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Reap What You Sow: Soil Pollution Remediation Reform in China

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REAP WHAT YOU SOW: SOIL POLLUTION REMEDIATION REFORM IN CHINA

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Abstract: As China undergoes the fastest economic development in the history of the world, so too has its environmental problems shattered all precedents. While China's leaders recognize they must change course, environmental concerns have long taken a back seat to economic development. Soil pollution is destroying China's environment, affecting public health, and reducing the country's food supply. Soil pollution slows China's economic development, preventing land development in urban centers. Soil pollution also threatens China's social stability because it has inspired marginalized groups to organize in protest of environmental conditions. Environmental remediation, or the obligations of a facility or the government to clean up land contaminates, is essential in China. But China's environmental remediation laws are ambiguous, poorly enforced, and often entirely unobserved. In order to respond to these challenges, the central government needs to develop a remediation scheme that: 1) requires strict liability to remediate soil pollution with appropriate exceptions; 2) evaluates the degree of remediation needed for a particular site; 3) utilizes the cadre system's promotion targets to ensure enforcement; and 4) promotes more public transparency to relieve the public's anxiety. These changes will serve both environmental and economic interests.

I. INTRODUCTION

When the Rongping factory opened in 1994 in the town of Xiping, Fujian Province, it seemed like an economic savior. The chemical plant doubled the town's population and quickly accounted for one-third of the county's tax base.[1] But after the factory opened, villagers noticed dying bamboo groves, fewer fish in the river, and a strange smell from the green slime in the river.[2] Illness and cancer rates grew.[3] Zhang Changjian, a local "barefoot doctor"[4] in Xiping, noticed these changes and began to petition the government in 1999 for soil remediation, arguing that the factory or government were obligated to clean up soil contaminates.[5] A high

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1 Shai Oster, *In Booming China, A Doctor Battles A Polluting Factory; Fouled Waters Lead to Flood of Protests Nationwide; Officials' Mixed Messages; Inspired by Erin Brockovich*, 248 WALL ST. J. E. EDITION A1 (July 19, 2006), http://online.wsj.com/article/SB115325157476810126.html.

2 *Id*.

3 Duan Hongqing, *Thirteenth year not the end in Village's Fight Against Pollution*, CAIJING MAGAZINE Sept. 2005 (China) *available at* http://english.caijing.com.cn/2005-09-05/100043252.html.

4 Barefoot doctors are individuals who have received basic medical education, usually training at a county hospital for three to six months, and work in rural areas of China. *See* Daqing Zhang & Paul Unschuld, *China's Barefoot Doctors: Past, Present, and Future*, 372 THE LANCET 1865 (2008).

5 Oster, *supra* note 1.

concentration of chromium, a known human carcinogen,[6] was found in Xingping's soil and water.[7] After years of unanswered letters, in 2001 Dr. Zhang was instructed by China's top environmental agency to organize a formal complaint.[8] Eventually 1,721 villagers joined the lawsuit.[9] The county government shut down Dr. Zhang's clinic.[10] The doctor claimed thugs assaulted him and his wife as a consequence of their efforts.[11] Despite these obstacles, the Xiping villagers' case is one of China's rare environmental success stories.[12] The court awarded the plaintiffs USD 85,000, with the average plaintiff getting about USD 50.[13]

For years, China has prioritized rapid economic growth over all other concerns,[14] but recent government rhetoric has favored stronger environmental protection. China elevated the position of environment and energy in the country's Eleventh Five-Year Plan, establishing high-priority national targets for energy intensity and pollution reduction.[15] The plan also included supporting policies and funding mechanisms.[16] The policies and funding have added more teeth to the environmental rhetoric. A few environmental targets were given the highest-level priorities. According to Professor Kan, "the Chinese government invested USD 1.6 billion annually, 0.51% of China's GDP, on environmental protection; in 2008, the number increased to USD 66 billion, reaching 1.49% of China's GDP."[17] In 2008, the State Environmental Protection Administration ("SEPA") was elevated to the ministry level position[18] and renamed the Ministry of Environmental

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[6] AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, TOXFAQS FOR CHROMIUM (Oct. 2012), http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=61&tid=17.

[7] Duan Hongqing, *supra* note 3.

[8] Oster, *supra* note 1.

[9] *Id.*

[10] *Id*

[11] *Id.*

[12] Alex Wang, *The Role of Law in Environmental Protection in China: Recent Developments*, 8 VT. J. ENVTL. L. 196, 214 (2007). The Center for Legal Assistance to Pollution Victims ("CLAPV") assisted Mr. Zhang and the villagers in the case. *Id.* at 213. Later, Professor Wang notes that the courts application of the correct legal doctrine could in part be attributed to the experience of the litigators. *Id.* at 219.

[13] Oster, *supra* note 1.

[14] Over the past three decades, China's GDP has grown by 9% annually. No country has moved up the economic ladder as quickly as China. PHILLIP STALLEY, FOREIGN FIRMS, INVESTMENT, AND ENVIRONMENTAL REGULATION IN THE PEOPLE'S REPUBLIC OF CHINA 1 (2010).

[15] Alex L. Wang, *China's Environmental Tipping Point, in* CHINA IN AND BEYOND THE HEADLINES 112, 114 (Timothy B. Weston & Lionel M. Jensen eds., 2012). Note: the Eleventh Five-Year Plan was promulgated in 2006 and ran until 2010. These five-year plans are a series of social and economic development initiatives.

[16] *Id.*

[17] *See* Haidong Kan, *Environment and Health in China: Challenges and Opportunities*, 117 ENVTL. HEALTH PERSP. 530 (Dec. 2009), *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2799473/.

[18] *China Upgrades Environmental Administration to Ministry*, XINHUA NEWS (China) (Mar. 11, 2008, 4:19 PM), http://news.xinhuanet.com/english/2008-03/11/content_7766369.htm.

Protection ("MEP").[19] With the elevation, the MEP enjoys a greater voice in decision-making and is less subject to opposing interests.[20]

While China has begun to acknowledge environmental concerns, there is still much room for improvement. China's ambitions to develop its economy have not slowed; it aims to quadruple its 2000 GDP by the year 2020.[21] As recently as 2010, the minister of the MEP publicly stated that China's current environmental situation could be summarized as "partly improved but remains uncontrolled as a whole, with increasing pressures."[22] In 2005, Xie Zhenhua, the minister of the MEP, was forced to resign due to the Jilin chemical plant incident.[23] Explosions at the plant killed six, lead to the evacuation of thousands, and created an eighty kilometer toxic slick of benzene[24] and nitrobenzene[25] in the Songhua River.[26] Although neither Mr. Xie nor the MEP were involved with the cover-up, his removal indicates that the central government may hold officials accountable for environmental disasters on their watch.[27] However, a year after his resignation, Mr. Xie was appointed vice minister of the more powerful National Development and Reform Commission ("NDRC") [28]—arguably a promotion.

Although Dr. Zhang and the Xiping villagers' success marks an improvement in legal accountability in Chinese environmental policy, their

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[19] ELIZABETH C. ECONOMY, THE RIVER RUNS BLACK: THE ENVIRONMENTAL CHALLENGE TO CHINA'S FUTURE 111 (2d. ed. 2010).

[20] *Id.* For a recent example of the MEP throwing its weight around, see Eric Ng & Li Jing, *Oil Giants Barred from new Projects After Missing Pollution Targets*, S. CHINA MORNING POST (Aug. 30, 2013, 5:02 AM), http://www.scmp.com/business/companies/article/1300306/china-environment-ministry-suspends-some-approvals-sinopec-cnpc.

[21] Haidong Kan, *supra* note 17.

[22] Wu Jingjing, *The Environment has been Partly Improved but Remains Uncontrolled as a Whole: Zhou Shengxian Talked About Exploring a new way for Environmental Protection*, XINHUA DAILY TELEGRAPH (China) (Nov. 27, 2010, 11:20 AM), http://news.xinhuanet.com/mrdx/2010-11/27/c_13624608.htm. *See also* WANG JIN & HOUFU YAN, BARRIERS AND SOLUTIONS TO BETTER ENVIRONMENTAL ENFORCEMENT IN CHINA 495 (Int'l Network for Envtl. Compliance and Enforcement ed., 2011), http://inece.org/conference/9/proceedings/56_WangYan.pdf (quoting Minister Zhenhua's statements).

[23] *See* Shai Oster, *China's Climate Negotiator Has Toxic History*, WALL ST. J. (Dec. 17, 2009), http://blogs.wsj.com/chinarealtime/2009/12/17/china%E2%80%99s-climate-negotiator-has-toxic-history/.

[24] Benzene is a known human carcinogen. *See* U.S. DEP'T OF HEALTH AND HUMAN SERV., NATIONAL TOXICOLOGY PROGRAM, REPORT ON CARCINOGENS, BENZENE 60 (2011).

[25] At low nitrobenzene concentrations, symptoms include fatigue, weakness, dyspnea, headache, and dizziness. At higher concentrations, depressed respiration, bluish-gray skin, disturbed vision, and coma may occur. U.S. ENVTL. PROT. AGENCY, HAZARD SUMMARY: NITROBENZENE (Jan. 2000), *available at* http://www.epa.gov/ttnatw01/hlthef/nitroben.html.

[26] *China Pledges to Minimize Impact of River Pollution on Russia*, XINHUA (China) (Nov. 24, 2005), http://news.xinhuanet.com/english/2005-11/24/content_3831641.htm.

[27] *See* Wu Jiao, *Recycling Officials, is it Right?* CHINA DAILY (Jan. 10, 2007), http://www.chinadaily.com.cn/china/2007-01/10/content_779115.htm.

[28] CHARLES R. MCELWEE, ENVIRONMENTAL LAW IN CHINA: MITIGATING RISK AND ENSURING COMPLIANCE 83 n.18 (2011).

proceedings also demonstrate its failures. Today, the soil around the chemical plant remains untreated and polluted.[29] The bamboo crops are still damaged and villagers say there is no market for their produce because people fear the food is tainted.[30] The land is still poisoned from the Rongping factory pollutants.[31]

This comment focuses on a neglected aspect of China's environmental law: soil remediation. Remediation requirements obligate entities to treat polluted soil.[32] Part II describes the effects of soil pollution and the problems it presents to China. Soil pollution threatens China's environment, economic development, and social stability. Part III argues that China's current legal framework for soil pollution is faulty. The current laws are ambiguous, poorly enforced by local officials, and often entirely unobserved. Chinese tort and criminal laws may theoretically provide an alternative solution to regulation, but they too are ineffective. Finally, Part IV proposes that in order to respond to these challenges, the central government needs to develop a remediation scheme that: 1) imposes strict liability to remediate soil pollution; 2) evaluates the degree of remediation needed for a particular site; 3) utilizes the cadre system's promotion targets to ensure enforcement; and 4) promotes more public transparency to relieve the public's anxiety.

