

Picking Waste, Preserving Democracy

Global Recycling and State Instability

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Once the primary destination of recyclable materials, China recently upended the geography of trash by banning waste imports. Changes in the waste market have historically weakened diplomatic relationships, undermined domestic political stability, and limited economic potential in waste-processing states. In one possible future for the market, democracies with abundant labor may take China's place as waste importers. Without effective policy action, the influx of waste will likely lead to environmental degradation, health crises, and corruption in the new importer states, ultimately fostering instability. Current efforts to address changes in the waste market shift the problem or do not address the root of the issue. American organizations can minimize the negative externalities of the waste trade by working with importing states to provide personal protective equipment, encourage waste worker unionization, and build capacity for customs enforcement.

Introduction

Shocks in the international waste market, defined as the transboundary commercial movement of waste, have the potential to impact American interests. In 2018, economic growth, domestic politics, and international rivalries led China to impose sudden and severe restrictions on waste imports. This change in Chinese policy raises the question of where waste will go in the future, absent active intervention.

This paper presents a futures assessment of the waste market as a set of interactions between regime type and factor endowments. Regime types considered here are authoritarian and democratic, while the factor endowments of interest are relative capital abundance versus labor abundance. To inform discussion of the waste market, four possible futures are presented, but attention should be focused on a scenario in which waste is sent to labor-abundant democracies. The influx of waste in these states will likely spark environmental degradation, health crises, and corruption, fostering instability and the deterioration of democratic institutions.

U.S. development organizations have the opportunity not only to stave off these dangers, but also to turn the waste trade into an economic benefit for importers and exporters. Minimizing harm to waste workers through personal protective equipment and support for waste pickers' associations, as well as bolstering customs enforcement capacity, will protect new waste importers from the negative effects of waste market shocks and safeguard American interests in this fragile arena.

Defining the Waste Market

The way we have been dealing with our waste problem is to export it. It makes our [problems] invisible by shifting them.

— Carroll Muffett, President of the Center for International Environmental Law, 2018¹

Waste is defined as “unwanted materials left over from a manufacturing process or refuse from places of human or animal habitation.”² A global market exists to dispose of or reuse this waste, with waste importers and exporters determined by supply, demand, and comparative advantage. For instance, environmental economist Brian Copeland posits that because waste management is a land-intensive process, trash will go to states with a comparative advantage in land. This theory assumes that the most expensive input for waste management is finding real estate for landfills. In this example, states that are sufficiently land abundant import foreign waste in addition to processing domestic trash.³ Copeland’s framework highlights the importance of relative abundance and comparative advantage in the waste trade.

A critical component of the waste market is the secondary commodities market, which trades items or materials that have already been used for further reuse or recycling. As global waste output is expected to rise 70 percent by 2050, the international market for secondary commodities is an increasingly important component of waste management.⁴ The waste market is politically important due to the dangerous nature of waste and the international integration of the global economy. This section outlines types of waste, describes factors that impact the recycling market, and explains why China was a major waste importer.

Waste Types

Waste can be categorized according to level of hazard and mode of transportation. Non-hazardous waste includes plastic, paper, textiles, and metal. Hazardous materials include electronic waste (e-waste) and toxic byproducts and is specifically governed by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal of 1992.⁵ Of the non-hazardous wastes, metal is easily recycled and highly desired, and therefore of little concern. The movement of plastic, paper, and textiles—commonly traded wastes affected by the recent Chinese policy changes—is of greatest importance in this context.⁶

The second key distinction is whether waste is legally traded or illegally trafficked. Illicit transboundary trade has primarily involved e-waste and hazardous materials. One type of scrap targeted by the Chinese waste import ban was mixed plastic. By altering the legal market, however, the ban also incentivized a market for illegally-traded plastic scrap. Either recyclers bought low-quality, cheap scrap, or exporters paid criminals to dump scrap too low quality to recycle. Hence, any discussion of the legal market must also acknowledge and address the illicit market.⁷ Within the illicit market, two key characteristics of waste impact the success of waste smugglers:

- *Easily mislabeled.* Exporters face lower customs and disposal fees if they successfully deceive importers about the materials they handle. When illegal waste is discovered by customs agents, it may be sent back to the exporting country and the exporter may be fined.⁸

Consequently, waste exporters frequently mislead customs agents regarding the contents of their imports.⁹ Recyclable materials, such as plastic scraps and rubber, are often labeled as “solid waste” or “domestic waste” to evade seizure by customs.¹⁰

- *Easily concealed.* Waste in general can be easily hidden in containers, further enabling smugglers. For example, plastic is often smuggled with a layer of useful materials on top, such as higher quality, recyclable plastic pellets.¹¹ Due to the volume of goods passing through each customs checkpoint daily and the size of shipping bales, customs agents struggle to thoroughly check each container.

