

CHINA’S ENVIRONMENTAL CAMPAIGN:
HOW CHINA’S “WAR ON POLLUTION” IS
TRANSFORMING THE INTERNATIONAL
TRADE IN WASTE

YING XIA*

I.	INTRODUCTION	1103	R
II.	THE GLOBAL VALUE CHAIN OF WASTE MAKING AND TRADING	1107	R
	A. <i>The Early Trade in Waste: the United States and Japan</i>	1108	R
	B. <i>The Rise of a Global Dumping Ground: China</i> ..	1110	R
III.	THE EXISTING REGULATORY FRAMEWORK OF GLOBAL WASTE TRADE	1115	R
	A. <i>International Agreements Concerning Cross-Border Waste Trade</i>	1117	R
	B. <i>Waste Export Control in the United States</i>	1122	R
	C. <i>Chinese Regulation of the Waste Trade and Its Limitations</i>	1125	R
IV.	CHINA’S ONGOING ENVIRONMENTAL CAMPAIGN AND FOREIGN WASTE BAN	1132	R
	A. <i>Motivations of the Current Environmental Campaign: Continuing Concerns, New Heights</i> ..	1133	R
	B. <i>Environmental Crackdowns Before the Foreign Waste Ban</i>	1138	R
	1. <i>The Crackdown on Lianjiao</i>	1139	R
	2. <i>The Crackdown on Wen’an</i>	1141	R
	3. <i>The Resilience of the Informal Recycling Industry</i>	1143	R
	C. <i>Enforcing the Foreign Waste Ban</i>	1145	R
	1. <i>Regulatory Reform on Waste Import and Management</i>	1145	R
	2. <i>Nationwide Environmental Enforcement</i>	1149	R

* S.J.D. candidate, Harvard Law School. I am grateful to William Alford, Matthew Erie, Sally Moore, Jane Bestor, Yu Luo, and Yueduan Wang for their excellent insights and suggestion on earlier drafts of this Article. I also want to thank editors at the New York University Journal of International Law and Politics, Gracie, Alyssa, Sarah, and Sophia, whom I have enjoyed working with along the way.

3.	<i>Domestic Implications of the Foreign Waste Ban</i>	1153	R
V.	THE GLOBAL IMPACT OF CHINA'S FOREIGN WASTE BAN: RACE TO THE TOP OR RACE TO THE BOTTOM.....	1157	R
A.	<i>The Coping Strategies of Developed Countries</i>	1158	R
1.	<i>Legislative and Public Policy Efforts to Promote Recycling</i>	1160	R
2.	<i>Industry Efforts for Waste Reduction and Capacity-Building</i>	1162	R
3.	<i>Diverting Waste Shipments to Alternative Destinations</i>	1164	R
B.	<i>Responses by Developing Countries</i>	1166	R
1.	<i>Southeast Asia</i>	1166	R
2.	<i>Tanzania</i>	1168	R
VI.	CONCLUSION	1170	R
A.	<i>China as an Emerging Global Environmental Leader</i>	1171	R
B.	<i>The Economy Versus the Environment Debate</i>	1173	R
C.	<i>Regulation of the Informal Economy in Globalization</i>	1175	R

China, as a factory platform for the world, became a center of the global waste trade in the 1990s, importing and processing hundreds of millions tons of waste materials every year. The recycling industry has contributed enormously to China's industrial growth, but has simultaneously generated various regulatory problems, such as environmental violations and illegal waste traffic. In mid-2017, the Chinese government announced a ban on the import of foreign waste with the objective of protecting the natural environment and human health. Scientists predict that this ban will displace over 100 million tons of plastic waste by 2030, along with other types of waste. One year into the enforcement of the foreign waste ban, the global waste trade regime has undergone significant changes. On the one hand, the ripple effect of the Chinese ban may encourage more investment in waste reduction and recycling, and a speeding up of the adoption of stricter environmental standards in international law and the domestic law of other countries. On the other hand, however, it could trigger a race to the bottom in environmental standards among developing countries as they are trying to take in waste shipments that are rejected by China. This article explores the regulatory context and power dynamics inside the global recycling value chain that has contributed to shaping the two ongoing trends. By presenting a case study of the impact of China's domestic environmental reform on the international waste trade, this article engages ongoing discussions about the emergence of Chinese leadership in global governance, the challenges of sustainable development, and the impact of globalization on the informal economy.

I. INTRODUCTION

After standing in the dock for half-hearted enforcement of international and domestic environmental laws for almost three decades, China has finally gained some credit for its efforts in pollution control and improving sustainable development.¹ Since the Chinese government declared in 2014 that it would “fight a war on pollution with the same determination as it fought poverty,”² China has planted over 300 million hectares of forest, phased out 20 million fossil fuel cars, and shut down tens of thousands of factories. Those efforts have resulted in an approximately thirty percent decrease in concentrations of fine particulates in the air within five years, according to China’s official statistics.³

Notwithstanding foreign recognition of China’s unparalleled achievements in environmental protection,⁴ ironically, one such measure has produced concern rather than praise internationally: China’s ban on foreign waste imports.⁵ In mid-

1. See Chao Deng, *China Takes Another Green Step Forward*, WALL ST. J. (Dec. 27, 2017, 10:08 AM), <https://www.wsj.com/articles/china-takes-an-other-green-step-forward-1514289286> (noting China’s efforts to improve its environmental policy); Muyu Xu & Elias Glenn, *Beijing May be Starting to Win Its Battle Against Smog*, REUTERS, Dec. 29, 2017, <https://www.reuters.com/article/us-china-pollution-beijing-insight/beijing-may-be-starting-to-win-its-battle-against-smog-idUSKBN1EN0ZJ?feedType==RSS&feedName=topNews> (reporting that Beijing is improving its air quality).

2. In the 2014 Annual Government Work Report, Chinese Prime Minister Li Keqiang stated that, “we shall fight a war on pollution with the same determination as it fought poverty.” *Zhengfu Gongzuo Baogao (Quanwen)* (政府工作报告(全文)) [Government Work Report (Full Report)], ZHONGGUO ZHENGFU WANGLUO (中国政府网络) [CHINESE GOV’T NETWORK] (Mar. 14, 2014), http://www.gov.cn/guowuyuan/2014-03/14/content_2638989.htm (translation provided by author).

3. *Dang de Shibada Yilai Woguo Shengtai Huanjing Baohu Chengjiu Zongshu* (党的十八大以来我国生态环境保护成就总述) [Summary of China’s Achievements in Ecological and Environmental Protection Since the 18th Party Plenum], XINHUA NEWS AGENCY (May 17, 2018); see Michael Greenstone, *Four Years After Declaring War on Pollution, China Is Winning*, N.Y. TIMES (Mar. 12, 2018), <https://www.nytimes.com/2018/03/12/upshot/china-pollution-environment-longer-lives.html> (reporting that air particulates decreased in China).

4. Greenstone, *supra* note 3.

5. See Yen Nee Lee, *The World is Scrambling Now That China is Refusing to be a Trash Dumping Ground*, CNBC (Apr. 16, 2018, 4:33 AM), <https://www.cnbc.com/2018/04/16/climate-change-china-bans-import-of-foreign-waste-to-stop-pollution.html> (noting the international concern about China’s ban); *China’s Import Ban on Plastic Waste Pushes Japan and Other Rich Nations to Re-*

2017, the Chinese national government announced that, starting in 2018, it would officially ban the import of twenty-four types of solid waste, including non-industrial plastic waste and unsorted paper waste.⁶ The goal was to gradually stop all waste imports that could be replaced with domestically recycled materials. Since China is the largest importer of waste worldwide—China imported 7 million tons of waste plastics and 28 million tons of waste paper in 2016, accounting for more than half of the world’s export of waste plastics and waste paper that year⁷—the foreign waste ban would have a profound impact on the global waste trade and recycling industry.⁸ More industrialized countries, including the United States, Japan, and the United Kingdom, as major waste exporters of the world, must either invest more in domestic recycling or divert their wastes to alternative destinations. Correspondingly, less developed countries must choose between the economy and the environment—that is, whether to embrace waste imports as an oppor-

think Trash Options, JAPAN TIMES (Dec. 4, 2018), <https://www.japan-times.co.jp/news/2018/12/04/national/chinas-import-ban-plastic-waste-pushes-rich-nations-rethink-trash-options/#.XFo64Rkzb-Y> (reporting that Japan and other countries are concerned about the ban).

6. *Chumu Jingxin: Quanguo Yiban de Laji Yundao Zhongguo* (触目惊心! 全球一半的“垃圾”运到中国) [*Shocking! More than Half of the World’s Waste was Shipped to China*], SINA (Aug. 7, 2007), <https://cj.sina.com.cn/article/detail/6155926769/349701?column=manage&ch=9> [hereinafter *More Than Half the World’s Waste Shipped to China*].

7. UN COMTRADE: INTERNATIONAL TRADE STATISTICS DATABASE, <https://comtrade.un.org/data> (last visited: Dec. 15, 2018) (revealing that China’s imports of waste plastic and waste paper each represent about half of the world’s total exports of 14.6 million tons and 57.4 million tons, respectively). The author compiled this information by narrowing down data searches in the UN Comtrade database. Here, the author found the world total by selecting the following: “Goods” and “Annual” in response to “Type of product & Frequency”; “As reported” under “SITC” in response to “Classification”; “2016” in response to “Periods (year)”; “All” in response to “Reporters”; “World” in response to “Partners”; and “Exports” in response to “Trade flows.” Finally, in response to “commodity codes,” the author either chose “3195 – Waste, Pairings and scrap, of plastics” or “4707 – Waste and scrap of paper and paperboard.” To find China’s totals, the author inputted largely the same selections, but selected “China” in response to “Partners” and “Import” in response to “Trade Flows.”

8. See Amy Brooks et al., *The Chinese Import Ban and Its Impact on Global Plastic Waste Trade*, 4 SCI. ADVANCES 1, 2 (2018) (finding that “an estimated cumulative 111 million MT of plastic waste will be displaced by 2030” as a result of the ban).

tunity for industrialization at a cost to their environment, as China has done in the past, or ban waste imports to protect their environment as China is doing now. Policy choices from Beijing, Washington, D.C., Kuala Lumpur, and Dar es Salaam have transformed power relations among various actors involved in the multi-billion dollar industry: For example, waste exporters from San Francisco, traders in Hong Kong, publicly traded paper companies in Wisconsin, or family-owned recycling workshops in Guangdong and Zanzibar. Strategies for survival of millions of people across the globe have shaped, and simultaneously have been shaped by, the international and domestic regulation of waste trade, as well as the implementation of those rules in practice.

This article investigates the transformative effect China's recent foreign waste ban has had on the international waste trade. China has become the single center of waste import and reprocessing activities under the existing trade regime because of insufficient environmental regulation at international and domestic levels. The foreign waste ban as well as the broader environmental campaign in China has diverted flows of waste trade to alternative destinations, which has led to diverse regulatory responses from international and domestic societies. Industrialized countries, as major waste exporters, face more pressure in improving their domestic recycling systems to cope with the Chinese ban on waste imports. Moreover, new alliances are forming to advocate for more regulation of the waste trade at international and national levels. For example, Norway has proposed to amend the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention) to cover the trade in waste plastics.⁹ Nevertheless, two types of human costs are highlighted. First, measures of the Chinese government to formalize the recycling industry have left millions of people in the informal recycling industry in despair, without proper compensation or opportunities for adaptation. Second, without a level playing field, some developing countries may choose to reduce their domestic environmental protection in order to

9. *Basel Amendment Proposed by Norway to Cover Scrap Plastic*, EUROPEAN UNION NETWORK FOR THE IMPLEMENTATION AND ENFORCEMENT OF ENVIRONMENTAL LAW (Aug. 3, 2018), <https://www.impel.eu/basel-amendment-proposed-by-norway-to-cover-scrap-plastic>.

gain a competitive advantage in the international economic system. While increased investments in the recycling industries in developing countries may contribute to local industrialization and economic growth, they may have high environmental costs. This suggests that the rise of alternative destinations for waste shipments from industrialized countries is likely to mitigate any potential positive effect of the Chinese ban on strengthening global environmental governance.

This article is structured as follows. Part I describes the historical development and structure of the international waste trade. Although waste import and recycling contributed to early-stage industrial development in the United States and Japan, it was not until the increased diversification of the global waste trade and the rise of international environmental law that regulation of the waste trade's negative externalities became a concern of international law. Part II assesses the current regulatory framework for the waste trade. The implementation of relevant international agreements has largely relied on the regulatory discretion of national governments, and the domestic laws of waste exporting and importing countries have failed to effectively monitor the environmental and health consequences of the international waste trade. Part III discusses China's foreign waste ban, focusing on its motivations, means of implementation, and domestic implications. This article argues that, as part of the ongoing environmental campaign, the foreign waste ban is aimed at bolstering the Chinese government's political legitimacy and soft power. However, it is less certain to what extent the effectiveness of the ban can be sustained, or what measures the government will take to mitigate the economic and social consequences of the ban. Part IV assesses the impact of China's foreign waste ban on the global recycling industry, and the responses of different state and non-state actors. Many developed countries have resorted to promoting waste reduction and recycling at home, while diverting their waste shipments to other destinations. Developing countries, in contrast, are faced with the challenge of balancing their economic growth and environmental protection. Part V concludes with varying regulatory implications of China's foreign waste ban and the ongoing environmental campaign more broadly. Environmental policy changes in China suggest an elevation of environmental protection in Chinese policymaking with objectives of restructuring its do-

mestic economy, promoting political legitimacy of the ruling party, and improving China's international soft power. Nevertheless, the implementation of the foreign waste ban has increased uncertainty in the long-term economic and social viability of the ban. Moreover, the ban has sparked fresh debates on long-standing issues of sustainable development. On the one hand, it demonstrates how interaction and competition between actors with divergent interests and motives have led to countries adopting different approaches toward the tension between the economy and the environment. On the other hand, it highlights an urgent need for raising environmental awareness in international and domestic societies, which is a pre-condition for environmental regulation of the waste trade to succeed.

This article evaluates China's changing role in global environmental governance by going beyond the conventional North-South binary in understanding the global trade in waste, and exploring multiple dimensions of the transformation of the waste trade and recycling industry following the Chinese foreign waste ban: national versus international, economy versus environment, and informal versus formal industries, among other considerations. This article highlights the process through which law and norms have shaped and been shaped by the power dynamics between business, regulators, and other stakeholders involved in the global recycling industry.

II. THE GLOBAL VALUE CHAIN OF WASTE MAKING AND TRADING

As the counterpart to consumption, recycling has always been an embedded feature of industrialization and globalization. Historically, both the United States and Japan relied to different degrees on the importation of waste to stimulate industrialization. Starting in the 1990s, China became the new center of the global waste trade. Compared to the early trade in waste, the current value chain of waste trade and recycling has grown enormously in terms of the magnitude and diversity of waste materials, and has demonstrated a clear feature of hierarchy. The surge of the waste trade and the development of international environmental law in the past few decades have

given rise to more regulatory attention regarding the environmental and human health consequences of the waste trade.

A. *The Early Trade in Waste: The United States and Japan*

Both the United States and Japan benefited from the trade in waste during the early stage of industrialization. During the nineteenth century, newly established local paper manufacturers in the northeastern United States imported rags from the United Kingdom to produce paper.¹⁰ Manufacturers preferred imported rags to domestic ones because of their higher quality.¹¹ Between 1850 and 1875, U.S. imports of rags rose from 98 million to 123 million tons.¹² At the turn of the twentieth century, due to World War I and European embargos imposed on the export of rags, U.S. paper mills invested substantially in experimentation with disappointing results.¹³ During the same period, the waste trade also became more organized. Trading companies specializing in domestic collection and importation of rags formed to meet the demands of paper mills. The National Association of Waste Material Dealers, the first major U.S. waste trade association, formed in 1913.¹⁴ In the domestic recycling system, mechanization and municipal waste management facilities gradually replaced “rag-and-bone” scavenging with salaried workers.¹⁵ Mass production and consumption of packaging materials generated more waste, increasing the demand for recycling and disposal.¹⁶

10. JOHN BIDWELL, *AMERICAN PAPER MILLS 1690-1832: A DIRECTORY OF THE PAPER TRADE WITH NOTES ON PRODUCTS, WATERMARKS, DISTRIBUTION METHODS, AND MANUFACTURING TECHNIQUES* xxv (2012).

11. *Id.*

12. SUSAN STRASSER, *WASTE AND WANT: A SOCIAL HISTORY OF TRASH* 85 (1999).

13. *Paper Makers Confer: Meet to Discuss Trade Problems Resulting from War*, N.Y. TIMES (Mar 10, 1916), <https://www.nytimes.com/1916/03/10/archives/paper-makers-confer-meet-to-discuss-trade-problems-resulting-from.html>.

14. *ENCYCLOPEDIA OF CONSUMPTION AND WASTE: THE SOCIAL SCIENCE OF GARBAGE* xxx (Carl A. Zimring & William L. Rathje eds., 2012).

15. Sabine Barles, *History of Waste Management and the Social and Cultural Representations of Waste*, in 4 *THE BASIC ENVIRONMENTAL HISTORY* 199, 212–213 (Mauro Agnoletti & Simone Neri Seneri eds., 2014).

16. STRASSER, *supra* note 12, at 172–173.

Japan started importing scrap copper and cotton waste for recycling and reprocessing as early as 1868, due to the shortage of domestic supply of industrial raw material.¹⁷ In 1932, Japan imported 164,000 tons of scrap steel from the United States, which was about sixty percent of total U.S. export of scrap steel that year.¹⁸ That number reached 2 million tons in 1939, likely driven by the rising demand for raw materials to make weaponry to support Japan's invasion of China.¹⁹ Japan's post-war developing economy continued to depend on waste materials imported from the United States. U.S. exports of waste iron and steel to Japan were so large that, during the 1960s and 1970s, the American Iron and Steel Institute advocated for an export control on waste metals.²⁰ Exporting ferrous scrap to Japan, they complained, hurt the steel industry in America, because Japan was not only the largest importer of U.S. waste metals, but also the largest exporter of finished steel to the United States.²¹ Similar arguments—that Japan was importing waste paper from the United States and exporting it back in the form of paper containers for electronic products—resurfaced during the height of the America-Japan trade war of the 1980s.²² It was not until the 1990s that Japan became a net exporter of waste materials, with China, South Korea, and Taiwan as the main destinations for its waste plastics, paper, and steel.²³ Nonetheless, Japan remained a leading country in precious metal recovery.²⁴

17. Michikazu Kojima, *Issues Relating to the International Trade of Second-Hand Goods, Recyclable Waste, and Hazardous Waste*, in *INTERNATIONAL TRADE IN RECYCLABLE AND HAZARDOUS WASTE IN ASIA* 1, 3 (Michikazu Kojima & Etsuyo Michida eds., 2013).

18. ADAM MINTER, *JUNKYARD PLANET: TRAVELS IN THE BILLION-DOLLAR TRASH TRADE* 82 (2013).

19. *Id.*

20. Tony Velocci, *The Scrap of the Century: The Dispute over Export Controls Is Heating up Again: Scrap Dealers Want to Sell Abroad, and Steelmakers Want Stable Supplies and Steady Prices*, *NATION'S BUS.*, Oct. 1979, at C37.

21. *Id.*

22. Nancy L. Ross, *Brisk Scrap Trade with Asia: Wastepaper Recycling Goes International*, *L.A. TIMES* (May 17, 1987), http://articles.latimes.com/1987-05-17/business/fi-823_1_wastepaper.

23. Aya Yoshida et al., *Secondary Materials Transfer from Japan to China: Destination Analysis*, 7 *J Mater Cycles Waste Manag.* 8, Table 1 (2005).

24. *See generally* MINISTRY OF THE ENV'T, *SOLID WASTE MANAGEMENT AND RECYCLING TECHNOLOGY OF JAPAN: TOWARD A SUSTAINABLE SOCIETY* (2012)

B. *The Rise of a Global Dumping Ground: China*

Even though China's importation of recyclable materials can be dated to the late 1970s, it did not become the center of the global waste trade until the 1990s, when industrialization in the country accelerated.²⁵ Skyrocketing demand for cheap raw materials has been the primary driving force behind the waste trade growth at the time, and the flow of rural migrants to urban and coastal China guaranteed cheap labor supplies in the labor-intensive recycling industry.²⁶ The "pollution haven hypothesis" also posits that industrialists from developed countries would look for places like China, where environmental regulations are less stringent, to reduce the cost of waste management in their home countries.²⁷ In addition, waste shipments to China were made possible thanks to the trade imbalance between China and many developed countries—the same factor that contributed to facilitating the waste trade between Japan and North America in the 1980s.²⁸ Cargo ships carrying Chinese manufactured products to the United States

(Japan) (demonstrating Japan's dedication to recycling at all levels of society).

25. Brooks et al., *supra* note 8, at 1.

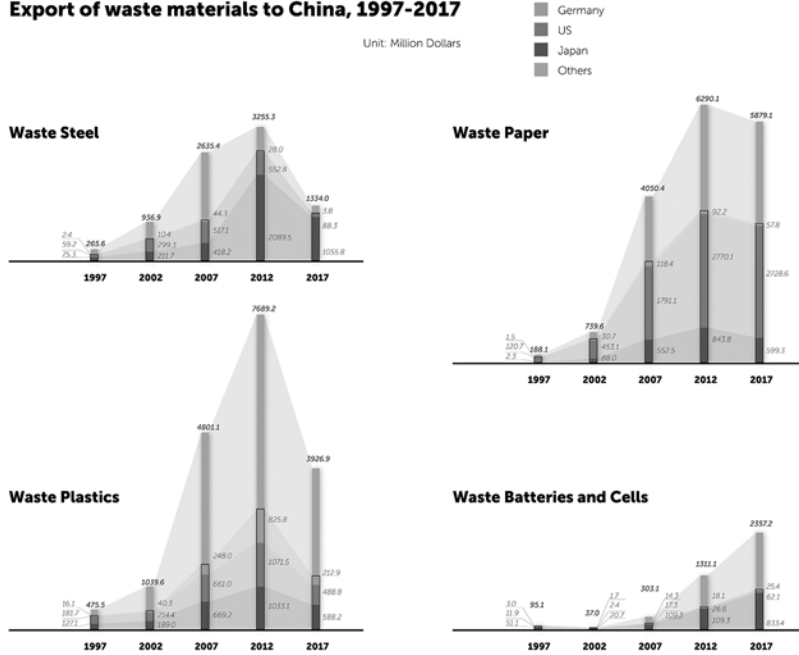
26. MINTER, *supra* note 18, at 45.

27. The pollution haven hypothesis posits that industries from developed countries, especially heavy industries, will relocate production to countries with lower costs for labor, raw materials, and environmental compliance. While some studies suggest that environmental regulations impact industries' decisions to relocate production, few were able to establish causal relation between FDI inflows and pollution in developing countries. For a few examples on studies of pollution haven hypothesis, see generally Gunnar S. Eskeland & Ann E. Harrison, *Moving to Greener Pastures? Multinationals and the Pollution Haven Hypothesis*, 70 J. DEV. ECON. 1 (2003) (finding that foreign investors in Mexico, Morocco, Côte d'Ivoire and Venezuela are more energy efficient); Jie He, *Pollution Haven Hypothesis and Environmental Impacts of Foreign Direct Investment: The Case of Industrial Emission of Sulfur Dioxide (SO₂) in Chinese Provinces*, 60 ECOLOGICAL ECON. 228 (2006) (confirming the pollution haven hypothesis using empirical evidence from China, which suggests a positive inter-correlation between FDI and air pollution in China and that changes in environmental regulation will affect FDI inflow decisions in the next period); Yuqing Xing & Charles D. Kolstad, *Do Lax Environmental Regulations Attract Foreign Investment?*, 21 ENVTL. & RESOURCE ECON. 1 (2002) (showing a negative correlation between the stringency of environmental regulation in host country and FDIs from the United States in heavily polluting industries).

28. Daniel Machalaba, *Ship Firms Cope With Trade Imbalance - Carriers Must Scramble Even to Export Waste*, WALL ST. J. (Eastern ed. Oct. 7, 1986).

and United Kingdom often returned with empty containers. As a result, transportation costs from these destinations to China were much lower than transportation costs from China to these destinations. According to some estimates, in 2013, shipping a container from Los Angeles to Shenzhen cost about US\$300, while shipping freight from Shenzhen to Los Angeles cost more than US\$2,400, approximately the same shipping cost from Los Angeles to Chicago.²⁹

Export of waste materials to China, 1997-2017



Source: UN Comtrade.