II. CHINA'S SOIL REMEDIATION POLICY IS ESSENTIAL TO THE ENVIRONMENT, ECONOMIC DEVELOPMENT, AND SOCIAL HARMONY

Before getting into the weeds of environmental remediation law, it is important to understand why soil pollution and remediation is crucial in China. Soil pollution threatens China's public health through direct exposure and contamination of the country's food supply. Economic development has been constrained because many contaminated sites are in urban centers and the land cannot be re-developed. Soil pollution also disrupts China's social stability. As a result, marginalized groups have started to organize in protest of environmental conditions. The combination of these three problems makes soil pollution an issue the Chinese government should take seriously.

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[29] Oster, *supra* note 1.

[30] *Id.*

[31] *Id.*

[32] *See, e.g.*, U.S. ENVTL. PROT. AGENCY, DIRECTIVE NO. 9200.4-25, SOIL CLEANUP CRITERIA IN 40 CFR PART 192 (1998), http://www.epa.gov/superfund/health /conmedia/soil/cleanup.htm.

A. Soil Pollution Threatens China's Public Health Through Direct Exposure and Contamination of China's Crops

The central government has not disclosed the exact degree of pollution in China's soil,[33] but all signs indicate a critical problem. The government commissioned a six-year soil survey involving 30,000 people, but the academics leading the project were forbidden from releasing preliminary findings.[34] Meanwhile, over one million tons of untreated toxic waste has accumulated across China.[35] In 2005, government officials demanded the safe disposal of four million tons of chromium stockpiled in nineteen provinces.[36] The NDRC reported that most of the waste was not properly disposed and instead was discharged directly into the environment.[37]

Once in the soil, soil pollution can contaminate land for centuries.[38] Polluted soil can be transmitted directly into the human body through soil ingestion, contaminated water pathways, or dermal contact.[39] All individuals in contact with polluted soil ingest at least small quantities of soil because soil adheres to hands and unwashed food.[40] Small children are particularly susceptible because of their tendency to consume soil directly.[41] Soil pollutants can affect water quality from surface runoff and erosion.[42] Approximately 78% of streams that run through urban areas are unsafe for

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[33] Jonathan Watts, *The Clean-up Begins on China's Dirty Secret—Soil Pollution*, THE GUARDIAN (June 12, 2012), http://www.guardian.co.uk/environment/2012/jun/12/china-soil-pollution-bonn-challenge. When Beijing lawyer Dong Zhengwei requested data from the 2006 survey, he was informed the survey is a state secret. Christina Larson, *Soil Pollution is a State Secret in China*. BLOOMBERG BUSINESSWEEK (Feb. 25, 2013), http://www.businessweek.com/articles/2013-02-25/soil-pollution-is-a-state-secret-in-china.

[34] Watts, *supra* note 33.

[35] Zhou Wenting, *Huge Stockpiles of Toxic Waste in 12 Provinces*, CHINA DAILY (Aug. 31, 2011), http://www.chinadaily.com.cn/cndy/2011-08/31/content_13224360.htm .

[36] *Id.*

[37] *Id.*

[38] *See* Bao Xiaodong & Zhang Xinyuan, *Building on Toxic Land,* SOUTHERN WEEKEND (China), (Dec. 1, 2012), *translated in* CHINADIALOGUE.NET, http://www.chinadialogue.net/article/show/single/en/4726. Similarly, heavy metals do not decompose like organic pollutants. *See* Chen Huamian et al., *Heavy Metal Pollution in Soils in China: Status and Countermeasures*, 28 ROYAL SWEDISH ACAD. OF SCI. 130, 132 (1999).

[39] John Hawley, *Assessment of Health Risk from Exposure to Contaminated Soil*, 5 RISK ANALYSIS 4, 289 (1985).

[40] P.W. Abrahams, *Soils, Their Implications to Human Health*, 291 SCI. OF THE TOTAL ENV'T. 1, 2 (2002).

[41] *See* Sue Binder & David Sokal, *Estimating Soil Indigestion: the Use of Tracer Elements in Estimating the Amount of Soil Ingested by Young Children,* 41 ARCHIVES OF ENVTL. HEATH 341 (1986).

[42] *See* Susanna T.Y. Tong & Wenli Chen, *Modeling the Relationship Between Land Use and Surface Water Quality,* 66 J. ENVTL. MGMT. 377 (2002).

drinking[43] and over 500 million Chinese do not have access to potable water.[44] Pollutants can also be transferred directly through contact with the skin. For example, in nineteen U.S. Superfund sites, dermal pathway was considered to be the biggest carcinogenic risk associated with soil contamination.[45]

Soil pollution threatens China's food safety.[46] Zhou Jianmin, director of the China Soil Association, estimated that one-tenth of China's farmland is affected by soil pollution.[47] Heavy metals in soil adversely affect plant growth.[48] Moreover, plants may absorb contaminates and become contaminated as well. About 16% of China's 120 million hectares of farmland suffer from pollution and 10 million acres are affected by industrial pollution.[49] Studies from 2002 and 2007 indicate that 10% of rice grown in China is contaminated by cadmium, a heavy metal that affects liver function and bone health.[50] Many Chinese simply cannot afford to buy non-contaminated rice,[51] while others remain ignorant of the problem.[52]

Once soil pollutants enter the human body, either through direct exposure or food contamination, they may accumulate. Pollutants accumulate in the body because many are not biodegradable.[53] This accumulation results in severe health effects.

Chinese industry is one source of soil pollution. Smelters and battery factories in China release lead into the environment.[54] Lead is a neurotoxin

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[43] Jie Chen, *Rapid Urbanization in China: a real Challenge to Soil Protection and Food Security*, 69 CATENA 1, 9 (2007).

[44] *China to Supply Safe Drinking Water for 160 Million Rural People in Five Years,* PEOPLE'S DAILY ONLINE (Aug. 31, 2006), http://english.peopledaily.com.cn/200608/31/eng20060831_298275.html.

[45] Abrahams, *supra* note 40, at 11.

[46] For example, researchers found high levels of arsenic in the rice plants and vegetables growing near mining and smelting industries. The people in the city had elevated levels of arsenic in their hair samples. *See* Xiao-Yong Liao et al., *Soil as Contamination and its Risk Assessment in Areas near the Industrial Districts of Chenzhou City, Southern China*, 31 ENV'T INT'L 791, 791-92 (2005).

[47] Watts, *supra* note 33.

[48] HUMAN RIGHTS WATCH, MY CHILDREN HAVE BEEN POISONED: A PUBLIC HEALTH CRISIS IN FOUR CHINESE PROVINCES 14 (2011).

[49] *Pollutants, Pesticides Threaten Farmland*, CHINA DAILY (June 12, 2012), http://europe.chinadaily.com.cn/business/2012-06/12/content_15496596.htm.

[50] Gong Jing, *Heavy Metals Tainting China's Rice Bowls*, CAIXING ONLINE (Feb. 14, 2011), http://english.caixin.com/2011-02-13/100224762.html.

[51] *Id.*

[52] *Id.*

[53] Tao Chen et al., *Identification of Trace Element Sources and Associated Risk Assessment in Vegetable Soils of the Urban-Rural Transitional Area of Hangzhou, China*, 151 ENVTL. POLLUTION 67 (2008).

[54] China's battery industry, one of the main culprits of lead contamination, has grown 20% every year from 2007 to 2011. *See* Sharon LaFraniere, *Lead Poisoning in China: The Hidden Scourge*, N.Y. TIMES (June 15, 2011), http://www.nytimes.com/2011/06/15/world/asia/15lead.html?pagewanted=all. In 2009, 600 children were found to have lead poisoning in a single incident in Shaanxi Province. Two weeks

that is especially harmful to children's behavioral and cognitive development.[55] Mercury is harmful as well: Chinese workers engaged in mercury smelting demonstrate bleeding gums, shaking hands, and twitching eyes, while cattle in the same region have shorter lifespans and develop bone deformation.[56] Cheap Chinese "brick" tea contains high levels of fluoride, which contributes to dental and skeletal fluorosis.[57] Rice in southern China has been contaminated with cadmium.[58] Cadmium has polluted the soil in some Chinese villages since before the 1960s.[59]

Farmers themselves are also a source of soil pollution. A study from Renmin University found that farmers used 40% more fertilizer than crops needed, causing about 10 million tons of fertilizer to be discharged into the environment every year.[60] Excess fertilizer washes into waterways and results in eutrophication, a phenomenon that occurs when too many nutrients cause excessive plant growth and starve fish of oxygen.[61] Nitrogen from fertilizers can also cause methemoglobinemia in infants, a blood disorder that can result in brain damage or death.[62]

While China must address contamination in the soil due to past practices, environmental accidents continue to make the situation worse. In 2012, twenty tons of cadmium were discharged into the Longjiang river,

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later in an unrelated incident, 1,300 children in Hunan Province were reported to have lead poisoning. Johnathan Watts, *1,300 Children get Lead Poisoning from Year-Old Factory in China*, THE GUARDIAN (Aug. 20, 2009), http://www.guardian.co.uk/world/2009/aug/20/china-children-mass-lead-poisoning.

[55] *See* CENTERS FOR DISEASE CONTROL AND PREVENTION, PREVENTING LEAD EXPOSURE IN YOUNG CHILDREN: A HOUSING BASED APPROACH TO PRIMARY PREVENTION OF LEAD POISONING 8 (Oct. 2004), *available at* http://www.cdc.gov/nceh/lead/publications/PrimaryPreventionDocument.pdf.

[56] Chen Huamian, *supra* note 38, at 132.

[57] *See* J. Cao, et. al., *Fluorosis Induced by Drinking Brick Tea*, 29 FLUORIDE 139, 139-42 (1996).

[58] *See* Cui Yuijing, et al., *Exposures to Metal Mixtures and Human Health Impacts in a Contaminated Area in Nanjing*, *China*, 31 ENVTL. INT'L 784 (2005).

[59] Gong Jing, *supra* note 50. *See also* Liang Chen, *A Poisoned River*, GLOBAL TIMES (China) (May 24, 2011), http://www.globaltimes.cn/content/658614.shtml (describing cadmium pollution in the Xiangjiang River). Villagers often have no choice but to eat the contaminated rice they cultivate. A woman from Xinma village in Human Province described the situation: "[p]eople with money can avoid the bad rice, but the rest of us just have to live with it." Jing Gong, *China's Tainted Rice Trail (2)*, CENTURY WKLY (China) (Apr. 1, 2011), *translated in* CHINADIALOGUE.NET, https://www.chinadialogue.net/article/show/single/en/4198-China-s-tainted-rice-trail-2-.