Recycling Market Considerations

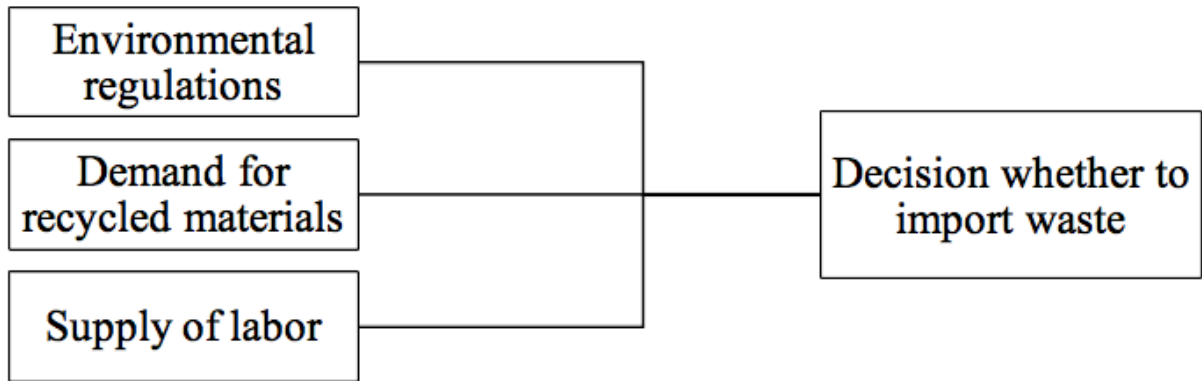
The waste market exists due to global imbalances in waste disposal costs and low transportation costs. The types of theoretically recyclable waste impacted by Chinese bans have specific qualities that impact cost-benefit asymmetry. Three factors primarily determine the direction of waste flows, namely regulation levels, demand, and factor endowments.

- *Environmental regulations.* The pollution haven hypothesis argues that environmental protection is a normal good; therefore, countries with more money have better environmental protections. To circumvent the high cost of disposing of waste in developed countries, companies will send waste to the poorest states with the weakest environmental regulations. In these countries, companies are not fined for the pollution from improper waste disposal.¹² When there are more stringent rules for waste management, rubbish will be driven abroad. This is the case in places like the European Union (EU), where there are high landfilling costs and laws mandating high recycling rates.¹³
- *Demand for recycled materials.* Strong economic growth, particularly in manufacturing, incentivizes investments in recycling technology.¹⁴ Recycled materials are attractive because they require less energy than would be used to produce new materials. Recycled aluminum requires 95 percent less energy than refining virgin aluminum; one ton of recycled office paper saves 4,100 Kwh of energy, while recycled plastic saves 5,774 Kwh of energy.¹⁵ However, states with substantial wealth and robust recycling programs will avoid accepting groups of materials that are more physically or chemically difficult to recycle in order to minimize pre-processing costs.
- *Factor endowments.* The recycling process is extremely sensitive to variations in material type and formulation.¹⁶ As an illustration, the average recycling contamination rate in the United States is 25 percent.¹⁷ Therefore, it is imperative that recycling streams are homogeneous and clean, and care is used to break down goods for recycling. To attain purity, recyclers can either severely limit the types of scrap they accept or Material Recovery Facilities (MRFs) must purify the waste stream before scrap can be recycled.¹⁸ The first option forgoes profit while the second is costly.

MRFs can use labor-intensive or capital-exhaustive waste processing methods. A comparative advantage in land becomes secondary to labor costs, because ideally few

secondary materials are landfilled. Because waste streams are so badly contaminated in waste exporting countries, it is profitable to send the dirty, comingled mixed waste overseas for manual sorting, rather than investing in capital-intensive waste-sorting technology. Low wages are therefore essential for maintaining a profit margin.

Figure 1: Drivers of the Recycling Market



China's Role in the Market

In the 1990s and early 2000s, China's comparative advantage in labor and weak environmental regulations increased its willingness to import waste. Strong economic growth, both within China and globally, ensured strong demand for recycled materials. Importing waste was made more profitable by loading scrap onto ships that brought Chinese goods to the United States, rather than letting them return to China empty. This practice of backhauling ensures that ships are always fully utilized, thereby lowering transportation costs.¹⁹ These factors combined to cement Chinese dominance of the waste market.²⁰

Challenges Arising from Changes in the Waste Market

Historically, changes in the waste market have endangered three pillars of security for importer states: diplomatic relationships, domestic political stability, and domestic economic potential. In the heavily globalized waste market, changes that impact waste importers threaten international stability and therefore U.S. interests.

