese government official calls on a debate on ancient Chinese philosophy with respect to the ecological protection. In his own understanding,

> One of the core principles of traditional Chinese culture is that of harmony between humans and nature. Different philosophies all emphasize the political wisdom of a balanced environment. Whether it is the Confucian idea of humans and nature becoming one, the Taoist view of the Tao reflecting nature, or the Buddhist belief that all living things are equal, Chinese philosophy has helped our culture to survive for thousands of years. It can be a powerful weapon in preventing an environmental crisis and building a harmonious society.[47]

Like Chinese philosophers, Western philosophers explicitly call for our moral obligation toward other things in nature. Immanuel Kant believes that humankind has no direct duties toward animals or inanimate things: "so far as animals are concerned, we have no direct duties."[48] To Kant, "animals are not self-conscious and are there merely as a means to an end. That end is man."[49] From there, Kant reasons that humankind has indirect duties to

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that he was the first one to offer education to all. Moreover, his concepts of the superior man and of heaven were at least partly new.").

45. James Miller, *How Confucianism Could Curb Global Warming*, CHRISTIAN SCI. MONITOR (June 26, 2009), http://perma.cc/C558-S5RY.

46. *Id.*

47. *Id.*

48. Immanuel Kant, *Indirect Duties to Nonhumans*, *in* ENVIRONMENTAL ETHICS: THE BIG QUESTIONS 82 (David Keller ed., 2010).

49. *Id.*

them to serve its own interest, i.e. to develop humane feelings toward other human beings.[50] He argues that "tender feelings towards dumb animals develop humane feelings towards mankind" and that "he who is cruel to animals becomes hard also in his dealing with men"; hence, "Our duties towards animals, then, are indirect duties towards mankind."[51]

Like Confucius, Kant extends our moral duties and inanimate things to develop harmonious neighborhoods:

> Duties towards inanimate objects are also indirectly duties towards mankind. Destructiveness is immoral; we ought not to destroy things which can still be put to some use. No man ought to mar the beauty of nature; for what he has no use for may still be of use to someone else. He need, of course, pay no heed to the thing itself, but he ought to consider his neighbour. Thus we see that all duties towards animals, towards immaterial beings and towards inanimate objects are aimed indirectly at our duties towards mankind.[52]

Other philosophers do not share the general proposition of humankind owing moral duties toward nature. To John Stuart Mill, Francis Bacon and Holmes Rolston III, nature is amoral and destructive; it is incumbent on humankind to intervene with its workings and ameliorate its flaws:[53]

> Nature proceeds with a recklessness that is indifferent to life; this results in senseless cruelty and is repugnant to our moral sensitivities. Life is wrested from her creatures by continual struggle, usually soon lost; those few who survive to maturity only face eventual collapse in disease and death. With what indifference nature casts forth her creatures to slaughter! Everything is condemned to live by attacking or competing with other life. There is no altruistic consideration of others, no justice.[54]

Aldo Leopold represents the theory of the so-called land ethic. He takes the position that our ethic should extend to include our "relation[ship] to land and to the animals and plants which grow upon it."[55] He takes a view opposite to that of Bacon and does not believe that humans are

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50 . *Id.*
51. *Id.*
52. *Id.* at 83.
53. ENVIRONMENTAL ETHICS: THE BIG QUESTIONS 60 (David Keller ed., 2010).
54. *Id.* at 61.
55. ALDO LEOPOLD, A SAND COUNTY ALMANAC & OTHER WRITINGS ON ECOLOGY AND CONSERVATION 172 (Oxford University Press 1949).

"conquerors" of nature; rather, humans are "plain member[s] and citizen[s]" of nature:

> The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land . . . . The land ethic changes the role of Homo Sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such.[56]

The above stance is shared by the Deep Ecology Movement. Arne Naess analyses two types of ecology movements. The first is called the Shallow Ecology Movement, which is concerned with pollution deduction and preservation of natural resources.[57] The second is called the Deep Ecology Movement, which shares the goals of the former Movement but differs from it in that it puts those goals in the broader context of addressing "ways of life, economic systems, power structures and the differences between and inside nations."[58] The Deep Ecology Movement embodies many principles. For example, it rejects anthropocentrism, holding that "humans are not the only valuable part of nature" and both humans and nonhumans such as rivers and landscapes enjoy equal rights to blossom.[59] It argues that the quality of human life "depends in part upon the deep satisfaction we receive from the close partnership, the symbiosis, with other forms of life."[60]

The Deep Ecology Movement is not free from criticism; some attack it as utopian since it turns a blind eye to the environmental issue being enmeshed in various matters:

> Green philosophy or the philosophy of the deep ecology movement is largely an articulation of the implicit philosophy of 5 year old children who have access to at least a minimum of animals, plants, and natural places. These children experience animals as beings like themselves in basic respects. They have joys and sorrows, interests, needs, loves and hates. Even flowers and places are alive to them, thriving or having a bad time. The personal identity of the small

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56. *Id.* at 172–73.

57. Arne Naess, *The Shallow and the Deep Ecology Movement*, *in* ENVIRONMENTAL ETHICS: THE BIG QUESTIONS 231 (David Keller ed., 2010).

58. *Id.*

59. Andrew McLaughlin, *The Heart of Deep Ecology*, *in* ENVIRONMENTAL ETHICS: THE BIG QUESTIONS 235 (David Keller ed., 2010).

60. Naess, *supra* note 57.

> child has environmental factors. They are part of himself or herself, the personal, social and natural self being one and indivisible. Philosophers of the deep ecology movement may be said to be people who have never found biological, political or other arguments to undermine those attitudes implicit in childhood.[61]

B. Pursuit of Global and Intergenerational Justice

The discussion of morality and human's moral duty toward nature forms the basis for our action in relation to nature; that in turn aims at justice. As Theodore Parker puts it,

> I do not pretend to understand the moral universe; the arc is a long one, my eye reaches but little ways; I cannot calculate the curve and complete the figure by the experience of sight; I can divine it by conscience. And from what I see I am sure it bends towards justice.[62]

In this connection, the most prominent Western philosopher, John Rawls, is relevant in our debate on environmental morality and achievement of justice. In developing a theory of justice, Rawls commences with the "original position" whereby free and equal people negotiate behind a veil of ignorance to agree to a set of principles to regulate the basic structure of a well-ordered—i.e. just—society.[63] Rawls introduces the concept of "a veil of ignorance" in the following terms:

> No one knows his place in society, his class position or social status, nor does anyone know his fortune in the distribution of natural assets and abilities, his intelligence, strength, and the like. I shall even assume that the parties do not know their conceptions of the good or their special psychological propensities. The principles of justice are chosen behind a veil of ignorance.[64]

Rawls believes that parties would adopt the maximum policy, a policy that maximizes the position of the least well-off member of the society. As such, he proposes two principles of justice, which he believes rational people

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61. Arne Naess, *Notes on the Politics of the Deep Ecology Movement*, *in* SUSTAINING GAIA: CONTRIBUTIONS TO ANOTHER WORLD VIEW 180 (Frank Fisher ed., 1987).