[60] Niu Shuping, *China Needs to Cut Use of Fertilizers Says Research*, REUTERS (Jan. 14. 2010), http://www.reuters.com/article/2010/01/14/us-china-agriculture-fertiliser-idUSTRE60D20T20100114. *See also* Yuxuan Li et al., *An Analysis of China's Fertilizer Policies: Impacts on the Industry, Food Security, and the Environment*, 42 J. OF ENVTL. QUALITY 972, 972-81 (2013) (explaining the potential environmental consequences of fertilizer use in China).

[61] Yang Meng, *The Damaging Truth About Chinese Fertiliser and Pesticide Use*, BLOOMBERG BUSINESSWEEK. CHINESE EDITION (Jul. 9, 2012), *translated in* CHINADIALOGUE.NET, https://www.chinadialogue.net/article/show/single/en/5153.

[62] *See* J.R. SELF & R.M. WASKOM, NITRATES IN DRINKING WATER (Colo. St. U. Extension ed., Oct. 2008) http://www.ext.colostate.edu/pubs/crops/00517.html.

affecting the water supply of 3.7 million people.[63] A chemical spill at a fertilizer factory in Changzhi discharged thirty-nine tons of aniline, a potential carcinogen, but local officials delayed reporting the accident for five days.[64] China's soil pollution problem is endangering public health. It is a problem that must be addressed.

B. Soil Pollution is Damaging China's Economy by Slowing Urban Development and Threatening Food Security

Due to China's economic development policy of "pollute first, control later" ("*xian wuran hou zhili*"),[65] the collateral damage to the environment from development has started to adversely affect its economy.[66] The total cost of controlling air and water pollution is 5.78% of China's GDP.[67] A 2005 study estimates that pollution expenses associated with lost labor and health care cost the Chinese economy USD 112 billion annually.[68] Specifically, soil pollution is slowing urban development and threatening China's domestic food supply.

Soil pollution is particularly damaging to economic development in urban areas. Many former industrial sites in cities have been abandoned because of contamination concerns.[69] Rural Chinese are migrating to cities at unprecedented rates.[70] As migration has occurred, city centers have expanded.[71] Factories formerly on the city's edge are now in the middle of

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[63] David Eimer, *20 Tons of Cadmium Poisoning Vital Chinese River*, THE TELEGRAPH (Feb. 2, 2012), http://www.telegraph.co.uk/earth/environment/9053671/20-tons-of-cadmium-poisoning-vital-Chinese-river.html.

[64] Edward Wong, *Spill in China Underlines Environmental Concerns*, N.Y. TIMES (Mar. 2, 2013), http://www.nytimes.com/2013/03/03/world/asia/spill-in-china-lays-bare-environmental-concerns.html?pagewanted=all.

[65] Wang, *supra* note 12, at 198.

[66] The idea that China's inadequate environmental protection could impede future growth goes back to at least 1997. *See* Mark Hertsgarrd, *Our Real China Problem*, THE ATLANTIC MONTHLY (Nov. 1997), http://www.theatlantic.com/past/docs/issues/97nov/china.htm.

[67] WORLD BANK, COST OF POLLUTION IN CHINA: ECONOMIC ESTIMATES OF PHYSICAL DAMAGE (2007). Another study using different metrics found the rate to be lower, at 2.68% of GDP. *Id.*

[68] MIT JOINT PROGRAM ON THE SCIENCE AND POLICY OF GLOBAL CHANGE, HEALTH DAMAGES FROM AIR POLLUTION IN CHINA (2011).

[69] Zhang Xiang, *Clean up Toxic Brownfields Before China can go Green*, SHANGHAI DAILY (Jan. 22, 2011), http://news.xinhuanet.com/english2010/indepth/2011-01/22/c_13702537.htm.

[70] In 1949 and 1978, only 7.3% and 17.9% of the total Chinese population lived in urban areas. By 2008, China's urbanization rate had reached 45.7%. Xiao-san Luo et al., *Trace Metal Contamination in Urban Soils of China*, 421 SCI. OF THE TOTAL ENV'T 17, 18 (2011). Additionally, a draft of the country's twelfth Five Year Plan aimed to raise the urbanization rate from 47.5 % in 2010 to 51.5% by the end of 2015, with an average annual increase of 4%. Li Jing, *Soil Pollution Poisons More than Farmland*, CHINA DAILY (March 10, 2011), http://www.chinadaily.com.cn/2011-03/10/content_12146168.htm.

[71] WORLD BANK, OVERVIEW OF THE CURRENT SITUATION ON BROWNFIELD REMEDIATION AND REDEVELOPMENT IN CHINA (Sept. 2010).

urban environments while other factories are pushed out of the city entirely.[72] Out of necessity, former industrial zones are re-classified for residential use.[73] Between 2001 and 2009, at least 98,000 industrial plants were closed and relocated across the country.[74] Many of the industrial plants were state-owned factories with high pollution output were built during the Great Leap Forward.[75] In normal circumstances, real estate developers would covet these centrally located pieces of property.[76] Yet, the sites have become empty brownfields.[77] They have become a roadblock to development, both because of pollution problems and because property owners and developers are concerned they may be held liable for the health effects of that pollution if they develop the land.[78]

Although Chinese law requires that soil be analyzed for contaminates before large construction projects commence,[79] this requirement is generally ignored. For example, in 2006, a housing developer in the city of Wuhan was awarded the contract to build near the city.[80] A year into construction, the site was determined to be the former location of a fertilizer factory and the soil to have been heavily contaminated.[81] The developer demanded his money back and the city of Wuhan paid RMB 120 million in compensation. Remediation, costing RMB 232 million, started in 2011.[82]

Soil pollution does not merely slow the economic development in China's urban environments—it also slows rural Chinese economies by contaminating the food supply. Due to topsoil pollution, China is suffering from economic losses in the form of reduced farmland production.[83] It is

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[72] *Id.*

[73] Yin Pumin, *Healing the Land*, BEIJING REVIEW (May 7, 2012), http://www.bjreview.com.cn/Energy/txt/2012-05/07/content_453010.htm.

[74] *Id.* In Beijing, more than 200 polluting enterprises inside the Fourth Ring Road have been relocated, leaving nearly eight million square miles of industrial land to be redeveloped. *See* WORLD BANK, *supra* note 71, at 4.

[75] *See* WORLD BANK, *supra* note 71, at 4.

[76] *See generally* Kenneth Rapoza, *China's Housing Market Continues to Soar*, FORBES (Sept. 18, 2013), http://www.forbes.com/sites/kenrapoza/2013/09/18/chinas-housing-market-continues-to-soar/.

[77] A brownfield is "any land or premise which has been previously developed and is not currently fully in use, although it may be partially occupied or utilized. It may also be vacant, derelict, or contaminated." Sandra Alker et al., *The Definition of Brownfield,* J. OF ENVTL. PLAN MGM'T, 64, 64-69 (2000).

[78] *See generally* WORLD BANK, *supra* note 71, at 4-6.

[79] Wang Canfa, *Chinese Environmental Law Enforcement: Current Deficiencies and Suggested Reforms*, 8 VT. J. ENVTL. L. 161, 166 (2007).

[80] Bao Xiaodong & Zhang Xinyuan, *supra* note 38.

[81] *Id.*

[82] *Id.*

[83] Li Jing, *supra* note 70.

estimated that in China twelve million tons of grain are contaminated by heavy metals each year, causing a loss of RMB 20 billion.[84]

China is particularly vulnerable to food shortages. China must feed 22% of the world's population on less than 9% of the world's cultivated land, and that area of land is shrinking.[85] Poorer counties in China are particularly vulnerable, as food availability is largely determined by local food supply.[86] Food prices are extremely volatile. For example, prices rose 18% between 2008 and 2009.[87] Rising food prices have the attention of the central government. In 2011, Chinese Premier Wen Jiabao pledged to boost food supplies to hold down costs.[88] China cannot afford to lose significant portions of its domestic crops. A strong policy that ensures polluted soil is properly remediated will make more land available for development in urban areas and help stabilize China's food security.

C. Mass Protests Against Soil Pollution Threaten China's Social Stability

In addition to causing environmental and economic problems, soil pollution is also a source of civil unrest. Less than 1% of environmental disputes are resolved through legal channels.[89] Chinese affected by severe environmental pollution have increasingly taken to protesting, which poses a threat to social stability.[90] While environmental protests are a relatively

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[84] Xu Qi, *Facing up to "Invisible Pollution,"* CHINA ENVTL. TIMES (Dec. 28, 2006), http://www.chinadialogue.net/article/show/single/en/724-Facing-up-to-invisible-pollution-.

[85] Jie Chen, *supra* note 43, at 2. For example, China faces tightening grain supplies. *See Grain Supply Concern Amid Fast Urbanization*, CHINA DAILY (Jan. 15, 2013), http://www.chinadaily.com.cn/china/2013-01/15/content_16121993.htm.

[86] XIAO YUNLAI & NIE FENGYING, WORLD FOOD PROGRAMME, A REPORT ON THE STATUS OF CHINA'S FOOD SECURITY 36, (2009) http://www.wfp.org/content/china-report-status-food-security-2009.

[87] *Experts Warn Inflation Could Lead to Unrest*, VOICE OF AMERICA (Oct. 27, 2009), http://www.voanews.com/content/a-13-2008-02-22-voa13-66807847/255756.html. Inflation was the top social concern among Chinese citizens in 2010. Tom Orlick, *Unrest Grows as Economy Booms*, WALL ST. J. (Sept. 26, 2011), http://online.wsj.com/article/SB10001424053111903703604576587070600504108.html.

[88] Bruce Grant, *Wen Vows to Control Chinese Food, Home Prices as Police Head Off Protests,* BLOOMBERG NEWS (Feb. 27, 2011), http://www.bloomberg.com/news/2011-02-27/wen-vows-to-control-chinese-food-home-prices-as-police-head-off-protests.html. For an example of rising food prices leading to protests, see Pinghui Zhuang, *Pupils Protest Over Food Price Rises*, SOUTH CHINA MORNING POST (Jul. 19, 2012), http://www.scmp.com/article/731650/pupils-protest-over-food-price-rises.

[89] Feng Jie & Wang Tao, *Officials Struggling to Respond to the Year of Environmental Protests*, SOUTHERN WEEKEND (China) (June 12, 2012), https://www.chinadialogue.net/article/show/single/en/5438-Officials-struggling-to-respond-to-China-s-year-of-environment-protests-.