Notwithstanding the similar trajectories of both the United States and Japan in the development of the global waste trade, expansion of globalization and industrialization over the past few decades has taken the contemporary waste trade to unprecedented levels. According to officials from the Chinese Ministry of Ecology and Environment (MEE)—for-

29. David Barboza, Q. & A.: *Adam Minter on Why China's Scrap Trade Helps the Environment*, N.Y. TIMES (Nov. 29, 2013, 12:58 AM), <https://sinosphere.blogs.nytimes.com/2013/11/29/q-a-adam-minter-on-why-chinas-scrap-trade-helps-the-environment/?mtref=www.google.com>.

merly the Ministry of Environmental Protection (MEP)³⁰— exports of solid wastes to China have increased ten-fold during the past twenty years, from 4 million tons to 45 million tons per year.³¹ Industrialized countries—Japan, the United States, and Germany, in particular—are the main sources of waste material exports to China.³² Japan is the leading exporter of scrap steel to China, accounting for sixty-four percent of the latter’s total import by value in 2012, or US\$2 billion out of \$3.3 billion.³³ The United States is the leading exporter of waste paper, contributing to nearly half of China’s waste paper imports in 2012.³⁴ In fact, waste paper trading made Zhang Yin, owner of a business chain that collects scrap paper from the United States and reprocesses them into cardboard sheets in China, the wealthiest woman in China, with a personal wealth of at least US\$1.5 billion in 2006.³⁵ It is noteworthy that not only developed countries export waste to China. In East and West African regions, plastic recycling industries, which Chinese expatriates dominate, have been exporting recycled

30. In March 2018, China’s Ministry of Environmental Protection (MEP) was renamed as Ministry of Ecology and Environment (MEE) in March 2018, which succeeds the responsibilities of MEP and incorporates the authority to supervise climate change and emission control, marine environmental protection, and so on, from the National Development and Reform Commission (NDRC), and State Oceanic Administration respectively. Ma Tianjie & Liu Qin, *China Reshapes Ministries to Better Protect Environment*, CHINA DIALOGUE (Mar. 14, 2018), <https://www.chinadialogue.net/article/show/single/en/10502-China-reshapes-ministries-to-better-protect-environment>.

31. Li Ganjie: *Xianzhi he Jinzhi Gutu Feiwu Jinkou Shi Zhongguo Zhengfu Xiang You de Quanli* (李干杰: 限制和禁止固体废物进口是中国政府享有的权利) [*Li Ganjie: Restricting and Banning the Import of Solid Waste Is the Right of the Chinese Government*], XINHUA NEWS AGENCY (Mar. 17 2018), http://www.xinhuanet.com/politics/2018lh/2018-03/17/c_137045887.htm.

32. For data from sources on China’s waste imports, see *supra* Graph One.

33. See *supra* note 7 and accompanying text. In this case, the author used a similar methodology as used to find the data on China; however, here, the author set “2012” in response to “Periods (year)”; “Imports” in response to “Trade flows”; and “7204 – Ferrous waste and scrap; remelting scrap ignots of iron or steel” in response to “commodity codes.”

34. *Id.*

35. David Barboza, *Blazing a Paper Trail in China*, N.Y. TIMES (Jan. 16, 2007), <https://www.nytimes.com/2007/01/16/business/16trash.html>.

plastics to polyester factories in coastal provinces of China since the early 2000s.³⁶

Besides the rapid growth in scale, the waste trade has also become more diversified. Plastic waste and e-waste, which was almost non-existent before the 1980s, has proliferated. In 1997, China's plastic waste import was worth US\$476 million; by 2012, it had risen to nearly US\$8 billion, a fifteen-fold increase in fifteen years and representing over half of the global trade of waste plastics.³⁷ By comparison, e-waste as a by-product of the recent technological revolution is more difficult to define and measure because of inconsistent classification standards employed by different countries and variations in implementing these standards. The Basel Action Network, a Seattle-based environmental NGO, used GPS tracking to investigate whether and how e-waste is recycled in developed countries.³⁸ The study revealed that the United States exported about forty percent of its old printers and monitors, of which more than half ended up in Hong Kong and mainland China.³⁹ Theoretically, e-waste recycling includes processing new products with reusable parts or components and extraction of precious metals. In practice, however, the latter is far more common than the former, due to the rudimentary technology employed by small recyclers.⁴⁰

The increased trade in plastic waste and e-waste has various economic and regulatory implications. For example, the

36. See generally Xiaoyang Tang, *8 Geese Flying to Ghana? A Case Study of the Impact of Chinese Investments on Africa's Manufacturing Sector*, 27 J. CONTEMP. CHINA 924 (2018) (discovering a Chinese plastic recycling cluster in Ghana). During fieldwork in Tanzania between 2016 and 2018, the author also found a cluster of over sixty plastic recycling factories that collect waste plastics in Tanzania and export them to China after sorting, shredding, or granulating. See *infra* Part IV.

37. See *supra* note 7 and accompanying text for the steps the author took to find the 2012 figure. The author found the 1997 figure simply by switching the "Periods (year)" to "1997," and further concluded that the 2012 figure represented over half of the world's trade of waste plastics by comparing the it to the value returned when "World" is inputted in response to "Partners" and "Export" is inputted in response to "Trade flows."

38. ERIC HOPSON & JIM PUCKETT, BASEL ACTION NETWORK, SCAM RECYCLING: E-DUMPING ON ASIA BY US RECYCLERS 18 (2016), <http://wiki.ban.org/images/1/12/ScamRecyclingReport-web.pdf>.

39. *Id.* at Table 1.

40. Qingbo Xu et al., *Cathode Ray Tube (CRT) Recycling: Current Capabilities in China and Research Progress*, 32 WASTE MGMT. 1566, 1570 (2012).

importation of waste plastics may discourage domestic recycling in China because domestically recycled materials in general are poorly sorted and of lower quality compared to imported materials.⁴¹ In addition, there are concerns that sub-standard products made from recycled materials are re-exported by China, thereby posing health risks to consumers in developed countries. However, products made from recycled materials in China are mainly consumed within China.⁴² Part II will discuss environmental consequences of the waste trade in more detail.

Hierarchy is another feature of the global value chain of waste trade and recycling. It is common for manufacturers in developed countries to acquire recyclable materials with higher content of valuable metals, like wires, while low-grade materials, such as Christmas tree lights, are exported.⁴³ For decades, Southeast Asia has served as a transshipment point for the sorting, cleaning, and disassembling of waste materials before re-exportation to China.⁴⁴ In China, small processing workshops would sell recycled chips back to Japanese companies because the former did not possess the technology to effectively extract precious metals such as gold and platinum.⁴⁵

Moreover, the domestic recycling industry of China also demonstrates a hierarchical order. Recycling clusters specializing in one or a few recyclable materials have developed across China. Within these clusters, numerous small, informal workshops depend on a few large enterprises for raw material supplies and sub-contracting opportunities. For example, Lianjiao, a small village in Guangdong, is home to a plastic

41. Zhang Chunyan (张春燕), "Yang Laji" Jinling Weihe Bixu Zhixing Daodi ("洋垃圾"禁令为何必须执行到底?) [Why Must We Enforce the "Foreign Waste" Ban?], QSTHEORY (Apr. 11, 2018), http://www.qstheory.cn/zoology/2018-04/11/c_1122668241.htm (explaining the idea of *tenglong huanniao* (腾笼换鸟) [vacating the cage to change birds], that is, to ban waste imports in order to stimulate demands for local recyclables).

42. COSTAS VELIS, INT'L SOLID WASTE ASS'N, GLOBAL RECYCLING MARKETS: PLASTIC WASTE 41 (2014).

43. David Barboza, *Part II: Adam Minter on China's Scrap Trade and the Environment*, N.Y. TIMES (Nov. 29, 2013, 11:55 PM), <https://sinosphere.blogs.nytimes.com/2013/11/29/part-ii-adam-minter-on-chinas-scrap-trade-and-the-environment>.

44. Aynsley Kellow, *Baptists and Bootleggers? The Basel Convention and Metals Recycling Trade*, 6 AGENDA 29, 32 (1999).

45. MINTER, *supra* note 18, at 195.

recycling cluster that is a well-known regional center for trading and processing domestically-generated waste plastic.⁴⁶ Similar clusters exist in Jiangsu, Hebei, and Guangxi for the recycling and reprocessing of paper waste, plastic waste, and e-waste.⁴⁷ Almost all the recycling workshops in those clusters are unregistered and unlicensed by the Chinese governments, which allows them to operate at a minimum cost with barely any facilities or regulations for health, safety, and environmental protection.⁴⁸ Most workshops hire casual workers on a daily-wage basis for the labor-intensive washing and shredding activities.⁴⁹ Their situations are comparable to the women and children working in the nineteenth-century paper mills in the United States, who often undertook the most toxic work, such as sorting imported rags into different categories, cutting them down to size, and removing unwanted matter like seams and buttons.⁵⁰ This informal nature of the recycling industry in China, as demonstrated in Part III, contributed to its resilience in the face of Chinese governments' attempts at environmental regulation, at least prior to the foreign waste ban.

III. THE EXISTING REGULATORY FRAMEWORK OF GLOBAL WASTE TRADE

Traditionally, policymakers emphasized the economic aspects of the waste trade and recycling, such as allowing countries and manufacturers to access raw materials that are crucial for industrialization, and securing a competitive advantage in the international economic system. Since the 1970s, owing to the development of international environmental law, the focus has gradually shifted toward the environmental and health im-

46. Michikazu Kojima et al., *Lessons Learned from Illegal Transboundary Movement of Hazardous Waste in Asia*, in *INTERNATIONAL TRADE IN RECYCLABLE AND HAZARDOUS WASTE IN ASIA* 149, 163 (Michikazu Kojima & Etsuyo Michida eds., 2013).

47. FENG WANG ET AL., UNITED NATIONS UNIV., *E-WASTE IN CHINA: A COUNTRY REPORT 22-25* (2013), <https://collections.unu.edu/eserv/UNU:1624/ewaste-in-china.pdf>.

48. VELIS, *supra* note 42, at 6.

49. Meng Dengke Muyu (孟登科穆彤), *Pojie Yingguo Laji Ruhua Liyi Lian: 8000 Gongli Hangxing Luxian Tu* (破解英国垃圾入华利益链:8000公里航行路线图) [*Decode the Value Chain of British Trash Export to China: 8,000 km Roadmap of Shipment*], SOHU NEWS (Feb. 1, 2007), <http://business.sohu.com/20070201/n247978663.shtml>.

50. BIDWELL, *supra* note 10, at xxxv.

plications of the waste trade. Nonetheless, debates about the relationship between the waste trade and the environment are far from settled. Trade advocates suggest that the liberalization of trade may encourage environmental protection in developing countries through the importation of more stringent pollution standards.⁵¹ However, environmentalists point to evidence that increasing environmental regulation of industries within the United States has resulted in more imports of finished goods from developing countries like Mexico, therefore confirming the pollution haven hypothesis.⁵² In addition, international trade, especially the trade in waste, has had the effect of relocating environmental pollution from the North to the South. The South cannot afford to turn down the economic opportunity associated with waste imports; meanwhile, it lacks sufficient institutions to protect it from environmental degradation.⁵³

During the 1980s, several scandals emerged involving entities from industrialized countries dumping toxic waste in the territory of developing countries, particularly in Africa and Latin America.⁵⁴ These incidents motivated international lawmakers to address the environmental impacts of the transboundary movement of waste, which ultimately led to the adoption of the Basel Convention. Two other international

51. See generally Nancy Birdsall & David Wheeler, *Trade Policy and Industrial Pollution in Latin America: Where Are the Pollution Havens?*, 2 J. ENV'T & DEV. 137 (1993) (claiming that trade liberalization in Latin America has not been associated with pollution-intensive development).

52. See generally Arik Levinson & M. Scott Taylor, *Unmasking the Pollution Haven Effect*, 49 INT'L ECON. REV. 223 (2008) (finding that pollution abatement controls and imports have a negative correlation that may bias estimates against finding a pollution haven effect).

53. JENNIFER CLAPP, TOXIC EXPORTS: THE TRANSFER OF HAZARDOUS WASTES FROM RICH TO POOR COUNTRIES 10 (2001); see also Graciela Chichilnisky, *North-South Trade and the Global Environment*, 84 AM. ECON. REV. 851, 864 (1994) (arguing that the North-South issue in the global environment is caused by different arrangements of property rights in developed and developing countries: In developing countries where environment is treated as common property, the cost to extract the resource is lower, and therefore constitutes a comparative advantage in the international trade).

54. Jennifer Clapp, *The Toxic Waste Trade with Less-Industrialised Countries: Economic Linkages and Political Alliances*, 15 THIRD WORLD Q. 505, 507 (1994) (pointing out that Africa was a popular target for waste dumping in the mid-1990s and other regions like the South Pacific, the Caribbean, and Latin America also became targets for waste exports in the late 1980s).

and regional institutions, the Organization for Economic Cooperation and Development (OECD) and the European Union, whose members include most of the industrialized countries in the world, are both critical in developing regulations on the waste trade. This Part evaluates the international regulatory framework on cross-border waste trade as described above, as well as the implementation of these rules by the United States and China. Further, this Part will argue that existing international regulation has suffered from a narrow scope of application and lack of enforcement. Limited capacity and willingness to detect, prevent, and control illegal waste traffic and the environmental consequences thereof have also constrained domestic implementation by both waste exporting and importing countries.

A. *International Agreements Concerning Cross-Border Waste Trade*

During the 1980s, Europe and the United States doubled down on their domestic environmental and safety laws, which increased the cost of waste disposal in many industries.⁵⁵ Shortly after, a number of scandals broke that revealed that Western corporations were dumping waste on the shores of Africa and Latin America. In 1988, Guinea-Bissau and some European tanneries and pharmaceutical companies reached an agreement stating that the former would bury 15 million tons of toxic waste produced by the latter over a five-year period and receive total compensation of US\$600 million over those five years—about four times its Gross National Product that year.⁵⁶ However, the Guinea-Bissau government, facing strong protest from other African countries, withdrew from the contract.⁵⁷ The governments of Niger, Benin, Senegal, and Republic of the Congo also fielded similar offers.⁵⁸ The North-South divide highlighted by those waste-dumping scandals presaged the negotiation of the Basel Convention.⁵⁹ Nevertheless,

55. Zada Lipman, *A dirty dilemma: The hazardous waste trade*, 23(4) HARV. INT'L REV. 67, 68 (2002).

56. James Brooke, *Waste Dumpers Turning to West Africa*, N.Y. TIMES (July 17, 1988), <https://www.nytimes.com/1988/07/17/world/waste-dumpers-turning-to-west-africa.html>.

57. CLAPP, *supra* note 54, at 35.

58. Brooke, *supra* note 56.

59. KATHARINA KUMMER, INTERNATIONAL MANAGEMENT OF HAZARDOUS WASTES: THE BASEL CONVENTION AND RELATED LEGAL RULES 43–44 (2000)

no single voice of the South emerged, as some developing countries, such as Brazil, were concerned that strict international regulations would harm their domestic recycling industry, and were therefore hesitant about imposing restrictions on the cross-border flow of waste.⁶⁰

The final text of the Basel Convention reflects a compromise between competing interests and preferences of different state parties. First, rather than adopting a complete ban on hazardous waste trans-boundary movements, as some African countries proposed, the Basel Convention requires prior informed consent (PIC) from the prospective states of import and transit for the trans-boundary movements of hazardous waste.⁶¹ Second, PIC applies to hazardous wastes that are destined for final disposal and recycling, but exempts those that are intended for “direct reuse”; i.e., repair, refurbishment or upgrading rather than major reassembly.⁶² In the absence of an agreement on the technical standards for distinguishing wastes and non-wastes, this “direct reuse” exemption runs the risk of undermining the entire regulatory mechanism, especially when considering the poor technological capabilities of developing countries as waste importers.⁶³ Third, although the Basel Convention has set principles for waste prevention and minimization, it mainly functions as a framework convention and leaves many questions open, including, for example, what constitutes “appropriate measures” to be taken to achieve environmentally sound management, or how liability or compensa-

60. Jonathan Krueger, *The Basel Convention and the International Trade in Hazardous Wastes*, 2002 Y.B. INT'L COOPERATION ON ENV'T & DEV. 43, 45.

61. KUMMER, *supra* note 59, at 45, 48. Basel Convention Annex IX provides a list of wastes that are not considered as hazardous and therefore, exempt from the PIC requirement. Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal, Annex IX, Mar. 22, 1989, 1673 U.N.T.S 126 [hereinafter Basel Convention].

62. For example, Annex IX of the Basel Convention includes electrical and electronic assemblies destined for reuse. Basel Convention, *supra* note 60. However, as we've seen in previous discussions, although there is a common belief that CRTs are reused or refurbished in China, what actually happens is that only some of the metal components are recovered, while most glass and plastics treated with flame retardants are discarded via open dumping. See Xu, *supra* note 40, at 1569–71 (discussing the difficulties of recycling CRT glass).

63. Sabaa Ahmad Khan, *E-Products, E-Waste and the Basel Convention: Regulatory Challenges and Impossibilities of International Environmental Law*, 25 REV. EUROPEAN COMMUNITY & INT'L ENVTL. L., no. 2, 2016, at 248, 254.

tion for damages that result from illegal waste traffic can be determined.⁶⁴ Therefore, enforcement upon and compliance with the Basel Convention largely depends on corresponding regional agreements and national legislation.

Two other international and regional arrangements, the OECD and the European Union, deserve particular attention, as most members of these two organizations are industrialized countries, and therefore waste exporters. Discussion of waste trade management under the OECD framework began in the early 1980s and resulted in a code-based classification system for hazardous waste, forming the basis for relevant annexes of the Basel Convention.⁶⁵ The 2011 OECD Council Decision on the Control of Trans-boundary Movements of Wastes Destined for Recovery Operations uses a two-tier procedure system to govern the transboundary movement of wastes between OECD members. For hazardous wastes, the Amber Control Procedure applies prior consent and tracking requirements for their transboundary movements, and for wastes that do not typically exhibit hazardous characteristics, the Green Control Procedure requires no additional control except for those normally applied in commercial transactions.

However, the OECD control system is weaker than the Basel Convention in several ways. First, the Green Control Procedure covers a broader scope of non-hazardous wastes. For example, the Basel Convention exempts electrical and electronic assemblies such as printed circuit boards and wires from the PIC requirement if they are destined for "direct reuse," but the exemption does not extend to recycling or final disposal.⁶⁶ Under the OECD Decision, however, these materials can be traded freely for base and precious metal recovery in the importing countries. Second, requirements of Amber Control Procedure are less stringent than that of the Basel Convention's PIC. The Amber Control Procedure assumes a "tacit consent" when the importing country lodges no objection within thirty days of the provision of a written notification by

64. See generally Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal, U.N. Doc. UNEP/CHW.1/WG.1/9/2 (Dec. 10, 1999) [hereinafter Basel Liability Protocol] (attempts to set up a liability scheme, but hasn't come into effect yet due to a lack of signatures).

65. KUMMER, *supra* note 59, at 161.

66. Basel Convention, *supra* note 61.

the exporter.⁶⁷ Like the Basel Convention, the OECD Decision does not address the issue of liability and compensation in cases of non-compliance.⁶⁸

The 2006 E.U. Regulation on Shipments of Waste (Waste Shipment Regulation) also adopts a two-tier regulation, which distinguishes between “Amber Listed” wastes and “Green Listed” wastes.⁶⁹ Nonetheless, the Waste Shipment Regulation is stricter than the OECD Decision to some degree. For instance, in accordance with the E.U. Regulation, the country of transit may restrict the transit of waste even if the activity complies with domestic laws and regulations of importing and exporting countries.⁷⁰ Moreover, the Waste Shipment Regulation applies more stringent control procedures to waste exports to non-OECD countries. In principle, it prohibits export for final disposal to countries outside the European Union, as well as export of Amber Listed wastes for recovery to non-OECD countries.⁷¹ As for export of Green Listed wastes for recovery to non-OECD countries, the importing countries were presented with three options: prohibit the import, require a prior notification and consent procedure, or simply

67. MIRINA GROSZ, SUSTAINABLE WASTE TRADE UNDER WTO LAW: CHANCES AND RISKS OF THE LEGAL FRAMEWORKS’ REGULATION OF TRANSBOUNDARY MOVEMENTS OF WASTES 178 (2011).

68. *See generally*, Mar Bradford, THE UNITED STATES, CHINA & THE BASEL CONVENTION ON THE TRANSBOUNDARY MOVEMENTS OF HAZAROU WASTES AND THEIR DISPOSAL, 8(2) Fordham Environmental Law Review 305 (2011) (deciding the governance of transboundary movements of hazardous waste without discussing liability and compensation where there is no compliance).

69. Regulation 1013/2006, of the European Parliament and of the Council of 14 June 2006 on Shipments of Waste, annex III–IV, 2006 O.J. (L 190) 1, 49–53 (EC) [hereinafter Regulation 1013/2006].

70. Case C-259/05, *Omni Metal Service*, 2007 E.C.R. I-4967. The European Court of Justice heard issues regarding a preliminary ruling from a Netherlands court, in which the Netherlands charged *Omni Metal Service*, a French company exporting scrap electrical cable from Spain to China, with violating E.U. Regulation No. 259/93, the precursor of the Waste Shipment Regulation. *Supra* I-4974–I-4975. The European Court of Justice decided that, a combination of two green listed materials, i.e., solid plastic and scrap copper doesn’t automatically qualify for the simplified control procedure that applies to green listed materials, despite the fact that both China and Spain have followed the green list procedure. *Supra* p. I-4981.

71. Exports for final disposal to European Free Trade Association (EFTA) countries are exempt from this prohibition. Regulation 1013/2006, *supra* note 69, at 22.

not control the import. In 2007, the European Union adopted a subsequent regulation to reflect responses from non-OECD countries.⁷²

In practice, enormous variation exists in the implementation of the Waste Shipment Regulation by the E.U. member states. A 2012 coordinated audit on the enforcement of Waste Shipment Regulation in eight member states showed that these countries have generally complied with formal implementation requirements, such as promulgation of rules for inspection and sanctions.⁷³ However, enforcement practices—including interpretation of technical standards, data collection and exchange, and sanctions imposed on non-compliance—differ vastly. In all eight countries, *ex post* inspections to monitor whether importing countries have recycled the waste in an environmentally sound manner were rare. The audited states prosecute few infringements due to a lack of evidence and information, with the exception of the Netherlands—wherein the public prosecutor drops many such cases.⁷⁴ To strengthen national enforcement, the European Union amended its Waste Shipment Regulation in 2014 to require member states to formulate more detailed plans about inspection and investigation.⁷⁵

To summarize, while the Basel Convention and regulations of the OECD and the European Union have set up an international framework to restrict and regulate trans-boundary movements of hazardous wastes from developed to developing countries, the regulations allow many other wastes to trade freely, especially when the wastes are destined for reuse

72. For the text of this regulation, *see generally* Commission Decision 1418/2007 of 29 Nov. 2007, Concerning the Export for Recovery of Certain Waste Listed in Annex III or IIIA to Regulation 1013/2006 of the European Parliament and of the Council to Certain Countries to Which the OECD Decision on the Control of Transboundary Movements of Wastes Does Not Apply, 2007 O.J. (L 316) 6.

73. SUPREME AUDIT INST. OF THE NETH., COORDINATED AUDIT ON THE ENFORCEMENT OF THE EUROPEAN WASTE SHIPMENT REGULATION 5 (2013), https://www.eca.europa.eu/sites/cc/Lists/CCDocuments/otherpublications/Coordinated_audit_on_the_enforcement_of_the_European_Waste_Shipment_Regulation.pdf.

74. *Id.* at 43–44.

75. Regulation 660/2014, of the European Parliament and of the Council of 15 May 2014 Amending Regulation 1013/2006 on Shipments of Waste, 2014 O.J. (L 189) 135, 136–137.

and recovery. In addition, inadequate enforcement mechanisms, such as monitoring or compensation, undermine the effectiveness of these international arrangements in reality. Therefore, further domestic legislation in both importing and exporting countries is necessary to ensure compliance with international regulations on waste trade.