62. THEODORE PARKER, TEN SERMONS ON RELIGION 84–85 (1853).

63. JOHN RAWLS, A THEORY OF JUSTICE 118 (Harvard Univ. Press rev. ed. 1971).

64. *Id.* at 118.

would agree govern the basic structure of the society.[65] The two principles are lexically ordered; the first is prior to the second. The first principle, also known as the principle of equal liberty, concerns "rights and liberties"; it provides that "each person is to have an equal right to the most extensive basic liberty compatible with a similar liberty for others".[66]

The second principle embodies two principles. First, the difference principle concerns "income and wealth" and provides that "social and economic inequalities are to be arranged so that they are both reasonably expected to be to everyone's advantage."[67] This principle is also rephrased as indicating that the inequalities are only allowed if they work "to the greatest benefit of the least advantaged members of society."[68] Second, the principle of fair equality of opportunity apparently concerns opportunities and provides that social and economic inequalities are to be "attached to positions and offices open to all"; here, an inequality of opportunity is permissible provided that it "enhances the opportunities of those with the lesser opportunity."[69]

Rawls would provide some perception into the rights of the future generation and the stance of the current generation toward the future generation with respect to environmental protection.[70] People in the original position would agree on a scheme whereby natural resources can only be exploited with the future generation in mind and the current generation deal with natural resources in such a way as to benefit the future generation.[71] Bryan Norton understands this to be couched in terms that some exploitation is allowed and indeed encouraged to take on board the possibility of technological innovation multiplying resources.[72] As far as biodiversity is concerned, Norton believes that parties would agree on "some pre-emptive constraints to protect biological diversity across generation" for the benefits of future generations.[73]

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65. *Id.* at 266.
66. *Id.*
67. *Id.*
68. *Id.*
69. *See* N. SIMMONDS, CENTRAL ISSUES IN JURISPRUDENCE JUSTICE, LAW AND RIGHTS 58 (London, Sweet & Maxwell 3rd ed. 2008) (explaining that the second principle in essence means that "social and economic inequalities are just only in so far as they work to the advantage of the least advantaged people in society").
70. HENDRIK PH. VISSER 'T HOOFT, JUSTICE TO FUTURE GENERATIONS AND THE ENVIRONMENT viii, 1 (Francisco J. Laporta et al. eds., 1999).
71. *See generally* EDWARD PAGE, CLIMATE CHANGE, JUSTICE AND FUTURE GENERATION 14 (2006) (discussing the conflicts that can occur between the interests of present and future generations).
72. Bryan G. Norton, *Intergenerational Equity and Environmental Decisions: A Model Using Rawls' Veil of Ignorance*, 1 ECOLOGY ECON. 137, 155 (1989).
73. *Id.*

However, environmental protection is not only a national issue but also an international issue. Then when taking Rawls in the international context, the problem arises that Rawls does not extend his theory across borders; rather he restricts it within the democratic jurisdiction of his own.[74] It is hard to imagine that nation states are willing to negotiate behind the veil of ignorance.[75] A typical example is lack of consensus over the Kyoto Protocol for environmental protection.[76] Then, when the Biodiversity Convention was negotiated at the Rio Summit in 1992, the north and the south could not agree on obligations on the conservation of biodiversity.[77] That was a plain case of the people in the advantaged position sharing more responsibilities, which would be especially applicable where those people derive benefits from exploiting biodiversity belonging to the less advantaged. However, the U.S. refused the poor South's insistence on sharing the wealth generated from drugs developed through extracts in their countries and using the share to preserve a gene-rich biodiversity.[78]

Thomas Pogge believes that what causes Rawls to refrain from extending his theory to all national societies is the existence of "intercultural diversity of traditions and moral judgments" makes it imperative that a modern constitutional democracy not "impose [their] values upon the rest of the world" or "pursue a program of institutional reform that envisions the gradual supplanting of all other cultures by a globalized version of [their] own culture and values.[79] However, Pogge does not believe that intercultural diversity should prevent the extension of Rawls' theory on the global scale. Intercultural diversity is not unique between nations; it is also existent within the Western democracy.[80] In fact, it exists in any country.[81] When Rawls developed his theory, presumably he primarily had the United States in mind. But, Pogge questions, "can he claim to speak for the black, Hispanic, and native American subcultures or even for ordinary farmers, clerks, housewives, or factory workers?"[82] That, however, is no obstacle that precludes Rawls from putting forward his

74. John Rawls, *Justice as Fairness: Political Not Metaphysical*, 14 PHIL. & PUB. AFF. 223, 225 (1985).

75. *Id.*; *see generally* Thomas Nagel, *The Problem of Global Justice*, 33 PHIL. & PUB. AFF. 113, 114–15 (2005) (further discussing the problem of Rawls' theory only applying to democratic jurisdictions).

76. Chen Gang, *The Kyoto Protocol and the Logic of Collective Action*, 1 CHINESE J. OF INT'L. POL. 525, 527 (2007).

77. Sir Geoffrey Palmer, *The Earth Summit: What Went Wrong at Rio?,* 70 WASH. U. L. REV. 1005, 1020 (1992).

78. *Id.* at 1021.

79. THOMAS W. POGGE, REALIZING RAWLS 267 (1989).

80. *Id.* at 270.

81. *Id.*

82. *Id.* at 271.

theory of justice to "initiate a discourse about justice" in the United States.[83] On the international front, Pogge holds that "a cross-cultural discourse about a substantive moral issue of great common concern will broaden the vision of its participants and will tend to make the moral conceptions involved less parochial as each tries to accommodate what it finds tolerable or even valuable in other cultural traditions."[84] He then projects that extending Rawls globally allows "a cross-cultural discourse"; premised on "a small set of widely accepted values and ideas," Rawls' globalized conception of justice "can offer a good deal of flexibility for acknowledging and incorporating cultural diversity."[85]

Once we accept that justice can be achieved on the global basis, the ensuing question is how to achieve it. The form in which global justice may take is a matter worth discussing. One way is to compensate the poor countries for their poverty to which environmental degradation or global warming has contributed and for which the rich countries are partially blamed due to the industrialization of the West and their way of conducting their business, lifestyles, etc. The responsibility of the developed countries for global warming and other environmental damage is plain. As Peter Singer argues,

> To put in terms a child could understand, as far as the atmosphere is concerned, the developed nations broke it. If we believe that people should contribute to fixing something in proportion to their responsibility for breaking it, then the developed nations owe it to the rest of the world to fix the problem with the atmosphere.[86]

Chinese representatives at the 1989 London Conference on Ozone Layer lashed criticism on the developed countries: they "had enriched themselves at the expense of the planet, and . . . therefore they owed it to the developing world to give substantial help to raise the standard of living on the basis of new and clearer technology."[87]

The form of compensation for developing countries is reliant on the poverty suffered by those countries. As such, further exploration is required to understand the essence of that poverty. Take the country of Papua New

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83. *Id.*
84. *Id.*
85. *Id.*
86. PETER SINGER, ONE WORLD: THE ETHICS OF GLOBALIZATION 33–34 (Yale Univ. Press 2nd ed. 2002).
87. G Wyburd, *Case Study: Industry*, *in* ENVIRONMENTAL DILEMMAS ETHICS AND DECISIONS 219 (R.J. Berry ed., 1993).

Guinea for example.[88] Evidence shows that, due to global warming, some reef islands have submerged underwater, forcing their residents to relocate to new places.[89] That causes many problems for them because of the loss of their homes. In a new place, they feel immediately uprooted and disoriented. The feeling persists for a long time to come, if not for the rest of their lives. In this sense, the damage simply destroys their lives. The damage can be understood in economic terms; the relocation immediately imposes long-term economic burden on the government and taxpayers, especially when an effective means is required in order to help those people find jobs and sustain themselves.[90] That inevitably burdens the local economy, especially where the local residents already struggle to make a living. There are many other forms of damage, but the above suffice to show that the damage resulting from global warming not only lies in economic loss, but more importantly, it inflicts huge adverse effects on people's lives.[91]

By way of debating on China's obligations toward Africa in relation to environmental damage, we next discuss the possible forms of compensation. Immediate pecuniary compensation is one way, but it is unlikely to be popular either with the Western governments or with the Chinese government.[92] Indeed, there are many other problems with compensation. Obviously, one is how to assess the scale of damage, which may also have the negative implication of long-term financial commitment. Another problem is to whom the payment is made and how to execute the payment. The norm is to pay the local government, but given that most poor countries have corrupt governments, the concern is that the aid will simply not reach the needy in the full extent and, without accountability, that is immoral.[93]

Whilst it is difficult to agree on immediate compensation, the "polluter pays" principle is based on immediate compensation, which is significant.[94] It may force companies to change their behavior; it is increasingly evident that

88. Rachel Sapery James, Lunchtime Talk at Columbia Law School (Mar. 6, 2012).
89. *Id.*
90 . *Id.*
91 . *Id.*
92. *Climate Change Compensation Emerges as Major Issue at Doha Talks*, GUARDIAN (Dec. 3, 2012), http://perma.cc/FX3K-DVRJ.
93. James Franklin, *Global Justice: An Anti-Collectivist and Pro-Causal Ethic*, 2 J. CATH. SOC. THOUGHT & SECULAR ETHICS 1, 4–9 (2012).
94. *See generally* Jonathan Remy Nash, *Too Much Market: Conflict Between Tradable Pollution Allowances and the Polluter Pays Principle*, 24 HARV. ENVTL. L. REV. 465, 468 (2000).