[90] *See* Elaine Kurtenbach, *Jinko Solar Holding Company Pledges Toxic Waste Cleanup In China*, HUFFINGTON POST (Sept. 20, 2011), http://www.huffingtonpost.com/2011/09/20/jinko-solar-holding-company-toxic-waste-cleanup_n_971419.html; Tania Branigan, *Anti-Pollution Protesters Halt Construction of Copper Plant in China*, THE GUARDIAN (July 3, 2012), http://www.guardian.co.uk/world/2012/jul/03/china-anti-pollution-protest-copper.

recent phenomenon,[91] the number of incidents is rising quickly. In 2005, over 50,000 protests occurred due to pollution.[92] Since 1996, the number of environmental protests in China has grown 29% per year.[93]

The environmental protests in China are largely grass-roots responses to specific environmental threats.[94] Generally, national environmental non-governmental organizations ("NGOs") are not involved in these localized protests.[95] Chinese protest both in response to environmental incidents that have already occurred, as when villagers in Shaanxi Province tore down a fence and smashed trucks upon learning that lead pollution from a local plant had poisoned more than 600 children.[96] They also protest in anticipation of future environmental degradation, as when thousands of Chinese in Sichuan Province protested the construction of a molybdenum copper plant.[97] Because the protests are always in response to specific local issues, they generally end once the specific problem has been addressed.[98] For example, an environmental protest ended once the polluting facility in Shaanxi was closed,[99] and the government promised to pay for victims' treatment.[100] In Sichuan, protests caused plans to build the copper plant to be abandoned.[101] In general, once the government takes action, protests stop and do not grow into larger movements.[102]

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[91] *See* Feng Jie & Wang Tao, *supra* note 89.

[92] Li Fangchao, *Environment Issus Addressed More Urgently*, CHINA DAILY (May 4, 2006), http://www.chinadaily.com.cn/bizchina/2006-05/04/content_582631.htm (quoting Pan Yue, deputy director of the State Environmental Protection Administration) ; Oster, *supra* note 1.

[93] Feng Jie & Wang Tao, *supra* note 89. This figure came from Yang Zhaofei, vice-chair of the Chinese Society for Environmental Sciences, at a speech to a recent special meeting of the Standing Committee of the eleventhNational People's Congress.

[94] Tong Yanqi distinguishes the grass roots protests of a pollution driven model of environmental social movements from the world view model. The world view model is largely found in countries that have reached a level of affluence in which people have post-material values such as a quality of life, which includes a clean environment in general. *See* Tong Yanqi, *Environment Movements in Transitional Societies,* 37 COMP. POL. 167, 168-69 (2005).

[95] An anonymous environmental NGO leader complained, "we already had too much trouble with the government. If we get involved with these local protests, it will be difficult for us to define ourselves. If we are perceived by the government as the black hand behind these protests, we won't be able to survive." *Id.* at 181.

[96] Jonathan Watts & Zhang Cui, *Chinese Villagers Storm Factory Blamed for Lead Poisoning of 600 Children*, THE GUARDIAN (Aug. 17, 2009), http://www.guardian.co.uk/environment/2009/aug/17/china-lead-factory-protest.

[97] Branigan, *supra* note 90.

[98] Tong Yanqi, *supra* note 94, at 183.

[99] *Smelter to Close Fully After Poisoning 851 Children With Lead*, XINHUA (Aug. 19, 2009), http://news.xinhuanet.com/english/2009-08/19/content_11911834.htm.

[100] Watts & Zhang Cui, *supra* note 96.

[101] Branigan, *supra* note 90.

[102] Phillip Stalley & Donging Yang, *An Emerging Environmental Movement in China?*, 186 THE CHINA Q. 333, 335-36 (2006).

The Chinese government is very concerned about any form of social unrest. The Chinese Communist Party has endorsed the doctrine of the "harmonious society" in response to growing inequalities in Chinese society.[103] The policy aims for a well-off, middle class society with minimal social tensions.[104] Feasibility reports for large construction projects now include "stability assessments" to assess the project's risk to social stability.[105] However, the government's response to social unrest is often heavy handed. In the environmental protests in Zhejiang Province, protestors were beaten[106] and imprisoned.[107] Local authorities used intimidation and close surveillance to control the area.[108] These practices are typical of the government's *wei wen* strategy of stopping large-scale demonstrations by any means necessary, including force.[109] If force fails, the government will quickly make concessions to keep the movement from escalating.[110]

Given the severity of China's pollution problems, the local-level environmental protests will not abate anytime soon. Moreover, Chinese attitudes towards pollution are changing. A recent survey shows that 57% of Chinese prioritize protecting the environment, even at the risk of curbing economic growth.[111] Without reform, environment pollution will continue to threaten the government's goal of social stability.

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[103] Joseph Kahn, *China Makes Commitment to Social Harmony*, N.Y. TIMES (Oct. 12, 2006), http://www.nytimes.com/2006/10/12/world/asia/12china.html?_r=0.

[104] See the *People's Daily* definition of "harmonious society," at: http://english.peopledaily.com.cn/90002/92169/92211/6274603.html. The *People's Daily* is an organ of the Central Committee of the Communist Party. *See China Defies Media Cuts and Closures with New Newspaper Launch,* THE GUARDIAN (Apr. 20, 2009), http://www.theguardian.com/world/2009/apr/20/china-newspaper-launch.

[105] Feng Jie & Wang Tao, *supra* note 89.

[106] *Large Scale Riot Erupts in Huashui Town of Zhejiang Province*, THE EPOCH TIMES (Apr. 15, 2005), http://www.theepochtimes.com/news/5-4-15/27880.html (last visited Oct. 30, 2013).

[107] Mark Magnier, *As China Spews Pollution, Villagers Rise Up*, LA TIMES (Sept. 3, 2006), http://articles.latimes.com/2006/sep/03/world/fg-enviro3.

[108] *Id.*

[109] *See* Harold Thibault, *Environmental Activism Gains Foothold in China,* THE GUARDIAN (Aug. 21, 2012), http://www.guardian.co.uk/environment/2012/aug/21/environment-activists-china-pollution-protest (commentary of sociologist Yang Guobin).

[110] *Id.*

[111] Daniella Yu & Anita Pugliese, *Majority of Chinese Prioritize Environment Over Economy*, GALLUP (June 8, 2012), http://www.gallup.com/poll/155102/majority-chinese-prioritize-environment-economy.aspx. *Compare with* Stalley & Donging Yang, *supra* note 102 (explaining that protests in China usually stop once the government intervenes).

III. CHINA'S SOIL POLLUTION LAWS ARE VAGUE AND INEFFECTIVE; OTHER SOURCES OF LAW FAIL TO ADDRESS THE PROBLEMS OF SOIL POLLUTION

Despite the soil pollution problems outlined above and constitutional commitments to environmental protection,[112] China lacks effective laws on comprehensive soil remediation.[113] In lieu of a law that directly addresses soil pollution, existing soil pollution may trigger several discrete, national tort and criminal laws, none of which ensure soil pollution is properly remediated. China's environmental laws fail to prevent soil contamination and, when contamination occurs, fail to require remediation because the laws are ambiguous, fines are ineffective, and local governments have no incentive to enforce the laws. Other areas of the law that may be used to address soil pollution, such as tort and criminal law, are also ineffective. Tort law fails because it is extremely difficult for a private citizen to bring suit; criminal laws addressing soil pollution are rarely invoked.

A. National Environmental Law Principles Have Not Been Transformed Into Regulations

China lacks a national law making soil pollution remediation compulsory and lacks national standards for surveying and assessing risk of polluted sites.[114] However, two national laws do make reference to contaminated sites and put forth guiding principles of regulation: The Law of the People's Republic of China on Prevention and Control of Environmental Pollution by Solid Waste ("Solid Waste Law") and the Environmental Protection Law of People's Republic of China ("Environmental Protection Law").[115] While these two laws provide guiding principles for soil remediation, the laws are ineffective because the principles have not been made into substantive regulations.

The Solid Waste Law and the Environmental Protection Law contain provisions for the treatment of contaminants. Under the law, the

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[112] In broad terms, the Constitution of the People's Republic of China provides that the state is responsible for protecting the environment and preventing the spread of pollution. *See* XIANFA art. 26 (1982) ("The state protects and improves the living environment and the ecological environment, and prevents and controls pollution and other public hazards.").

[113] Wang Jin & Yan Houfu, *supra* note 22, at 496.

[114] Bao Xiaodong & Zhang Xinyuan, *supra* note 38.

[115] *See* MCELWEE, *supra* note 28. In China's hierarchy of laws, "basic law" enacted by the National People's Congress is at the top. Both of these laws were enacted by the Standing Committee of the National People's Congress and are thus not basic laws. No environmental law has been enacted by the full National People's Congress.

environmental protection departments may order facilities that have failed to treat hazardous waste to begin treating waste in accordance with relevant provisions within a specified period of time.[116] If an entity fails to do so, it may be required to have a third party treat the hazardous waste at the entity's expense.[117] Moreover, entities that cause severe environmental pollution are required to take measures to eliminate or reduce the danger of the pollution, promptly inform anyone that may be harmed, and report the pollution to the environmental protection department of the local people's government at or above the county level and other relevant departments.[118] A polluting enterprise is obligated to eliminate the hazard and compensate victims for direct losses.[119]

Both laws obligate the government to remedy soil pollution. Under the Solid Waste Law, the government must take measures to eliminate or reduce the danger when severe environmental pollution threatens the lives and property of people. If necessary, the government may stop operations that have caused or may cause pollution accidents.[120] Under the Environmental Protection Law, if life or property is endangered by severe environmental pollution, the department of environmental protection must report to the local people's government, and the government remove or alleviate the hazard.[121]

While seemingly well-intentioned, the laws are more akin to policy statements than substantive legal requirements.[122] For example, for the

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[116] Yufang He Kongzhi Guti Feiwu Wuran Huanjin (固体废物污染环境防治法) [The Prevention and Control of Environmental Pollution by Solid Waste Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Congress, Oct. 30, 1995, effective Apr. 1, 2005), art. 55 (China).

[117] *Id.*

[118] *Id.* at art. 63. The Environmental Protection Law contains a similar provision, but appears to have a lower threshold, applying to mere accidents of pollution, stating: "[a]ny unit that, as a result of an accident or any other exigency, has caused or threatens to cause an accident of pollution, must promptly take measures to prevent and control the pollution hazards, make the situation known to such units and inhabitants as are likely to be endangered by such hazards." *Id.* at art. 31.

[119] Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong, Dec. 26, 1989, effective Dec. 26, 1989), art. 41 (China).