B. *Waste Export Control in the United States*

Although the United States has signed but not ratified the Basel Convention, it is a member of the OECD Decision, which requires the United States to regulate trans-boundary movements of hazardous wastes.⁷⁶ The 1976 Resource Conservation and Recovery Act (RCRA) is the primary legislation in the United States that governs the generation, transport, storage, and disposal of hazardous waste.⁷⁷ The RCRA's regulatory scheme for the management of hazardous waste, known as the "cradle-to-grave" system,⁷⁸ establishes a manifest system requiring waste generators to keep records of domestic treatment, storage, and disposal of hazardous waste.⁷⁹ In the case of hazardous waste export, Section 3017 of the RCRA requires exporters to obtain prior notification of the exporter and written consent from the importing country authority.⁸⁰ The RCRA also requires waste exporters to obtain confirmation of recovery or disposal from the disposal facilities at the final destination.⁸¹ However, if domestic laws exempt a certain type of hazardous waste from the manifest system, mainly for recycling and recovery purposes, then the export control procedure also exempts that certain hazardous waste.⁸² This is inconsistent

76. *List of OECD Member Countries - Ratification of the Convention on the OECD*, OECD, <http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm> (last visited Apr. 23, 2019) (indicating that the United States has been an OECD member since April 12, 1961). OECD Decisions are legally binding on all members except those which abstain at the time of adoption. *OECD Legal Instruments*, OECD, <https://www.oecd.org/legal/legal-instruments.htm> (last visited Apr. 23, 2019).

77. Barbara Scramstad, *Transboundary Movement of Hazardous Waste from the United States to Mexico*, 4 *TRANSNAT'L LAW* 253, 265 (1991).

78. *Id.*

79. 42 U.S.C. § 6922 (2010).

80. 42 U.S.C. § 6938 (1984).

81. 40 C.F.R. § 262.83(d)(2)(xv) (2017).

82. *See* Hazardous Waste Management System; Exports of Hazardous Waste, 51 Fed. Reg. 8,744, 8,747 (Mar. 13, 1986) (to be codified at 40 C.F.R.

with the United States' obligation under international law, because U.S. domestic regulations do not classify some wastes, such as municipal solid waste and spent lead-acid batteries (SLABS), as hazardous waste.⁸³ Therefore, these wastes are exempt from the notification and consent procedure, even though the OECD Decision and national legislation of many other countries place restrictions on these types of waste.⁸⁴ Furthermore, non-hazardous wastes under the RCRA are still subject to other domestic environmental and health regulations within the United States, but these rules and standards may not be available in many developing countries that import these wastes.⁸⁵

Traditionally, the Environment Protection Agency (EPA), as the primary implementer for environmental laws and regulations in the United States, has taken a relaxed approach toward export control of waste shipments.⁸⁶ In practice, the EPA has limited methods and incentives to verify whether an ex-

pt. 262.51) (proposing that exports of hazardous waste that are exempt under certain categories would also be exempt to additional requirements); Jeffrey M. Gaba, *Exporting Waste: Regulation of the Export of Hazardous Wastes from the United States*, 36 WM. & MARY ENVTL. L. & POL'Y REV. 405, 483 (2012) (stating that the EPA appears to exempt domestically recycled wastes from classification while at the same time imposing export controls on the same materials for concerns that they will not be managed properly outside the United States).

83. Gaba, *supra* note 82, at 482.

84. Org. for Econ. Co-operation and Dev. [OECD], Decision on the Control of Transboundary Movements of Wastes Destined for Recovery Operations, at D(2)(j), OECD Doc. C(92)39/FINAL (Mar. 30, 1992) ("Each transboundary movement of wastes shall be accompanied by a movement document which includes the information listed in Appendix 8.B to this Decision" (emphasis removed)); *supra* D(2)(1) ("[T]he recovery facility shall send a certificate of recovery to the exporter and to the competent authorities of the countries of export and import . . .").

85. Lisa T. Belenky, *Cradle to Border: U.S. Hazardous Waste Export Regulations and International Law*, 17 BERKELEY J. INT'L L. 95, 108 (1999) (citing the EPA's response to public comments that address the narrow scope of the regulations for RCRA Section 3017: "It is highly unlikely that Congress would have been more concerned about wastes exported than about wastes in its own backyard.").

86. See David Biello, *Not in My Backyard: Stopping Illegal Export of Junked Televisions and Computers*, SCIENTIFIC AMERICAN (Nov. 19, 2008), <https://www.scientificamerican.com/article/stopping-illegal-e-waste-export-and-mis-handling> (finding that the EPA has no strategy to restrict export of harmful waste).

ported waste is destined for disposal or reuse. Normally, waste export requires prior notification and consent from the importing country, but if the RCRA classifies wastes exported for reuse as non-waste, then the exported waste will be exempt from the notification and consent requirements.⁸⁷ A 2013 study by Commission for Environmental Cooperation pointed out that U.S. exporters are sending SLABs to forty-seven countries despite the EPA lacking a record of consent from those countries.⁸⁸ The study raised other questions about the implementation of the export control system, including the lack of coordination between the EPA and the customs authority, improper tariff coding used for waste classification, and significant data disparity between importing and exporting countries.⁸⁹ The recent Hazardous Waste Export-Import Revisions, effective in late 2016, demonstrates the EPA's efforts to mitigate the gaps between international and domestic regulations on export control of hazardous wastes by incorporating some provisions from the OECD Decision.⁹⁰ However, more time is needed for evaluation of the effectiveness of the Revisions, especially the rules concerning information exchange and management.

With regard to liability, which international law has left to the discretion of national legislation, the RCRA penalizes illegal exports of hazardous wastes with imprisonment for no more than five years and/or a fine up to US\$50,000 per day and per violation.⁹¹ So far, only a handful of U.S. companies and individuals have been found guilty for illegal waste exports.⁹² It is unlikely that foreign nationals or institutions that

87. See Gaba, *supra* note 82, at 451–452 (noting that the EPA's policies result in several problems for determining e-waste and hazardous waste).

88. Comm'n for Env'tl. Cooperation [CEC], *Hazardous Trade? An Examination of US-generated Spent Lead-acid Battery Exports and Secondary Lead Recycling in Canada, Mexico, and the United States*, at 23 (2013), <http://www3.cec.org/islandora/en/item/11220-hazardous-trade-examination-us-generated-spent-lead-acid-battery-exports-and-en.pdf>.

89. *Id.* at xi–xii.

90. 40 C.F.R. § 262.83(b)(1)(xi) (2017).

91. 42 U.S.C. § 6928(d)(6) (defining one requirement for criminal penalties: knowingly exporting hazardous waste without consent of the receiving country or in violation of an international agreement between the United States and the receiving country.”).

92. See *e.g.*, *United States v. Ahmad*, 67 F.3d 309 (9th Cir. 1995) (affirming that defendants violated 42 U.S.C.S. § 6928(d)(1) by knowingly

have suffered damages from U.S. illegal waste exports will seek relief in U.S. courts, as the court in *Amlon Metals* declared that it had no intent of applying the RCRA extraterritorially.⁹³ Theoretically, foreign nationals or institutions may bring a claim under the Alien Torts Claims Act, but U.S. courts have yet to determine whether provisions of the Basel Convention or the OECD Decision are sufficient to establish corporate liability for illegal waste export under customary international law.⁹⁴ To summarize, there is a considerable gap between the international regulatory framework on trans-boundary movement of hazardous waste and U.S. implementation of international law with respect to monitoring, detection, and liability of illegal waste export. The next section will discuss how China, as the largest waste importer in the world, failed to fill this regulatory gap before the foreign waste ban.

C. *Chinese Regulation of the Waste Trade and Its Limitations*

China's domestic regulation of the international waste trade began to take shape in mid-1990s, but has suffered from ineffective implementation for the past two decades. Further, cross-border waste traffic was prevalent because of high demands for cheap raw materials in China, circumvention of regulation by waste traders and small recyclers, and corruption by law enforcement officials. Media exposure of illegal waste imports and environmental violation in the Chinese recycling industry during the 2000s suggests that the Chinese government was well aware of the implementation gap, but failed to act upon it due to concerns that it might hurt the economy. This changed during the recent environmental campaign and the

transporting hazardous waste from the premises of their laboratory to a facility that did not have a permit); *United States v. Udell*, No. 2:05-00402 (E.D. Pa. sentenced Feb. 14, 2006) (sentenced for mishandling waste); *EarthCycle, LLC, EPA*, *docketed*, No. RCRA-HQ-2009-0001 (2016) (claiming violations of several provisions of RCRA).

93. *See generally* *Amlon Metals, Inc. v. FMC Corp.*, 775 F. Supp. 668 (S.D.N.Y. 1991) (wherein industrial wastes produced by FMC, a pesticide company in Baltimore, were exported to the United Kingdom and subsequently discovered by local authorities to contain high concentrations of a toxic substance, xylene; the court dismissed claims brought under RCRA based on a presumption against extraterritorial application of the law).

94. *Id.* at 671 (rejecting the plaintiff's claim that the Stockholm Principles and the Restatement (Third) of Foreign Relations Law constitute actionable international law under the Alien Torts Claims Act).

foreign waste ban in 2017, which signified an elevation of environmental protection in Chinese policymaking.

In 1995, China passed the Law on Prevention and Mitigation of Environmental Pollution by Solid Waste as an effort to implement the Basel Convention and designated the MEP—now the MEE, as of early 2018—as the supervisory agency for waste imports and exports.⁹⁵ The MEP classifies wastes into three categories, each subject to different administrative procedures.⁹⁶ The first category of waste is prohibited, which includes hazardous wastes under the Basel Convention. The MEP completely bans the importation of this category of waste. The second category is restricted. The MEP requires importers to meet certain requirements, including possession of a MEP-issued waste import license; registration of overseas supplier enterprise with the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ); and a certificate for pre-shipment inspection recognized by AQSIQ 1,66.⁹⁷ The third category is non-restricted, and the MEP exempts importation of such wastes from its review and approval.⁹⁸ The MEP updates catalogues for the three categories of waste every few years in correspondence to changes of its regulatory priorities.

However, many of these requirements have suffered from ineffective implementation. In practice, the law delegates re-

95. Zhonghua Renmin Gongheguo Gutu Feiwu Wuron Huanjing Fangzhi Fa (中华人民共和国固体废物污染环境防治法) [Law on Prevention and Control of Environmental Pollution by Solid Waste] (promulgated by the Standing Comm. Nat'l People's Cong., Oct. 30, 1995, effective Apr. 1, 2005), art. 11, CLI.1.13136(EN) (Lawinfochina).

96. *Id.* at art. 25.

97. Org. for Econ. Co-operation and Dev. [OECD], Reducing Barriers to International Trade in Non-Hazardous Recyclable Materials and Waste: Exploring the Environmental and Economic Benefits: Part 2. Findings of Six Country Studies, at 7, 18, OECD Doc. COM/TAD/ENV/JWPTE(2008)27/ANN (Nov. 21 2008).

98. As of the 2015 revision of the Law on Prevention and Control of Environmental Pollution by Solid Waste, importation of wastes that fell within the non-restricted list must follow an automatic import licensing procedure. Zhonghua Renmin Gongheguo Gutu Feiwu Wuron Huanjing Fangzhi Fa (中华人民共和国固体废物污染环境防治法) [Law on Prevention and Control of Environmental Pollution by Solid Waste] (promulgated by the Standing Comm. Nat'l People's Cong., Oct. 30, 1995, effective Apr. 1, 1996; revised by the Standing Comm. Nat'l People's Cong., Apr. 24, 2015), art. 25, CLI.1.252600(EN) (Lawinfochina).

sponsibility for undertaking pre-shipment inspection to the China Certification & Inspection Group (CCIC), a state-owned enterprise that has branches operating in over thirty countries.⁹⁹ In many situations, due to the lack of manpower, the CCIC must hire temporary employees who are not equipped with the specific knowledge about types of waste materials or the necessary skills to perform inspection.¹⁰⁰ Corruption is another factor impeding the effectiveness of law enforcement. For example, rent-seeking activities were prevalent in the self-inspection certification, a procedure that exempts certain CCIC-certified suppliers from pre-shipment inspection and allows them to conduct self-inspection instead.¹⁰¹ As a result, waste materials that do not meet the control standards for importation made their ways to China in large quantities.

In 1997, China amended its Criminal Code to penalize illegal waste traffic with imprisonment of up to ten years.¹⁰² The same year, a Shanghai court convicted William Ping Chen, a Chinese-American, for smuggling 238 tons of municipal waste from California to China using forged documents.¹⁰³ It is also the first reported waste traffic case prosecuted in China. While the U.S. media portrayed Chen as a “minor offender” and accused China of politicizing the case because the prosecution took place during a negotiation over intellectual

99. Guanyu Mingque Shouquan de Jinkou Feiwu Yuanliao Zhuangyun Qian Jianyan Jigou Yewu Fanwei He Quyu de Gonggao (关于明确授权的进口废物原料装运前检验机构业务范围和区域的公告) [Public Notice on the Business Scope and Area of Delegated Pre-shipment Inspection of Imported Waste Materials] (promulgated by General Admin. of Quality Supervision, Inspection and Quarantine, Aug. 05, 2007) CERTIFICATION AND ACCREDITATION ADMINISTRATION, June 28, 2011, <http://www.cnca.gov.cn/cnca/psi/fkfw/431433.shtml>.

100. Interview with Jason Xu, an experienced waste trader in Vancouver, B.C. (Dec. 3, 2018).

101. *Id.*

102. Zhonghua Renmin Gongheguo Xingfa (中华人民共和国刑法) [Criminal Law of the People's Republic of China] (promulgated by Nat'l People's Cong., Mar. 14, 1997, effective Oct. 1, 1997), art. 155, 339, CLI.1.17010(EN) (Lawinfochina).

103. *See generally* Weilian-Ping-Chen Zousi An (威廉·平·陈走私案) [William Ping Chen Smuggling Case], CLI.C.235877(EN) (Lawinfochina) (Sup. People's Ct. Feb. 28, 1997) [hereinafter William Ping Chen Smuggling Case].

property issues between the U.S. and Chinese governments,¹⁰⁴ China characterized the case as a rightful implementation of Chinese criminal law and the Basel Convention.¹⁰⁵

A search for “illegal waste traffic” in the official database of Chinese court cases returns 202 cases between 1997 and 2018; a review of these cases provides insight into the nature of waste traffic and the challenges for regulation.¹⁰⁶ Searching for similar cases before 1997 reveals that China prosecuted fewer than twenty waste traffic cases before 1997, two-thirds of which involved illegal imports of e-waste, a practice banned by the Chinese government in 2000.¹⁰⁷ Overall, between 1997 and 2018, e-waste (sixty-nine cases), waste plastics (fifty-eight cases), and waste metals (twenty-nine cases) represent more than seventy percent of all the waste traffic cases.¹⁰⁸ There are three main methods of waste trafficking: crossing through un-

104. Seth Faison, *China Convicts American as Trash Smuggler*, N.Y. TIMES (Jan. 14, 1997), <https://www.nytimes.com/1997/01/14/world/china-convicts-american-as-trash-smuggler.html>.

105. Chen was sentenced for ten years and was fined for 500,000 yuan, but he didn't serve in Chinese prison because he was deported from China after the decision was made. *Id.*; William Ping Chen Smuggling Case, *supra* note 103.

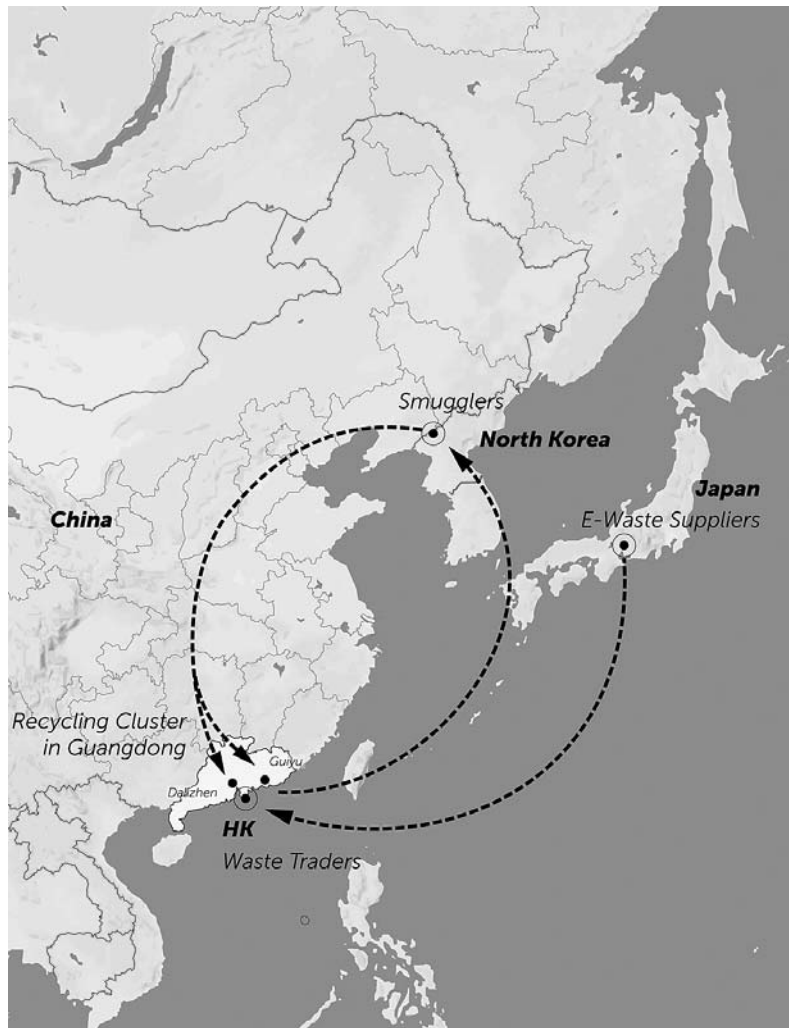
106. See generally Zhongguo Caipan Wenshu Wang (中国裁判文书网) [China Judgements Online], <http://wenshu.court.gov.cn/> (last visited Apr. 23, 2019) [hereinafter China Judgements Online] (containing 7 million criminal case decisions and 35 million civil case decisions as of November 2018). China Judgements Online is a database established by the Supreme Court of China in 2013 to publicize court decisions from Chinese courts of all levels. Zuigao Renmin Fayuan Guanyu Renmin Fayuan Zai Hulanwang Gongbu Caipan Wenshu de Guiding (最高人民法院关于人民法院在互联网公布裁判文书的规定) [Provisions of the Supreme People's Court on the Issuance of Judgments on the Internet by the People's Courts], (promulgated by Sup. People's Ct., Nov. 21, 2013, effective Jan. 1, 2014) CLI.3.213603 (EN) (Lawinfochina).

107. *Yanjin Jinkou Dianzi Laji, Jinzhi Jinkou Mulu Jiang Fabu* (严禁进口电子垃圾 禁止进口目录将发布) [*Prohibiting the Import of Electronic Waste, New Catalogue on Prohibited Waste Imported is About to Be Published*], PEOPLE'S DAILY (May 31, 2002), <http://www.people.com.cn/GB/jinji/31/179/20020531/741649.html>; China Judgements Online, *supra* note 106.

108. China Judgements Online, *supra* note 106. There is some overlap between the three individual categories because several cases involve the smuggling of more than one material. See, e.g., Luozhiqiang, Luozhijian Zousi Feiwu Yishen Xingshi Panjueshu (罗志强、罗志坚走私废物一审刑事判决书) [Luo Zhiqiang, Luo Zhijian, Criminal Judgment of Smuggling Waste] CHINA JUDGMENTS ONLINE (Guangdong Guangzhou Interm. People's Ct. 2018) (involving the smuggling of waste plastics and waste metals).

checked borders (eighty-nine cases), concealment through false classification and document forgery (sixty-two cases), and trading of imported waste or waste import license (fifty-six cases). In many other cases, illegal waste traffic was not prosecuted because the enforcement authority was unable to detect the traffic activity or the trafficked waste became untraceable after it entered China.

GRAPH TWO: E-WASTE SMUGGLING NETWORK IN EAST ASIA



China shares nearly 5,000 kilometers of border with Vietnam, Myanmar, and North Korea, making it difficult to effectively detect illegal border crossing. In several cases, complex smuggling networks have connected e-waste suppliers in Japan with traders based in Hong Kong, who, in turn, enlist smugglers in North Korea to ship the e-waste from Hong Kong to Northeast China via the Yalu River.¹⁰⁹ The smugglers then transport the waste south to buyers in recycling clusters in Guangdong.¹¹⁰

In addition, the CCIC's pre-shipment inspectors normally rely on random sampling and visual inspection to determine whether those imported wastes comply with Chinese pollution control standards.¹¹¹ This gives rise to considerable variation in the enforcement by different port authorities. A number of cases suggest that inspections in Hong Kong are less stringent than that in North America or Europe, likely because of the sheer volume of goods that flow in and out of the free port.¹¹² According to a 2006 report by a British NGO, even though China formally banned the import plastic beverage bottles that

109. For examples of these cases, see e.g., Feng Moushun Zousi Feiwu An Yishen Panjue (冯某顺走私废物案一审判决) [Feng Moushun Waste Traffic First Instance Decision], CHINA JUDGMENTS ONLINE (Guangdong Guangzhou Interm. People's Ct. 2018); Wang Yucai, Huang Shoujun Zousi Feiwu An Zhongshen Panjue (王玉才、黄守军走私废物终审判决) [Wang Yucai, Huang Shoujun Waste Traffic Final Decision], CHINA JUDGMENTS ONLINE (Guangdong High People's Ct. 2015); Yu Renying Deng Zousi Feiwu An Yishen Panjue (余仁营等走私废物案一审判决) [Yu Renying and Others Waste Traffic First Trial Decision], CHINA JUDGMENTS ONLINE (Liaoning Dalian Interm. People's Ct. 2014).

110. See *supra* Graph Two.

111. Interview with Jason Xu in Vancouver, B.C. (Dec. 3, 2018); interview with a dozen Chinese plastic recyclers, in Dar es Salaam, Tanz. (Jan. 2-Jan. 25, 2018).

112. For examples of such cases, see e.g., Hefei Tuteng Maoyi Youxian Gongsi Deng Zousi Feiwu An Yishen Panjue (合肥图腾贸易有限公司等走私废物案一审判决) [Hefei Tuteng Trade Co. Ltd. and Others Waste Traffic First Trial Decision], CHINA JUDGMENTS ONLINE (Jiangsu Suzhou Interm. People's Ct. 2013); Li Faguang Zousi Feiwu An Zhongshen Panjue (黎发光走私废物案终审判决) [Li Faguang Waste Traffic Final Decision], CHINA JUDGMENTS ONLINE (Higher People's Ct. of Guangdong 2014); see also WASTE & RESOURCES ACTION PROGRAM, UK PLASTICS WASTE – A REVIEW OF SUPPLIES FOR RECYCLING, GLOBAL MARKET DEMAND, FUTURE TRENDS AND ASSOCIATED RISKS 13–14 (2006), <http://www.wrap.org.uk/sites/files/wrap/UK%20Plastics%20Waste.pdf> (reporting that China has stricter standards for mainland China).

are not washed or shredded in 2001, importation remains the norm rather than the exception, with Hong Kong handling most of the shipments.¹¹³ The fact that Hong Kong has functioned as a transshipment point for the majority of waste destined for China not only undermines any efforts of exporting countries to monitor waste disposal in final destinations, but it also presents a challenge to the return of illegally imported wastes, which is a responsibility of the exporting country under the Basel Convention.¹¹⁴ Only four of the 200 decisions mention successful return of waste shipments to Hong Kong and the United States; in many situations, trafficked wastes are either not traceable after purchase by domestic buyers, or customs continues to hold the trafficked wastes awaiting disposal.¹¹⁵ Even though China has excluded trading companies from applying for waste import licenses and formally banned the trading of waste import licenses since 2011,¹¹⁶ the network

113. WASTE & RESOURCES ACTION PROGRAM, *supra* note 112, at 148.

114. Basel Convention Article 9 provides a responsibility for the state of export to ensure that illegally trafficked waste will be taken back by the exporter or the generator (“In case of a transboundary movement of hazardous wastes or other wastes deemed to be illegal traffic as the result of conduct on the part of the exporter or generator, the State of export shall ensure that the wastes in question are . . . taken back by the exporter or the generator or, if necessary, by itself into the State of export . . .”). Basel Convention, *supra* note 61, at art. 9.