Threat to Diplomatic Relationships

The waste crisis will give rise to new challenges to international rule of law and multilateral partnerships, notably by increasing waste crime and multinational disputes.

- *Increased illicit trade.* Waste crime is an international problem that corrodes trust between the unwitting waste importer and the waste exporter. The United Nations Environmental Programme estimates waste crimes like smuggling and dumping to be worth 20 to 30 billion USD per year.²¹ Legitimate businesses are undercut by the illicit trade of waste, perpetrated by both small groups of individuals and organized criminal groups.²² Waste crime is difficult to eliminate due to the “near complete lack of monitoring, statistics, or reporting” on global trash flows.²³ In 2016, the head of the British Environment Agency called waste crime the “new narcotics.”²⁴
- *More frequent multinational disputes.* The dangerous nature of the waste trade promotes international disputes between governments, companies, and individuals on the ground. In the case of the *Khian Sea*, a ship laden with American toxic ash drifted from port to port for two years during the 1980s, unable to unload its cargo.²⁵ Eventually, the ship dumped 4,000 tons of waste in Haiti before it was ordered to leave; clean-up cost hundreds of thousands of dollars and took more than ten years to negotiate and enact.²⁶ Of the 12 countries that the *Khian Sea* visited, it was turned away at gunpoint from two.²⁷ Protests of the ship and its American waste were so common in the states it hoped to dock in that the *Khian Sea* changed its name and the title of its cargo multiple times to try to trick customs officials.²⁸ Such backlash against waste-exporting states could be a major problem, especially for the United States, as one of the largest waste exporters in the world.²⁹

Threat to Domestic Political Stability

The governments of waste importers face internal unrest and disruption to domestic politics before and after joining the market.

- *More frequent domestic protests.* Multinational disputes over the waste trade are frequently precipitated by domestic protests, which can strain local and state governments. In January 2019, the Filipino Bureau of Customs discovered the second illegal shipment of mixed wastes in the Philippines within six months. Both shipments came from South Korea. There was an uproar in both states, including multiple protests by the Filipino NGO EcoWaste Coalition outside the Korean embassy in Taguig City in late 2018.³⁰ Importing waste can throw off budgets for waste management, an issue to which citizens are extremely sensitive. Protests against the government, spurred by citizens’ frustrations with waste build-up, have played out over recent years in countries as varied as Russia, Lebanon, and Italy.³¹
- *Emerging interest groups.* Economic opportunities created by the waste trade will empower new groups that advocate policies other citizens object to or are suboptimal for the country as a whole.³² These new interest groups will find allies in a number of different constituencies; for example, waste workers and facility owners as well as environmental activists. Conflict between interest groups and the larger electorate may lead to civil disputes or a lack of political will to address fully the impacts of the waste trade. In India, for instance, local supervisors are afraid to change the current waste management system,

because they fear that the many ragpickers who depend on access to scrapyards could strike and disrupt the informal recycling industry or possibly turn violent and riot.³³

Threat to Domestic Economic Potential

Unmanaged waves of waste can generate negative externalities that limit economic potential.

- *Damaging impacts on human health.* For states with lackluster public services, trash can be a severe public health threat and importing more can exacerbate the negative health effects. Health issues—namely high blood pressure—plagued the area surrounding Wen'an, which was the center of the Chinese recycling industry until the 2010s.³⁴ Respiratory illnesses, rashes, and headaches are common side effects of unregulated recycling work.³⁵ Additionally, some companies attempt to purify recycling streams by burning plastic, but this practice can release toxic chemicals into the atmosphere that eventually become carcinogens. Heightened risks of heart disease and nervous system damage is also linked with burning plastic.³⁶ The health impacts of waste mismanagement are long lasting and can limit the earning potential of individuals who would otherwise be in the workforce.
- *Increased environmental damage.* Informal recycling in open dumps, as well as improper disposal of unrecyclable waste, leads to serious land degradation. Paying for large-scale disposal and remediation projects is expensive and difficult. In Malaysia, for instance, the burst of recycling in 2018 contaminated one single site with 4,400 tons of waste. With no bidders interested in buying the site at auction, simply transporting the garbage to a cement plant for containment would cost nearly USD 615,000.³⁷

The psychology of voters and policymakers also plays an important role in undervaluing remediation. The brain processes hypothetical and real decisions differently, so people are less willing to dedicate resources to problems whose effects they cannot yet see.³⁸

Collectively, these trends ensure that global waste flows will challenge international stability over the next five to ten years. Global municipal solid waste output is predicted to nearly double by 2025.³⁹ Waste generation rates will double in lower-income states, leading waste disposal costs to increase five-fold.⁴⁰ At the same time as the global amount of waste is growing, environmentalist policies will likely push states to commit to higher standards of resource conservation. Stringent environmental policies could lead waste exporters to reduce their trash output while reducing strain on existing markets. However, the profit incentives companies traditionally receive by recycling mean that exporting waste for recycling is more desirable than simply reducing waste.