> the larger companies in vulnerable industries have grown in awareness of the need to develop environmental policies and preventative management systems. . . at the very least, [those who do little] should realise that, quite apart from moral considerations, prevention usually costs less than cleaning up at a later date.[95]

More significantly, it may, arguably, nurture a participatory culture where the companies and the affected people work together. Indeed, we propose innovation and invention as a form of compensation. They integrate innovative housing and production to help the dislocated people get their feet on to the new land as participants in the design of their new life; thus, catering to their particular needs enmeshed in their cultures. Such form of compensation is participatory, involving the affected people and hence causing less unexpected disruption to their lives. This form of compensation is sustainable, considering the broad goal of the ongoing new life in the new environment. Furthermore, innovation also prevents environmental damage or at least it helps to manage sensible business operations with sensitive environmental implications.[96] Moreover, it promotes the resolution of environmental damage and preservation of biodiversity.[97] Innovation also involves advanced technologies. China and other countries need to help Africa in terms of technological development, in combating environmental issues and promoting development just as China argued that the US should do likewise to China.[98] Where entities make investments, the most advanced technology should be employed to deal with environmental protection. Some commercial companies employ strategies where they export polluters and outdated methods and technologies overseas, such strategies are wrong and could cause disastrous consequences for both China and Africa.[99] If we have global justice in mind, it requires contribution both to redress the past damage and to operate in a way to promote the economic and environmental wellbeing of the host

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95. Wyburd, *supra* note 87, at 217–18.

96. John Elkington, *Making Capitalism Sustainable*, *in* ENVIRONMENTAL ETHICS: THE BIG QUESTIONS 528, 531 (David Keller ed., 2010) ("Such as creation, adoption and custom, pressure groups regulators audit companies' environmental performance, makes it compulsory to report emissions, meet targets, voluntarily agreed sector standards or regulatory requires. Media and environmentalists may also put companies to account.").

97. *Id.* at 530.

98. Wyburd, *supra* note 87, at 219; *see also* ERIC FREDELL, CHINA: ENVIRONMENTAL TECHNOLOGIES EXPORT MARKET PLAN iii (1996) (examining how the China used the United States comprehensive export assistance plan to develop its own plan to operative competitively in the global market).

99. Wyane Ma and Chuin-Wei Yap, *China Needs Industry to Enlist in 'War on Pollution'*, WALL ST. J. (Mar. 6, 2014), http://perma.cc/8ZJY-Z2TZ; Hu Weijia, *Nation Not Seeking to Export Outdated, Low-End Industrial Capacity*, GLOBAL TIMES (May 25, 2015), http://perma.cc/FE8W-J3VC.

country for the present and future. As far as China is concerned, innovation and invention are crucially pertinent with respect to its investment in Africa. Taking on board its obligation toward Africa for its past environmental records, China has the particular responsibility in making sure that its current and future investment in Africa does not aggravate its environmental debts or incur new debts. Indeed, as Confucius says, "Do not do to others what you do not want them to do to you."[100]

Having discussed the moral obligation for the protection of environment and conservation of ecology and the significance of the debate for the achievement of global justice, we must appreciate the immense task in carrying through the obligation. Though I propose a legal solution in the next part, it must be borne in mind that environmental and ecological protection is a complex issue enmeshed in a whole range of interests of people and conflicts among them. To adopt a participatory stance in relation to business and investment is as effective as, and possibly more effective than, mere legal redress.

II. LEGAL SOLUTION TO ENVIRONMENTAL PROTECTION: BONDING REQUIREMENTS

The above addresses humankind's moral obligations toward environment and the pursuit of justice globally and between generations. Given the moral importance, legal solutions are particularly relevant in carrying through those obligations. The ensuing discussion first evaluates the adequacy of compensation for environmental damage through tort law. Having revealed some problems with tort liability, we next introduce the bonding requirements as a plausible alternative and conduct an in-depth analysis of the issues with the requirements, especially in the context of Africa. Then, we proceed to put forward a tripartite solution to those issues and address relevant matters, such as the form it takes, together with its advantages and feasibility.

A. Tort Liability

When the environmental damage occurs, the government or the aggrieved parties sue the alleged polluters in tort. If the plaintiff cannot establish a causal link, the suit is not successful and the liable polluter "disappears."[101] Scholars call this the "disappearing defendant problem."[102]

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100. CONFUCIUS, THE ANALECTS 12:2, 5:11.

101. John Summers, *The Case of the Disappearing Defendant: An Economic Analysis*, 132 U. PA. L. REV. 145, 146 (1983).

Where the causation is established and the liable firm is successfully sued, there is "the judgment proof" problem arising from the liability rule which provides that the defendants' liability does not exceed their resources and hence the judgment debt may only cover the actual damage to the extent of the resources.[103] Once the court delivers such judgment, its enforcement shall become an issue where the liable firm does not have the financial means to meet its obligations and hence declares bankruptcy.[104] The problem is aggravated when the law allows the firm to discharge its liability in the case of bankruptcy.[105] The problem becomes more acute with the adverse social implications of job loss, "where firms become insolvent as the result of the financial obligations arising from some catastrophic environmental or safety mishap."[106] Shavell argues that "potential insolvency causes a reduction in care level" and a "socially efficient outcome" is hard to achieve.[107]

James Boyd analyses the problems with "a bankrupt, dissolved, or absent polluter" and shows that a firm may avoid the cost for environmental cleanup through bankruptcy or dissolution.[108] Boyd identifies that "the U.S. landscape is littered with environmentally damaging operations that were either abandoned entirely or left un-reclaimed due to bankruptcy."[109] A U.S. Environmental Protection Agency Superfund study shows that "the cost of so-called orphan shares—liability costs for site cleanup that cannot be recouped due to a polluter's bankruptcy or absence—will range from 150 million to 420 million every year at federal Superfund sites alone."[110] Robert Repetto reported on mining companies in the U.S. and came to

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102. *Id.*

103. Steven Shavell, *The Judgment-Proof Problem*, 6 INT'L REV. L. & ECON. 45, 58 (1986).

104. James Boyd, *Financial Responsibility for Environmental Obligations: Are Bonding and Assurance Rules Fulfilling Their Promise?*, RES. FOR THE FUTURE 3 (Aug. 2001), http://perma.cc/BG39-LL5M; T. Randolph Beard, *Bankruptcy and Care Choice*, 21 RAND J. ECON. 626, 626 (1990) ("[B]ankruptcy can result (with its attendant limited liability), and the injurer can escape some of the cots of its activities.").

105. Boyd, *supra* note 104.

106. David Gerard & Elizabeth Wilson, *Environmental Bonds and the Problem of Long-Term Carbon Sequestration*, J. ENVTL. MGMT. 1097 (2009), http://perma.cc/L2AZ-FEZF.

107. Shavell, *supra* note 103; Tomislav Vukina, *The Relationship Between Contracting and Livestock Waste Pollution*, 25 REV. AGRIC. ECON. 66, 82 (2003).

108. Boyd, *supra* note 104; Jeffrey Kehne, *Encouraging Safety Through Insurance-Based Incentives: Financial Responsibility for Hazardous Wastes*, 96 YALE L.J. 403, 405 (1986); William T. Gorton III, *Understanding the Reclamation Surety Relationship Before and After Operator Default*, ROCKY MOUNTAIN MIN. L. FOUND., 10 (Nov. 2009) https://perma.cc/VUG4-8JL8 ("Frequently in bankruptcies, debtor companies and their secured creditors attempt to sell attractive assets to maximize the dollar recovery but ignore and attempt to leave behind their environmental reclamation obligations.").