[120] Yufang He Kongzhi Guti Feiwu Wuran Huanjin (固体废物污染环境防治法) [The Prevention and Control of Environmental Pollution by Solid Waste Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Congress, Oct. 30, 1995, effective Apr. 1, 2005), art. 64 (China).

[121] Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong, Dec. 26, 1989, effective Dec. 26, 1989), art. 32 (China).

[122] Wang, *supra* note 12, at 203. For example, the Solid Waste Law provides that the State shall: encourage and support the adoption of beneficial measures of centralized treatment of solid wastes, encourage and support scientific research, encourage the entities and individuals to purchase and use

treatment of hazardous waste, the "relevant provisions" and "specified periods of time" of Article 55 of the Solid Waste Law are never defined.[123] Similarly, the measures the government is required to take to remove or alleviate hazards under Article 32 of the Environmental Protection Law are never specified.

Normally, the State Council and the MEP would implement regulations to enforce these principles,[124] but no regulations have been implemented.[125] When legislation requires, as it does here, the State Council is authorized to promulgate administrative regulations.[126] Relevant State Council agencies create regulations pursuant to the national law.[127] These regulations have the force of law.[128] The MEP has adopted a single "directive" specifically for soil remediation.[129] The Directive on Completing Environmental Pollution Prevention and Control When Enterprises Move, states that "the company which inherits the debts and rights (of the polluter) should shoulder the responsibility for providing financial assistance to restore the productivity of polluted land."[130] However, the directive fails to clarify the punishment for violators [131] and has remained largely ineffective.[132] The ambiguities are the result of compromises made in

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renewable products and reusable products, encourage scientific research and production institutions to do research on and manufacture plastic-sheet covering and packages of commodities, and encourage a legal service agency to offer legal aids to the victims of suits of environmental pollution by solid wastes. Yufang He Kongzhi Guti Feiwu Wuran Huanjin (固体废物污染环境防治法) [The Prevention and Control of Environmental Pollution by Solid Waste Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Congress, Oct. 30, 1995, effective Apr. 1, 2005), art. 3, 6, 7, 17, and 84 (China).

[123] *See* Yufang He Kongzhi Guti Feiwu Wuran Huanjin (固体废物污染环境防治法) [The Prevention and Control of Environmental Pollution by Solid Waste Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Congress, Oct. 30, 1995, effective Apr. 1, 2005), art. 55 (China).

[124] MCELWEE, *supra* note 28, at 83.

[125] INGA CALDWELL & XINYU WANG, VERMONT LAW SCHOOL, A HIDDEN PROBLEM: CHINA'S CONTAMINATED SITE SOIL POLLUTION CRISIS 4 (2011), http://www.vermontlaw.edu/Documents/China%20Program/CaldwellWangPaper3.pdf.

[126] Per XIANFA art. 89(1), the State Council has the power to "adopt administrative measures, enact administrative rules and regulations, and issue decisions and orders in accordance with the Constitution and statutes." Some scholars posit that this power makes the State Council the most important organ of state power. As most national legislation is extremely general, the State Council has the ability to essentially re-write the laws. MCELWEE, *supra* note 28.

[127] MCELWEE, *supra* note 28, at 78.

[128] MA XIAOYANG & LEONARDO ORTOLANO, ENVIRONMENTAL REGULATION IN CHINA: INSTITUTIONS, ENFORCEMENT, AND COMPLIANCE 15 (2000).

[129] Caldwell & Xinyu Wang, *supra* note 125, at 14.

[130] Wu Jiao, *Govt Targets Land Pollution to Ensure Food Security*, CHINA DAILY (June 20, 2008), http://www.chinadaily.com.cn/china/2008-06/20/content_6779537.htm.

[131] *See id.*

[132] It is not uncommon for agencies responsible for drafting environmental assessments of construction projects to falsify their reports in order to benefit the future polluter. Wang Canfa, *supra* note

drafting and concerns over economic growth.[133] Many counties and towns continue to dispose of waste without any treatment.[134]

B. China's Environmental Laws are Largely Enforced by Local Agencies, Which are Controlled by Local Governments and Prevented from Effectively Enforcing Environmental Regulations

Ambiguities in the national law contribute to the failure of the law in a formalistic sense, but enforcement of the law brings an additional set of problems. The MEP is part of the central government's State Council and is replicated as Environmental Protection Bureaus ("EPBs") at each subsequent lower level of local government—provincial, city, district, county, and town.[135] Local EPBs are agencies in the local government; EPBs are not part of the central government. Local EPBs are charged with actually implementing the MEP's regulations,[136] but they serve competing masters. The MEP and provincial level EPBs promulgate regulations and policies for local EPBs.[137] However, in all cases, the local government appoints the local EPB's director[138] and provides their annual budget.[139] Because local governments control each local EPB's budgets, local governments are the more powerful interest.[140]

Many officials in local governments are more concerned with GDP than the environment, both in order to raise sufficient revenue for their government and out of self-interest. China divides revenue and expenditures among central and local governments.[141] The central government collects a

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79, at 166-67. Professor Wang cites one example in which the EIA report stated the distance between the proposed plant and a residential district was 400 meters, when it was actually 20 meters.

[133] Wang, *supra* note 12, at 204 (reporting that Zou Shengxian, director of the State Environmental Protection Administration, said "[l]ocal protectionism has resulted in rampant violation of the environment.").

[134] Wang Canfa, *supra* note 79, at 170.

[135] *See* Abigail Jahiel, *The Organization of Environmental Protection in China,* 156 THE CHINA Q. 757, 758-59 (Dec. 1998).

[136] The MEP only exercises direct oversight in rare instances, such as large construction projects and cross-provincial pollution prevention. *See* MCELWEE, *supra* note 28, at 113-18.

[137] The hierarchy of political power is generally straightforward: a government office of lesser rank has no authority to compel compliance from offices of higher rank. Thus, a provincial level EPB can make demands on the city or county EPBs, but not vice versa. But sometimes, the hierarchy is unclear. Provinces have the same rank as ministries. As such, the MEP, a ministry, cannot command a province to comply with one of its regulations, it can only recommend that it comply. *See* Jahiel, *supra* note 135, at 765 n.18.

[138] MCELWEE, *supra* note 28, at 115.

[139] The local government also determines increases in personnel and even allocation of such resources as cars, office buildings and employee housing. Jahiel, *supra* note 135, at 759.

[140] *Id.*

[141] Wang Jin & Yan Houfu, *supra* note 22, at 496.

larger portion of the taxes, but local governments are primarily responsible for public services.[142] To improve public services under this scheme, local officials must pursue policies that promote rapid economic growth.[143] Many environmental violators are major taxpayers supporting the local government.[144] Large fines may also divert money from the local community.[145] Reliant on the polluters' contributions, local governments instruct courts not to implement environmental penalties.[146] In the Rongping Factory case described in the introduction,[147] the polluting chemical factory accounted for 25% of the county's income.[148] The factory's arrival also doubled the town's population.[149]

Local officials also pursue economic development at the expense of environmental considerations out of self-interest. Their job performance is primarily evaluated on the growth of the local economy's GDP.[150] Conversely, environmental performance constitutes only a small part of the evaluation.[151] Party members are evaluated every five years, which contributes to an emphasis on quick, short-term performance.[152] At best, environmental performance does not affect the local economy. At worst, it slows economic growth. Because of the importance of the GDP, local governments tend to take short-term actions to quickly develop the economy.[153]

C. Fines Levied by Local Environmental Departments are Ineffective Because Fines are Rarely Awarded and Often the Cost of the Fine is Lower than the Cost of Compliance

The environmental protection department of local governments may levy fines against polluting entities. Fines can result from a number of acts and omissions. Entities can be fined for failing to declare solid wastes or engaging in deception when declaring solid or hazardous waste.[154] They can

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[142] *Id.*
[143] *Id.*
[144] *Id.* at 502 n.6.
[145] Wang Canfa, *supra* note 79, at 169.
[146] Wang Jin & Yan Houfu, *supra* note 22, at 499 n.6.
[147] *See supra* Part I.
[148] Wang Canfa, *supra* note 79, at 169.
[149] Oster, *supra* note 1.
[150] Wang Canfa, *supra* note 79, at 171.
[151] Wang Jin & Yan Houfu, *supra* note 22, at 495-96.
[152] *See* Gang Guo, *China's Local Political Budget Cycles*, 53 AM. J. OF POL. SCI. 621, 624 (2009).
[153] Wang Canfa, *supra* note 79, at 171.
[154] *See* Yufang He Kongzhi Guti Feiwu Wuran Huanjin (预防和控制固体废物污染环境) [The Prevention and Control of Environmental Pollution by Solid Wastes Law of the People's Republic of

be fined for failing to adopt precautionary measures to prevent pollution by hazardous waste.[155] Entities can be fined for closing, leaving idle, or dismantling without permission equipment intended to prevent and control solid or hazardous waste,[156] and for using sites or equipment previously contaminated with hazardous waste without treatment.[157]

While the outward objective of fines is to discourage pollution,[158] fines are simply too low at present to deter environmental violations. Guilty parties find it more cost-effective to pay the fine than correct violations.[159] In theory, polluting facilities may be fined RMB 1,000,000 for dumping imported waste from abroad[160] and for severe environmental accidents.[161] In practice, fines do not exceed RMB 200,000.[162] The cost of breaking the law can be just 10% of the cost of compliance.[163] While facilities that discharge pollutants above proscribed standards should face administrative sanctions, when the standards are enforced, the polluting facility is typically ordered to reduce their discharge flow by a specified time rather than pay a fine.[164] Instead of unilaterally levying fines against polluting facilities, local environmental bureaus often negotiate with the polluting facility,[165] settling on a fine that is far below both the damages caused by the pollution and the

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China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 29, 2004, effective Apr. 1, 2005), art. 68(1) & 75(1) (China); *see also* Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong, Dec. 26, 1989, effective Dec. 26, 1989), art. 35(2)-(3) (China).

[155] Yufang He Kongzhi Guti Feiwu Wuran Huanjin (预防和控制固体废物污染环境) [The Prevention and Control of Environmental Pollution by Solid Wastes Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 29, 2004, effective Apr. 1, 2005), art. 75(11) (China).

[156] *Id.* at art. 68(4), 75(3).

[157] *Id.* at art. 75(10).

[158] *See generally,* Clifford Rechtschaffen, *Deterrence vs. Cooperation and the Evolving Theory of Environmental Enforcement*, 71 S. CAL. L. REV. 1181 (1998).

[159] Wang Jin & Yan Houfu, *supra* note 22, at 497.