Without a functioning market for waste, meeting international sustainability targets will be more difficult. As net exporters of waste in the global North try to meet their sustainability goals, they will keep the waste market alive.⁴¹ Incentives to trade trash that are unaffected by the costs of negative externalities will push the waste market in a dangerous direction.

Disruption of the Waste Market

Large amounts of dirty wastes or even hazardous wastes are mixed in the solid waste that can be used as raw materials. This polluted China's environment seriously.

— Chinese waste ban declaration to the World Trade Organization, 2017⁴²

New Chinese policies recently changed the waste market. Once the destination for much of the world's traded trash, China announced in 2018 that it was on course to ban all waste imports in the next two years.⁴³ Changes in Chinese policy have taken the form of customs enforcement initiatives and a formal waste import ban.

- *Customs enforcement initiatives.* Chinese action on waste began in 2013 with the “Green Fence” customs initiative, which led to more intensive inspections of scrap material and importer practices.⁴⁴ In February 2017, “National Sword” was announced as a replacement program that focused more on halting smuggling operations not targeted by “Green Fence.” The new policy was characterized by heightened enforcement on criminal activity, especially permit fraud, as well as intermittent raids, arrests, and scrap confiscation.⁴⁵
- *Waste import ban.* In July 2017, China filed a notice with the World Trade Organization announcing its intent to ban imports of 24 different types of waste, including recovered mixed paper, several types of scrap plastic, and textiles. China justified this ban, effective January 1, 2018, on the grounds that “large amounts of dirty waste or even hazardous wastes” were mixed in with imports.⁴⁶ An increasingly stringent contamination standard of 0.5 percent accompanied the ban, which many waste exporters in states like the United States, United Kingdom, and Japan cannot meet.⁴⁷

There is no indication that China will lower these trade barriers in the future. In March 2018, the “Blue Sky 2018” program replaced National Sword as the primary waste import restriction customs initiative.⁴⁸ Three months later, China declared its intent to impose a “full recyclable import ban by 2020.”⁴⁹ The future of the market is still extremely uncertain.⁵⁰

Motivations for the Ban

The Chinese waste import ban took many in the waste industry by surprise; although the Chinese had been increasing customs restrictions and enforcements initiatives, few industry journalists or executives thought that China would actually enact a ban. The Chinese policy changes can be traced to rising concerns about economic growth, international rivalries, and domestic politics.

- *Economic growth.* Chinese economic growth has led to higher wages, undercutting the viability of manually separating low-quality, impure imports of recyclable materials. Growing consumerism in Chinese cities increases the generation of domestic waste and the materials for recycling facilities.⁵¹ Economic strength also lowers manufacturers' need to save money by purchasing recycled rather than virgin materials.

- *International rivalries.* Beijing marketed China’s policy change as a stand against “foreign garbage.”⁵² This rhetoric plays into nationalistic and anti-foreigner sentiment, especially in regard to the current antagonism between China and the United States.⁵³ Chinese citizens question why domestic workers are processing waste for “American imperialists,” rather than focusing on improving Chinese recycling.⁵⁴ Furthermore, China has displaced the United States as a more assertive defender of the global environment, cracking down on fishery abuse and promoting the Paris climate accords.⁵⁵ Among recycling industry experts, it is rumored that Chinese officials were embarrassed into action by negative international coverage of Chinese recycling in media like *Plastic China*.⁵⁶
- *Domestic politics.* The waste import ban is a low-cost method for Chinese leaders to signal their concern for environmental issues, particularly because environmental and health issues stemming from improper recycling have caused an outcry in the past. In the town of Guiyu, for instance, the recycling boom of the 1990s spurred 5,000 households to engage in amateur recycling.⁵⁷ These improper recycling methods led to elevated lead levels in children’s blood and high concentrations of cancer-causing dioxins.⁵⁸ Chinese leaders argue that the ban will help the Chinese environment by reducing the strain on domestic waste management.⁵⁹ Lastly, the ban on foreign trash helps solidify Chinese President Xi Jinping’s environmental legacy with the public.⁶⁰