115. For cases in which waste shipments were successfully returned to the exporters, see e.g., Guangdong Chuangsheng Gongmao Youxian Gongs He Xiao Sike Zousi Feiwu An Yishen Panjue (广东创盛工贸有限公司和肖斯克走私废物案一审判决) [Guangdong Chuangsheng Industry and Trade Corp. and Xiao Sike Waste Traffic Trial Court Decision], CHINA JUDGEMENTS ONLINE (Guangdong Guangzhou Interm. People’s Ct. 2016); Chengdu Jinning Maoyi Youxian Gongs He Pengmou Zousi Feiwu An Yishen Panjue (成都锦宁贸易有限公司和彭某走私废物案一审判决) [Chengdu Jinning Trading Co. Ltd. and Peng Waste Traffic Trial Court Decision], CHINA JUDGEMENTS ONLINE (Jiangsu Zhenjiang Interm. People’s Court 2015); Jiaguan (Xianggang) Youxian Gongs He Zhong Hongjian Zousi Feiwu An Yishen Panjue (佳冠(香港)有限公司和钟红建走私废物案一审判决) [Jiaguan HK Co.Ltd. and Zhong Hongjian Waste Traffic Trial Court Decision], CHINA ONLINE JUDGMENTS (Guangdong Guangzhou Interm. People’s Ct. 2018); Li Guoqing Zousi Feiwu An Yishen Panjue (李国庆走私废物案一审判决) [Li Guoqing Waste Traffic Trial Court Decision], CHINA ONLINE JUDGMENTS (Fujian Xiamen Interm. People’s Ct. 2017).

116. Gutu Feiwu Jinkou Guanli Banfa (固体废物进口管理办法) [Administrative Measures for the Import of Solid Waste] (promulgated by the Ministry of Environmental Protection, Ministry of Commerce, National Development and Reform Commission, General Administration of Customs, Gen-

of the waste trade continues to thrive because of the geographic dispersion and informality. These cases also suggest that government authorities in China chose to turn a blind eye to these practices because they viewed the waste trade as beneficial to the Chinese economy.¹¹⁷ By trading import quotas, licensed importers get commissions and tax deduction from the value-added tax (VAT) on imported waste materials, allowing unlicensed recycling workshops to access cheap raw materials.¹¹⁸ Professional waste traders have often played a facilitative role by matching domestic demand with overseas supplies, re-allocating import quotas, and preparing documents for customs clearance.¹¹⁹ For about three decades, a resilient network connecting actors holding different positions in the global value chain of waste trade and recycling has gradually evolved. Correspondingly, this evolution has undermined the authority of the Chinese government to monitor the transport, processing, and disposal of imported waste and ensure environmental compliance in these activities.

IV. CHINA'S ONGOING ENVIRONMENTAL CAMPAIGN AND FOREIGN WASTE BAN

In mid-2017, the Chinese state announced a foreign waste ban. The ban intended to stop imports of solid wastes that have caused environmental degradation and public discontent by early 2017, and to replace the importation of other wastes with China's domestic recyclables by 2019.¹²⁰ To implement

eral Administration of Quality Supervision, Inspection and Quarantine, effective Aug. 1, 2011), MINISTRY ECOLOGY & ENV'T., Apr. 8, 2011, at 2, http://english.mee.gov.cn/Resources/laws/regulations/Solid_Waste/201111/P020111114599168815496.pdf.

117. Interview with Jason Xu, in Vancouver, B.C. (Dec. 3, 2018).

118. In a few cases, licensed importers sold their unfulfilled quota to others because they are worried that inadequate production capacity will have a negative impact on their bank credit lines and future quota allocations.

119. Interview with Vicent Tian, a Chinese plastic waste trader, in Bos., Mass. (Oct. 20, 2018); Interview with Jason Xu, in Vancouver, B.C. (Dec. 3, 2018).

120. Jinzhi Yang Lese Rujing Tuijin Gutu Feiwu Jinkou Guanli Zhidu Gaige Shishi Fang'an, (禁止洋垃圾入境推进固体废物进口管理制度改革实施方案) [Implementation Plan for Prohibiting the Entry of Foreign Garbage and Advancing the Reform of the Solid Waste Import Administration System] (promulgated by the St. Council, July 18, 2017, effective July 18, 2017)

this ban, the national government has moved to revise relevant laws and technical standards, tighten control of import licensing and waste shipment inspections, and organize nationwide enforcement campaigns against environmental violations in recycling and reprocessing activities. While the scale and impact of the current environmental reform is unparalleled, previous environmental crackdowns in China reveal problems of inconsistency and unsustainability in enforcement measures. Part III sheds light on the motivations, enforcement mechanisms, and domestic implications of the foreign waste ban.

A. *Motivations of the Current Environmental Campaign:
Continuing Concerns, New Heights*

China's economic achievements in the first thirty years of reform have had an enormous cost in environmental degradation. The MEP puts China's environmental pollution cost in 2009 at 1,392 billion Chinese yuan, which accounts for about 3.8 percent of the country's GDP that year, while China's GDP growth rate of the same year is 8.7%.¹²¹ In contrast to the impressive impact on economic growth, environmental issues and associated health risks have fueled growing public dissent in China and raised concerns about government legitimacy and social stability, as evidenced by the increasing number of environmental protests and wide publicity of the documentary

CLI.2.298856(EN) (Lawinfochina) [hereinafter Plan for Prohibiting the Entry of Foreign Garbage]. The new pollution control standards on waste import requires that the contamination or impurity level of the imports of municipal waste plastics, unsorted waste paper, and waste textiles should be no higher than 0.5%. This was viewed by waste exporters as too strict to comply with and therefore constitutes a de facto ban of waste imports. Statement from David Biderman, Executive Dir. & CEO, Solid Waste Ass'n of N. Am., Catalogue of Solid Wastes Forbidden to Import into China by the End of 2017, to WTO/TBT Nat'l Notification and Enquiry Ctr. of China & Ministry of the Evtl. Prot. of China (Aug. 31, 2017) (on file with the author).

121. Zhang Wei (章轲), Neidi Huanjing Wuran Sunshi Zeng Su Chao GDP Chan Chu Lu Wei Fada Guojia 1/10 (内地环境污染损失增速超GDP产出率为发达国家1/10) [*Environment Pollution Cost in Mainland China Grows Faster than Its GDP; China's Resource Productivity is One-Tenth of that of Developed Countries*], PEOPLE'S DAILY (Feb. 1, 2012), <http://finance.people.com.cn/GB/16984524.html> (citing MEP's China Environmental and Economic Account Report 2009).

Under the Dome before it was banned in mainland China.¹²² To ameliorate these destabilizing factors, the Chinese government has endeavored to improve its environmental governance since the late 2000s, as envisaged in the *Eleventh* and *Twelfth Five-Year Plans*.¹²³ China's current environmental campaign, with its central focus on the foreign waste ban, continues the effort of previous environmental reforms in China. Nonetheless, the scale and impact of the ongoing campaign has reached new heights—supplanting, to a certain level, the priority of economic growth as the traditional performance legitimacy indicator, and embodying elements of environmentalism as part of China's development ideology as well as its quest for soft power and global leadership.

Adopted in 2006 and 2011 respectively, the *Eleventh* and *Twelfth Five-Year Plans* both set aggressive targets for energy conservation and pollution control. For example, the *Twelfth Five-Year Plan* sets up targets of a seventeen percent reduction in carbon dioxide emission per unit GDP, and an increase of the industrial solid waste utilization rate from sixty percent to seventy-two percent by 2015.¹²⁴ During this period, there oc-

122. Natasha Gilbert, *Green Protests on the Rise in China*, NATURE (Aug. 14, 2012), <https://www.nature.com/news/green-protests-on-the-rise-in-china-1.11168>; 'Under the Dome' Documentary on Pollution, N.Y. TIMES (Mar. 7, 2015), <https://www.nytimes.com/2015/03/07/world/asia/china-blocks-web-access-to-documentary-on-nations-air-pollution.html>.

123. Zhonghua Renmin Gongheguo Jingji He Shehui Fazhan Di Shiyi Ge Wu Nian Jihua (中华人民共和国经济和社会发展第十一个五年计划) [11th Five-Year Plan (2006-2010) for National Economic and Social Development] (promulgated by the Nat'l People's Congress, Mar. 16, 2006) ST. COUNCIL. GAZ., Mar. 14, 2006, http://www.gov.cn/gongbao/content/2006/content_268766.htm [hereinafter 11th Five-Year Plan] (establishing environmental programs in section 6); Zhonghua Renmin Gongheguo Guomin Jingji He Shehui Fazhan Di Shi'er Ge Wu Nian Guihua Gangyao (中华人民共和国国民经济和社会发展第十二个五年规划纲要) [12th Five-Year Plan for National Economic and Social Development of the People's Republic of China] (promulgated by the Nat'l People's Congress, Mar. 16, 2006) ST. COUNCIL. GAZ., Mar. 16, 2011, http://www.gov.cn/2011lh/content_1825838.htm (establishing environmental programs in section 6).

124. Guowuyuan Guanyu Yinfa Shierwu Kongzhi Wenshi Qiti Paifang Gongzuo Fangan de Tongzhi (国务院关于印发“十二五”控制温室气体排放工作方案的通知) [Work Plan for Greenhouse Gas Emission Control During the 12th Five-Year Plan Period] (promulgated by the St. Council, Dec. 1, 2011) ST. COUNCIL. GAZ., Jan. 13, 2012, http://www.gov.cn/zwgk/2012-01/13/content_2043645.htm; Shierwu Ziyuan Zonghe Liyong Zhidao Yijian (“十二五”资源综合利用指导意见) [Guiding Opinion on the Comprehensive

curred a highly significant institutional change: the inclusion of environmental performance in the cadre evaluation system, which strengthened the enforceability of those environmental performance targets over those related to economic growth, which had previously trumped other targets.¹²⁵ However, there were setbacks to the promotion of environmental protection. For example, a policy experiment of “green GDP,” which proposed to discount environment-related costs of economic activity from the accounting of GDP, failed due to resistance from local governments.¹²⁶ The *Thirteenth Five-Year Plan*, which covers the years between 2016 and 2021, emphasizes the role of industrial upgrading and technological innovation in promoting green development, and seeks to establish accountability mechanisms for government officials engaged in decision-making, implementation, and monitoring of environmental compliance.¹²⁷ Under these policy directions, pollution control in waste processing and recycling industries is consistent with the broader goals of economic transformation, including the phasing out of excess production capacity to facilitate industrial upgrading.¹²⁸ The ultimate goal of the foreign waste ban, according to the State Council, is to protect the nat-

Utilization of Resources during the 12th Five-Year Plan] (promulgated by Nat'l Dev. Reform Comm'n, Dec. 10, 2011) NAT'L DEV. REFORM COMM'N, Dec. 10, 2011, http://www.ndrc.gov.cn/zcfb/zcfbtz/201112/t20111229_453571.html.

125. ALEX WANG, *The Search for Sustainable Legitimacy: Environmental Law and Bureaucracy in China*, 37 HARV. ENVTL. L. REV. 365, 399 (2013).

126. Vic Li & Graeme Lang, *China's "Green GDP" Experiment and the Struggle for Ecological Modernisation*, 40 J. CONTEMP. ASIA 44, 54 (2010).

127. Guanyu Jiaqiang Ziyuan Huanjing Shengtai Hongxian Guankong de Zhidao Yijian (关于加强资源环境生态红线管控的指导意见) [Guiding Opinion on Strengthening the Red Line Management and Control of Environment and Ecology] (promulgated by the Nat'l Dev. Reform Comm'n, June 2, 2016) ST. COUNCIL GAZ., June 2, 2016, http://www.gov.cn/xinwen/2016-06/02/content_5079114.htm. Scholars have criticized that, previous environmental cadre evaluation system has suffered from insufficient accountability because of frequent rotations of government officials. Sarah Eaton & Genia Kostka, *Authoritarian Environmentalism Undermined? Local Leaders' Time Horizons and Environmental Policy Implementation in China*, 218 THE CHINA Q. 359, 361 (2014).

128. Guanyu Jiji Fahui Huanjing Baohu Zuoyong Cujin Gongji Ce Jiegou Xing Gaige de Zhidao Yijian (关于积极发挥环境保护作用促进供给侧结构性改革的指导意见) [Guiding Opinion on the Actively Deploying the Role of Environment Protection in Promoting Supply-Side Structural Reform] (promulgated by the Ministry Env'tl. Prot., Apr. 14, 2016) ST. COUNCIL GAZ.,

ural environment and human health, while the intermediate goal is to increase domestic recycling and boost self-sufficiency in the demand for recycled materials.¹²⁹ Moreover, environmental protection has seemingly also gained some normative value itself, independent of the objectives of economic and social stability. As the next section will show, the Chinese government has doubled down on suppressing informal recycling plants and workshops mainly for environmental purposes, notwithstanding the risks of increased production cost and labor displacement.

The call for establishing a socialist ecological civilization (社会主义生态文明) captures the normative value of environmental protection as part of China's new development ideology.¹³⁰ The current administration has announced a transition in its guiding principles from an emphasis on "construction, speed, short-term, and development" to governance, "quality," "long-term," and "protection," in order to alleviate people's imminent concerns about the environment and health.¹³¹ In order to overcome the problems of inconsistency and local protectionism in environmental regulation, the national government has introduced a series of measures of institutional reform aimed at centralizing cadre management in environmental agencies, strengthening environmental performance evaluation and accountability of lower-level governments, and promoting the use of information technology in environmental monitoring and enforcement activities.¹³² Moreover, the

Apr. 14, 2016, http://www.gov.cn/zhengce/2016-05/22/content_5075678.htm.

129. Plan for Prohibiting the Entry of Foreign Garbage, *supra* note 120, at 24.

130. The term "ecological civilization" was enshrined in the Constitution of the Chinese Communist Party in 2012. See Heidi Wang-Kaeding, WHAT DOES XI JINPING'S NEW PHRASE "ECOLOGICAL CIVILIZATION" MEAN?, *The Diplomat* (Mar. 6, 2018), <https://thediplomat.com/2018/03/what-does-xi-jin-pings-new-phrase-ecological-civilization-mean/>.

131. *Xi Jinping shengtai wenming jingdian yulu* (习近平生态文明经典语录) [*Xi Jinping Quotes on Ecological Civilization*], State Forestry and Grassland Administration of China (Mar. 20, 2015), <http://www.forestry.gov.cn/main/4498/20150320/749111.html>.

132. *Guanyu Jinyibu Qianghua Shengtai Huanjing Baohu Jianguan Zhifa de Yijian* (关于进一步强化生态环境保护监管执法的意见) [Opinions on Further Tightening Regulatory Law Enforcement Concerning the Protection of the Ecological Environment] (promulgated by the Ministry Ecology & Env't, Sept. 13, 2018) MINISTRY ECOLOGY & ENV'T, Sept. 13, 2018, <http://www.mee.gov.cn/>.

formal addition of “creat[ing] a good productive and living environment for the people, and contributing to global ecological safety” to the CPC’s constitution indicates that it is a slogan not only for bolstering China’s national pride internally, but also for claiming global leadership in environmental protection.¹³³ The past three years have witnessed China’s emergence as a leader in global climate change negotiations, South-South cooperation, and now deterring illegal waste traffic.¹³⁴ Therefore, this ongoing environmental campaign in China also contributes to the objectives of improving China’s international reputation and soft power as enshrined in the Belt and Road Initiative (BRI), but with more emphasis on the sustainability of development. In 2017, the Chinese national government proposed a “Green Belt and Road,” which highlights the need for international cooperation on green financing and technological innovation.¹³⁵ So far, however, this has remained only a conceptual framework for policymaking.

Although the elevation of environmental goals in Chinese state policies is unprecedented, there are notable continuities in strategies for implementation. Since the 1990s, Chinese industrial reform has been guided by the principle of “grasping the large and letting go the small” (抓大放小), with the objective of improving efficiency in state-owned enterprises and en-

gov.cn/gkml/sthjbgw/bgtwj/201809/t20180927_630564.htm; Zhonggong Zhongyang Bangong Ting Guowuyuan Bangong Ting Yinfa “Guanyu Sheng Yixia Huanbao Jigou Jiance Jiancha Zhifa Chuizhi Guanli Zhidu Gaige Shidian Gongzuo de Zhidao Yijian” (中共中央办公厅 国务院办公厅印发《关于省以下环保机构监测监察执法垂直管理制度改革试点工作的指导意见》) [The General Office of the CPC Central Committee Issued the “Guiding Opinion on the Reform of Vertical Management of Environmental Agencies at Provincial and Lower Levels, State Council”] XINHUA NEWS AGENCY (Sept. 22, 2016), http://www.xinhuanet.com/politics/2016-09/22/c_1119608354.htm.

133. Latham & Watkins LLP, *Environmental Protection is Enshrined as Official Ideology in China Amid Major Reforms*, LEXOLOGY (Nov. 21, 2017), <https://www.lexology.com/library/detail.aspx?g=0dd4539c-2762-4bef-b148-dbee22f3ca04>.

134. BARBARA FINAMORE, WILL CHINA SAVE THE PLANET? 53 (2018) (finding that China’s climate ledges are interconnected with its goal to reduce air pollution because both rely on reducing the reliance on coal and the development of clean energy.)

135. *Guidance on Promoting Green Belt and Road*, BELT & ROAD PORTAL (May 8, 2017), <https://eng.yidaiyilu.gov.cn/zchj/qwfb/12479.htm>.

hancing government monitoring of major industries.¹³⁶ An example of the implementation of this principle in environmental reform is the circular economy pilot scheme introduced in 2005, which focused on building a certain number of showcase enterprises or industrial parks in key industries such as waste reprocessing.¹³⁷ In the *Thirteenth Five-Year Plan* period, the government continues to prioritize the development of leading companies and industrial parks that can employ economies of scale in recycling, while tightening environmental monitoring and inspections of small, informal factories.¹³⁸ Nonetheless, the circular economy scheme failed to foster a formal recycling industry. Informal recycling workshops closed during environmental crackdowns but did not vanish; instead, they relocated or reopened when environmental enforcement relaxed.¹³⁹ This begs the question of whether and to what extent the Chinese governments can sustain the foreign waste ban and the current environmental campaign.

B. *Environmental Crackdowns Before the Foreign Waste Ban*

Small recyclers who benefit from the availability of cheap labor and the importation of waste materials have dominated China's recycling industry, providing jobs for about 15 million people in 2016.¹⁴⁰ Illegality involving waste traffic and environ-

136. Yuanzheng Cao et al., *From Federalism, Chinese Style to Privatization, Chinese Style*, 7 *ECON. TRANSITION* 103, 120 (1990) (Chinese translation provided by author).

137. Guowuyuan Guanyu Jiakuai Fazhan Xunhuan Jingji de Ruogan Yijian (国务院关于加快发展循环经济的若干意见) [Several Opinions of the State Council Regarding Hastening the Development of the Circular Economy], (promulgated by the St. Council, July 2, 2005) *ST. COUNCIL GAZ.*, July 2, 2005; 11th Five-Year Plan, *supra* note 123.

138. Guowuyuan Guanyu Yinfa "Shisanwu" Shengtai Huanjing Baohu Gui Hua de Tongzhi (国务院关于印发“十三五”生态环境保护规划的通知) [Notice of the Thirteenth Five-Year Plan of Protection of the Ecological Environment Protection Plan] (promulgated by the St. Council, Nov. 24, 2006) *ST. COUNCIL GAZ.*, Dec. 5, 2016, http://www.gov.cn/zhengce/content/2016-12/05/content_5143290.htm.

139. *Lianjiao "Yang Laji" Xiang Zhoubian Shuanyi* (联滔“洋垃圾”向周边转移) [*Relocation of "Foreign Waste" from Lianjiao to the Neighboring Areas*], *CN-HW* (Feb. 1, 2007), <http://www.cn-hw.net/html/china/200702/1641.html>.

140. *Zhongguo Zaisheng Ziyuan Huishou Ye Fazhan Baogao 2017* (中国再生资源回收业发展报告2017) [Report of Chinese Renewable Resource Recycling Industry Development 2017], (promulgated by the St. Council, May 2, 2017) *MINISTRY OF COM.*, May 2, 2017, at 4.

mental violations is part of their everyday operation, and has contributed to their advantage in the global value chain of recycling. Small recyclers, which often operate in clusters, contribute both to economic production and environmental degradation in local communities. In the past, Chinese governments have responded to the environmental and health problems associated with these recycling clusters by organizing targeted environmental crackdowns. A review of government crackdowns on two informal recycling clusters in China prior to the foreign waste ban suggests that a lack of consistency and sustainability in follow-up implementation and the built-in resilience of the informal recycling industry have undermined previous enforcement efforts.

1. *The Crackdown on Lianjiao*

Lianjiao, a village on the outskirts of Guangzhou, was one of the earliest recycling centers in China that dealt with imported wastes, thanks to its proximity to Hong Kong.¹⁴¹ An industrial zone, founded in 1992, hosted over 1,000 factories dedicated to sorting and processing scrap plastics and metals by the early 2000s.¹⁴² Eighty to ninety percent of the factories were unlicensed by the government. Chinese media puts the number of migrant workers employed at Lianjiao somewhere between 15,000 and 100,000.¹⁴³

In 2007, the British news organization Sky News broke a story about how the United Kingdom's plastic waste—legal and illegal—ended up in factories in Lianjiao, exposing regulatory issues of waste traffic and environmental pollution.¹⁴⁴

141. *More Than Half the World's Waste Shipped to China*, *supra* note 6.

142. Fengqing Li & Huang Huang, *The "Three-Old" Policy of Community Renewals in China: Based on Cases in the Pearl River Delta Region*, in 49TH ISOCARP CONGRESS 5 (2013) (conference paper presented in Brisbane, Australia, October 1–4, 2013), http://www.isocarp.net/Data/case_studies/2344.pdf.

143. Meng Dengke Muyu, *supra* note 49.

144. However, the original report was no longer available on the official website of the Sky News, but see BETH TERRY, PLASTIC-FREE: HOW I KICKED THE PLASTIC HABIT AND HOW YOU CAN TOO 324–336 (2012) (citing Holy Williams, *Green Britain: Are You Poisoning China?*, SKY NEWS (Jan. 9, 2007), <http://news.sky.com/home/video/14160896>); *China Set to Curb Foreign Waste Imports*, CHINA DAILY (Jan. 24, 2007), http://www.chinadaily.com.cn/china/2007-01/24/content_791722.htm (noting the continuing investigation of British dumping in China following the Sky News report); *Chinese*

Follow-up investigations by Chinese domestic media stimulated nationalistic sentiments against foreign waste imports, which resulted in a government crackdown on the recycling cluster.¹⁴⁵ In its history, Lianjiao has seen several waves of enforcement activities, but the Chinese government elevated its efforts in 2006, by explicitly including environmental performance targets in the cadre evaluation system in the *Eleventh Five-Year Plan*. In less than a month after the Sky News report, the local government ordered immediate closure of the recycling plants and formed an enforcement team comprised of 1,200 officials to conduct environmental inspections. They cut off power and water supplies and set up roadblocks to stop waste materials from coming into Lianjiao.¹⁴⁶

The two-week crackdown allegedly brought to an end a recycling cluster that, according to Chinese media, earned an income of 830 million Chinese yuan in 2005—higher than the GDP of some hinterland prefectures of Guangdong.¹⁴⁷ However, some questioned the effectiveness of government enforcement activities, and pointed out that instead of being wiped out altogether, many recycling factories at Lianjiao had relocated to other parts of Guangdong and Northern China, where the implementation of environmental regulations was less stringent.¹⁴⁸ It is likely that the informal recycling industry in Lianjiao restarted after the crackdown. Evidence from several waste traffic cases suggests that as recently as 2017, e-wastes from Japan and the United States were still traveling into Lianjiao and its neighboring villages, where importers re-

Internet Users Urge Authorities to Act on Waste, CHINA DIALOGUE (Jan. 16, 2007), <https://www.chinadialogue.net/blog/695-Chinese-internet-users-urge-authorities-to-act-on-waste/en> (referencing Britain's Sky News program titled "Are you poisoning China?").

145. *Id.*

146. "Yang Laji Julun" Wei Dao Nanhai Xian Qudi Feijiu Suliao Huishou Ye ("洋垃圾巨轮"未到南海先取缔废旧塑料回收业) [*Crackdown on the Plastic Recycling Industry Before "Foreign Waste" Shipments Arrived in Nanhai*], PEOPLE'S DAILY (Jan. 22, 2007), <http://env.people.com.cn/GB/5309978.html>.