109. James Boyd, *Show Me the Money: Environmental Regulation Demands More, Not Less, Financial Assurance*, 144 RESOURCES FOR FUTURE, Summer 2001, at 21.

110. *Id.*

similar finding that some had filed for bankruptcy, leaving the financial burden of remediation on taxpayers. Dakota Mining Company running the Gilt Edge gold Mine offers an example. [111] When the company filed for bankruptcy, it left 130 million gallons of acid mine wastewater on the mine. [112] The State concerned held a cash bond of 6.2 million with a demand note for the balance of 6.8 million. The state government ended up spending twenty-seven million with an additional eighteen million for complete reclamation.[113]

Firms may attempt to escape liability through outright declaration of bankruptcy. It is also likely that "firms may purposefully increase the likelihood of bankruptcy by divesting themselves of capturable assets in order to externalize costs."[114] Moreover, to escape liabilities, a firm may legally dissolve and hence the cost recovery becomes impossible.[115] As environmental damage is more likely to emerge over many years, a firm may sell its assets over the period and then fully dissolve itself, thereby effectively externalizing environmental costs.[116]

B. Bonding Requirements and Problems

To address the problems with tort liability, the bonding requirements are often adopted. There are many advantages with the bonding requirements. For example, there is no need to establish the causal link between the defendant firm and the damage;[117] rather, all that is required is to show that the environment is damaged, the site is un-reclaimed, etc. The burden of proof is then shifted onto the firm, which, in discharging the liability, must show that they did not cause the damage.[118] The form of the bond may come as a surety bond, cash deposits, or letter of credit. The benefit of the surety bond or letter of credit is clear; the provider/underwriter of the surety bond would examine the firm's credit

111. ROBERT REPETTO, SILENCE IS GOLDEN, LEADEN, AND COPPER: DISCLOSURE OF MATERIAL ENVIRONMENTAL INFORMATION IN THE HARD ROCK MINING INDUSTRY, YALE SCH. FORESTRY & ENVTL. STUD. 12 (2004) http://perma.cc/J7ZR-BC4K.

112. *Id.*

113. *Id.*

114. Boyd, *supra* note 104.

115. *Id.* at 4.

116. *Id.*

117. *See* Albert C. Lin, *Size Matters: Regulating Nanotechnology*, 31 HARV. ENVTL. L. REV. 349, 399 (2007).

118. Gerard & Wilson, *supra* note 106.

standing, its financial statements, business practices, and overpayment history. This actually helps to screen out unviable businesses.[119]

The bonding requirements are widely used. To make sure that they perform their contracts, importers and exporters are often required to fulfill the bonding requirements.[120] For example, the Dominican Republic requires importers to post a bond to guarantee the payment of the selective consumption tax, as it does with domestic producers.[121] In the 1960s, two voluntary associations, namely, the Association of British Travel Agents ("ABTA") and the Tour Operators Study Group ("TOSG") introduced the first bonding scheme to safeguard the interests of air travelers and provide compensation for aggrieved travelers. [122] Under the scheme, each of their members was required to contribute 5% of their annual turnover as their bonds.[123] Initially, both companies held and managed the bonds for their members and arranged for repatriation of passengers from abroad and refunds of payments. Now the Civil Aviation Authority undertakes the management.[124]

In the U.S., the Miller Act makes the bonding compulsory for the government contract projects. Two types of bonds are required before any contract for federal public work projects of over 100,000 U.S. dollars is awarded: a performance bond and a payment bond.[125] The former aims to protect the federal government whereas the latter protects suppliers of labor and material.[126] Additional bonds may be required.[127] In essence, it protects suppliers of labor or materials to contractors or subcontractors. Subcontractors and suppliers of labor or material may sue on the payment bond, so may those suppliers who contract with the subcontractors and hence have no contractual relationship with the contractor.[128] A supplier's right to bring a civil action on the payment bond may be waived subject to the stringent conditions. The unique feature of the Act is that the action is

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119. *Surety Bonds: The Basics*, U.S. SMALL BUS., https://perma.cc/V4ZT-2BQX?type=source (last visited Sept. 11, 2015).

120. DEP'T FOR BUS. INNOVATION & SKILLS, TRADE AND INVESTMENT FOR GROWTH 57 (2011), https://perma.cc/6QMS-4H5S?type=source; EXEC. OFFICE OF THE PRESIDENT OF THE U.S., U.S. JOINT STRATEGIC PLAN ON INTELLECTUAL PROP. ENFORCEMENT 17 (2010), https://perma.cc/2G7R-VUAR.

121. *Dominican Republic – Measures Affecting the Importation and Internal Sale of Cigarettes*, WORLD TRADE ORG., https://perma.cc/P9R5-EN2X (last visited Sept. 11, 2015).

122. *ATOL-The History of ATOL and Consumer Protection*, CIV. AVIATION AUTH., https://perma.cc/E5KT-DMYU (last visited Sept. 8, 2015).

123. *Id.*

124. *Id.*

125. 40 U.S.C. § 3131(a) (2012).

126. *Id.*

127. 40 U.S.C. § 3131(e) (2012).

128. 40 U.S.C. § 3133 (2012).

brought against the surety of the bond; it is "to shift the ultimate risk of nonpayment from workers and suppliers to the surety."[129]

The bonding requirements are also used in the mining and oil exploration and production. This is our interest in this article. Such requirements are aimed to safeguard the protection of the environment and the compensation of the aggrieved parties from the environmental damage.[130] The requirements in essence embody the bond agreement between the parties, which sets down clear criteria under which the bond is to be released to the firm.[131] It also specifies the firm's liabilities whereby the bond is to be forfeited; as with other liabilities, the liabilities for environmental damage must be established before the bond is forfeited.[132] Furthermore, the funds cannot be used for liabilities not covered in the agreement.[133]

The problems with the bonding requirements concern the adequacy of the bond amount, its scope of coverage, and the firm's duration of liability.[134] The amount of the bond is based on estimates ex ante. But sometimes, environmental damage is difficult to measure in monetary terms.[135] Plus, the damage may only emerge many years later when the responsible actor does not exist anymore.[136] This may well leave the bond insufficient for the cost of cleanup or reclamation.[137] As some suggested, "the public sector is only protected up to the amount of the bond posted, not for the full amount of potential damages. If the firm remains solvent, regulators can seek a remedy through the courts."[138] But, the firm may have become insolvent, in which case the excess of the cost falls on the shoulder of the tax-payers.[139] The design of the bond may take this into account. However, designing the bond at the optimal level is far from easy:

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129. THE LAW OF PAYMENT BONDS 65 (Kevin L. Lybeck & H. Bruce Sheves eds., 1998) (explaining that a surety company provides the bond on the basis of collateral securing the bond, and vets the investors or traders before providing the bond, which becomes a legal guarantee for signing contracts or performing them).

130. Boyd, *supra* note 104, at 1.

131. *Id.* at 45.

132. *Id.*

133. *Id.*

134. L. Thomas Galloway & Thomas J. Fitzgerald, *The Bonding Program Under the 1977 Surface Mining Control and Reclamation Act: Chaos in the Coalfields*, 89 W. VA. L. REV. 675, 681 (1987).

131. Frank Wätzold, *Efficiency and Applicability of Economic Concepts Dealing with Environmental Risk and Ignorance*, 33 ECOLOGICAL ECON. 299, 307 (2000).