Evidence of the Initial Impact of Chinese Policy Changes

The Chinese waste ban has already heavily influenced customs policies within the region. Many Southeast Asian states, including Thailand, Vietnam, and Malaysia, initially were eager to serve as alternative markets for waste. However, they were quickly overwhelmed and have since followed China’s lead in restricting waste imports and announcing future foreign waste bans. Given that Asia imported 81 percent of U.S. plastic scrap in the first half of 2018 alone and “an estimated 111 million metric tons of plastic waste will be displaced [...] by 2030,” the waste market must rapidly evolve.⁶¹

Chinese policies also caused changes in the illicit waste market. Within months of the ban, organized criminals in Poland began openly burning plastic wastes transported from the United Kingdom. More than 60 fires were started by waste criminals covering their tracks at Polish dumps in the first half of 2018.⁶² Most of this British waste would have otherwise gone to China. Similarly, the Philippines is considering filing a diplomatic protest of South Korea after Filipino authorities charged that Korean trash was smuggled into the country in late 2018.⁶³ Authorities also discovered Canadian garbage in the Philippines, prompting further outrage.⁶⁴ As more ambitious waste regulations go into place from Malaysia to Turkey, it is clear that the changing waste market is an emerging crisis that demands action.

The Future of Trash

A high level of uncertainty exists in the recycling market today. No one has a crystal ball to see or predict what is going to happen tomorrow, next week, next month, or next year.

— Robert Reed, Recology spokesman, 2018⁶⁵

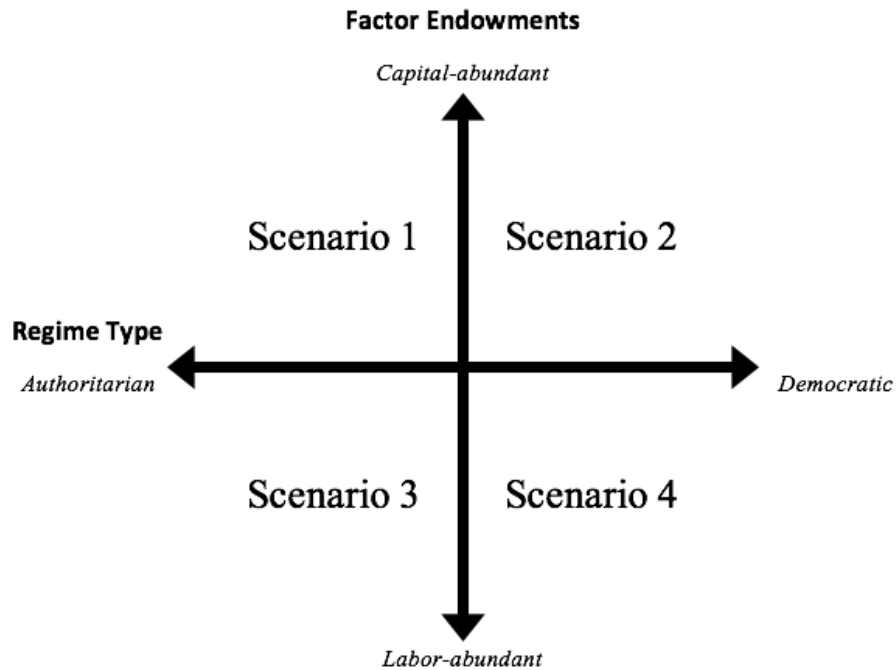
If left unaddressed, the changing waste market will exacerbate the six challenges identified above, with negative impacts on development, governance, and global stability. American development and governance organizations, such as USAID and the Millennium Challenge Corporation, therefore have a fundamental interest in guiding the future of the waste market.

Variables of Interest

Predicting future waste flows is difficult. The market is extremely volatile in the wake of the Chinese policy changes and existing flows are not well understood or modeled.⁶⁶ To help make sense of the market, a 2x2 scenario matrix is offered to explore different possible futures. This analysis is particularly concerned with economic development and governance objectives for new waste-importer states. Both near- and long-term predictions are offered. The two variables considered in the model are regime type and factor endowments.

- *Regime Type.* The horizontal axis of this model contains a dichotomous choice between authoritarian and democratic regimes. Regime type is included in the model because the waste market affects various groups differently, meaning the costs and benefits of importing waste vary by regime type. For example, the negative externalities affect the poor but not the elite, while the profits accrue primarily to the elite and not the poor. In a democracy, popular pressure to ban will affect the legislative agenda. However, in an authoritarian regime, the government is unlikely to act in response to popular pressure unless the waste market negatively impacts the elites.
- *Factor Endowments.* This analysis considers whether states are either relatively labor-rich or capital-rich along the vertical axis. Low-cost, unskilled labor currently dictates the profitability of recycling and the waste trade, as waste moves from high-wage states to low-wage ones. Gross Domestic Product (GDP) per capita can also be used to assess factor endowments. Poorer states are typically labor-rich rather than capital-rich.⁶⁷ Wealth also has other manifestations in the waste market. For example, the Environmental Kuznets Curve documents the correlation between wealth and demand for and provision of sanitary landfills and clean waste disposal.⁶⁸ Wealth is also associated with the ability to enforce customs regulations, such as a waste import ban.⁶⁹ Land endowments are not included in this model; although factor endowments matter, per Copeland, as land matters far less in the recycling market than in the general waste market, where more material is landfilled.