147. Lianjiao "Yang Laji" Xiang Zhoubian Zhuanyi (联滔"洋垃圾"向周边转移) [*Relocation of "Foreign Waste" from Lianjiao to the Neighboring Areas*], CN-HW (Feb. 1, 2007), <http://www.cn-hw.net/html/china/200702/1641.html>.

148. *Id.*

cycled some metal and plastic components and disposed of other parts improperly.¹⁴⁹

2. *The Crackdown on Wen'an*

Wen'an, a prefecture of Hebei, emerged as the center for plastic recycling in Northern China in the 1980s, when a few government-owned plastic factories sparked local entrepreneurship in the plastic industry.¹⁵⁰ Like Lianjiao, thousands of family-run workshops relied on both municipal wastes collected by scavengers in Beijing and foreign wastes that arrived through the seaport of Tianjin for raw materials.¹⁵¹ It is estimated that importers trade and process between 1.3 and 2.5 million tons of plastic wastes in Wen'an every year.¹⁵² According to an ethnographic study by an environmental group in Beijing, although a vast majority of these factories remain informal, there is a certain level of complementarity and coordination among them—some factories focused on preliminary processing activities such as sorting, cleaning, and shredding, and others on injection molding. A few granulator plants—producing plastic pellets from recycled plastic flakes—sell their semi-manufactured pellets to large plastic factories, which would process them into finished plastic products.¹⁵³

During the 1990s and 2000s, the local government of Wen'an made several attempts to control environmental pollu-

149. For cases that demonstrate this, see e.g., Zeng Mou Zousi Feiwu An Yishen Panjue (曾某走私废物案一审判决) [Zeng Waste Traffic Trial Court Decision], CHINA JUDGEMENTS ONLINE (Guangdong Foshan Interm. People's Ct. 2015); Wang Yixing Dengs Zousi Feiwu An Yishen Panjue (王怡杏等走私废物案一审判决) [Wang Yixing and Others Waste Traffic Trial Court Decision], CHINA JUDGEMENTS ONLINE (Guangdong Foshan Interm. People's Ct. 2015); Feng Moushun Zousi Feiwu An Yishen Panjue (冯某顺走私废物案一审判决) [Feng Moushun Waste Traffic Trial Court Decision], CHINA JUDGEMENTS ONLINE (Guangdong Shantou Interm. People's Ct. 2018).

150. Joshua Goldstein, *A Pyrrhic Victory? The Limits to the Successful Crackdown on Informal-Sector Plastics Recycling in Wenan County, China*, 43 *MOD. CHINA* 3, 8 (2016).

151. MINTER, *supra* note 18, at 230.

152. Goldstein, *supra* note 150, at 5.

153. *Wen'an: Heshi Zouchu "Baoguang Wuyong" de Yinmai?* (文安: 何时走出“曝光无用”的阴霾?) [*Wen'an: When Could It Come Out of the Fog of "Futile Media Exposure"?*], GREEN BEAGLE ENV'T INST. (July 21, 2011), <http://www.bjep.org.cn/pages/Search/0-1101?rid=1812&str=%E6%96%87%E5%AE%89>.

tion and formalize the plastic recycling industry, but all failed because of the industry's contribution to local employment and corrupt practices in the local government.¹⁵⁴ Local residents benefited from operating plastic recycling plants and leasing out land to business owners and migrant workers, and local officials took advantage of environmental enforcement to seek rent.¹⁵⁵ In addition, the 1994 fiscal reform, which allocated three-quarters of VAT revenues to the central government, also left little incentive for the local government to enforce tax collection.¹⁵⁶

In 2011, a local newspaper revealed that water contamination in Wen'an had poisoned local farmland and wiped out hundreds of acres of wheat.¹⁵⁷ A series of news articles that targeted the environmental and health issues linked with informal recycling followed.¹⁵⁸ One report claimed that many Wen'an residents who had enlisted in the army failed their physical examinations due to liver problems caused by air pollution.¹⁵⁹ That year, Li Keliang, the newly appointed party secretary at Wen'an, showed greater determination to resolve those environmental issues than his predecessors.¹⁶⁰ Li or-

154. *Id.*

155. *Id.*

156. Goldstein, *supra* note 150, at 12.

157. Wu Jiang (吴江), *Hebei "Fei Suliao Zhi Du" Zhengdun Huishou Ye, Dangdi Ren Bugan Yong Shou Wuran Heshui* (河北“废塑料之都”整顿回收业当地人不敢用受污染河水) [*Hebei "Capital of Waste Plastics" Rectifies the Recycling Industry, Local Residents Could Not Use Contaminated Water from the River for Irrigation*], PHOENIX NEW MEDIA LIMITED (Aug. 15, 2011), http://news.ifeng.com/mainland/detail_2011_08/15/8401618_1.shtml.

158. Environmental and health hazards in Wen'an were reported by both local and national media. There were a couple of government crackdowns during the mid-2000s, but little progress was made. Local plastic shop owners describe those environmental campaigns as an excuse for rent-seeking officials to solicit bribes. *Wen'an Feijiu Suliao Hangye Gongzhong Guanzhu Dashi Ji* (文安废旧塑料行业公众关注大事记) [*Major Events in the Plastic Recycling Industry in Wen'an*], GREEN BEAGLE ENV'T INST. (July 20, 2011), <http://www.bjep.org.cn/Pages/Index/39-1101?rid=1809>.

159. *Bei Zhongguo Jujue De Yang Laji, Dangchu Shi Zenme Yongru Zhongguo De* (被中国拒绝的洋垃圾, 当初是怎么涌入中国的) [*Foreign Waste Now Rejected by the Chinese, How Did They Flood to China in the Past*], NETEASE INC. (Jan. 27, 2018), http://news.163.com/18/0127/00/D949GSBH00018M4D_mobile.html.

160. Jin Hao & Wu Jiang (金煜 & 吴江), *"Fei Suliao Zhi Du" Zhengdun Huishou Ye Zhi Beijing Feipin Jiage Da Die* (“废塑料之都”整顿回收业致北京废品价格大跌) [*"Recycling of Plastics" Rectification and Recycling Industry Caused*

dered all washing and shredding workshops to stop operations permanently, with failure to comply resulting in large fines and the removal or destruction of their machines.¹⁶¹ A 2013 site visit by Joshua Goldstein, an associate professor at the University of Southern California, found most washing and shredding workshops had disappeared, with the exception of a few molding factories.¹⁶² Some viewed the 2011 government crackdown on the informal recycling industry as a deliberate measure to promote Dongdu Environmental Protection Industrial Park, a government-led park to foster large recycling factories.¹⁶³ The construction of Dongdu began in 2006, in light of the *Eleventh Five-Year Plan* that encouraged concentration of the recycling industry in “designated zones”, but its development stagnated due to competition from informal recycling activities outside of Dongdu.

3. *The Resilience of the Informal Recycling Industry*

Lianjiao and Wen'an together are a microcosm of China's informal recycling industry, which has managed to carve out a business in the hierarchical recycling value chain dominated by international waste traders and upscale plastic manufacturers, and navigate the space between formal environmental regulations and gaps in implementation. The ability of these informal recyclers to adapt and bounce back in the face of environmental crackdowns can be attributed to several factors.

First, the informal recycling industry enjoys an obvious cost advantage. Informal workshops operate at a minimum cost by avoiding tax and externalizing the environmental cost of their production, with almost no investment made in health and safety facilities. This makes them a perfect candidate for labor-intensive activities such as sorting, cleaning, and shredding, while large-scale manufacturers are drawn to higher

Beijing's Scrap Prices to Plummet], CHINA NEWS (Aug. 15, 2011), <http://www.chinanews.com/ny/2011/08-15/3256675.shtml>.

161. Jin Hao & Wu Jiang (金煜 & 吴江), *Fei Suliao Zhi Du Zhi Wu Xingzheng Boji Beijing Qiye Huyu Zhengfu Gei Yitiao Huolu* (废塑料之都治污新政波及北京企业呼吁政府给一条活路) [*Waste Plastics Town Pollution Control New Deal and Beijing Enterprises Call on the Government to Give a Living*], PHOENIX NEW MEDIA LIMITED (Aug. 15, 2011), <http://finance.ifeng.com/news/20110815/4391871.shtml>.

162. Goldstein, *supra* note 150, at 25.

163. *Id.* at 17.

value-added production.¹⁶⁴ The formal and informal recycling factories have played differentiated yet interdependent parts in the same value chain of recycling. Before the 2011 crack-down, one of the biggest suppliers of raw materials to Wen'an was Tianjin Ziya Circular Economy Park, a formal recycling zone specializing in metal scrap processing. Workers stripped millions of tons of imported copper wires by hand in informal workshops outside of Ziya's formal recycling zone. Waste importers sent copper to factories in Ziya for recovery and sold plastic coatings to waste plastic markets in Wen'an.¹⁶⁵

Second, the flexibility of the informal economy (economic activities not regulated or protected by the state) allowed small recyclers to make quick adjustments to changes in market and regulatory conditions. In the recycling market, frequent price movements are common due to many factors. For instance, waste plastics compete directly with virgin materials made from petroleum, and when the price for crude oil plummeted in 2016, the global plastic recycling industry came under pressure.¹⁶⁶ Unlike the formal economy, informal recycling plants, which mainly rely on casual workers, can respond nimbly to shifts in market supply and demand as well as environmental enforcement.¹⁶⁷ In the cases of Lianjiao and Wen'an, informal workshops suspended their operations during the heights of government crackdowns, but resumed production after the crackdowns subsided.

Last but not least, informal recyclers can bounce back after government crackdowns due to the lack of sustainability and consistency in local government enforcement. In re-

164. Foshan Shi Nanhai Qu Shuitongtian Maoyi Youxian Gongsì Deng Zousi Feiwu An Yishen Panjue (佛山市南海区水同天贸易有限公司等走私废物案一审判决) [Foshan Municipality Nanhai District Shuitongtian Trading Co. Ltd. and Others Waste Traffic Trial Court Decision], CHINA JUDGMENTS ONLINE (Guangdong Foshan Interm. People's Ct. 2014) (finding that licensed importers kept waste plastics that were relatively clean and of good quality for their own production and sold lower-grade materials to small and unlicensed factories and workshops in the local area).

165. Joshua Goldstein, *China's International Recycling Trade*, U. SOUTHERN CAL. U.S.-CHINA INST. (Aug. 29, 2007), <https://china.usc.edu/chinas-international-recycling-trade>.

166. Gill Plimmer, *Recycling Industry Feels Strain of Falling Prices*, FIN. TIMES (Aug. 23, 2016), <https://www.ft.com/content/cc2f1612-63c2-11e6-8310-ecf0bddad227>.

167. MINTER, *supra* note 18, at 167.

cycling clusters like Lianjiao and Wen'an, environmental crackdowns happened once in a while, but were often one-off events because many enforcement measures required cross-departmental collaboration—among, for example, taxation departments, environmental protection services, and police. These collaborations often took place on an ad hoc basis, meaning that follow-up monitoring was rare.¹⁶⁸ Moreover, without establishing a level playing field in environmental enforcement, a government crackdown in one place would drive informal recyclers to relocate their business to loosely regulated regions or areas. In one waste traffic case, the owner of an e-waste processing plant moved his operation around three or four prefectures in Guangdong between 2013 and 2018, corresponding to changing environmental requirements of the local governments.¹⁶⁹

C. *Enforcing the Foreign Waste Ban*

1. *Regulatory Reform on Waste Import and Management*

Since the State Council issued the decision to reform the regulatory system of waste import in mid-2017, the government has adopted or revised more than two dozen regulatory and policy documents to implement the foreign waste ban.¹⁷⁰ There are three pillars of the ongoing regulatory reform.

a. *Restrictions on Waste Imports*

To achieve the goal of replacing waste imports with domestically recycled resources by 2019, the MEE, National Development and Reform Commission (NDRC), and General Administration of Customs (GAC) led the reform of the waste import regulatory system. The National Catalogues on the Import of Solid Waste went through three revisions between 2017

168. See Jianfu Chen, *Mission Impossible: Judicial Efforts to Enforce Civil Judgments and Rulings*, in IMPLEMENTATION OF LAW IN THE PEOPLE'S REPUBLIC OF CHINA 85, 104–106 (Jianfu Chen et al. eds., 2002) (indicating that collaborative efforts usually resulted in individual court judgements, and that it is unlikely that the efforts are sustainable in “noncampaign times”).

169. Zhong Shijian He Li Jianzhong Zousi Feiwu An Zhongshen Panjue (钟世坚和李建忠走私废物案终审判决) [Zhong Shijian and Li Jianzhong Waste Traffic Final Decision], CHINA ONLINE JUDGMENTS (Higher People's Ct. of Guangdong 2018).

170. Plan for Prohibiting the Entry of Foreign Garbage, *supra* note 120.

and 2018, downsizing the list of solid wastes that can be imported as raw materials from sixty-six to eighteen.¹⁷¹ The national government adopted new technical standards to raise pollution control requirements for imported waste,¹⁷² and to strengthen the port authority's pre-shipment inspections and monitoring.¹⁷³ The government also tightened control on import licensing; for the importation of waste paper, only enterprises with a production capacity of no less than 50,000 tons

171. For three announcements on catalogue changes between 2017 and 2018, between which forty-eight previously-permitted materials became prohibited, see *Guanyu Tiaozheng "Jinkou Feiwu Guanli Mulu" de Gonggao* (关于调整《进口废物管理目录》的公告) [Announcement on Adjusting the Catalogue of Imported Waste Management], MINISTRY OF ECOLOGY & ENV'T (Dec. 25, 2018), http://www.mee.gov.cn/xxgk2018/xxgk/xxgk01/201812/t20181227_687488.html; *Guanyu Tiaozheng "Jinkou Feiwu Guanli Mulu" de Gonggao* (关于调整《进口废物管理目录》的公告) [Announcement on Adjusting the Catalogue for the Management of the Import of Solid Wastes], MINISTRY OF ECOLOGY & ENV'T (Apr. 19, 2018), http://www.mee.gov.cn/gkml/sthjbgw/sthjbgg/201804/t20180419_434911.htm; *Guanyu Fabu "Jinkou Feiwu Guanli Mulu" (2017 Nian) de Gonggao* (关于发布《进口废物管理目录》(2017年)的公告) [Announcement on Issuing the Catalogue for the Administration of the Import of Solid Wastes (2017)], MINISTRY OF ECOLOGY & ENV'T (Aug. 16, 2017), http://www.mee.gov.cn/gkml/hbb/bgg/201708/t20170817_419811.htm.

172. A series of Environmental Protection Standards on solid waste import were adopted or revised by MEP. The new impurity limits were set at 0.5% (down from 1.5%) for waste paper, plastic and ferrous metal and one percent for non-ferrous metal. Cole Rosengren & Cody Boteler, *China Proposes New 0.5% Contamination Standard with March 2018 Enforcement*, WASTE DIVE (Nov. 16, 2017), <https://www.wastedive.com/news/china-proposes-new-05-contamination-standard-with-march-2018-enforcement/511122>.

173. Measures for the Inspection, Quarantine, Supervision and Administration of Imported Solid Waste That Can Be Used as Raw Materials (Amended), General Administration of Customs, July 1, 2018; *Guanyu Gongbu "Jinkou Ke Yong Zuo Yuanliao de Gutu Feiwu Guonei Shou Huo Ren Zhuce Dengji Guanli Shishi Xize" de Gonggao* (关于公布《进口可用作原料的固体废物国内收货人注册登记管理实施细则》的公告) [Announcement on Issuing the Detailed Rules for the Implementation of the Registration Administration of Domestic Consignees of Imported Solid Wastes That Can Be Used as Raw Materials] (promulgated by Gen. Admin. Customs, June 15, 2018, effective Aug. 1, 2018) CLI.4.315970(EN) (Pkulaw), <http://en.pkulaw.cn/display.aspx?cgid=315970&lib=law>; *China Sets Rules for Third-Party Pre-Shipment Inspection Agencies*, BUREAU OF INT'L RECYCLING (Jan. 6, 2018), <https://bir.org/news-press/latest-news/china-sets-rules-for-third-party-pre-shipment-inspection-agencies> (discussing the Implementation Rules on the Supervision and Administration of Pre-shipping Inspection of Imported Solid Waste Used as Raw Materials, which take effect as of June 1, 2018).

per year are allowed to apply for the waste import license.¹⁷⁴ In addition, the government implemented higher environmental standards for imported waste processing facilities, undertaking nationwide environmental crackdowns and enforcement measures to expose and sanction violations in waste processing.¹⁷⁵ Finally, China is currently seeking to cooperate with international organizations and foreign government to facilitate the return shipment of illegal waste imports.¹⁷⁶

b. Improving the Domestic Recycling System

In correspondence to import restrictions, the Chinese government has been working on improving its domestic recycling system. The government's aim is to invest 252 billion yuan in establishing municipal waste sorting and disposal systems in major cities by 2020,¹⁷⁷ and to promote waste-to-energy projects in rural areas, accompanied by public education on waste reduction and recycling.¹⁷⁸ The government reiterates the principles of the so-called three Rs (Reduce, Reuse,

174. Jinkou Fei Zhi Huanjing Baohu Guanli Guiding (进口废纸环境保护管理规定) [Provisions on the Environmental Protection Administration of Imported Waste Paper] (promulgated by Ministry Envtl. Prot., Dec. 14, 2017) MINISTRY ENVTL. PROT., Dec. 14, 2017, <http://images.mofcom.gov.cn/www/201803/20180302135708646.pdf>.

175. Xianzhi Jinkou Lei Ke Yong Zuo Yuanliao de Gutu Feiwu Huanjing Baohu Guanli Guiding (限制进口类可用作原料的固体废物 环境保护管理规定) [Provisions on the Administration of Environmental Protection Relating to Solid Waste in the Category of Import Restriction Usable as Raw Material (Amended)] (promulgated by Ministry Envtl. Prot., Dec. 14, 2017, effective Dec. 14, 2017) MINISTRY OF COM., Mar. 8, 2018, <http://www.mofcom.gov.cn/article/b/g/201803/20180302717536.shtml>.

176. Plan for Prohibiting the Entry of Foreign Garbage, *supra* note 120.

177. "Shisanwu" Quanguo Chengzhen Shenghuo Laji Wu Hai Hua Chuli Sheshi Jianshe Guihua ("十三五"全国城镇生活垃圾无害化处理设施建设规划) [Plan for the Construction of Urban Household Waste Harmless Treatment Facilities in the 13th Five-Year Plan Period] (promulgated by the Nat'l Dev. Reform Comm'n, Dec. 31, 2016) NAT'L DEV. REFORM COMM'N, Dec. 31, 2016, <http://www.ndrc.gov.cn/fzgggz/hjbh/huanjing/201701/W020170123353734549548.pdf>.

178. Guanyu Quanmian Jiaqiang Shengai Huanjing Baohu Jianjue Da Hao Wuran Fangzhi Gongjianzhan de Yijian (关于全面加强生态环境保护坚决打好污染防治攻坚战的意见) [The Opinion on Strengthening Ecological and Environmental Protection and Fighting the Battle Against Pollution] (promulgated by CCP Cent. Comm. and St. Council on June 16, 2018) ST. COUNCIL GAZ, June 24, 2018, http://www.gov.cn/zhengce/2018-06/24/content_5300953.htm.

Recycle) and clean production,¹⁷⁹ as well as plans to launch pilot projects for extended producer responsibility in selected industries, including batteries, electronic products, and laminated packaging.¹⁸⁰ The government also aims to establish a quasi-cradle-to-grave waste management system to monitor the generation, transport, processing, and disposal of solid waste.¹⁸¹ To strengthen the accountability mechanism, the Chinese government also included evaluation of the environmental performance of waste importers and e-waste producers and recyclers into the all-encompassing social credit system.¹⁸²

Moreover, industrial restructuring, as mentioned previously, also constitutes an important part in building domestic recycling capacity in China. Financial incentives were available for the development of environmental protection or circular economy industrial parks, which would benefit from central-

179. Guowuyuan Bangong Ting Guanyu Yinfa Shengchan Zhe Zeren Yan-shen Zhidu Tuixing Fang'an de Tongzhi (国务院办公厅关于印发生产者责任延伸制度推行方案的通知) [Plan for Implementing Extended Producer Responsibility] (promulgated by the St. Council, Dec. 25, 2016) ST. COUNCIL GAZ., Jan. 3, 2017, http://www.gov.cn/zhengce/content/2017-01/03/content_5156043.htm.

180. *Id.*

181. Guanyu Jianjue Ezhi Gutu Feiwu Feifa Zhuanyi He Qingdao Jinyibu Jiaqiang Weixian Feiwu Quan Guocheng Jianguan de Tongzhi (关于坚决遏制固体废物非法转移和倾倒进一步加强危险废物全过程监管的通知) [Notification on Firmly Containing the Illegal Transfer of Solid Waste and Disposal, and Further Strengthening the Monitoring and Regulation of the Whole Process of Hazardous Waste] (promulgated by the Ministry Ecology & Env't, May 10, 2018) MINISTRY ECOLOGY & ENV'T, May 10, 2018, http://www.mee.gov.cn/hjzli/gtfwgl/wxfwgl/201805/t20180522_440867.shtml.

182. Huanjing Baohu Bu Fazhan Gaige Wei Guanyu Jiaqiang Qiye Huanjing Xinyong Tixi Jianshe de Zhidao Yijian (环境保护部发展改革委关于加强企业环境信用体系建设的指导意见) (Guiding Opinions on Strengthening the Construction of Environmental Credit System for Enterprises) (promulgated by Ministry Env'tl. Prot. & Nat'l Dev. Reform Comm'n, Nov. 27, 2015) ST. COUNCIL GAZ., Nov. 27, 2015, http://www.gov.cn/gongbao/content/2016/content_5059107.htm; *see generally* Guowuyuan Guanyu Yinfa Shehui Xinyong Tixi Jianshe Guihua Gangyao (2014-2020 Nian) de Tongzhi (国务院关于印发社会信用体系建设规划纲要(2014—2020年)的通知) [Outline of Plan for Building the Social Credit System (2014–2020)] (promulgated by the St. Council, June 14, 2014) ST. COUNCIL GAZ., June 27 2014, http://www.gov.cn/zhengce/content/2014-06/27/content_8913.htm (the social credit system is to establish a credit reporting system for the assessment of the economic and social reputation of enterprises and individuals using big data technology; those who default on court fines or bank loans, or avoid tax, will be restricted from travel).

ized waste treatment and economies of scale.¹⁸³ In addition, the government has called for a transition from waste imports and processing, to international investment and trade in the recycling industry,¹⁸⁴ and encourages domestic recycling companies to take advantage of international cooperation on production capacity to invest in recycling and reprocessing industries in other countries.¹⁸⁵

2. *Nationwide Environmental Enforcement*

In 2013, the GAC launched Operation Green Fence, a national inspection aimed at deterring illegal waste traffic and reducing contamination in waste imports.¹⁸⁶ Estimates show that, before the Operation's launch, a typical level of contamination for U.S. exported waste plastics was twenty percent, even though 2009 legislation required the contamination or impurity level be controlled at 1.5% or less.¹⁸⁷ After Chinese customs tightened enforcement of quality standards for imported waste, U.S. exporters responded by implementing more rigorous inspections themselves to avoid the high cost of return shipments.¹⁸⁸ During the ten-month enforcement cam-

183. Guanyu Tuijin Ziyuan Xunhuan Liyong Jidi Jianshe de Zhidao Yijian (关于推进资源循环利用基地建设的指导意见) [Guiding Opinions on Promoting the Construction of Pilot Projects for Circular Utilization of Resources] (promulgated by the Nat'l Dev. Resources Comm'n, Oct. 29, 2017) ST. COUNCIL GAZ., Nov. 2, 2017, http://www.gov.cn/xinwen/2017-11/02/content_5236511.htm.

184. Gongye He Xinxu Hua Bu, Shanwu Bu, Keji Bu Guanyu Jiakuai Tuijin Zaisheng Ziyuan Chanye Fazhan de Zhidao Yijian (工业和信息化部 商务部 科技部关于加快推进再生资源产业发展的指导意见) [Guiding Opinions on Advancing the Development of Renewable Resources Industry] (promulgated by Ministry Indus. Info. Tech. & Ministry Com. Tech., Dec. 21, 2016) MINISTRY INDUS. INFO. TECH., Jan. 25, 2017, <http://www.miit.gov.cn/n1146295/n1652858/n1652930/n3757016/c5477568/content.html>.