[160] Yufang He Kongzhi Guti Feiwu Wuran Huanjin (预防和控制固体废物污染环境) [The Prevention and Control of Environmental Pollution by Solid Wastes Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 29, 2004, effective Apr. 1, 2005), art. 78 (China).

[161] *Id.* at art. 82.

[162] Michael Faure & Hao Zhang, *Environmental Criminal law in China: A Critical Analysis,* 41 ENVTL. LAW REP. 10,024, 10,037 (2011).

[163] Dong Hongwei, *Why Does Environmental Compliance Cost More than Penalty?—A legal Analysis on Environmental Acts of Enterprises in China,* 1 FRONTIER ENVTL. SCI. OF ENGINEERING 434, 435 (2007).

[164] MCELWEE, *supra* note 28, at 54.

[165] The local EPB has this power pursuant to the Environmental Protection Law. *See* Yufang He Kongzhi Guti Feiwu Wuran Huanjin (固体废物污染环境防治法) [The Prevention and Control of Environmental Pollution by Solid Waste Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Congress, Oct. 30, 1995, effective Apr. 1, 2005), art. 55 (China).

expense of pollution control.[166] Not only is polluting often cheaper than compliance, but polluting enterprises often view these fines as entitling them to take unlawful action.[167]

Moreover, if the polluting entity refuses to pay a fine, environmental departments are unable to take direct measures to compel payment and instead must appeal to the courts for enforcement.[168] Unfortunately, the courts do not cooperate with the enforcement of fines.[169] In addition, the environmental department is required to pay an initial "implementation fee" to the courts.[170] This fee is calculated by the amount of the penalty.[171] Most fees are very low, around RMB 50, and are not of interest to the courts.[172]

Administrative fines are the prevailing mechanism China uses to punish those who violate environmental laws.[173] These fines are rarely enforced and ineffective when enforced. Unfortunately, there is little government initiative to change this faulty scheme.[174]

D. Polluters May be Civilly Liable but it is Extremely Difficult for Citizens to Bring Cases

Civil suits, in which private citizens attempt to enforce environmental laws through litigation, are another means of forcing polluting entities to remediate polluted soil and prevent soil pollution in general. Two national laws provide a cause of action for environmental tort litigation. The

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[166] Stefanie Beyer, *Environmental Law and Policy in the People's Republic of China*, 5(1) CHINESE J. OF INT'L L., 185, 207 (2006).

[167] *Id.* at 207-08. For a striking account of a polluting enterprise paying compensation to a village to continue to pollute, with no intent of remediation, see Anna Lora-Wainwright, et. al., *Learning to Live with Pollution: The Making of Environmental Subjects in a Chinese Industrialized Village*, 68 THE CHINA J. 106, 106-24 (2012).

[168] Zhōnghuá rénmín gònghéguó xíngzhèng sùsòng fǎ (中华人民共和国行政诉讼法) [Administrative Procedure Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Congress, April 4, 1989, effective Oct. 1, 1990), art. 66 (China). *See also* Alex Wang, *Environmental Courts and Public Interest Litigation in China*, 43 CHINESE LAW AND GOV'T 4, 6 (2010); Wang Jin & Yan Houfu, *supra* note 22, at 499.

[169] Wang Jin & Yan Houfu, *supra* note 22, at 499.

[170] *Id.* at 499, n.5.

[171] The "implementation fee" is RMB 50 if the penalty is below RMB 10,000. If the penalty is more than RMB 10,000 but less than RMB 500,000, the "implementation fee" will be 0.5% of that amount. If the penalty is more than RMB 500,000, the "implementation fee" will be 0.1% of that amount. About 90% of the environmental penalties in China are less than RMB 20,000. *Id.* at 500-01.

[172] *Id.* at 499.

[173] Administrative fines are more common than other civil or criminal penalties. Dong Hongwei, *supra* note 163.

[174] Wang Jin & Yan Houfu, *supra* note 22, at 497-98 (noting that while amending the Law on the Prevention and Control of Water Pollution in 2007, many scholars supported the proposition to establish a "daily penalty" in the law that would raise the cost of violations. However, the Legislature did not adopt the penalty because doing so would increase the burden on enterprises and harm economic development.)

Environmental Protection Law holds that "a unit that has caused an environmental pollution hazard shall . . . make compensation to the unit or individual that suffered direct losses."[175] The Tort Law of the People's Republic of China ("Tort Law of China") requires "where any harm is caused by environmental pollution, the polluter shall assume the tort liability."[176] On its face, the tort law appears favorable to pollution victims because of the generous liability provisions and because the defendant carries the burden of proof. In practice, courts frequently mis-apply the law, victims are unaware of statute of limitations, local interests protect polluters, and victims have difficulty enforcing judgments.

The tort law seems favorable to pollution victims because suspected tort offenders in China are liable jointly and severally[177] and China has "no fault" liability for pollution violations.[178] Under joint and several liability in China, if two or more parties engage in conduct that hurts a third party, but the third party is unable to establish which party is responsible for all the specific damage, the victim can hold all the parties liable or instead choose to hold only one party liable.[179] This is important in scenarios where a new enterprise has replaced an old enterprise, and it cannot be determined which enterprise is primarily responsible for the soil pollution.[180] Moreover, China has "no fault" liability, meaning that pollution victims do not need to show that the polluter violated a law or emission standards.[181] Simply being in

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[175] Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong, Dec. 26, 1989, effective Dec. 26, 1989), art. 41 (China).

[176] Zhonghua Renmin Gongheguo Qinquan Zeren Fa (**中**华人民共和国侵权责任**法)** [Tort Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 26, 2009, effective July 1, 2010), art. 65 (China), *available at* http://www.gov.cn/jrzg/2009-12/26/content_1497435.htm. *English translation available at* http://www.procedurallaw.cn/english/law/201001/t20100110_300173.html.

[177] *Id.* at art. 8.

[178] Wang, *supra* note 12, at 208.

[179] Zhonghua Renmin Gongheguo Qinquan Zeren Fa (**中**华人民共和国侵权责任**法**) [Tort Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 26, 2009, effective July 1, 2010), art. 8, 10, 68 (China), *available at* http://www.gov.cn/jrzg/2009-12/26/content_1497435.htm. *English translation available at* http://www.procedurallaw.cn/english/law/201001/t20100110_300173.html.

[180] *See* YUYONG GONG, THE WORLD BANK, INTERNATIONAL EXPERIENCE IN POLICY AND REGULATORY FRAMEWORKS FOR BROWNFIELD SITE MANAGEMENT 3-4 (2010).

[181] Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong, Dec. 26, 1989, effective Dec. 26, 1989), art. 41 (China). Wang notes that the language "in violation of state principles" under General Principles, art. 124, seems to indicate a requirement for showing some violation of the law, but that scholars agree Environmental Protection Law Article 41 controls because the specific supersedes the general, and the newer statute supersedes the older. *See* Wang, *supra* note 12, at 208.

compliance with the law is not enough to shield pollution producing enterprises from civil liability.

Pollution victims also have an advantage because the burden of proof lies with the polluting defendant.[182] The polluting entity assumes the burden to prove that it is not liable, its liability could be mitigated, or that there is no causation between its conduct and the harm.[183] The Supreme People's Court has confirmed that the burden of proof lies with the defendant.[184] Despite the Supreme People's Court's position, many courts still require the pollution victims to show causation,[185] or require the victims to show causation before shifting the burden to the defendant.[186]

While the liability and burden of proof provisions favor pollution victims, it is nevertheless extremely difficult for pollution victims to win in tort litigation. Petitioners must file their claim within three years of becoming aware of pollution related loses.[187] Yet in many cases, pollution victims' first instinct is not to file a suit but to bring the problem to the attention of local government authorities.[188] Polluting enterprises engage in stalling tactics, by which the enterprise enters into negotiations with the

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[182] Yufang He Kongzhi Guti Feiwu Wuran Huanjin (预防和控制固体废物污染环境) [The Prevention and Control of Environmental Pollution by Solid Wastes Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 29, 2004, effective Apr. 1, 2005), art. 86 (China); Zhonghua Renmin Gongheguo Qinquan Zeren Fa (中华人民共和国侵权责任法) [Tort Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 26, 2009, effective July 1, 2010), art. 66 (China), *available at* http://www.gov.cn/jrzg/2009-12/26/content_1497435.htm. *English translation available at* http://www.procedurallaw.cn/english/law/201001/t20100110_300173.html.

[183] Zhonghua Renmin Gongheguo Qinquan Zeren Fa (中华人民共和国侵权责任法) [Tort Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 26, 2009, effective July 1, 2010), art. 66 (China), *available at* http://www.gov.cn/jrzg/2009-12/26/content_1497435.htm. *English translation available at* http://www.procedurallaw.cn/english/law/201001/t20100110_300173.html.

[184] *See* MCELWEE, *supra* note 28, at 256. In Hebei, a Korean manufacturer was held liable for the death of a neighbor because the manufacturer could not prove it was not the cause of the fatal cancer. Though the court appeared to award reduced damages because no causal connection between the pollution and the cancer was shown, this remains an area of potential concern for companies operating in China. *See id*. at 255-56 (citing Qie Jianrong, *Pollution Victim Li Yujun Prevails in Claim for Cancer Death*, LEGAL DAILY, (July 7, 2009), http://www.legaldaily.com.cn/bm/2009-07/08/content_1119585.htm).

[185] Wang, *supra* note 12, at 209.

[186] Adam Moser & Tseming Yang, *Environmental Tort Litigation in China*, 41 ENVTL. LAW REP. 10895, 10897 (2011).

[187] Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong, Dec. 26, 1989), art. 42 (China).

[188] Benjamin van Rooij, *People vs. Pollution: Understanding Citizen Action Against Pollution in China*, 19 J. OF CONTEMP. CHINA 55, 63 (2010).

citizens[189] with no intent of executing the agreement and subsequently forcing the citizens to pursue an alternative course of action.[190]

To bring suit, plaintiffs must pay the court an "acceptance fee," which is a percentage of relief requested.[191] The fees can be low, RMB 50 for cases involving less than RMB 10,000, but fees quickly escalate if more relief is requested.[192] These acceptance fees act as a deterrent on citizens trying to bring suit.[193] Indigent plaintiffs can seek a waiver for the acceptance fee, but waiving the fee is at the court's discretion. Some courts rely on fees to support their operational budget,[194] and some courts deny waivers to a plaintiff that the court believes is a "troublemaker."[195]

Once in court, plaintiffs are not required by law to show causation, but they must show damages.[196] In many instances, damage claims require technical expertise that plaintiffs simply do not have; thus, the plaintiffs must bring in outside experts.[197] It can be very difficult for plaintiffs to show damages from one-time pollution violations, because at the time of the violation a victim may not have anticipated needing evidence of damages for a later court case.[198] In addition, judges rarely have environmental expertise and have difficulty weighing different expert opinions to find a resolution.[199]

The same local protectionist interests that affect agency enforcement of environmental laws are also at play in the courtroom.[200] Local governments control judicial appointments and finance local courts.[201] In deciding civil lawsuits, local courts often take "overall interests" into consideration.[202] These "overall interests" are all the potential at-large interests that may be affected by the decision, not just the interests of the

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[189] These negotiations may be moderated by the local EPB, and the bureaus may help determine who is liable. Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong, Dec. 26, 1989, effective Dec. 26, 1989), art. 41 (China). Administrative mediations settle the majority of pollution claims in China, and each EPB may have its own procedures. MCELWEE *supra* note 28, at 254.