136. *Id.*

137. *Id.*

138. Gerard & Wilson, *supra* note 106.

139. *Id.*

> Any formula that sets bonding commitments at a high level would entail an incremental cost to operators, potentially discouraging or preventing investment among small companies, while placing additional economic burden on development and property transactions. On the other hand, bonding levels that are set at average cost do not adequately account for the possibility of cost falling above posted levels, essentially requiring that a portion of the risk be held by the government.[140]

Some industries such as the mining industry employ the "worst case scenario," i.e., the value of the bond is set at maximum reclamation cost liability.[141] Historically in the U.S. coal mining left many sites un-reclaimed or under-reclaimed. The U.S. passed the Surface Mining Control and Reclamation Act ("SMCRA") to deal with such problems as the cost of reclaiming those sites.[142] The mining operators are required to post a reclamation bond, which will be collected upon default.[143] Defaulting operators unable to meet the full cost of reclaiming the site will not receive future mining licenses; the regulatory agency, rather than the operators, determines the amount of reclamation of land; the reclamation bond is set at an amount sufficient to reimburse all projected costs of reclamation.[144]

The bond design based on the worst case scenario may not be applicable where the worst case cannot be identified. For example, in relation to the emerging nanotechnology industry where the scale of risk and damage is unknown, the worst case is hard to predict. Albert Lin, in this connection, suggests that where a firm does not exceed the damage level as specified by the necessary authority, the bond could be made wholly or partially refundable and "the unrefunded portion of the bond, intended to cover expected damages that have not yet occurred, would be deposited in a trust fund that the proposal would establish."[145] But the crucial questions are how to determine the damage level in the first place;

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140. MARK J. KAISER & ALLAN G. PULSIPHER, A REVIEW AND UPDATE OF SUPPLEMENTAL BONDING REQUIREMENTS IN THE GULF OF MEXICO, U.S. DEP'T. OF THE INTERIOR, MINERALS MGMT. SERV. 23 (Oct. 2008), http://perma.cc/DQ7T-TYJC.

141. Lin, *supra* note 117, at 401.

142. Craig B. Griffin, *West Virginia's Seemingly Eternal Struggle for a Fiscally and Environmentally Adequate Coal Mining Reclamation Bonding Program*, 107 W. VA. L. REV. 105, 111 (2004).

143. *Id.* at 112. (listing the three different types of bonds: corporate surety bonds where the third party guarantor underwrites the firm's obligation to pay the cost of reclamation; collateral bonds which include cash; letters of credit, etc.; or self bonds as executed by the firm itself or a qualified third party).

144. *Id.* at 114.

145. Lin, *supra* note 117, at 398.

then how long would the un-refunded sum would be kept in the trust fund? These questions are difficult to answer but they are important in carrying through the "worst scenario" framework. As is to be seen later, if one is concerned to employ such a framework in the context of Africa, one needs to bear in mind the balance between the desire for investment and that for environmental protection.

Some particular industries adopt a bond pool with the government's participation, which would appear to resolve the above problems. In the U.S., in an effort to encourage the development of nuclear power, the government passed the Price-Anderson Act "to assure adequate public compensation in the case of a nuclear accident; and to set a limit on the liability of private industry to remove a major deterrent to private participation in the development of nuclear energy."[146] It was "a protective measure to ensure participation in the field of nuclear energy in a time when the insurance industry was either not able or willing to provide the necessary coverage to protect new entrants into the atomic energy field."[147] It establishes a system "financed through a combination of private insurance and mandatory contributions to a common fund."[148] The mandatory contributions form a pooling whereby "each nuclear licensee is required to purchase 160 million in private liability insurance and to contribute a maximum of 10 million yearly (up to a maximum of 63 million) to the compensation fund when there is a nuclear incident at any plant," then all liability for nuclear accidents was capped at 560 million U.S. dollars.[149] The firm's liability is capped at a certain level and the government indemnifies the damages over that level.[150] With the 1988

146. S. Rep. No. 100-70, at 1426 (1988),

147. Linda S. Mullenix & Kristen B. Stewart, *The September 11th Victim Compensation Fund: Fund Approaches to Resolving Mass Tort Litigation*, 9 CONN. INS. L. J. 121, 139 (2002).

148. Robert L. Rabin, *Some Thoughts on the Efficacy of a Mass Toxics Administrative Compensation Scheme,* 52 MD. L. REV. 951, 955 (1993).

149. Mullenix & Stewart, *supra* note 147, at 140 (internal quotes omitted); U.S. NUCLEAR REGULATORY COMM'N, FACT SHEET ON NUCLEAR INSURANCE AND DISASTER RELIEF FUNDS 1 (2008), http://perma.cc/7JTF-FESF

> (Under existing policy, utilities that operate nuclear power plants pay a premium each year for $300 million in private insurance for offsite liability coverage for each reactor unit. This primary insurance is supplemented by a second policy. In the event a nuclear accident causes damages in excess of $300 million, each licensed nuclear reactor would be assessed a prorated share of the excess up to $95.8 million. With 104 plants licensed to operate, this secondary pool contains about $8.6 billion. After 15 percent of this pool is expended, prioritization of the remaining funds is left to the discretion of local jurisdictions. After the insurance pool is used, responding organizations like State and local governments can petition Congress for additional disaster relief under the provisions of Price-Anderson.).

150. *Id.*

amendment, "federal indemnity would be phased out."[151] Instead, excess damages would be funded from the compensation pool/self-insurance scheme made for Nuclear Regulatory Commission licensees.[152]

The pooling scheme can create hurdles and problems. Obviously, it screens out those who do not meet the pool membership criteria; it may "increase substantially the cost of reclamation bonding," or "prohibit market entry altogether because of unavailability of surety bonds."[153] However, the main objection to the scheme is that it creates the "moral hazard."[154] Bengt Holmstrom explains the moral hazard as follows: "It has long been recognized that a problem of moral hazard may arise when individuals engage in risk sharing under conditions such that their privately taken actions affect the probability distribution of the outcome."[155]

In a situation where the moral hazard occurs, the arrangement "will not induce proper incentives for taking correct actions."[156] Thus, the pooling scheme undermines incentives for safe operation.[157] As the compensation for the aggrieved parties depends on the pooling mechanism, it "de-emphasiz[es] the importance of individual responsibility."[158] Precisely because the pool does not demarcate individual responsibility, it "blunt[s] the incentives to investment in optimal safety by individual firms."[159] George Priest argues that "moral hazard increases the costs of injuries and, thus, increases the risk level."[160] Thus, it comes as no surprise that some firms may "take greater risks because they are insured."[161]

The above shows the difficulty in designing the bond. Once the bond is posted, then the next step concerns the regulation of the bond and the judicial review the regulators decision. The firm under the bonding requirements is overseen by a regulatory body and the function of regulators is that they monitor the work of the firm and authorize the

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151. Cole Mahone Adams, *Damages and Injury:* Smith v. Carbide *and Chemicals Corporation and the Application of Kentucky Law Under the Price-Anderson Act*, 22 J. NAT. RESOURCES & ENVTL. L. 175, 176 (2008–2009).

152. *Id.*

153. Galloway & Fitzgerald, *supra* note 134, at 684.

154. Alexandra B. Klass & Elizabeth J. Wilson, *Climate Change and Carbon Sequestration: Assessing a Liability Regime for Long-Term Storage of Carbon Dioxide*, 58 EMORY L. J. 103, 168 (2008).

155. Bengt Holmstrom, *Moral Hazard and Observability*, 10 BELL J. OF ECON. 74, 74 (1979).

156. *Id.*

157. Klass & Wilson, *supra* note 154.

158. Rabin, *supra* note 148.

159. *Id.* at 956.