Figure 2: Matrix of Alternate Futures



Scenario 1 (authoritarian, capital-abundant)

Authoritarian, capital-abundant states do not currently import waste due to the importance of labor in the contemporary waste market as well as minimal need for the economic benefits of the waste market. An example of these types of countries are the Gulf states.

- *Near term:* It is possible that this category of states could import waste to decrease reliance on virgin materials, foster economic connections with other states, or gain some sort of cost-imposition leverage. Importing waste may help countries achieve these goals in the short run.⁷⁰
- *Long term:* However, these states are *unlikely* to import waste because they do not need an economic boost. For example, the Gulf states do not need the limited economic growth that the waste trade would encourage, nor are they major manufacturers that would benefit from cheaper recycled materials. China was able to ban the waste trade because, as its economy grew, waste sector employment and lower prices for materials became less important. For authoritarian regimes like China, not importing waste is a low-cost way of signaling to citizens that the regime cares about the environment.⁷¹

Scenario 2 (democratic, capital-abundant)

Currently, there are some democratic and capital-rich states that import limited amounts of waste for uses such as waste-to-energy (WTE) conversion. States in this category include northern European countries like Sweden or other capital-abundant democracies like Australia.⁷²

- *Near term:* Citizen resistance and low capacity may stymie a significant increase in waste imports. Democracies are *unlikely* to import meaningful amounts of waste because citizens would likely impose pressure on their lawmakers not to do so, as has frequently been the case in the Not In My Backyard (NIMBY) movement.⁷³ For example, in Australia, government officials concluded that the best way forward is to use more WTE incinerators.⁷⁴ However, locals protested and the planned incinerator was scrapped in 2018.⁷⁵ Citizen resistance will likely be strong in the face of an overwhelming wave of waste that exceeds the capacity of domestic processing facilities.
- *Long term:* Nevertheless, it could be advantageous for these states to import waste in the long term. These states could potentially import waste if they were required to comply with ambitious environmental goals for recycling rates and greenhouse gas emissions.⁷⁶ Alternatively, sustainability goals could raise the cost of landfilling, increasing the amount of regional or global waste exports and creating a potential waste buyer's market. These capital-rich democracies might be more likely to embrace the recycling industry because they can more easily enforce purity standards and negotiate better prices. Capital-rich states are also better equipped to utilize sorted waste than labor-rich states. For example, Sweden imports waste to feed its sophisticated WTE incinerators.⁷⁷ Nonetheless, the same problems that arose in the short run, such as citizen resistance to waste imports, could also arise in the long run.

Scenario 3 (authoritarian, labor-abundant)

This scenario is one that American governance organizations have less leverage over, but that could contribute to poor development and governance outcomes for the importer states. States in this category are comparable to China in the 1990s, in that they have low labor costs and are minimally responsive to citizen input. Turkey is one contemporary example of an authoritarian, labor-abundant state with a role in the waste trade; it increased waste imports from the United Kingdom by 225 percent over the last year.⁷⁸

- *Near term:* The elites of the authoritarian regime are insulated from the effects of the waste trade. Thus, there is little incentive to limit waste imports or strictly enforce environmental regulations.⁷⁹ Environmental degradation will occur, and possibly crime as well, as firms try to cut corners while importing, recycling, and disposing of waste. However, the existing mechanism for stifling protest would most likely limit the political ramifications in the short run.⁸⁰
- *Long term:* The costs of the environmental degradation will accrue. Remediating waste sites and managing the inefficiencies generated by corruption will become increasingly

expensive.⁸¹ These financial burdens would slow down the economy. It would be challenging for the importer states to ever evolve into a democracy; if they did, failure of the new government to address the expensive, dangerous challenges of the waste trade would increase the likelihood of falling back into authoritarianism.⁸²

Scenario 4 (democratic, labor-abundant)

States that are democratic and labor-abundant are likely to import waste and be harmed in the process. U.S. policymakers have the opportunity to minimize and avert serious threats to stability through intervention by influencing this scenario. Without any intervention, this future poses significant threats to the new importer states. A high-volume influx of waste will have deleterious effects on the environment, health, and corruption, which may lead ultimately to domestic unrest and state instability. Policy action by American governance and development groups can limit the dangers posed by the waste trade *and* make the waste market more profitable.