[190] van Rooij, *supra* note 188, at 74.

[191] Wang, *supra* note 12, at 211.

[192] The acceptance fees can range from 0.5 % of requested compensation for requested compensation of over RMB 200 million, to 2.5% for requested compensation between RMB 10,000 and 1 million. Rachel Stern, *From Dispute to Decision: Suing Polluters in China*, 206 THE CHINA Q. 294, 300 (2011).

[193] Moser & Tseming Yang, *supra* note 186, at 10897.

[194] *Id.*

[195] Stern, *supra* note 192, at 300.

[196] Moser & Tseming Yang, *supra* note 186, at 10898.

[197] *Id.* at 10899.

[198] van Rooij, *supra* note 188, at 68.

[199] Moser & Tseming Yang, *supra* note 186, at 10989.

[200] *See supra* Part III.B.

[201] Cai Dingjian, *Development of Chinese Legal*, 11 CULTURAL DYNAMICS 135, 161 (1999).

[202] Moser & Tseming Yang, *supra* note 186, at 10896.

parties to the dispute.[203] Often consideration of the "overall interests" means a focus on protecting social stability, which entails preserving the status quo[204] and not creating or setting a new precedent for environmental remediation.[205]

Even when plaintiffs succeed at trial, it is often difficult to enforce compliance with the decision. Although the Environmental Protection Law states that a polluting unit "shall have the obligation to eliminate" the pollution hazard,[206] indicating courts could require soil remediation, courts rarely do so, instead opting for monetary compensation.[207] Yet enforcing monetary judgments is difficult. Officials may respond to requests for enforcement of non-local judgments by ignoring the law or inventing expenses to deduct a percentage from the award.[208] Officials may also conspire with the local government to hide assets.[209] Additionally, some courts only assist in the enforcement of judgments from jurisdictions in which their own decisions are enforced.[210]

Environmental tort litigation is increasingly popular as a potential source of relief for the victims of environmental pollution,[211] and there have been some recent successful cases brought by private citizens against polluting industries.[212] Nevertheless, institutional barriers to bringing and successfully executing an environmental tort claim are such that environmental torts do not sufficiently deter soil polluters. Consequently, environmental tort litigation is not a viable alternative to a national soil remediation policy.

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[203] *Id.*

[204] *Id.*

[205] For a description of the mechanisms at play that discourage judges from making waves, including liability for legal error, *see generally* Carl Minzer, *Judicial Disciplinary Systems for Incorrectly Decided Cases: The Imperial Chinese Heritage Lives On*, 39 N.M. L. REV. 63 (2009).

[206] Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong, Dec. 26, 1989, effective Dec. 26, 1989).

[207] Moser & Tseming Yang, *supra* note 186, at 10897. For an example of the difficulties of compliance in general, even with the support of local officials, consider the incident in Yangzhoug City, Hunan Province. Local officials, including delegates of the local National People's Congress, stormed a smelter that had refused to stop production and destroyed the plant's furnaces with three tons of dynamite. *See* Ouyang Hongliang & Zhang Ruidan, *Heavy Metal Warfare*, CAIJING (Aug. 11, 2011), http://english.caijing.com.cn/2009-08-11/110222718.html.

[208] Cai Dingjian, *supra* note 201, at 146-50.

[209] *Id.*

[210] *Id.* at 150.

[211] In 2006, there were 616,122 environmental complaints, a 60% increase from 2001. *See* Stern, *supra* note 192, at 295.

[212] *See supra* Part I.

E. Polluters May be Held Criminally Liable, but Liability is Generally Reserved for Well-Publicized Cases

The Solid Waste Law,[213] Environmental Protection Law,[214] and Criminal Law[215] all contain criminal liability provisions for environmental abuses. Yet the language of the laws is too ambiguous and penalties are too infrequently enforced for the laws to be effective deterrents.

The Solid Waste Law and the Environmental Protection Law do not define environmental crimes or contain specific sanctions.[216] The Solid Waste Law states that if the act constitutes a crime, the perpetrator shall be subject to criminal liability.[217] The Environmental Protection Law states that if a violation of law causes a serious environmental pollution accident, leading to heavy losses of property, human injury, or death, then the person directly responsible shall be investigated for criminal responsibility.[218] The party held responsible is not usually the director of the polluting enterprise, but rather a lower level employee.[219]

The Criminal Law sets out a maximum prison sentence of seven years.[220] The requisite "serious consequences" for environmental pollution accidents is a relatively low threshold.[221] Traditionally, criminal sanctions in

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[213] Yufang He Kongzhi Guti Feiwu Wuran Huanjin (预防和控制固体废物污染环境) [The Prevention and Control of Environmental Pollution by Solid Wastes Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 29, 2004, effective Apr. 1, 2005) (China).

[214] Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 26, 1989, effective Dec. 26, 1989) (China).

[215] Zhōngguó rénmín gònghéguó xíngfǎ (中国人民共和国刑法) [Criminal Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Cong., July 1, 1979, effective March 14, 1997), art. 338.

[216] MCELWEE, *supra* note 28, at 248.

[217] Yufang He Kongzhi Guti Feiwu Wuran Huanjin (预防和控制固体废物污染环境) [The Prevention and Control of Environmental Pollution by Solid Wastes Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., Dec. 29, 2004, effective Apr. 1, 2005), art. 78, 83 (China) (governing dumping, piling up, treating, and importing solid waste from abroad and the collection, storage, utilization, or treatment of hazardous waste).

[218] Zhonghua Renmin Gongheguo Huanjing Baohu Fa (中华人民共和国环境保护法) [Environmental Protection Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong, Dec. 26, 1989, effective Dec. 26, 1989), art. 49 (China).

[219] For lack of Chinese criminal sanctions for executives and managers, *see* Jeffrey M. Bellamy, *Putting the Boss Behind Bars: Using Criminal Sanctions Against Executives Who Pollute – What China Could Learn From the United States*, 13 IND. INT'L & COMP. L. REV. 579 (2002).

[220] Zhōngguó rénmín gònghéguó xíngfǎ (中国人民共和国刑法) [Criminal Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Cong., July 1, 1979, effective March 14, 1997), art. 338.

[221] MCELWEE , *supra* note 28, at 250. *See also* Zui Gao Renmin Fayuan Guanyu Shenli Huajing Wuran Zingshi Anjian Juti Zingyong Falu Ruogan Wenti De Jieshi (最高人民法院审理环境污染刑事案

the environmental context are reserved for large, well-publicized incidents and are not imposed in less-publicized incidents.[222] Even when pollution qualifies as a crime, violators are more likely to receive administrative penalties in the form of fines[223] than criminal punishment.[224] Between 1997 and 2003, of the 387 pollution accidents that would have constituted a crime, only 20 involved criminal prosecutions.[225] The problem seems to be a lack of will.

Because of the inadequacy of environmental criminal law, prosecutors may choose to pursue different tactics for extreme cases. The Biaoxin Chemical Company was held responsible for illegally discharging toxic chemicals that left one million people in Jiangsu Province without water.[226] Biaoxin's chairman was convicted of spreading poison in violation of Criminal Law Article 115.[227] Article 115 allows graver penalties, including the death penalty.[228] Though an interesting example of a unique strategy, it is one that has not been frequently utilized.[229] Because criminal prosecutions for environmental violations are rare, they do not deter crimes against the environment.

IV. THE CENTRAL GOVERNMENT SHOULD DEVELOP A COMPREHENSIVE REMEDIATION SCHEME

As outlined above, China lacks a clear soil pollution remediation policy. The government's failure to address soil pollution has led to environmental, economic, and social problems that will only worsen if the problem is not addressed. Fortunately for China, it does not have to re-invent the wheel. China can draw on experiences of developed countries to create an efficient and cost-effective solution. China's central government should consider the problems that other countries' soil remediation programs faced in order to anticipate likely problems in its own program. Of course, it

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件的解释) [Supreme People's Court Interpretation of the Trial of Criminal Cases of Environmental Pollution] (promulgated by Sup. People's Ct., effective July 28, 2006) (China). Serious consequences for violating this law include property losses of at least RMB 300,000, death of one or more people, or light wounds to not fewer than ten people.

[222] MCELWEE, *supra* note 28, at 251.

[223] For the failure of fines, see *supra* Part III.C.

[224] Wang Canfa, *supra* note 79, at 168.

[225] *Id.*; MCELWEE, *supra* note 28, at 251-52.

[226] MCELWEE, *supra* note 28, at 252.

[227] *Id.*

[228] Zhōngguó rénmín gònghéguó xíngfǎ (中国人民共和国刑法) [Criminal Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Cong., July 1, 1979, effective March 14, 1997), art. 115.

[229] MCELWEE, *supra* note 28, at 252.

would be unrealistic to expect policies directly transplanted from foreign countries to work in China. Any remediation policy China adopts must consider specific problems in China, particularly in the area of enforcement. The central government should develop a remediation scheme that evaluates the degree of remediation necessary, establishes channels for funding, offers promotion targets to officials, and promotes public participation.

A. A New Remediation Framework Should Include Standards of Risk Assessment to Evaluate the Degree of Necessary Remediation

A policy requiring full soil remediation is not feasible in China. Treating soil for pollutants is very expensive, especially if the goal is to purify the soil entirely.[230] This is an area where China can learn from the mistakes of other countries. For example, in the United States, during the early stages of the United States' Superfund program, the small number of initial soil remediation sites went over budget and cost the program large amounts of money.[231] Similarly, the Netherlands' initial soil remediation program required all projects to be remediated to the same high standard, but the program proved unsustainable due to the heavy expenses it incurred.[232] Given the extent of China's soil pollution problem, if China sets "complete remediation" as its goal, the program would experience the same financial setbacks experienced in the United States and the Netherlands. China can also consider how other countries' effectively addressed or resolved those problems. The Netherlands adopted a successful risk-based approach to soil remediation.[233] With the risk-based approach, the site's future use is considered to determine to what extent remediation is necessary.[234] The Dutch system includes target values, the degree the soil should be free of contaminants based on the anticipated use of the land, and intervention values, which are based on the current risk-level the soil pollution carries.[235] For example, sites in urban areas that will eventually support residential or commercial buildings receive more extensive remediation, whereas rural sites receive less remediation.