160. George L. Priest, *Insurability and Punitive Damages*, 40 ALA. L. REV. 1009, 1023–24 (1989).

161. Linn & Richardson, *supra* note 39, at 32.

release of funds after the firm meets the obligations specified in the bond agreement.[162] The regulators decide to release the bond of the compliant firm or collect the bond of the defaulting firm, but the decision is a complex process. Two issues among others are worth noticing: first, regulators must work closely with scientific and engineering experts to establish the environmental damage; [163] second, where environmental damage is observable, the firm's liability is clear and can be readily resolved by reference to the bond agreement. [164] In such a case, obviously, the regulator's task is easy and may invite less dispute. Then, in other cases, the regulators may need to take into account also the future or potential damage and then, where feasible, increase the bonding requirements under annual review.[165] This is a difficult process and Repetto reported that, due to lack of effective action of regulators, many sites in the U.S. were un-reclaimed or under-reclaimed, resulting in huge burdens on taxpayers for the complete reclamation.[166]

Generally, the regulation of the bonding requirements and the decision of the regulators are subject to independent judicial review; this enhances regulatory standards and provides the requisite due process for the firm in relation to the decision of the regulators.[167] Moreover, due process in turn functions to improve regulatory standards and framework. [168] In fact, accountable regulation is important to attract Foreign Direct Investiment ("FDI"), despite the extra cost for the firm. Valpy Fitzgerald argues that "regulatory standards that are regarded as predictable by investing firms will reduce uncertainty and increase the attractiveness of investment, even if they involve higher operating costs. This predictability can itself be derived from the legal or legislative process that supports them, which means they will not be applied arbitrarily."[169] Similarly, Xiaolun Sun regards a sound regulatory framework with enforceable laws and regulations as "imperative for FDI to enter and thrive."[170]

However, there are problems with the court system in most African countries. Take Angola for example. Apart from high legal fees, it takes a considerably long time for the court to hear a case because the judicial

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162. Boyd, *supra* note 104, at 45.
163. *Id.* at 61.
164. *See* Wätzold, *supra* note 135, at 307.
165. Repetto, *supra* note 111, at 31.
166. *Id.* at 6–7, 12.
167. Boyd, *supra* note 104.
168. Valpy Fitzgerald, *Regulatory Investment Incentives*, ORG. FOR ECON. CO-OPERATION AND DEV. at 3 (Nov. 20, 2001) https://perma.cc/WX7P-7ZAH?type=source.
169. *Id.*
170. Xiaolun Sun, *How to Promote FDI? The Regulatory and Institutional Environment for Attracting FDI*, FOREIGN INV. ADVISORY SERV. (2002), http://perma.cc/J68C-KZCX.

system there lacks capacity and efficiency.[171] The World Bank's Doing Business in 2010 survey shows that a court case for contract enforcement could take up to 1,011 days and cost up to forty-four percent of the claim in Angola.[172]

Arbitration is possible. The Voluntary Arbitration Law in Angola, for example, gives the parties the opportunity to resolve their general disputes through arbitration; then the Petroleum Activities Law of 2004 provides an arbitration framework in particular relation to disputes over petroleum activities.[173] But there are difficulties. The first difficulty is with lack of enforcement of arbitral awards as Angola is not a member of the United Nations' New York Convention.[174] The second difficulty is that Angola is not party to the major convention for investment dispute settlement, namely, the World Bank's International Centre for Settlement of Investment Disputes ("ICSID").[175] What is significant about ICSID arbitration is that it gives an individual direct recourse against a state for investment related matters.[176] Investors cannot resort to such a dispute settlement regime in Angola. The ICSID award, if given elsewhere, is not directly enforceable, but can only be recognized and enforced through the national courts; hence, the problems with the judicial systems recur.

Leaving aside its own problems such as lack of due process,[177] arbitration is particularly problematic in Africa. First, the cost is an issue; "the requirement of advance payment of arbitration costs in modest amounts of US $50,000 to US $200,000 may be a heavy imposition on an African country or party which suffers from an acute shortage of foreign exchange resources, and has made no provision for this contingency."[178] Then there are other problems. Samuel Asante argues:

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171. *2008 Investment Climate Statement Angola* U.S. DEP'T OF STATE, https://perma.cc/8L7W-RPKN.

172. Bureau of Econ., Energy, & Bus. Aff., *2010 Investment Climate Statement-Angola*, U.S. DEPT. OF STATE (May 2010), http://perma.cc/ESV4-QCFM.

173. Oladiran Ajayi & Patricia Rosario, *Investments in Sub Saharan Africa: The Role of International Arbitration in Dispute Settlement*, SELECTEDWORKS, (Mar. 2009) http://perma.cc/4UV8-H293.

174. *Id.*

175. Susan D. Franck, *The ICSID Effect? Considering Potential Variations in Arbitration Awards*, 51 VA. J. INT'L L. 825, 826 (2011) ("ICSID arbitration awards were not statistically different from other arbitral processes" hence, "ICSID arbitration was not necessarily biased or that investment arbitration operated in reasonably equivalent ways across forums.").

176. CAROLE MURRAY ET AL., SCHMITTHOFF'S EXPORT TRADE: THE LAW AND PRACTICE OF INTERNATIONAL TRADE 556 (London: Sweet & Maxwell, 11th ed. 2007).

177. Alec R. Johnson, *Rethinking Bilateral Investment Treaties in Sub-Saharan Africa*, 59 EMORY L.J. 919, 965 (2010).

178. Samuel K.B. Asante, *The Perspectives of African Countries on International Commercial Arbitration*, 6 LEIDEN J. INT'L. L. 331, 344 (1993).

> A number of factors - paucity of training facilities in international arbitration, political instability, rapid turnover of public servants, bureaucratic barriers to transmitting or utilizing valuable international experience - have combined to limit the exposure of African lawyers in the public and private sectors to the intricacies of international arbitration.[179]

However, independent adjudication is so important that "African countries are not likely to attract FDI if they do not grant foreign investors the right to resort to some form of independent adjudication."[180] But, as seen above, the current judicial and arbitral systems in Africa are stricken with problems and may well do a disservice to the FDI. Are there any alternatives? Alec Johnson proposes some alternatives. Johnson advocates an international commercial court and argues that it would offer many advantages.[181] Full-time judges hear the case in lieu of arbitrators, reducing conflicts of interest and enhancing due process.[182] Then, unlike an arbitral award, the decision is subject to proper appellate procedures.[183] Take the ICSID as an example: its award is final and it does not have an appeal process. The Centre only has an internal procedure for the interpretation, revision, or annulment of an award whereby the defendants may apply to the Secretary-General to annul an award on the specified grounds that

> [t]he Tribunal was not properly constituted; the Tribunal has manifestly exceeded its powers; there was corruption on the part of a member of the Tribunal; there has been a serious departure from a fundamental rule of procedure; the award has failed to state the reasons on which it is based.[184]

Given that the seat of arbitration is usually outside Africa, Johnson also proposes localization of arbitration as "a less dramatic alternative."[185] Whilst it would reduce the cost of arbitration and make arbitration more accessible to local businesses,[186] it arguably poses the questions of short-term alternatives and the need for investment in training local arbitrators.

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179. *Id.* at 335.
180. Johnson, *supra* note 177, at 965.
181. *Id.*
182. *Id.*
183. *Id.*
184. ICSID Convention, Regulation, and Rules, Apr. 10, 2006, Rule 50(3)(b)(i), ICSID/15, https://perma.cc/BSW6-UB7F.
185. Johnson, *supra* note 177, at 965–66.
186. *Id.*

The first alternative does appear to be dramatic in that the legitimacy of an international court is an issue, let alone its cost when compared with a domestic court. The second alternative apparently reflects the trend of arbitration in Africa. As argued above, until competent arbitral facilities and personnel are in place, an alternative is certainly needed.

C. Our Proposed Solution

From the above discussion, the bonding requirements are stricken with problems such as inadequacy of compensation. If adopted by African countries, one prominent issue concerns the design of the bond: at what level should the bond be fixed so as to provide adequate compensation for environmental loss without deterring investment? Furthermore, we identify the problems with the appeal process in Africa, both judicially and through arbitration; this raises the question of how to make the regulation of the bond transparent and accountable in order not to burden foreign investment and hence turn away investors.

In resolving the above problems, we propose that a solution be found in modifying the bonding requirements. Under the proposal, the bonding agreement is a tripartite agreement between the firm, the local government, and the home government. It involves state participation, though it needs to be distinguished from state liability under international law, where a state may be liable for pollution that spilled over its borders and inflicted damage on another state. Ralph d'Arge and Allen Kneese pointed out that the basic constraint in that situation is that to "use your own property so as not to injure your neighbor's and every state's obligation [is to] not allow knowingly its territory to be used for acts contrary to other states."[187] It must be made clear that under our proposal the state does not assume liability for environmental damage incurred by its companies overseas, nor does it provide indemnity; the claim stops where no funds or no companies are traceable under the state's jurisdiction. This would make the state the regulator rather than the business partner or insurer. Arguably this complies with the state's fundamental role and would make it more willing and indeed more sensible to participate in the protection of another state's environment incident to its firms' overseas investment.