- *Near term:* In this scenario, labor-rich democracies import waste due to internal and/or external pressures. External pressure to import waste could come from the exporters in the global North, while internal pressure could come from business interests and/or a desire for economic growth.⁸³ Waste imports begin, but due to underfunding of regulatory agencies, there is less stringent enforcement of laws regarding the volume imported or the methods of recycling or disposal. The states are overwhelmed by imports, prompting dangerous environmental and health outcomes.⁸⁴ In the international waste market, corruption is a serious problem. Bribes could influence the decision to import and permeate the actual import, recycling, and disposal process. Such corruption undermines faith in regulatory agencies and democratic institutions and leads to crony capitalism.⁸⁵ Dangerous economic and health outcomes, combined with demonstrable institutional failures to protect citizens and limit corruption, will lead to public protests.
- *Long term:* Responsive democracies may issue a waste ban as a result of protests. As mentioned previously, however, there is weak enforcement capability in this scenario. Therefore, the ban will simply lead to crime, as the same activities continue despite their nominal illegality, thereby worsening corruption problems.⁸⁶ If such states recognize that they cannot enforce a ban and do not pursue one, protests of the regime will increase. As in scenario 3, the cost of remediating waste sites will be immense, and especially daunting to countries with fewer resources.⁸⁷ All of the above—crime, protests, environmental problems—limits the states' ability to grow as an economy or as a democracy, ultimately pushing the states toward authoritarianism and away from functional democracy.

In summation, scenarios 1 and 2, in which capital-abundant states become dominant waste importers are unlikely. As mentioned above, the most important factor endowment for the contemporary recycling industry is low-cost labor. Industry experts indicate that it would take at least five years for automated machinery that separates waste to become operational and implementable.⁸⁸ Retrofitting MRFs would be extremely expensive and time consuming; private industry is unlikely to accomplish construction quickly, and public industry is constrained by budgetary concerns.⁸⁹ Either of these scenarios in which capital-rich states process waste could be

desirable. These types of states could enforce environmental regulations better than labor-rich states, thereby limiting the impact of negative externalities. Scenario 3, while worrisome, offers U.S. governance and development organizations little policy leverage and many logistical challenges. Scenario 4 is both extremely likely and the best opportunity to intercede and break the dangerous causal chain set in motion by the introduction of the waste trade.

Examples of Countries at Risk in Scenario 4

Two states well-positioned to fall into scenario 4 due to their low labor costs and proximity to major waste exporters are Albania and Honduras. These countries should be monitored carefully as they have existing problems with crime and corruption.

- *Albania.* There is already pressure on the Albanian government to import waste to stimulate economic growth in the recycling and manufacturing industry. Importing waste could also be an attempt to appeal to the EU, as Albania attempts to join the union. The country already imports waste from Italy and the Balkans, as of 2016, and its geographic proximity to a region with strict regulations and ambitious goals for decreasing landfilling make it an attractive destination to ship waste.⁹⁰ GDP per capita is approximately one fourth the level of the EU—therefore, low labor costs are a strong benefit of operating in Albania.⁹¹ The manufacturing sector weathered the Great Recession well, despite averaging 2.48 percent GDP growth from 2010 to 2017.⁹² There have been numerous attempts to increase waste imports for economic reasons, as recently as September 2017, although none have been successful so far.⁹³

However, waste imports would be problematic because Albania has no domestic recycling programs.⁹⁴ Recycling rates have not only failed to grow in recent years, they fell between 2013 and 2015.⁹⁵ Environmental crime is a serious concern for Albania, due to extant smuggling by organized criminal groups and corruption enabled by minimal independent oversight.⁹⁶ Albania is known as a transshipment point for narcotics, arms, and contraband.⁹⁷ There are accusations that “waste mafias” dump Italian trash in Albania.⁹⁸ As the country has opened up over the past two decades, environmental risks posed by rapid globalization have become more severe.⁹⁹

- *Honduras.* Currently a destination for scrap textile imports and the site of a German PET (polyethylene terephthalate) recycling facility, Honduras is poised to enter the market as a waste importer.¹⁰⁰ Geographic proximity to and existing trade connectivity with the United States, one of the world’s largest waste exporters, ensure low transportation costs.¹⁰¹ Honduran environmental regulations do not limit corporations and the country has the unfortunate distinction of being the deadliest in the world for environmental activists.¹⁰² The regulatory difference means that more dangerous industries would move to Honduras, in line with the pollution haven hypothesis. Low labor costs further ensure that Honduras is a competitive waste processor. Honduras currently imports a large amount of industrial raw materials that could be replaced with recycled materials.¹⁰³ Alternatively, the recycled materials could be sold to any of Honduras’ neighbors with strong manufacturing sectors.