185. Xunhuan Fazhan Yinling Xingdong (循环发展引领行动) [Leading Movements of Circular Development] (promulgated by Nat'l Dev. Reform Comm'n, Apr. 21, 2017) NAT'L DEV. REFORM COMM'N., May 4, 2017, http://www.ndrc.gov.cn/gzdt/201705/t20170504_846514.html.

186. *Haiguan Zong Shu Jiedu "Luli" Zhuanxiang Xingdong* (海关总署解读“绿篱”专项行动) [The General Administration of Customs Interprets Operation Green Fence], GENERAL ADMIN. CUSTOMS CHINA (May 15, 2013), http://gkml.customs.gov.cn/hefei/tabid/242/ctl/InfoDetail/InfoID/24932/mid/789/Default.aspx?ContainerSrc=%5BG%5DContainers%2F_default%2FNo+Container.

187. VELIS, *supra* note 42, at 46, 53.

188. *Id.* at 47.

paign, Chinese customs intercepted 976,300 tons of unlawfully imported waste.¹⁸⁹ However, as soon as the Operation ended in late 2013, waste imports surged again.¹⁹⁰ Meanwhile, problems such as illegal trading of import licenses and environmental violations in informal recycling activities persisted due to challenges of continuous monitoring.¹⁹¹

Since 2017, enforcement of the current foreign waste ban has demonstrated greater efforts of coordination among various ministries and different levels of governments. For example, the GAC launched National Sword, a multi-year enforcement campaign that targeted the smuggling of foreign waste and endangered animal products, among other things.¹⁹² In 2017, the GAC investigated 286 cases of illegal waste traffic and intercepted 870,000 tons of solid waste, an increase of almost seven times the 2016 amount.¹⁹³ Since 2018, in order to strengthen customs control, the government has restricted solid waste imports to eighteen designated ports. Guangdong Province alone used to have twenty-six ports for the clearing of

189. 2013 Nian Haiguan “Luli” Xingdong Jiang 5.88 Wan Dun “Yang Lese” Ju Zhi Men Wai (2013年海关“绿篱”行动将5.88万吨“洋垃圾”拒之门外) [2013 Operation Green Fence Kept 588 Thousand “Foreign Garbage” Out of China], XINHUA NEWS AGENCY (Jan. 21, 2014), http://www.gov.cn/jrzq/2014-01/21/content_2572181.htm.

190. Renda Daibiao Li Anxi: Yanking Feijiu Suliao Jinkou Baohu Shengtai Huanjing (人大代表李安喜:严控废旧塑料进口保护生态环境) [People’s Congress Representative Li Anxi: Strictly Control Waste Plastic Imports and Protect Ecological Environment], PEOPLE’S NETWORK (Mar. 17, 2014), <http://energy.people.com.cn/n/2014/0317/c71890-24655207.html>.

191. See Yang Laji Baoli Lian (洋垃圾暴利链) [The Profit Chain of Foreign Garbage], CHINA NEWS (July 23, 2017), <http://www.chinanews.com/cj/2017/07-23/8285104.shtml> (reporting that informal recycling activities have persisted); Gutǐ Fèiwù Zǒusī Xíngchéng Qánzhěng Chǎnyè Liàn (固体废物走私形成完整产业链) [An Integrated Industrial Chain of Solid Waste Smuggling], XINHUA NEWS AGENCY (June 5, 2017), http://www.xinhuanet.com/energy/2017-06/05/c_1121086907.htm (noting that smuggling solid waste is a hot topic).

192. “Guomen Lijian” Queding Wuge Dasi Zhongdian (“国门利剑2018”确定五个打私重点) [“National Sword” Identified Five Key Areas of Anti-Smuggling], CHINA GOV’T NETWORK (Feb. 7, 2018), http://www.gov.cn/xinwen/2018-02/07/content_5264624.htm.

193. Qunian Chazheng Yang Laji 86.68 Wan Dun (去年查证“洋垃圾”86.68万吨) [866.8 Thousand Tons of Foreign Garbage Identified Last Year], PEOPLE’S DAILY (Feb. 7, 2018), <http://society.people.com.cn/n1/2018/0207/c1008-29809561.html>.

waste imports, but that number is now down to six.¹⁹⁴ During the first three quarters of 2018, the GAC has intercepted 1.45 million tons of illegally imported wastes that failed to meet the new contamination control requirement, which is 0.5% for waste paper, plastic, and ferrous metal and one percent for non-ferrous metal.¹⁹⁵ The GAC also made efforts to expedite return shipments or disposal of intercepted waste materials. Reportedly, the GAC returned at least 116,000 tons of solid wastes to countries of export during the 2018 enforcement campaign.¹⁹⁶ In October 2018, Customs of Tianjin predicted that it would, by the end of the year, incinerate 14,600 tons of waste materials stranded in its storage, a portion of which traces back to as early as 2010.¹⁹⁷

In July 2017, the MEP led a one-month inspection campaign against imported waste processing facilities across the country. More than 1,260 staff members from the MEP and its

194. Guanyu Fabu Xianding Gutu Feiwu Jinkou Kou'an De Gonggao (关于发布限定固体废物进口口岸的公告) [Announcement on the Ports Restricting the Import of Solid Wastes] (promulgated by Ministry of Ecology & Env't, June 27, 2018), GENERAL ADMIN. OF CUSTOMS, June 27, 2018, <http://www.customs.gov.cn/customs/302249/302266/302269/1906407/index.html>;

Guanyu Zai Guangdong Shixing Jinkou Ke Yongzuo Yuanliao De Gutu Feiwu "Jiujin Kou'an" Baoguan De Gonggao (关于在广东试行进口可用作原料的固体废物“就近口岸”报关的公告) [Announcement on the Experiment of Customs Clearance “at the Nearest Port” in Guangdong] (promulgated by Ministry of Ecology & Env't and General Admin. of Customs, June 26, 2013), MINISTRY ECOLOGY & ENV'T, Sept. 1, 2013, http://www.mec.gov.cn/gkml/hbb/bgg/201307/t20130705_254924.htm.

195. Haiguan Kaizhan Daji “Yang Laji” Zousi Jizhong Xingdong (海关开展打击“洋垃圾”走私集中行动) [*Focused Movement Organized by the Customs to Target Foreign Garbage Smuggling*], GENERAL ADMIN. CUSTOMS CHINA (Sept. 14, 2018), http://www.customs.gov.cn/customs/xwfb34/302413/302417/lt2018zxxd_djyljzs/hgxd/2008269/index.html [hereinafter *Focused Movement Organized by Customs*]; Katie Pyzyk, *With China's 'Nearly Impossible' Contamination Standard, Where Are MRFs Looking Now?*, WASTE DIVE (Apr. 4, 2018), <https://www.wastedive.com/news/china-contamination-standard-MRFs/519659>.

196. *Focused Movement Organized by Customs*, *supra* note 191.

197. Tianjin Haiguan: Kaizhan “Gufei Qinggang” Xingdong Niandi Wancheng 1.46 Wandun Yang Laji Wuhai Hua Chuli (天津海关: 开展“固废清港”行动年底完成1.46万吨洋垃圾无害化处理) [*Tianjin Customs: Implementing the “Clearing Solid Waste at the Port” Movement, Completing Harmless Disposal of 14,600 Tons of Foreign Waste by Year End*], GENERAL ADMIN. CUSTOMS CHINA (Oct. 26, 2018), http://www.customs.gov.cn/customs/xwfb34/302413/302417/lt2018zxxd_djyljzs/mtbd79/2059201/index.html.

local counterparts reviewed environmental documents of these facilities, conducted on-site inspections of pollutant emissions, and investigated non-compliance activities such as trading of waste import licenses.¹⁹⁸ The MEP inspected approximately 1,800 recycling and processing facilities, with over 1,000 subject to different kinds of penalties.¹⁹⁹ The MEP revoked or cancelled the import licenses of 960 companies, totaling 5 million tons of import quota.²⁰⁰ Simultaneously, the MEP organized another campaign to target 200 recycling clusters of e-waste, waste rubber, waste plastics, and waste textile, which led to a forced shutdown of 8,800 informal workshops.²⁰¹ In mid-2018, the MEE reaffirmed its long-term commitment toward environmental enforcement by making the imported waste processing industry a work priority for the next three years.²⁰²

198. “*Daji Jinkou Feiwu Jiagong Liyong Qiye Huanjing Weifa Xingwei Zhuanxiang Xingdong Fang’an*” *Meiti Baodao* (“打击进口废物加工利用企业环境违法行为专项行动方案”媒体报道) [Press Release on the Special Action Plan Against Environmental Violation of Imported Waste Processing Enterprises], MINISTRY OF ECOLOGY & ENV’T (July 3, 2018), http://www.mee.gov.cn/gkml/sthjbgw/qt/201707/t20170704_417163.htm.

199. Zhang Wei (章轲), *Huanbao Bu: Bei Jiancha de Jinkou Feiwu Jiagong Liyong Qiye Weifa Bili Gaoda 60%* (环保部: 被检查的进口废物加工利用企业违法比例高达60%) [Ministry of Environmental Protection: More Than 60 Percent of Inspected Enterprises Processing Imported Waste Have Violated Law], *YICAI* (Aug. 23, 2017), <https://www.yicai.com/news/5334331.html>.

200. Yuan Huanjing Baohu Bu 2017 Nian Fazhi Zhengfu Jianshe Gongzuo Zongjie (原环境保护部2017年法治政府建设工作总结) [Summary of the Work on Building a Rule of Law Government by Former Ministry of Environmental Protection in 2017], MINISTRY ECOLOGY & ENV’T., Apr. 8, 2018, http://fgs.mee.gov.cn/xzfyys/201811/t20181129_676665.shtml.

201. Work plan on the clean-up and rectification of recycling industries processing e-waste, waste tyres, waste plastics, waste clothes, and waste home appliances, MEP and NDRC, etc., October 11, 2017; see also Liu Buwei Qingli Zhengdun Zaisheng Liyong Hangye, Jiang Jinyibu Quid Yipi Wuran Yanzhong Qiye (六部委清理整顿再生利用行业 将取缔一批污染严重企业) [Six Ministries to Clean up the Recycling Industry and Close Down Heavily Polluted Enterprises], *PEOPLE’S DAILY* (Aug. 17, 2017), <http://env.people.com.cn/n1/2017/0817/c1010-29477884.html>.

202. Guanyu Yanjiu Chuli Gutu Feiwu Wuran Huanjing Fangzhi Fa Zhifa Jiancha Baogao Ji Shenyi Yijian Qingkuang De Baogao (关于研究处理固体废物污染环境防治法执法检查报告及审议意见情况的报告) [Report on the Study of Enforcement and of Opinions in the Discussion of Law on the Prevention and Control of the Environmental Pollution of Solid Waste] (promulgated by the Standing Comm. Nat’l People’s Cong., June 19, 2018),

3. *Domestic Implications of the Foreign Waste Ban*

While it may be too early to tell whether strict enforcement of the foreign waste ban is sustainable, or to what degree it will contribute to achieving environmental clean-up goals of the Chinese government, the foreign waste ban has already transformed China's recycling industry. In the first quarter of 2018, China's waste import plummeted by fifty-seven percent.²⁰³ Due to the shortfall in raw materials, recycling factories in China have suffered from incredible price hikes—eight months after the announcement of the foreign waste ban, the price of waste steel had increased by forty percent, and waste paper by almost sixty percent.²⁰⁴ Due to the foreign waste ban and oil price increase, the profit margin in China's plastic manufacturing industry has dropped by half, from ten to five percent.²⁰⁵ Besides market fluctuations, stricter environmental compliance requirements also add to the rising operational cost of recycling enterprises, perhaps more so for small-scale factories than large ones.

Some positive changes occurred in the recycling business. First, investment has increased in the development of environmental technology and equipment. The government has subsidi-

ST. COUNCIL GAZ., June 19, 2018, http://www.npc.gov.cn/npc/xinwen/2018-06/19/content_2056153.htm.

203. *Id.*

204. See *9 Yue 12 Ri Zhongguo Feigang Jiage Zhishu Ji Zhuliu Diqu Jiage* (9月12日中国废钢价格指数及主流地区价格 (图)) [*China's Scrap Price Index and Mainstream Regional Prices on September 12 (Figure)*], CHINA RECYCLABLE RESOURCE INFO. CTR. (Sept. 12, 2018), <http://www.crrainfo.org/content-10-37028-1.html> (publishing a graph of China's scrap steel index that indicates its price at the beginning of 2018 was roughly 2,000 yuan per ton and roughly 2,200 yuan per ton by September 4, 2018); *09 Yue 12 Ri Zhongguo Fei Zhi Jiage Zhishu* (09月13日中国废纸价格指数) [*China's Waste Paper Price Index on September 13*], CHINA RECYCLABLE RESOURCE INFO. CTR. (Sept. 13, 2018), <http://www.crrainfo.org/content-13-37035-1.html> (publishing a graph of China's waste paper index that indicates its price at the beginning of 2018 was roughly 2,150 yuan per ton and roughly 2,900 yuan per ton by August 30, 2018).

205. *Lirun da Fudu Yasu, Suliao Hangye Jin Wei 4.91%* (利润大幅度压缩, 塑料行业利润仅为4.91%) [*Profit Margin of the Plastic Industry was Greatly Suppressed, Reduced to Only 4.91%*], PHOENIX NEW MEDIA LIMITED (July 21, 2018), <http://wemedia.ifeng.com/70146292/wemedia.shtml>.

dized waste-to-energy pilot projects.²⁰⁶ Firms in manufacturing and environmental engineering have doubled down on their investment in recycling technology research and development. For example, Beautiful China Holdings, a Hong Kong-listed firm specializing in environmental technology solutions, signed a joint venture agreement with the Australian Integrated Green Energy to invest US\$25 million in a plastic-to-fuel production project in Shandong.²⁰⁷ Guanghua Technology and Hengtong Technology have expanded their operations from manufacturing to recycling of lithium batteries and building materials respectively.²⁰⁸ Besides, emerging start-ups using artificial intelligence and information technology to improve the municipal waste recycling system have received hundreds of millions of dollars from venture capitalists.²⁰⁹

Second, in order to mitigate raw material shortage, more Chinese recyclers have accelerated their overseas expansion. Enforcement of the foreign waste ban, as well as the imposition of tariffs on scrap imports from the United States as the U.S.-China trade war escalates, have driven Chinese compa-

206. “Gufei Ziyuan Hua” Zhongdian Zhuanxiang 2018 Niandu Dingxiang Xiangmu Shenbao Zhinan (“固废资源化”重点专项2018年度定向项目申报指南) [Guidelines on the Application for the Key Projects in “Resource Recovery of Solid Waste”] (promulgated by the Ministry Sci. & Tech., July 20, 2018), MINISTRY SCI. & TECH., July 20, 2018, <http://www.most.gov.cn/mostinfo/xinxifenlei/fgzc/gfxwj/gfxwj2018/201807/W020180720325753596051.pdf>.

207. *Australian Company Will Convert China’s Waste Plastics to Fuel*, MANUFACTURERS’ MONTHLY (Apr. 18, 2018), <http://www.manmonthly.com.au/news/australian-company-convert-chinas-waste-plastics-fuel>.

208. *Shui Jiang Yinling Hangye - Toushi 2018 Shang Bannian Zaisheng Ziyuan Hangye Touzi Shijian* (谁将引领行业——透视2018上半年再生资源行业投资事件) [Who Will Lead the Industry: A Review of Investments in the Recycling Industry in the First Half of 2018], POLARIS SOLID WASTE NETWORK (July 5, 2018), <http://huanbao.bjx.com.cn/news/20180705/910736.shtml>.

209. One such example is the Small Yellow Dog, which develops mobile application and installs waste sorting machines in residential communities to promote recycling activities. The waste sorting machines use information technology to determine the value of each recyclable, based on market price and weight of the materials. By mid-2018, Small Yellow Dog had received over one billion yuan of investment. Jiang Xiaochuan (江晓川), *Zhineng Laji Huishou Shang Xiao Huanggou Rongzi 12.3 Yi, Zhongzhi Jituan Lingtou* (智能垃圾回收商小黄狗融资12.3亿, 中植集团领投) [Smart Garbage Recycler “Small Yellow Dog” Receives 1.23 Billion Yuan of Finance Led by Zhongzhi Group], TENCENT QQ-FINANCE (June 21, 2018), <https://finance.qq.com/a/20180621/039357.htm>.

nies' decision to invest in the U.S. recycling industry.²¹⁰ In mid-2018, Nine Dragons Paper, one of China's largest paper manufacturers, announced its purchase of a resolute pulp mill in West Virginia for US\$62 million, as well as a decision to invest another US\$300 million to expand its existing mills in Wisconsin and Maine.²¹¹ Reports show Chinese companies have set up at least five other multi-million dollar investment projects to process waste paper, plastics, and metals in the United States.²¹² In Japan, a Chinese environmental company, Tus-Sound, also disclosed a plan to invest a total of ¥10 billion to set up eight to ten plastic granulation factories, which upon completion, will account for over half of Japanese exports of plastic granules to China.²¹³ These developments resonate, to a certain level, with Chinese policy goals of promoting domestic industrial upgrading and international cooperation in relo-

210. DeAnne Toto, *China to Impose Tariffs on Scrap Imports from the US*, RECYCLING TODAY (Aug. 8, 2018), <https://www.recyclingtoday.com/article/china-imposes-tariffs-on-us-scrap-imports>.

211. *ND Paper Buys Resolute Forest Services Mill in Fairmont, WV, for \$62 million, Plans to Expand Production*, WV NEWS (Nov. 2, 2018), https://www.wvnews.com/news/wvnews/nd-paper-buys-resolute-forest-services-mill-in-fairmont-wv/article_6d3a134a-5ac2-5e81-8c65-3621ac19b9da.html; *ND Paper Expands- Upgrades Wisconsin and Maine Paper Mills*, AREA DEVELOPMENT (Oct. 9, 2018), <http://www.areadevelopment.com/newsItems/10-9-2018/nd-paper-nine-dragons-paper-wisconsin-maine.shtml>.

212. See e.g., Jared Paben, *Another Chinese Firm to Buy a U.S. Paper Mill*, RESOURCE RECYCLING (Aug. 28, 2018), <https://resource-recycling.com/recycling/2018/08/28/another-chinese-firm-to-buy-a-u-s-paper-mill> (finding that a Chinese firm is restarting a pulp and fine paper mill in Kentucky); Michael Sasso, *China Wants Only the Cleanest Trash*, BLOOMBERG (Aug. 22, 2018, 5:00 AM), <https://www.bloomberg.com/news/articles/2018-08-22/china-wants-only-the-cleanest-trash> (noting that XTJ, a Chinese company, and its American exporter are creating a recycling plant in Georgia); Colin Staub, *Chinese Company to Open S.C. Recycling Facility*, RESOURCE RECYCLING (Sept. 11, 2018), <https://resource-recycling.com/recycling/2018/09/11/chinese-company-to-open-s-c-recycling-facility> (referring to a new plant in South Carolina); Colin Staub, *Details on Upcoming U.S. Recycling Projects from Chinese Firms*, RESOURCE RECYCLING (Apr. 3, 2018), <https://resource-recycling.com/recycling/2018/04/03/details-on-upcoming-u-s-recycling-projects-from-chinese-firms> (discussing Chinese processors opening offices in South Carolina and Alabama).

213. *Zong Touzi Yibai Yi Riyuan! Sande Zaisheng Jinjun Riben Zaisheng Suliao Hangye* (总投资100亿日元! 桑德再生进军日本再生塑料行业) [*Investment Totaling Ten Billion Yen! Sound Group Enters Japan's Plastic Recycling Industry*], CAIJING (Dec. 19, 2017), <http://m.caijing.com.cn/api/show?contentid=4380036>.

cating China's excess capacity overseas, underlying the adoption of the foreign waste ban.

Scholars have argued that environmental regulation has changed both the distribution of market shares and the relative contribution of labor and capital to changes in output, and small companies or plants have suffered more from the enforcement of environmental regulation as compared to large firms.²¹⁴ The foreign waste ban makes this apparent, as those who have the ability to cope with the ongoing policy-induced industry transformation are mainly large corporations. While some small-scale recyclers are engaging in overseas relocation, as will be discussed in Part IV, the foreign waste ban and the follow-up implementation have devastated most of them. In practice, governments preferred forced closure as a one-size-fits-all solution to environmental violations in order to meet environmental performance targets set by the national government, failing to grant small recycling factories any grace period for rectification.²¹⁵ According to official Chinese statistics, employment in China's recycling industry in 2017 has decreased by 3 million, from 15 to 12 million.²¹⁶ It is likely that most job losses have occurred in the informal economy, and that it would affect owners and employees of those informal recycling plants differently. The closing down of small- and medium-sized workshops may offer opportunities

214. B. Peter Pashigian, *The Effect of Environmental Regulation on Optimal Plant Size and Factor Shares*, 27 J. L. & ECON. 1, 23–25 (1984).

215. Interview with Chinese plastic recyclers, in Dar es Salaam, Tanz. (Jan. 2–Jan. 25, 2018). In order to mitigate this problem, the MEE issued a policy document, which urges local governments to prevent “one size fits all” measures in implementing environmental targets. However, it is unclear how this opinion is going to be enforced. *China Planning to End ‘One Size Fits All’ Environmental Policies*, SOUTH CHINA MORNING POST (May 28, 2018), <https://www.scmp.com/news/china/policies-politics/article/2148106/china-planning-end-one-size-fits-all-environmental>.

216. SHANGWU BU LIUTONG YE FAZHAN SI (商务部流通业发展司) [MINISTRY OF COMMERCE DEPARTMENT OF CIRCULATION INDUSTRY DEVELOPMENT], ZHONGGUO ZAISHENG ZIYUAN HUI SHOU HANGYE FAZHAN BAOGAO 2017 (中国再生资源回收行业发展报告2018) [REPORT ON THE DEVELOPMENT OF CHINA'S RECYCLING INDUSTRY 2018] 1 (2017); SHANGWU BU LIUTONG YE FAZHAN SI (商务部流通业发展司) [MINISTRY OF COMMERCE DEPARTMENT OF CIRCULATION INDUSTRY DEVELOPMENT], ZHONGGUO ZAISHENG ZIYUAN HUI SHOU HANGYE FAZHAN BAOGAO 2018 (中国再生资源回收行业发展报告2017) [REPORT ON THE DEVELOPMENT OF CHINA'S RECYCLING INDUSTRY 2017] 1 (2018).

for large recycling enterprises to consolidate the industry and internalize environmental costs, but simultaneously could induce anxiety about social instability as a result of increased inequality and slowing economic growth.²¹⁷

V. THE GLOBAL IMPACT OF CHINA'S FOREIGN WASTE BAN: RACE TO THE TOP OR RACE TO THE BOTTOM

China's foreign waste ban has thrown the world into crisis. Media outlets everywhere have repeatedly devoted headlines to the waste piling up in North America, Europe, and Japan.²¹⁸ Researchers estimate that the Chinese ban will displace 111 million tons of plastic waste around the world by 2030.²¹⁹ While most agree that this is a wake-up call for more waste reduction efforts by the industry, consumers, and policymakers, reactions from various interested parties have been mixed, suggesting that the ongoing reorganization of the recycling value chain is more complicated than a binary divide between the North and the South.²²⁰

Internationally, during a meeting of the Open-ended Working Group of the Basel Convention—a subsidiary body of

217. See David Stanway, *China Environment Facing Pressures from Economic Slowdown: Minister*, REUTERS, Oct. 29, 2018, <https://www.reuters.com/article/us-china-pollution/china-environment-facing-pressures-from-economic-slowdown-minister-idUSKCN1N30TH> (relaying the Chinese government's concern that the war on pollution would further disrupt economic growth).