The first question is: how does such an agreement work and what are the benefits? Under the agreement, the firm posts the bond as usual but the difference from the normal bonding requirements is that the firm's home

187. Ralph C. d'Arge & Allen V. Kneese, *State Liability for International Environmental Degradation: An Economic Perspective*, 20 NAT. RESOURCES J. 427, 429 (1980).

government is made a party to the agreement. The home government is thus able to enforce the agreement. The framework provides many advantages. First, as the home government possesses or is better equipped to procure information about its firms in relation to their historical records for environmental protection, it can screen out unworthy firms.[188] As Jing Gu has explored, "Thousands of Chinese firms failing to reach the new green standards have been closed down by the Chinese Government. Some of these have relocated to countries, including some in Africa, where regulatory requirements are less stringent or less severely enforced."[189] Had the Chinese government been obliged to take steps to screen out those firms, many problems that might have arisen in Africa would have been "nipped in the bud."

Second, the bond can be put at a reasonably acceptable level, as excessive bonding turns away investors. To fill up the deficiency for clean-up, payments, etc. after the bond is collected, or to trace the polluters many years later, the home government can locate the firm's assets in its home country or the firm itself where the firm has ceased its operation in Africa and since moved back home. The tripartite bonding agreement can make an explicit provision to the effect that where the bond is insufficient to cover the cost for cleanup or where the bond has expired, the other parties are entitled to claim from the company's assets located within the jurisdiction and in China.

Third, the advantages are also reflected in the appeal process in relation to the decision of the regulatory body. The home government plays an active role in the appeal process by becoming a member in the appeal panel. To make such a panel more transparent, impartial, and independent, an international organization such as the International Monetary Fund ("IMF") and the World Bank may also be asked to serve as a member. Nongovernmental organizations may also be made an observer where they are tasked with the protection of environment in Africa and hence proactively involved in project monitoring.[190]

As the appeal process does not involve the local courts or an arbitration tribunal in Africa, the problems with them are avoided. Furthermore, with

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188. Galloway & Fitzgerald, *supra* note 134, at 684. (noting that it may be arbitrary to exclude firms with poor records; but unless those firms have a clear executable plan to address the problem and possibly post double bond (one to meet the local requirements and one to meet the home requirements), it is wise not to allow those firms to engage in overseas operation as they do present potential risk, and arguing that "while historical performance and length of business experience cannot guarantee future performance, these factors are believed to be indicators of future risk").

189. Jing Gu, *China's Private Enterprises in Africa and the Implications for African Development*, 24 EUR. J. DEV. RES. 570, 583 (2009).

190. Cassel, *supra* note 33, at 17.

international composition and expertise in the appeal panel, the local members are given the unique opportunity to participate in and possibly shape high-level adjudication processes. This would provide the necessary experience and help to train experts for localization of arbitration in Africa in the future and for improvement of its judicial capacity generally.

The second issue is whether the home government should and would be willing to get involved. This can be answered in the affirmative both from the perspective of the international atmosphere and efforts and from the point of view of China itself. On the international front, the home government's involvement in regulating its firms operating overseas especially with respect to the protection of environment, has long been recognized by the United Nations. There have been general calls on the transnational companies' home governments to monitor their activities abroad to make sure that they operate in an ethical way in the host countries. The home governments should implement measures "holding [the transnational companies] accountable to higher standards of corporate responsibility, sharing information gathered with host country policy makers, and designing disciplinary measures and compensation schemes where there is clear evidence of damage to the host economy."[191]

As far as China is concerned, the Organisation for Economic Co-operation and Development ("OECD") Environmental Performance Review of China in 2007 emphasized that the Chinese government needs to put strong efforts "to ensure that Chinese corporations operating overseas, particularly in such environmentally sensitive industries as forest products and mining, are positive contributors to China's stated goal of building an international reputation for sound environmental management and sustainable development." [192] The Chinese government was urged to "improve governmental oversight and environmental performance in the overseas operations of Chinese corporations."[193] An African Union meeting of experts and diplomats in September 2006 emphasized the necessity of "finding mechanisms to ensure China pays more attention to environmental damage."[194] Scholars also recognize the importance of "intergovernmental collaboration" to create a level playing field; Gu believes that such collaboration between Chinese and African governments should be formed to "ensure that individual companies cannot go 'shopping' for countries

191. U.N. Conference on Trade and Dev., *Economic Development in Africa: Rethinking the Role of Foreign Direct Investment*, at 81, U.N. Doc UNCTAD/GDS/AFRICA/2005/1, U.N. Sales No. E.05.II.D.12 (2005) http://perma.cc/GJ4Q-78CM.

192. Bosshard, *supra* note 25, at 10.

193. *Id.*

194. Akwe Amosu, *China in Africa: It's (Still) the Governance, Stupid*, FOREIGN POL'Y IN FOCUS (Mar. 9, 2007), http://perma.cc/RF5G-R39L.

with low standards and those well behaved companies will not lose out to badly behaved companies."[195]

There are in fact many incentives for the Chinese government to get involved in the protection of environment in Africa. China is often accused of exploiting the African resources without regard to the improvement of the human rights there. As said before, the Chinese government defends its position by insisting on the detachment of investment from human rights. It is a long-established policy of China that "China does not mix business with politics."[196] The Chinese government takes the stance that "human rights are relative, and each country should be allowed their own definition of them and timetable for reaching them."[197] Although it is contentious whether investment should be purely economic, China would need more persuasion and the international community would need to do more to change China's stance. However, as far as environmental protection is concerned, the situation is different; especially given China's own domestic problem with the environmental damage and its efforts to balance development and environmental protection. Fundamentally, the Chinese government realizes the importance of environmental protection to sustainable development.[198] Indeed, China recently committed itself to cutting its greenhouse gas emissions by forty percent by 2020; that commitment has been integrated in its new five-year economic development plan.[199] With its participation in protecting the environment in Africa, the government would show its engagement in the long-term development of the continent; that would inevitably win good publicity for the government. Undeniably, China pays particular attention to its international image and influence; as one has observed, "[t]he overseas performance of domestic companies reflects the image and influence of the Chinese government, and is also an important indicator of the nation's soft power."[200] The engagement with environmental protection would further improve China's ties with the local governments and people, making its

195. Gu *supra* note 189, at 27.

191. Hanson, *supra* note 12.

197. *Id.*

198. Bureau of East Asian and Pacific Aff*., Background Note: China*, U.S. DEPT. OF STATE, (Sept. 6, 2011), https://perma.cc/F9A6-GASE; Information Office of the State Council of the People's Republic of China, *Environmental Protection in China*, XINHUA NEWS (June 1996), http://perma.cc/4QLC-GAJR ("China has, in the process of promoting its overall modernization program, made environmental protection one of its basic national policies, regarded the realization of sustainable development as an important strategy and carried out throughout the country large-scale measures for pollution prevention and control as well as ecological environment protection.").

198. Peter Bosshard, *China's Dam-Building Will Cause More Problems Than it Solves*, GUARDIAN (Mar. 4, 2011), http://perma.cc/E97H-C69L.

200. *Green Norms for Overseas Investment Soon*, CHINA DAILY (July 9, 2010), http://perma.cc/DCK4-S4J6.

firms' overseas operations encounter less resistance and gain more cooperation; in this sense, it would improve the economic goal from its investment in Africa. Currently, there are efforts channeled through such venues as the Forum for China Africa Co-operation to facilitate the engagement of the Chinese government in monitoring projects and agreeing on environmental standards.[201] The United Nations Environment Program is also involved in the initiative.[202]

The Chinese government itself has begun to take the issue of corporate social responsibility ("CSR") seriously. It has joined both the Equator Principle and the Global Compact. The Equator Principle Financial Institutions agree that investments exceeding ten million U.S. dollars (lowered from fifty million U.S. dollars in 2007) exist within CSR and sound environmental practice.[203] They agree not to extend loans to those companies failing to conform to certain principles including social and environmental standards.