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[230] YUYANG GONG, *supra* note 180, at 5.

[231] *Id*.; Mark Jaffe, *Superfund Cleanup Becomes A Bureacratic Quagmire*, PHILA. INQUIRER (Aug. 17, 1986), http://articles.philly.com/1986-08-17/news/26066168_1_superfund-list-dangerous-toxic-waste-sites-epa-officials.

[232] *See* WORLD BANK, *supra* note 71, at 31.

[233] *See generally* Frank Swartjes, *Risk-Based Assessment of Soil and Groundwater Quality in the Netherlands: Standards and Remediation Urgency*, 19 RISK ANALYSIS 1235 (1999).

[234] YUYANG GONG, *supra* note 180, at 35.

[235] *See id.*

Contaminated soil lies within China's urban and rural areas.[236] Instead of implementing a program that requires the same remediation standards regardless of how the land will be used, China should develop a policy that involves a risk-based analysis. A risk-based system can reduce the cost and time of remediation.

B. A New Remediation Framework Should Include Targets for Government Officials to Ensure the Policy is Implemented

Environmental policy implementation is extremely difficult in China. Much of the difficulty lies in the fact that implementation is left to the local governments and the local governments are largely concerned with developing the local economy.[237] This is because their tax base is supported by the local economy and because the officials are evaluated for promotion based on economic performance.[238]

One way to encourage local government officials to comply with proposed regulations is to provide relevant environmental "targets" on which the local cadre's promotions are evaluated.[239] The Central Communist Party' ("CCP") uses the cadre evaluation system to incentivize goals.[240] The most important goals gain "veto power," in that the failure to achieve them trumps all other accomplishments.[241] The cadre system also provides horizontal oversight in that officials can be held collectively liable for the performance of any individual on the same level of government.[242] This creates a scenario in which officials at the same level monitor each other's work to ensure the legislation is being implemented.[243] In practice, the cadre evaluation system has been successful in implementing policies. For example, China's one-child policy has been implemented effectively because the policy's goals have "veto power."[244]

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[236] *See supra* Part II.A.-B.

[237] *See supra* Part X.

[238] *See supra* Part III.B.

[239] Alex L. Wang, *The Search for Sustainable Legitimacy, Environmental Law and Bureaucracy in China*, 37 HARV. ENVTL. L. REV. 365 (2013); *see also* Wyatt Golding, *Incentives for Change: China's Cadre System Applied to Water Quality*, 20 PAC. RIM L. & POL'Y J. 399, 407 (2011) (explaining that the cadre system considers environmental protection targets as part of performance evaluations).

[240] Susan H. Whiting, *The Cadre Evaluation System at the Grass Roots: The Paradox of Party Rule*, *in* HOLDING CHINA TOGETHER: DIVERSITY AND NATIONAL INTEGRATION IN THE POST-DENG ERA 101-19. (Barry J. Naughton & Dali L. Yang, eds., 2004).

[241] *Id.*

[242] *Id.*

[243] *Id.*

[244] Golding, *supra* note 239.

Including "veto power" targets in a soil remediation policy will ensure that local officials do no simply ignore the soil remediation policy. Instead of pressuring the EPBs to turn a blind eye to local pollution, local officials will assist the EPBs to enforce the policy. "Veto power" targets could remove the biggest enemy of environmental law implementation: local officials.[245]

Initially, it may be a little strange to include mention of veto targets in legislation because the cadre evaluation system relates to promotions within the communist party, which is formally separate from the Chinese government.[246] Legislation usually does not mention the party explicitly.[247] However, cadre evaluation targets have started to appear in environmental legislation. For example, amendments to the Law on the Prevention and Control of Water Pollution (Water Pollution Law) uses the cadre system to incentivize local officials.[248] Article 5 of the Water Pollution Law stipulates that the fulfillment of water environmental protection targets constitutes a part of the performance evaluation of local people's governments or their responsible persons.[249]

However, including cadre evaluation targets in environmental policies creates both problems if there are used to falsify information.[250] Officials will feel conflicting obligations: the obligation to maintain economic growth and the obligation to enforce environmental laws that tend to slow economic growth. Local officials may be tempted to falsify the data they report back to their superiors.[251] Data falsification has been a problem in the past. A 2008 survey found that 81% of officials provided false data about their village's income.[252]

One solution to the problem of data falsification would be to allow the national level MEP offices to conduct random inspections of areas that claim to have met the soil remediation goals. This would provide a level of national oversight. However, it would be difficult for this program to be

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[245] *Id.*

[246] The Chinese Communist Party has had a political monopoly since the founding of the People's Republic of China. *See* BEINA XU, COUNCIL ON FOREIGN RELATIONS, THE CHINESE COMMUNIST PARTY, (Aug. 29, 2013), http://www.cfr.org/china/chinese-communist-party/p29443. This is true despite the fact that China's Constitution makes no mention of the Communist Party. *See* XIANFA art. 3 (2004) (China).

[247] China's Constitution only mentions the Communist Party in the Preamble, which is largely dedicated to describing the revolutionary history of the PRC. *See* XIANFA pmbl. (2004), *available at* http://english.people.com.cn/constitution/constitution.html.

[248] *See* Yufang He Kongzhi Guti Feiwu Wuran Huanjin (关于预防和控制的水环境污染的法律) [The Prevention and Control of Water Pollution Law of the People's Republic of China] (promulgated by the Standing Comm. Nat'l People's Cong., May 11, 1984, amended 2008) (China).

[249] *Id.*

[250] *See* Wang, *supra* note 15.

[251] *Id.* at 121 (stating that hospital electricity shut down to meet target).

[252] *See* Lily L. Tsai, *The Falsification Village Income Statistics*, 196 THE CHINA Q. 805 (2008).

effective. China is a large country,[253] so a random sampling could only cover a small amount of China's soil. Moreover, officials have a time period of four to five years to be promoted,[254] so the MEP would have a four to five year window to catch the falsified reports before the officials moved on. So in addition to any national-wide sampling program, the remediation policy should include channels for public participation and oversight, as explained in the next section.

C. A New Remediation Framework Should Include Channels for Public Information and Participation

Any central government remediation policy should require local governments to publicize initial soil pollution levels and soil pollution levels after remediation is complete. Such a policy would have three benefits: it would 1) apply additional pressure on the local officials to implement a soil remediation policy, 2) inform citizens of their living environment, and 3) allow citizens to oversee claims of successful remediation.

Including public participation creates additional pressure for enforcement. As discussed, the Chinese public participates in environmental issues even when uninvited.[255] The internet and social media have created new pathways for public participation. In response to illegal dumping in Weifang, Shandong Province, activist Deng Fei has started a campaign on the Twitter-like service, called "Weibo," asking his followers to post pictures of the rivers in their hometown.[256] Deng Fei has over three million followers, some of whom responded by posting their own pictures or accounts of pollution in their area.[257] The government in Weifang quickly responded to Deng Fei's post, investigating over 700 factories and promising RMB 100,000 to anyone that could find the culprit.[258] The success of the Weibo campaign demonstrates that public participation can ensure accountability.

While it is important that public participation is encouraged, any new soil pollution legislation should ensure that the public is informed.

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[253] *See* CENT. INTELLIGENCE AGENCY, THE WORLD FACT BOOK (China), https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html (specifically 9,596,961 sq. km.) (last visited October 30, 2013).

[254] *See* Gang Guo, *supra* note 152, at 624.

[255] *See* Feng Jie & Wang Tao, *supra* note 89.

[256] Michelle FlorCruz, *China's Netizens Tackle Water Pollution Through Weibo*, INT'L BUS. TIMES (Feb. 18, 2013), http://www.ibtimes.com/chinas-netizens-tackle-water-pollution-through-weibo-1091456.

[257] *See* Larson, *supra* note 33; Leslie Hook, *Weibo Alters China's Environmental Debate,* FIN. TIMES (Mar. 4, 2013), http://www.ft.com/intl/cms/s/0/a924440e-7fef-11e2-af49-00144feabdc0.html#slide0.

[258] Hook, *supra* note 257.

Unfortunately, environmental protestors are not always informed and they inadvertently act contrary to their interests.[259] For example, there have been instances in which protestors challenge new, efficient plants that are to replace old, more polluting ones. For example, protests in Shifang and Ningbo led to USD 64 million and USD 963 million losses in investments respectively.[260] Scholars describe this as a "triple-lose" scenario: 1) the local economy loses a sound and legitimate project; 2) the project approval body loses public confidence; and 3) the public loses what may have been a greener outcome.[261] After the "successful" protests in Shifang, dozens of small chemical plants scheduled for replacement continue polluting as normal.[262] Part of the problem is that the public often lacks confidence in environmental regulation because so many environmental assessments are misleading.[263]

Providing information about the soil pollution levels will help raise awareness of the dangers of soil pollution and indicate that the central government is serious about addressing the problem. With more awareness, local citizens affected by soil pollution will draw the connection between observed health problems and pollution in the soil. When government officials claim successful remediation, the locals will be able to determine if the remediation was actually performed. With successful remediation, public confidence in the regulatory scheme will grow. If crops have not returned and health has not improved, the citizens will have basis on which to suspect the pollution has not been remediated. Citizens can then bring claims of failure to implement remediation to the attention of higher officials.[264]

V. CONCLUSION

Soil pollution poses enormous problems for China's economy, national health, and social stability. In order to combat the problem of soil pollution, the central government should enact comprehensive soil pollution legislation that clarifies liability and sets a sliding scale of remediation standards for polluted soil based on future land use. However, this is not to

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[259] *See* Feng Jie & Wang Tao, *supra* note 89.

[260] *Id.*

[261] *Id.*

[262] *Id.*

[263] *See generally* Wang Yue et. al., *Xinhua Insight: China Needs Public Consultation Amid Painful Protests*, CHINA ORG. (July 31, 2012), http://www.china.org.cn/china/Off_the_Wire/2012-07/31/content_26080663.htm.

[264] Carl F. Minzner, *Xinfang: An Alternative to Formal Chinese Legal Institutions*, 42 STAN. J. INT'L L. 103 (2006).

say enacting such legislation will ensure soil remediation success. Soil pollution legislation should also include targets in cadre evaluation and channels for public information and participation to systemically change the way China addresses soil pollution.