218. See e.g., Darryl Fears & Kate Furby, *A Giant Wave of Plastic Garbage Could Flood the U.S., a Study Says*, WASHINGTON POST (June 20, 2018), https://www.washingtonpost.com/news/energy-environment/wp/2018/06/20/a-giant-wave-of-plastic-garbage-could-flood-the-u-s-in-10-years-a-study-says/?utm_term=.b1daaddc8d0c (finding that United States waste processing plants are struggling to keep up with the waste after China stopped accepting foreign waste imports); *Plastic Waste Piling up in Japan After Chinese Import Ban*, KYODO NEWS (Oct. 18, 2018), <https://english.kyodonews.net/news/2018/10/f3c95402f3ed-plastic-waste-piling-up-in-japan-after-chinese-import-ban.html> (reporting a waste build up in Japan); Matthew Taylor, *Rubbish Already Building up at UK Recycling Plants Due to China Import Ban*, GUARDIAN (Jan. 2, 2018), <https://www.theguardian.com/environment/2018/jan/02/rubbish-already-building-up-at-uk-recycling-plants-due-to-china-import-ban> (referring to a waste build up in the United Kingdom).

219. Brooks et al., *supra* note 8, at 2.

220. *China's trash ban lifts lid on global recycling woes but also offers opportunity*, UN ENVIRONMENT (Jul.6, 2018), <https://www.unenvironment.org/news-and-stories/story/chinas-trash-ban-lifts-lid-global-recycling-woes-also-offers-opportunity>.

the Convention—in September 2018, the Norwegian government proposed to add waste plastics to the list of waste that requires the PIC standard.²²¹ Environmental groups, as well as twenty-one countries, including China and several countries in Africa, voiced their support for the proposal, whereas the European Union, Japan, and Canada sought to block it.²²² At the national level, developed countries as major waste exporters have resorted to different strategies. On the one hand, governments and industries have committed to improving waste reduction and recycling. On the other hand, they are also diverting waste shipments to new destinations such as Southeast Asia and Africa, which will, in turn, undermine the efforts of waste reduction and recycling.²²³ At the same time, developing countries, presented with the opportunity to fill the vacuum left by China and become the new importer of foreign waste, must try to balance competing policy priorities and divergent interests of various actors.

A. *The Coping Strategies of Developed Countries*

After China notified the World Trade Organization (WTO) of its restrictions on foreign waste imports, five WTO members—the United States, the European Union, Australia, Canada, and Japan—questioned the broad scope of the measure.²²⁴ Industrial associations, such as the Institute of Scrap Recycling Industries, requested a longer transition period, arguing that the ban would be detrimental to the North Ameri-

221. *Basel Amendment Proposed by Norway to Cover Scrap Plastic*, *supra* note 9.

222. *Countries Voice Support for Controlling Plastic Scrap in International Trade Treaty*, RECYCLING TODAY (DeAnne Toto ed., Sept. 10, 2018), <https://www.recyclingtoday.com/article/proposals-to-restrict-trade-of-plastic-scrap-gain-support>. The proposal will be submitted for consideration and possible adoption by the fourteenth meeting of Conference of Parties, which will take place in April 2019. *Supra*.

223. Kari Lindberg, *After China, Southeast Asia Is Also Detoxing from Imported Plastic Trash*, QUARTZ (Jan. 8, 2019), <https://qz.com/1516317/southeast-asia-is-detoxing-from-imported-plastic-trash>; *Illegal Trade in Waste: Overview of Operation Demeter IV*, WORLD CUSTOMS ORG. (Nov. 28, 2018), <http://www.wcoomd.org/en/media/newsroom/2018/november/illegal-trade-in-waste-overview-of-operation-demeter-iv.aspx>.

224. *WTO Members Start Review of Technical Barriers to Trade Agreement*, WORLD TRADE ORG. (Nov. 8, 2017), https://www.wto.org/english/news_e/news17_e/tbt_15nov17_e.htm.

can recycling industry.²²⁵ U.S. officials also accused China's foreign waste ban of breaching its WTO obligations by treating domestic and foreign waste differently.²²⁶ However, these protests proved unsuccessful, as *Brazil-Tyres* firmly established the regulatory discretion of member states to use trade-restrictive measures in pursuing environmental and health objectives.²²⁷ Thus, as waste piles up in many developed countries and China shows no sign of loosening its import ban, these countries have resorted to various strategies of adaptation, such as promoting waste reduction, building capacity in domestic recycling industries, and diverting waste shipments to new destinations. How those strategies are implemented, and to what

225. Statement from Robin K. Wiener, President, Inst. of Scrap Recycling Indus., to WTO/TBT Nat'l Notification and Enquiry Ctr. of China (Aug. 18, 2017), <https://www.isri.org/docs/default-source/default-document-library/isri-comments-to-the-wto-re-notification-gtbtchn1211-august-18-2017.pdf?sfvrsn=2&sfvrsn=2>.

226. Tom Miles, *U.S. Asks China Not to Implement Ban on Foreign Garbage*, REUTERS, Mar. 23, 2018, <https://in.reuters.com/article/us-china-environment-usa/u-s-asks-china-not-to-implement-ban-on-foreign-garbage-idINKBN1GZ2WI>.

227. In the *Brazil Tyres* case, the European Union sued Brazil over an import ban imposed in 2000 on retreaded (and waste) tyres. The Panel and the Appellate Body observed that the objective of protecting human health and life against life-threatening diseases such as dengue fever and malaria is "both vital and important in the highest degree," and that the preservation of animal and plant life and health, "which constitutes an essential part of the protection of the environment," is also an important value. Therefore, the Court found that the import ban fell under the GATT Article XX(b) exception for national policies that are inconsistent with GATT provisions. In other words, a policy measure that treats domestic waste and foreign waste differently for environmental protection purposes does not constitute a violation of a state's obligations under the WTO by itself. On the other hand, the implementation of the import ban, i.e., the exemption of MERCOSUR countries from the import ban as well as court injunctions that legalize the import of used tires by Brazilian retreading companies, is inconsistent with the chapeau of Article XX, which requires the measure not be applied in a manner that would constitute "a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail." It seems that similar problems do not exist with the Chinese ban, as it is unlikely for the Chinese courts to act disconcertingly from the administrative branch, and no exemption has been made to any specific countries. Panel Report, *Brazil – Measures Affecting Imports of Retreaded Tyres*, WTO Doc. WT/DS332/R, ¶ 5.86, 7.111 – 7.112, 7.390, (adopted June 12, 2007); see Appellate Body Report, *Brazil – Measures Affecting Imports of Retreaded Tyres*, WTO Doc. WT/DS332/AB/R, ¶ 179, 183, 233 (adopted Dec. 3, 2007).

extent they will be successful, have divergent implications for the future of the waste trade and waste management.

1. *Legislative and Public Policy Efforts to Promote Recycling*

In the United States, California, Hawaii, and Washington have proposed state-level legislation to mitigate the impact of Chinese foreign waste ban.²²⁸ California Governor Jerry Brown has signed bills which, on the one hand, relax compliance requirements for the recycling and diversion objectives set by state recycling laws,²²⁹ and on the other hand, call for reducing California's traditional reliance on volatile foreign markets for its recyclable materials by investing in domestic infrastructure.²³⁰ The California legislation was also aimed at plastic use prevention by, for example, requiring state facilities to use recyclable or compostable packaging, and restaurants to offer plastic straws only upon request.²³¹

The European Union has also worked on more comprehensive plans to improve waste recycling within the region, especially for waste plastics. The European Commission introduced a target to recycle fifty-five percent of plastic packaging by 2030, and a complete ban on single-use plastic packaging by 2021.²³² In order to meet the new targets, the European Union promised to channel 100 million euros to stimulate

228. Riley Hutchings et al., *Is China's Ban on Imported Waste an Economic Opportunity for States?*, NAT'L CONF. ST. LEGISLATURES BLOG (June 18, 2018), <http://www.ncsl.org/blog/2018/06/18/is-chinas-ban-on-imported-waste-an-economic-opportunity-for-states.aspx>.

229. A.B. 3178, 2018 Assemb., Reg. Sess. (Cal. 2018).

230. Letter from Scott Smithline, Dir., Cal. Dep't Res. Recycling and Recovery, to Local Jurisdictions Cal. (May 8, 2018) (on file with CalRecycle) (noting that in 2016 more than 60 percent of California's recyclable materials were exported to China).

231. Jeff Daniels, *California Governor Signs Bill to Reduce Plastic Straw Use, Cut Waste 'Choking Our Planet'*, CNBC (Sept. 20, 2018, 6:42 PM), <https://www.cnbc.com/2018/09/20/california-gov-jerry-brown-signs-bill-to-reduce-plastic-straw-use.html>.

232. *EU Targets Recycling as China Bans Plastic Waste Imports*, REUTERS, Jan. 16, 2018, <https://uk.reuters.com/article/us-eu-environment/eu-targets-recycling-as-china-bans-plastic-waste-imports-idUKKBN1F51SP>; Josh Gabbatiss, *European Parliament Votes to Ban Single-Use Plastics in Bid to Tackle Pollution*, INDEPENDENT (Oct. 24, 2018), <https://www.independent.co.uk/environment/plastic-pollution-ban-vote-eu-european-parliament-environment-ocean-meps-a8599686.html>.

technology development and innovations in recycling.²³³ The final version of the European Strategy for Plastics did not include a proposal to impose an environmental tax to induce plastic recycling due to a lack of unanimity, but member states have individual freedom to set up more aggressive targets and use taxation or other economic instruments to promote waste prevention and recycling.²³⁴ For instance, a new packaging law in Germany, which will come into effect in 2019, announces recycling targets of sixty-three percent for plastic packaging (from the current thirty-six percent), and ninety percent for metal, glass, paper, and board by 2022.²³⁵ The British government has extended a five-pence plastic bag charge to small retailers and is consulting on a new tax on all plastic packaging in 2022.²³⁶

Other waste exporters such as Japan and Australia have also enacted national strategies for plastic reduction and capacity-building in domestic recycling. The Japanese Ministry of the Environment set targets to recycle or reuse all plastic containers by 2035 and reduce twenty-five percent of single-use plastics by 2030 through plastic-to-fuel projects like requiring retailers to charge for plastic bags.²³⁷ In addition, the government increased its budget for subsidizing new recycling facili-

233. European Commission, *Ambitious New Strategy to Make Plastic Fantastic*, 65 ENVIRONMENT FOR EUROPEANS (forthcoming), https://ec.europa.eu/environment/efe/themes/economics-strategy-and-information/ambitious-new-strategy-make-plastic-fantastic_en (last updated Mar. 16, 2018).

234. During the process of drafting the European Strategy for Plastics, the Rapporteur stressed that a European Union-wide plastics tax is inconsistent with division of powers between the European Union and its member states, but called for member states to introduce plastic taxes within their own jurisdictions. *Report on a European Strategy for Plastics in a Circular Economy*, at 9, Comm. on the Env't, Pub. Health and Food Safety (July 16, 2018), http://www.europarl.europa.eu/doceo/document/A-8-2018-0262_EN.html.

235. *New German Packaging Law to Hit Market in 2019*, PLASTIC NEWS EUROPE (July 3, 2018, 1:00 AM), <http://www.plasticsnewseurope.com/article/20180703/PNE/180709983/new-german-packaging-law-to-hit-market-in-2019>.

236. Rebecca Smithers, *UK to Consult on Plastic Packaging Tax, Chancellor Says*, GUARDIAN (Oct. 29, 2018), <https://www.theguardian.com/environment/2018/oct/29/uk-to-consult-on-plastic-packaging-tax-chancellor-says>.

237. Kazuhiro Igarashi, *Environment Ministry Compiles Targets to Combat Single-Use Plastic Pollution*, MAINICHI (Oct. 20, 2018), <https://mainichi.jp/english/articles/20181020/p2a/00m/0na/024000c>.

ties from US\$4 million to \$13.5 million in 2018.²³⁸ The Australian government introduced a more ambitious plan, which is to recycle all packaging materials by 2025 and halve food waste by 2030.²³⁹ It has also elevated funding of waste recovery projects, and endorsed industry-led product stewardship schemes to improve recycling of electronic products, types, and oil.²⁴⁰

2. *Industry Efforts for Waste Reduction and Capacity-Building*

Industry, which contributes the most to waste generation and, therefore, to waste reduction, is another crucial driving force in the transition to a circular economy and capacity-building in recycling. In 2018, a wave of voluntary recycling targets from the industry sector emerged in response to the Chinese foreign waste ban and environmental activism in global civil society. McDonald's was among the first to announce a plan to use 100% sustainable sources for its packaging worldwide, and to require all its restaurants recycle packaging, by 2025.²⁴¹ Coca-Cola subsequently committed to using fifty-percent-recycled materials for its plastic bottles by 2030, with the aim of increasing that figure to 100% for all its bottles and cans.²⁴² Based on a Greenpeace estimate, in 2016, the company produced over 110 billion plastic bottles.²⁴³ By October 2018, over 250 major brands, including Nestle, Kellogg,

238. Julian Ryall, *How China's Plastic Waste Ban Has Left Japan to Deal with Mountains of Trash*, SOUTH CHINA MORNING POST (July 4, 2018, 11:17 AM), <https://www.scmp.com/news/asia/east-asia/article/2153690/how-chinas-plastic-waste-ban-has-left-japan-deal-mountains-trash>.

239. Agreed Statement from the Seventh Meeting of Env't Ministers, Ausd. Dep't of Env't and Energy (April 27, 2018), <http://www.environment.gov.au/system/files/pages/4f59b654-53aa-43df-b9d1-b21f9caa500c/files/mem7-agreed-statement.pdf>.

240. Ben Messenger, *§4.2 Government Investment in Recycling Projects for Victoria, Australia*, WASTE MGMT. WORLD (July 12, 2018), <https://waste-management-world.com/a/4-2-government-investment-in-recycling-projects-for-victoria-australia>.

241. *McDonald's Aims for Fully Recycled Packaging by 2025*, BBC (Jan. 16, 2018), <https://www.bbc.com/news/business-42704291>.

242. Angelica LaVito, *Coca-Cola Wants to Collect and Recycle 100% of Its Bottles, Cans by 2030*, CNBC (Jan. 19, 2018, 7:11 AM), <https://www.cnbc.com/2018/01/19/coca-cola-wants-to-collect-and-recycle-100-percent-of-its-packages-by-2030.html>.

243. Sandra Laville, *Coca-Cola Increased Its Production of Plastic Bottles by a Billion Last Year, Says Greenpeace*, GUARDIAN (Oct. 2, 2017), <https://>

and PepsiCo, had joined the pledge to reduce plastic pollution in their operations.²⁴⁴ The efforts at industry self-regulation have received a cautious welcome from environmental organizations. While voluntary recycling targets may be a move in the right direction, environmental groups point out that they prioritize recycling over reduction.²⁴⁵ In addition, to prevent window-dressing, some are calling for more immediate actions in plastic reduction, as well as transparency and accountability in self-reporting.²⁴⁶

Historically, the recycling industries in waste exporting countries have lagged because they failed to compete with China's informal recycling industry. Shipping wastes to China to fulfill recycling objectives was much cheaper than recycling and disposing of them domestically.²⁴⁷ Between 2003 and 2010, the United States built almost no new polyethylene reprocessing capacity.²⁴⁸ According to a Chinese trader with decades of experience in the North American market, there are fewer than five plastic recycling factories in the United States.²⁴⁹ With the Chinese foreign waste ban in place, there is both pressure and opportunity for reinvigorating the recycling industry in waste exporting countries. Besides increasing Chi-

www.theguardian.com/environment/2017/oct/02/coca-cola-increased-its-production-of-plastic-bottles-by-a-billion-last-year-say-greenpeace.

244. Isabelle Gerretsen, *Big Brands Pledge to Turn Tide on Global Plastic Waste*, REUTERS, Oct. 28, 2018, <https://www.reuters.com/article/us-global-plastic-waste/big-brands-pledge-to-turn-tide-on-global-plastic-waste-idUSKC1N1N303V>.

245. Robin Hicks, *NGOs Call Out 'Vague' Pledge by 250 Companies to Tackle Plastic Pollution*, ECO-BUSINESS (Oct. 30, 2018), <https://www.eco-business.com/news/ngos-call-out-vague-pledge-by-250-companies-to-tackle-plastic-pollution>.

246. Perry Wheeler, *Coca-Cola, Nestlé, Danone, Mars, Pepsi and Unilever Sign Global Plastics Pledge but Still Haven't Prioritized Reduction*, GREENPEACE (Oct. 29, 2018), <https://www.greenpeace.org/usa/news/coca-cola-nestle-danone-mars-pepsi-and-unilever-sign-global-plastics-pledge-but-still-havent-prioritized-reduction>. In 2018, California district attorneys settled cases with several retail brands, including Amazon, Costco, and Walmart, for alleged violation of California law by falsely marketing their plastic products as "biodegradable" or "compostable." Jared Paben, *Amazon Settles 'Biodegradable' Claims Case*, RESOURCE RECYCLING (Aug. 21, 2018), <https://resource-recycling.com/recycling/2018/08/21/amazon-settles-biodegradable-claims-case/#more-10404>.

247. MINTER, *supra* note 18, at 88 (2013).

248. VELIS, *supra* note 42, at Figure 26.

249. Interview with Jason Xu, in Vancouver, B.C. (Dec. 3, 2018).

nese investment in the recycling industries of some developed countries, as discussed in Part III, some multinationals have eyed this market potential. In Japan, Mitsubishi Materials plans to invest over US\$100 million in precious metals recycling plants devoted to metal recovery from e-waste and lithium-ion car batteries in Japan and the Netherlands.²⁵⁰ Three other Japanese mining companies have also established new recycling facilities or expanded their existing plants to recycle e-waste.²⁵¹ However, most of these new plants will not become fully operational until 2020 or later. In Europe, Suez, a Paris-based multinational corporation specializing in energy supply and waste management, partnered with LyondellBasell, a chemical company from Houston, to purchase a plastic reprocessing factory in the Netherlands and expand its production.²⁵² In the United States, Amazon has invested US\$10 million dollars to support the recycling infrastructure, and has committed to diverting 1 million tons of recyclable materials from landfills and opening up curbside recycling programs for 3 million U.S. households by 2028.²⁵³

3. *Diverting Waste Shipments to Alternative Destinations*

Although developed countries have made some efforts to improve recycling and reduce domestic waste production, finding an alternative importer or destination besides China is preferable because exporting requires little time or capital investment. During the Operation Green Fence in 2013, many waste shipments destined for China were transshipped to ASEAN countries for sorting and cleaning so that they could meet the higher standards enforced by the GAC.²⁵⁴ While global waste trade declined in both volume and value in 2013,

250. *Japanese Companies Digging for Gold in Urban Waste*, NIKKEI ASIAN REVIEW (Oct. 3, 2017) <https://asia.nikkei.com/Business/Japanese-companies-digging-for-gold-in-urban-waste>.

251. *Id.*

252. Brian Taylor, *New Places to Go*, RECYCLING TODAY (Mar. 12, 2018), <https://www.recyclingtoday.com/article/plastics-recycling-investments>.

253. Adam Allington, *Amazon Primes Recycling Pump, Betting Market Will Bounce Back*, BLOOMBERG (Oct. 16, 2018), <https://www.bna.com/amazon-primes-recycling-n73014483295> [<https://web.archive.org/web/20190127085000/https://www.bna.com/amazon-primes-recycling-n73014483295>].

254. VELIS, *supra* note 42, at 48.

waste exports to India and ASEAN countries grew significantly.²⁵⁵

Similar to what happened during Operation Green Fence, without an international consensus on the control of waste trade, China's foreign waste ban has redirected waste shipments to countries that have not restricted the trade. News reports show that major waste exporting countries have once again turned to countries in Southeast Asia, the Middle East, and Africa. The United Kingdom's exports of waste plastics to Malaysia tripled between January and April 2018, and during the same period, its exports to mainland China and Hong Kong fell by ninety-seven percent and seventy-one percent, respectively.²⁵⁶ In the first half of 2018, U.S. exports of waste plastics to Thailand rose by almost 2,000%, to Malaysia by 273%, and to Vietnam by 46%.²⁵⁷ Other countries like Turkey and Tanzania also witnessed a boom in waste imports in the past year.²⁵⁸ The existence of a pollution haven alternative to

255. See *supra* note 7 and accompanying text. The author came to this conclusion through a similar method as used for comparing the Chinese and global plastic exports. In this case, though, the author set "Imports" as the response to "Trade flows" and "India" as the response to "Partners," then compared the results when "Period (years)" was either "2012" or "2013." The resulting data indicated that, between 2012 and 2013, Indian plastic waste import from the United Kingdom and the United States increased by nearly 350% and 45% by trade value, respectively. The author used the same method to track growth in Indonesia (where U.K. export of spent batteries increased by 890%) and Vietnam (where U.K. export of spent batteries increased by 20%). See also ASHISH CHATURVEDI & NICOLE McMURRAY, INST. DEV. STUDIES, CHINA'S EMERGENCE AS A GLOBAL RECYCLING HUB - WHAT DOES IT MEAN FOR CIRCULAR ECONOMY APPROACHES ELSEWHERE? 25–28 (2015) (noting that the United Kingdom claimed that its Green Fence program decreased waste exports while waste exports to Indonesia increased).

256. Leslie Hook, *Plastic Waste Export Tide Turns to South-East Asia After China Ban*, FIN. TIMES (June 13, 2018), <https://www.ft.com/content/94ee72d0-6f26-11e8-852d-d8b934ff5ffa>.

257. Karen McVeigh, *Huge Rise in US Plastic Waste Shipments to Poor Countries Following China Ban*, GUARDIAN (Oct. 5, 2018), <https://www.theguardian.com/global-development/2018/oct/05/huge-rise-us-plastic-waste-shipments-to-poor-countries-china-ban-thailand-malaysia-vietnam>.

258. See *supra* note 7 and accompanying text. The author used the same method to draw this conclusion, only changing the "Partners" to "Tanzania" or "Turkey," and the "Period (years)" to compare to "2016" and "2017." The resulting data shows that between 2016 and 2017, Tanzania's plastic waste import from Japan increased by 1,100%, and their plastic waste import from the United States rose to \$92,736 from almost zero. Further, during the

China may have multiple consequences.²⁵⁹ First, it is likely to undercut commitments to waste reduction and recycling by developed countries. Second, developing countries may follow China's initial path and sacrifice environmental concerns for potential economic growth—but these decisions will heavily depend on the national policies of those countries and the power dynamics between the government authorities and different stakeholders, such as domestic and international recyclers, local communities, and environmental groups.

B. *Responses by Developing Countries*

Before China launched the current environmental campaign, other developing countries, such as Malaysia and Tanzania, were already engaging in the global recycling value chain. Importers in these developing countries sort, clean, and shred scrap paper, plastics, and electronics locally, before shipping them to China for reprocessing. In addition, Chinese investment has played an important role in expanding the recycling industry in these countries. Since China has moved to ban foreign waste, these countries are presented with two options—reject the waste as China does to protect the environment, or take in the waste as an opportunity to stimulate industrialization at a cost to their environment. Some countries adopted both strategies at different times, with varying consequences for the industry, the public, and the global trade of waste.

1. *Southeast Asia*

As mentioned earlier, for decades, Southeast Asia has acted as a transshipment point for waste destined for China, and since China enforced the foreign waste ban, wastes of all kinds have been flowing to Southeast Asia. Local recyclers view this as a great business opportunity and hope to turn Southeast Asia into the next center for global plastic recycling.²⁶⁰ In ad-

same period, Turkey's plastic waste import from the United Kingdom and the Netherlands increased by 185% and 180%, respectively.

259. See *supra* note 27 and accompanying text.

260. Michael Taylor, *Southeast Asian Plastic Recyclers Hope to Clean up After China Ban*, REUTERS, Jan. 15, 2018, <https://www.reuters.com/article/us-asia-environment-waste-plastic/southeast-asian-plastic-recyclers-hope-to-clean-up-after-china-ban-idUSKBN1F504K>.

dition, a number of Chinese recycling companies have established operations in Malaysia, Vietnam, and Thailand in order to deal with inadequate raw material supplies and environmental policy changes in China.²⁶¹

However, none of the Southeast Asian countries has the capacity to absorb all the wastes diverted from China, and so environmental pressures have forced many Southeast Asian countries to restrict waste import in various ways. Since April 2018, Indonesia has required 100% inspection of waste paper and plastic imports.²⁶² In August, Thailand announced a temporary ban on plastic imports as well as a plan to ban e-waste and plastic waste imports in two years, and in October, Malaysia imposed an import tax on waste plastics.²⁶³ Environmental violations in recycling activities are a main cause of such policy reactions. In 2018, the Thai government discovered that several Chinese-owned plastic recycling factories were importing and processing plastic components of e-waste illegally.²⁶⁴ The incident caused a media frenzy, which subsequently led to a nationwide environmental inspection of the plastic recycling industry and tightening of immigration policies.²⁶⁵ In Malaysia, the local government of Kuala Langat organized an envi-

261. David Stanway, *China's Plastic Recyclers Go Abroad as Import Ban Bites*, REUTERS, June 26, 2018, <https://uk.reuters.com/article/us-china-pollution-waste/chinas-plastic-recyclers-go-abroad-as-import-ban-bites-idUKKBN1JM0L9>; Nikki Sun et al., *China's Scrap Plastic Ban Saddles Neighbors With Piles of Problems*, NIKKEI ASIAN REV. (June 26, 2018), <https://asia.nikkei.com/Spotlight/Asia-Insight/China-s-scrap-plastic-ban-saddles-neighbors-with-piles-of-problems>; Interview with Vincent Tian, in Bos., Mass. (Oct. 20, 2018).