Not many Chinese financial institutions involved in financing projects in Africa have signed up to it. China's Industrial Bank is the first Chinese bank to adopt the Equator Principles.[204] It remains to be seen whether many other financial institutions will join the scheme. It is of limited application with many investments not exceeding the stipulated amount. The main problem with the Equator Principles, as indeed with most international agreements or conventions, is lack of a mechanism to monitor compliance and enforce remedial measures.[205] But China appears to take its commitment seriously. In November 2007, the Solar Electric Power Association ("SEPA") withheld loans for a handful of companies found violating environmental rules.[206]

China also joined the U.N. Global Compact, which embodies ten principles addressing, *inter alia*, the issue of environmental protection based on the Rio Declaration on Environment and Development.[207] The relevant principles in relation to environmental protection are principles seven though nine as follows:

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201. Corkin, *supra* note 17, at 3, 8.

202. *China, Africa Underscore Cooperation in Environment Protection*, CHINA.ORG.CN (Nov. 6, 2006), http://perma.cc/4P5Q-XXMK.

203. THE EQUATOR PRINCIPLES 3 (June 2013), http://perma.cc/RC4V-WMTW.

204. *China's Industrial Bank Adopts Equator Principles*, PEOPLE'S DAILY ONLINE (Nov. 2, 2008), http://perma.cc/KAR9-Y5MK.

205. Peter Bosshard, *Higher Standards for Chinese Companies – and a Risk for Africa*, INT'L RIVERS (Jan. 30, 2008, 4:13 PM), http://perma.cc/75RL-2XBA.

206. *Id.*

207. *The Ten Principles of the UN Global Impact*, U.N. GLOBAL COMPACT, https://perma.cc/Z5LH-UYBD?type=source (last visited Sept. 8, 2015).

> Principle 7: Businesses should support a precautionary approach to environmental challenges;
> Principle 8: undertake initiatives to promote greater environmental responsibility; and
> Principle 9: encourage the development and diffusion of environmentally friendly technologies.[208]

In addition to accession to the above two international schemes, the State Council of China has urged Chinese investors to "pay attention to environmental resource protection."[209] The Chinese government is in the process of promulgating the Chinese Overseas Direct Investment Environment Protection Guidelines whereby Chinese companies must abide in their overseas investment. The Guidelines would require companies to make environmental impact assessments and agree on courses of action for the protection of the environment. They would address the issue of compensation and corporate social responsibility. Then, the penalty for the worst violation is cessation of overseas investments.[210] Thus, based on China's own desire to regulate its investments overseas in respect of environmental protection, it is plausible that the Chinese government would be receptive to our tripartite framework. Then with the international efforts, it is more plausible that the Chinese government would be persuaded into participating in the framework.

In the Introduction, we asked whether the scheme should be made mandatory for any company and government. We now answer the question in the affirmative. It is self-explanatory that non-discrimination is one of the fundamental principles, be it with investment policies or otherwise. The question here is whether the scheme should be made mandatory. Discussions in another related area may help demonstrate the point. In relation to the discussion of whether the U.S. Price-Anderson Act should be mandatory and be made the basis for an international pooling system, Norbet Pelzer argues that a mandatory international pooling system would create unconquerable legal problems in some states such as Germany where there is a constitutional issue to resolve.[211] In contrast, Michael G. Faure and Tom Vanden Borre argue against a voluntary system; instead, they prefer mandatory participation in the system. They not only believe that the constitutional issue is resolvable, but also posit that "[a] pooling model on a

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208. *Id.*
209. Corkin, *supra* note 17, at 6.
210. *Green Norms*, *supra* note 200.
211. Norbert Pelzer, *International Pooling of Operators' Funds: An Option to Increase the Amount of Financial Security to Cover Nuclear Liability*, 79 NUCLEAR L. BULL. 37, 49 (2007).

voluntary basis can be difficult to create if there is not a convention behind the operators to force them to pool" and such an international convention is hard to reach.[212] This would raise the same issue for our scheme if it were made voluntary rather than mandatory. The lack of an international convention may leave the environmental damage uncompensated or under-compensated for, but an international convention on environmental protection may be hard to agree upon, as the chequered history of the Kyoto Protocol and the United Nations Framework Convention on Climate Change shows.[213]

If the scheme is made mandatory, African countries may have concerns as to, e.g., whether it would turn away investors and whether the home governments would agree to the tripartite agreement. With respect to the first concern, indeed, the participation of the home government may mean extra burden and cost for the investors. For example, before investing overseas, a firm may have to satisfy its home government's initial screening process on the viability of its environmental protection plan. That would appear to hinder or possibly deter overseas investment. But such participation by the home government ensures transparency and fairness in the subsequent appeal process concerning regulators' findings and decisions. As discussed before, despite the cost, a clear regulatory framework with due process, which the tripartite agreement embodies, actually gives investors certainty and induces, rather than deters, the FDI.[214] In relation to the second concern, China serves as a counterbalancing power against Western investors and may well provide the impetus for other countries to support the tripartite agreement. For both economic and political reasons, China is so determined to invest in Africa that not only does China invest in countries where Western businesses do, but China also invests in areas or countries which other countries would not invest, be it for security reasons or otherwise.[215] To win contracts, firms from other countries certainly do not want to be put at a disadvantage and have all the

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212. Michael G. Faure & Tom Vanden Borre, *Compensating Nuclear Damage: A Comparative Economic Analysis of the U.S. and International Liability Schemes*, 33 WM. & MARY ENVTL. L. & POL'Y REV. 219, 282 (2008).

213. *See generally* William D. Nordhaus & Joseph G. Boyer, *Requiem for Kyoto: An Economic Analysis of the Kyoto Protocol* (Feb. 8, 1999), http://perma.cc/DUZ5-R7CN (analyzing the economics of the Kyoto protocol and illustrating its high global costs); Cass R. Sunstein, *Of Montreal and Kyoto: A Tale of Two Protocols*, 31 HARV. ENVTL. L. REV. 1, 4 (2007); *see generally,* Afael Leal-Arcas, *Is The Kyoto Protocol an Adequate Environmental Agreement To Resolve the Climate Change Problem?*, 10 EUR. ENVTL. L. REV. 282 (2001).

214. Fitzgerald, *supra* note 168.

215. Raphael Kaplinsky & Mike Morris, *Chinese FDI in Sub-Saharan Africa: Engaging with Large Dragons*, 21 EUR. J. DEV. RES. 551, 562–63 (2009); *Chinese Trade and Investment Activities in Africa*, AFR. DEV. BANK GRP. (July 29, 2010), http://perma.cc/J4GR-8KKC.

incentives to urge their own governments to join such a scheme. In fact, some governments, such as the U.K., have already set up a domestic framework to make sure that its companies operate overseas in an ethical way.[216] Indeed, the United Nations urges all governments to implement measures to ensure that their businesses observe equity in investing overseas. It is perceivable that home governments could expand such efforts as to participate in the tripartite agreement.

CONCLUSION

In this article, we address the environmental protection from two perspectives: moral suasion and legal solution. We first show the moral obligations for the protection of the environment and the pursuit of justice globally and between generations. Then, as far as legal solutions are concerned, we show that the conventional way of resolving the environmental damage in tort is problematic and in many cases tort provides inadequate damages. We advocate the bonding requirements as a solution and propose that, given the problems associated with the conventional bonding requirements in the context of Africa, the requirements be modified such that the home government of the investors participates in the tripartite bonding agreement. Such an agreement would address issues associated with the conventional bonding requirements and offer a framework to improve the independent judicial review for the decision of the regulators and hence provide a scheme conducive to both investment and environmental protection. Furthermore, it would also provide the opportunity to train the judiciary and enhance judicial capacity for the local African governments. In enabling the African governments to realize the benefits and advantages of the framework, we finally propose that the modified bonding requirements be made mandatory for all investors intending to commercially exploit the mine and oil resources in Africa.

216. ECONOMIC DEVELOPMENT IN AFRICA, *supra* note 191.