262. *Indonesia Imposes Preshipment Inspection Policy on Fiber Imports*, RECYCLING TODAY (Megan Workman ed., May 31, 2018), <https://www.recyclingtoday.com/article/indonesia-imports-preshipment-inspection-isri>. Thailand has similarly cracked down on illegal importation and processing of electronic waste. Tassanee Vejpongsa, *Thai Police Probe Suspected Illegal e-Waste Recycling*, ASSOCIATED PRESS NEWS, May 25, 2018, <https://apnews.com/e5ab4ff7b2bd4de8bab33e70abeaafd6>.

263. *International Policies Affecting Global Commodity Markets*, CAL. RECYCLE, <https://www.calrecycle.ca.gov/markets/nationalsword/globalpolicies> (last updated: Apr. 3, 2019).

264. Chaiyot Pupattanon, *Piles of Hazardous Waste Found at Illegal Recycling Factory*, BANGKOK POST (June 8, 2018), <https://www.bangkokpost.com/news/environment/1481349/piles-of-hazardous-waste-found-at-illegal-recycling-factory>.

265. *Taiguo Fei Suliao Jiang Chu Xingui* (泰国废塑料将出新规) [*Thailand About to Issue New Regulations on Waste Plastic Recycling*], SOHU NEWS (June 18, 2018), http://www.sohu.com/a/236347038_270404.

ronmental crackdown on unlicensed plants processing imported plastics, arresting several Chinese citizens working in those plants.²⁶⁶ But recyclers and plastic manufacturers are pushing back against restrictions on the waste trade and recycling industry in Southeast Asia. After Malaysia imposed a three-month ban on plastic waste imports in July 2018, sixteen recyclers made a public petition in the media and asked the government to allow law-abiding imports for the sake of employment in the domestic recycling industry.²⁶⁷ The Malaysian government and local recyclers reached a compromise eventually, under which licensed importers may continue importing waste plastics while the government committed to a complete ban on waste plastic import in three years.²⁶⁸

2. Tanzania

In January 2018, the author conducted field research on the plastic recycling industry in Tanzania, visiting and interviewing plastic recycling and manufacturing plants.²⁶⁹ The field study found that Chinese expatriates have gradually taken over the local plastic recycling industry since the 2000s, establishing forty to fifty plastic recycling and reprocessing factories.²⁷⁰ Around half of these Chinese factories produce plastic grocery bags and household products for the domestic

266. *Ma Lai Xi Ya Fei Suliao Gongchang Bei Chafeng* (马来西亚废塑料工厂被查封) [Waste Plastic Recycling Factory in Malaysia Closed by Government], SOHU NEWS (Oct. 10, 2018), http://www.sohu.com/a/258520294_270404.

267. *Bei Ma 16 Jia Zaisheng Suliao Chang Yawu Zhe, Yu Zhengfu Wu Yanchang Dongjie Jinkou Suliao Zhunzheng* (北馬16再生塑料廠商業者籲政府勿延長凍結進口塑料準證) [Sixteen Waste Plastic Recyclers in North Malaysia Petitioned to Government to Resume Waste Plastic Imports], ORIENTAL DAILY NEWS (Oct. 22, 2018), <http://beta.orientaldaily.com.my/s/264638>.

268. *Quanmian Tingfa Yang Laji AP; "Ganjing Yang Laiji" You Tiaojian Jinkou* (全面停发洋垃圾AP“干净洋垃圾”有条件进口) [Issuance of New Import License Suspended; “Clean Foreign Garbage” Can Be Imported in Compliance with Government Regulation], CHINA PRESS (Oct. 26, 2018), www.chinapress.com.my (insert “全面停发洋垃圾AP“干净洋垃圾”有条件进口” in the “Search” field; then follow the first matching hyperlink).

269. The author interviewed managers, employees, and suppliers of over thirty plastic plants in Dar es Salaam and Zanzibar. For more detail on technology linkages between Chinese investments and the local recyclers, see generally Ying Xia, *Wealth from the Waste? A Case Study of Chinese Investment in the Plastic Recycling Industry of Tanzania* (SAIS China-Africa Research Initiative, Working Paper 2019/06).

270. *Id.*

market, and the other half export shredded plastic flakes to China.²⁷¹ Tanzania has been the largest exporter of waste plastics to China since 2010.²⁷² Those Chinese recycling factories have contributed to knowledge transfer in the local industry, by teaching sorting and recycling techniques to local trash transfer stations and helping them upgrade into reprocessing workshops.

Recyclers in Tanzania have responded to China's foreign waste ban by stepping up and offering an alternative to developed countries that want to dispose of their waste. Some factories found new buyers in Southeast Asia, only to face policy fluctuations in these destinations.²⁷³ Others imported machines from China to produce plastic pellets, which are still permitted for import into China.²⁷⁴ Still others took the chance to expand production by importing waste from Europe and North America.²⁷⁵ Many domestic recyclers and officials saw the Chinese ban as an opportunity for employment creation and industrialization in Tanzania, and the Tanzanian government, so far, has taken a *laissez-faire* approach towards waste import.²⁷⁶

Notwithstanding the potential contribution to the economy, the increased waste import into Tanzania may exacerbate environmental and health problems. Almost none of the Dar es Salaam and Zanzibar factories visited during the author's aforementioned fieldwork had pollution control facilities or

271. *Id.*

272. *See supra* note 7 and accompanying text. Using the same method, the author changed only the "commodity code" to "waste paper" and the "Period (years)" to "2010" and higher, thus returning data indicating that Tanzania has been China's largest exporter since then.

273. Interview with John Yang, Yongxin Plastic Co., in Dar es Salaam, Tanz. (Jan. 21, 2018).

274. Interview with Bob Xue, Xue Plastic Co., in Dar es Salaam, Tanz. (Jan. 22, 2018).

275. Interview with Lingang Wang, WLG Plastic Co., in Dar es Salaam, Tanz. (Jan. 17, 2018).

276. Interview with Zephania Shaidi, Confederation of Tanz. Indus., in Dar es Salaam, Tanz. (Jan. 24, 2018). Confederation of Tanzania Industries is one of the largest industrial association in Tanzania; it represents Tanzania's manufacturers in the East African Community Manufacturers Network. *EAC Manufacturers Network Meet to Discuss Regional Challenges*, SOKO DIRECTORY (Feb. 24, 2017), <https://sokodirectory.com/2017/02/eac-manufacturers-network-meet-discuss-regional-challenges>.

measures to ensure workplace safety.²⁷⁷ Local governments demonstrate more interest in enforcing immigration laws than environmental or health provisions.²⁷⁸ There are also signs that the importation of waste plastics might discourage Tanzania's domestic recycling, because imported wastes are better sorted and of higher quality—one of the very reasons why China has banned waste import in order to prioritize domestic recycling.²⁷⁹ In addition, the financial situation of many local recyclers has deteriorated, as declining demand for locally recycled plastics has caused prices to decrease. Some, albeit only a small number, have managed to turn this into an advantage. Two interviewed recyclers, each of whom owns a small processing workshop in Zanzibar and west Tanzania, imported machines and equipment from China, and started producing plastic pipes and buckets for the local and regional markets.²⁸⁰

VI. CONCLUSION

By presenting a case study of the impact of China's domestic environmental reform—particularly the effect of China's ban of foreign waste imports on the international waste trade—this article contributes to ongoing discussions about China's emerging leadership in global governance, challenges of sustainable development, and the role of informal economy in globalization.

277. *See supra* 269 and accompanying text.

278. Interview with Chinese and local plastic recyclers and manufacturers, in Dar es Salaam and Zanzibar, Tanz. (Jan. 2-Jan.25, 2018).

279. Interview with unnamed workers, Jiaxing Plastic Co., in Dar es Salaam, Tanz. (Jan. X, 2018).

280. One recycler, known as "George" was an owner of a small processing workshop; he bought machines from China in early 2018 to produce plastic buckets in West Tanzania after supplying PET flakes to Chinese plastic factories in Dar es Salaam for two years. Interview with George, in Dar es Salaam, Tanz. (Jan. 15, 2018). Another recycler, "Amour" was also a local supplier for Chinese and Indian plastic recycling plants for several years before he decided to start a plastic plumbing pipe factory in Zanzibar in 2016, also with machines imported from China. Interview with Amour, in Zanzibar, Tanz. (Jan. 18, 2018).

A. *China as an Emerging Global Environmental Leader*

China's economic achievements over the past forty years have not only helped alleviate poverty for 700 million Chinese citizens, but also made the country the second largest investor in the world as of 2016.²⁸¹ While many developing countries are increasingly drawn to the so-called China model of development, China has faced criticism for the environmental degradation associated with its economic activities both internally and externally. China's urban air pollution, above most other environmental issues, poses serious health risks, leading many multinationals to pay an environmental allowance to their expatriate employees in China to compensate for potential health damage.²⁸² Some have even used the spill-over effect on air quality in the United States as evidence to argue against the outsourcing of manufacturing to China.²⁸³ Moreover, China's overseas construction and investment projects under the auspices of the country's global initiatives such as the BRI and International Capacity Cooperation have raised additional concerns.²⁸⁴ For example, in Kenya, the Chinese-funded standard gauge railway that connects the Mombasa port with Nairobi, the capital, met fierce opposition because it would allegedly impact wildlife and tourism in several national parks.²⁸⁵ The ongoing environmental campaign, including the foreign

281. Chinese annual FDI outflow has amounted to \$183 billion in 2016, surpassing that of Japan for the first time and thus becoming the second largest investor of the world. *China Becomes World's Second-Largest Source of Outward FDI: Report*, XINHUA NEWS AGENCY (June 8, 2017), http://www.xinhuanet.com/english/2017-06/08/c_136350164.htm.

282. See generally e.g., Haidong Kan et al., *Ambient Air Pollution, Climate Change, and Population Health in China*, 42 ENVTL. INT'L 10 (2012) (noting that air pollution is a major risk for China); Natalie Thomas, *China's Smog Driving Top Foreign Talent Away: U.S. Business Survey*, REUTERS, Mar. 19, 2014, <https://www.reuters.com/article/us-china-pollution-survey/chinas-smog-driving-top-foreign-talent-away-u-s-business-survey-idUSBREA2I0KU20140319> (reporting that foreigners do not want to remain in China due to air pollution).

283. Jintai Lin, et al., *China's International Trade and Air Pollution in the United States*, 111 PROC. NAT'L ACAD. SCI., no. 5, 2014, at 1736, 1736, 1741.

284. See Fernando Ascensão, et al., *Environmental Challenges for the Belt and Road Initiative*, 1 NATURE SUSTAINABILITY 206, 206 (2018) (noting that BRI may promote environmental degradation).

285. Samuel Kisika, *Activists Protest as Next Phase of SGR Begins in Park*, THE STAR (June 19, 2018), <https://www.the-star.co.ke/news/2018-06-18-activists-protest-as-next-phase-of-sgr-begins-in-park>.

waste ban, seeks to address these environmental challenges in China, with broader aims of bolstering the government's domestic political legitimacy and international soft power.

China's interest in environmental regulations began in the 1970s in response to the Stockholm Declaration, the first document in international law to recognize the right to a clean and healthy environment as a basic human right. Since then, however, China has faced criticism over decades for failing to prevent or control its environmental degradation, due to vagueness of provisions, lack of enforcement, and more importantly, subordination of environmental protection to economic interests at national and local levels.²⁸⁶ Beginning in the mid-2000s, the Chinese government has gradually elevated environmental considerations in its policymaking. Previous efforts—similar to discussed policies like the green GDP experiment and use of environmental protection targets in performance measurement—have witnessed varying degrees of success.²⁸⁷ In the ongoing campaign against pollution, of which the foreign waste ban is a crucial part, the Chinese government has shown an unprecedented commitment to protecting the environment. Law has played an important role in the implementation of the foreign waste ban, as evidenced by the revision of a number of regulations and technical standards regarding waste imports, which, according to U.S. industrial associations for recyclers, amount to the strictest in the world.²⁸⁸

286. See e.g., William P. Alford & Yuanyuan Shen, *Limits of the Law in Addressing China's Environmental Dilemma*, 16 *STAN. ENVTL. L. J.* 125 (1996) (arguing that China's attempts to fix environmental issues have failed due to difficulties of enforcement and doctrinal issues); Abigail R. Jahiel, *The Organization of Environmental Protection in China*, 156 *CHINA Q.* 757 (1998) (noting that China's focus on development and consumerism has caused environmental degradation).

287. See generally Yijia Jing et al., *The Politics of Performance Measurement in China*, 34 *POL'Y & SOC'Y* 49 (2015) (noting ways in which political processes and priorities in China have acted as obstacles to environmental reform).

288. For example, in the comments that the Solid Waste Association of North America (SWANA) submitted following China's announcement of the foreign waste ban, SWANA states that the 0.5% contamination/impurity level China sought to implement is "neither practical nor economically feasible, and is not consistent with either current practices or applicable, existing internationally recognized specifications." It further suggested that two percent would be an acceptable standard "if given an appropriate transition time." Comment from David Biderman, Executive Dir. & CEO, Solid Waste Ass'n of N. Am., Environmental Protection Control Standard for Imported

In addition, the foreign waste ban also resonates with the policy goals embodied in the BRI because it calls for more investment in domestic waste management facilities, as well as research and development in clean energy and recycling technology. In recent years, there has been increasing pressure for the Chinese government to engage alternative funding sources to bridge the financing gap in the BRI projects.²⁸⁹ By prioritizing environmental compliance and sustainable development, China may be able to attract more international investors and promote its reputation as an emerging global environmental leader.

With that said, challenges remain as to how to balance China's domestic and international environmental goals. Some are skeptical that China has employed double standards in its environmental practices, and that while Chinese has been implementing more environmentally conscious measures at home, its overseas activities do not adhere to the same standard.²⁹⁰ Observations from the enforcement of the foreign waste ban seem to suggest that there is at least some truth to these criticisms. Tightened environmental enforcement in China has driven many recyclers and manufacturers, large and small, overseas—a migration which may in turn generate concerns about environmental and regulatory compliance of Chinese companies in host countries, and jeopardize the policy objective of improving China's soft power abroad.

B. *The Economy Versus the Environment Debate*

The past century witnessed frequent reconfiguration of the relationship between the environment, society, and the economy. Though the idea that the natural environment has

Solid Wastes as Raw Materials, to WTO/TBT Nat'l Notification and Enquiry Ctr. of China & Ministry of the Env'tl. Prot. of China (Dec. 15, 2017), <http://www.keystoneswana.org/resources/Legislative/2017/2017%2012%2015%20-%20SWANA%20Comments%20on%20GTBTNCHN%201224%20-%201234.pdf>.

289. He Huifeng, *Is China's Belt and Road Infrastructure Development Plan About to Run Out of Money?*, SOUTH CHINA MORNING POST (Apr. 14, 2018, 10:00 PM), <https://www.scmp.com/news/china/economy/article/2141739/chinas-belt-and-road-infrastructure-development-plan-about-run>.

290. Elena F. Tracy et al., *China's New Eurasian Ambitions: The Environmental Risks of the Silk Road Economic Belt*, 58 EURASIAN GEOGRAPHY & ECON., no. 1, 2017, at 56, 77.

value mainly as a production factor is no longer the dominant vision,²⁹¹ many continue to view environmental issues from an economic perspective. The famous “tragedy of the commons” phenomenon, for instance, highlights the problem of inadequate internalization of environmental cost generated by production processes.²⁹² Proposed solutions include environmental tax and regulation, property rights, and technology development.²⁹³ Criticism of these neoclassical theories focuses on the fundamental tensions between economic growth and environmental protection,²⁹⁴ as well as the social and power dynamics that shape and reshape economic modernization and environmental problems.²⁹⁵ For example, business leaders point to overpopulation and lack of regulation in the South as leading causes of environmental depletion, while the political elite emphasize consumption, unsustainable production methods, and globalization.²⁹⁶ Yet the meaning of development is also socially constructed and context-specific. Under the existing global economic system, lax environmental regulation is considered crucial for the international competitiveness of the domestic industry in some countries, but it may also cause environmental inequalities between developed and developing countries.²⁹⁷

291. See generally Harold Hotelling, *The Economics of Exhaustible Resources*, 39 J. POL. ECON., no. 1, 1931, at 137 (pointing out that conservation movement is promoted by the monopolies to maintain high prices of natural resources rather than for the sake of future generations).

292. See generally Bruce A. Larson & Daniel W. Bromley, *Property Rights, Externalities, and Resource Degradation: Locating the Tragedy*, 33 J. DEV. ECON. 235 (1990) (proposing that private property regime could be a solution to environmental degradation).

293. *Id.*

294. See Joan Martínez-Alier, et al., *Sustainable De-Growth: Mapping the Context, Criticisms and Future Prospects of an Emergent Paradigm*, 69 ECOLOGICAL ECON. 1741, 1744 (2010) (comparing de-growth à la française with sustainable de-growth in ecological economics).

295. See generally Corinne Gendron, *Beyond Environmental and Ecological Economics: Proposal for an Economic Sociology of the Environment*, 105 ECOLOGICAL ECON. 240 (2014) (discussing different approaches to environmental economics).

296. *Id.* at 248–49.

297. See generally Roldan Muradian & Joan Martínez-Alier, *Trade and the Environment: From a ‘Southern’ Perspective*, 36 ECOLOGICAL ECON. 281 (2001) (arguing that neither environmental economics nor Northern ecological ec-

The history of the development of the international waste trade testifies to the tensions between the economy and the environment. Waste import and labor-intensive recycling contributed to the early industrialization in the United States, Japan, and more recently, China. Insofar as the current world trade regime allows countries to use less stringent environmental and labor regulations to their competitive advantage, it also enables environmental cost shifting from one country to another. While China struggles to transition from a *pollute first, clean up later* type of development model to an *ecological civilization*, it will have to bear the consequences of economic downturn and unemployment. Meanwhile, other developing countries now importing diverted waste face the risk of becoming the next global dumping ground. There are several possible ways, however, to help prevent a race to the bottom in those alternative destinations.

First, investing in green technology and safer waste processing and disposal facilities will help both waste reduction and control over environmental and health hazards generated in the recycling process. Second, the ripple effect of China's foreign waste ban may lead to the adoption of stricter transnational environmental regulations, thereby creating a more level playing field for recyclers across the globe. Third, the world's waste crisis following China's import ban has generated greater pressure for industrial actors and consumers to recognize the problem of overconsumption and take a more active role in waste reduction. Improving environmental awareness and fostering consensus and cooperation among the government, industry, and society at large is essential for making these measures effective, and requires long-term orientation. Furthermore, national and international policymaking ought to account for the unequal allocation of economic benefits and environmental costs of the global recycling industry among different groups of the population within and across countries.

C. *Regulation of the Informal Economy in Globalization*

The informal economy—which, according to an International Labor Organization estimate, employs about 2 billion

onomics take into account the structural conditions determining the international trade system).

people worldwide—has played an important role in globalization.²⁹⁸ Debates about the nature and cause of the informal economy have been active since the 1970s.²⁹⁹ Some consider the persistence of an informal-formal dichotomy to be a result of widening gaps in access to technology and other resources in both domestic and international economic systems.³⁰⁰ Others emphasize the interdependence between the informal and formal economies, but point out that the former's interest is subordinate to that of the latter—for example, reducing the cost of labor and production.³⁰¹ Law is also an important factor in the rise of the informal economy, either because various regulatory barriers prevent informal producers from entering the formal sector or because high compliance costs in the formal sector encourages them to stay informal.³⁰² The review of the informal recycling industry in China in this article suggests that each theory explains some but not all the components of

298. INT'L LABOR ORG., WOMEN AND MEN IN THE INFORMAL ECONOMY: A STATISTICAL PICTURE 13 (3rd ed. 2018). This number includes informal employment within and outside of informal enterprises. In the interest of time, discussion in this section will be limited to informal enterprises.

299. For an overview of theories and debates on the informal economy, see generally Martha Alter Chen, *The Informal Economy: Definitions, Theories and Policies 2* (Women in Informal Emp't: Globalizing and Org., Working Paper No. 1, 2012).

300. See Keith Hart, *Informal Income Opportunities and Urban Employment in Ghana*, 11 J. MOD. AFR. STUD., no. 1, 1973, at 61, 61 (noting “[p]rice inflation, inadequate wages, and an increasing surplus to the requirements of the urban labour market have led to a high degree of informality in the income-generating activities of the sub-proletariat” in Ghana.); see also Hans Singer & Richard Jolly, *Unemployment in an African Setting: Lessons of the Employment Strategy Mission to Kenya*, 107 INT'L LAB. REV. 103, 104 (1973) (finding “[t]hese internal imbalances are linked to extreme imbalances between the Kenyan economy and the world economy—in trade, technology, and the conditions governing private foreign investment.”).

301. See generally Caroline O. N. Moser, *Informal Sector or Petty Commodity Production: Dualism or Dependence in Urban Development?*, 6 WORLD DEV. 1041 (1978) (reviewing analytical frameworks and policy proposals of a number of studies of employment and poverty); Manuel Castells & Alejandro Portes, *World Underneath: The Origins, Dynamics and Effects of the Informal Economy*, in THE INFORMAL ECONOMY: STUDIES IN ADVANCED AND LESS DEVELOPED COUNTRIES 11 (Manuel Castells et al. eds., 1989) (introducing the informal economy and discussing the formal-informal distinction).

302. See generally HERNANDO DE SOTO, *THE OTHER PATH* (2002) (finding that structural problems that keep people in poverty provide a breeding ground for terrorists).

the interaction among the informal recyclers, formal producers, and regulators in the ongoing process of globalization.

The prevalence of informal recycling in China is the result of a co-existence of overregulation and lack of regulation. The Chinese government introduced a number of restrictions—such as the environmental license, waste import license, and overseas supplier registration—to raise the barriers for entering into the formal recycling industry with the objective of protecting the environment. However, most of these measures have suffered from ineffective implementation because of local protectionism, corrupt practices, and subordination of environmental protection to economic development goals in policy decision-making. As a consequence, state regulations have functioned as barriers for entrance into the formal economy without achieving the intended policy objectives. Moreover, they have also contributed to the power imbalance between formal and informal recyclers, whereby the former enjoys greater economic benefits and the latter bears higher risks of noncompliance.

Law has also played a crucial role in shaping the power dynamics in the global recycling value chain. Mass production and consumption drive both the supply and demand for recycling, and the global waste trade facilitates the commodification of environmental and labor standards in developing countries. For the past thirty years, Chinese recyclers have used informality as a means to enhance their international competitiveness, but they have also subordinated their interests to those of transnational traders and overseas suppliers. If the international community cannot reach a consensus to regulate the global waste trade, this hierarchical and interdependent network in the waste trade and recycling industry would be extended to Southeast Asia and Africa following China's waste ban, and is likely to undercut capacity-building in the formal recycling industry.

The study of the domestic and international implications of China's foreign waste ban shows that law is part of the cause of problems associated with informal recycling, but should also be part of the solution. The mechanisms by which China has carried out the foreign waste ban and broader environmental reforms have resulted in further marginalization of the informal recycling industry. While many owners of recycling workshops have either switched to other businesses or gone over-

seas where informal recycling still has a chance of survival, it remains unclear what alternatives are left for employees of those recycling workshops, many of whom lack the skills to work in the formal sector. This begs the question of what substitutes the state can or should provide to the poor and underemployed when the state suppresses the informal economy as a safety net. As a start, Chinese regulatory agencies should develop a more nuanced understanding of the relationship between informality and illegality, and avoid an one-size-fits-all approach in the implementation of environmental regulations. As the government seeks to steer development in a more sustainable direction, long-term policymaking in China should focus more on ameliorating growing tensions between different actors and interest groups in society.