Extreme inequality, violence against environmental activists, and unsustainable land use are existing problems that would be exacerbated by the failed introduction of Honduras to the global recycling market. Land degradation and water pollution from forestry and mining would be compounded by the introduction of large amounts of scrap.¹⁰⁴

Recommended U.S. Policy Actions

When we talk about recycling, the concept is good and the objectives are good. But if the recycling industry is good, why do America, Europe, Korea and Japan have to export to other states? Can you answer me that?

— Penchom Saetan, Thai NGO leader, 2018¹⁰⁵

The international waste trade is a complex system with overlapping effects on domestically-generated waste and pollution. Policies that attempt to minimize pollution, such as campaigns for less single-use plastic, more corporate responsibility, and greater environmental awareness reduce the negative externalities of the waste trade.¹⁰⁶ There are also some groups that will benefit from the Chinese waste ban, such as recyclers who can set higher prices and thus have more money to invest in high-tech MRFs. Before these innovations can take hold, however, the negative effects of the disruption to the waste market will be felt in the developing world. Proactive policies for managing the dangers to new waste importers, especially those states that are democratic and labor-abundant, are critical to international stability.

Limitations of Existing Policies

There are some policies that have been proposed or pursued by states grappling with the effects of the waste market shock. However, these policies all have significant shortcomings, as they either fail to target all types of waste or shift the problem of waste elsewhere.

- *Fails to target all types of waste and scrap.* One proposal would subject plastic scrap to the Basel Convention.¹⁰⁷ The amendment would require all 186 parties to the Basel Convention to consider plastic scrap a material “that requires special consideration, which would oblige states exporting plastic waste to get the prior informed consent of the receiving party.”¹⁰⁸ This policy is primarily meant to decrease maritime plastic pollution, but it would also more heavily regulate the scrap industry.

One of the shortcomings of the proposal to amend the Basel Convention is that it does not address other kinds of scrap that have been displaced by the recent policy shock. Therefore, although the proposed amendment is a good first step, it is far from a complete policy solution. Additionally, amending the Basel Convention requires strong customs enforcement. If waste enters a country and its origin is clear, the Convention provides an arbitration framework and allows the unwilling importer to return the waste. But given the ease of smuggling waste, if it enters a country and is dumped without any identifying characteristics, that country cannot take action, despite the Basel Convention’s protections.

- *Shifts the problem elsewhere.* Following the Chinese policy changes, some states have simply banned waste imports. Southeast Asian countries imported far more waste than average in 2018. For example, Malaysia experienced a 611 percent increase in plastic waste imports and Thailand underwent a 2,000 percent increase in U.S. plastic imports response to China’s waste ban.¹⁰⁹ These Asian states were quickly overwhelmed by the sheer volume of trash redirected from China. They restricted import quotas and even set timelines for banning all waste imports. Malaysia has already banned scrap plastic imports, while Thailand set a goal for complete scrap plastic bans by 2021.¹¹⁰ Bans are tempting because they can shelter a country’s market from being flooded, show that the government is acting to protect citizens and the environment, and allow waste processors at the global level to be choosier about the quality of waste that they purchase.

Banning the waste trade is an imperfect solution for both the institutor of the ban and the world. Waste crime has arisen in states with bans because waste can easily be transported illegally. For instance, Malaysia restricted waste imports in 2018 in preparation for a full ban. Since then, the government has discovered and shut down 140 illicit recycling operations throughout the country.¹¹¹ Moreover, banning waste imports redirects problems to other states that may be less prepared for such issues. As with any good, the maximum benefit derives from free trade.¹¹² If there is a profit to be made, waste will move internationally, following “the path of least resistance.”¹¹³

Policy Recommendations

U.S. development and governance agencies can mitigate the impacts of the waste trade on labor-abundant democracies in three arenas. The first is at the individual worker-level, the second is at the group worker-level, and the third is at the national-level. Each of these policies disrupts part of the causal chain endangering labor-abundant democracies that import waste.

- *Ensure personal protective equipment availability for individual workers.* Waste workers have one of the most dangerous professions in the world. Even in a developed country like the United States, refuse collection is one of the top five most dangerous jobs.¹¹⁴ The risks to workers include injury from heavy equipment or sharp and heavy waste materials, or illnesses including respiratory disorders from smoke inhalation from fires common at dump sites.¹¹⁵ Personal protective equipment (PPE), such as gloves, boots, overalls in bright colors for visibility, and respiratory tract protection, is a simple way of protecting workers.¹¹⁶ Employer provision of PPE and employee adoption of PPE is a standard requirement for waste work, set by government agencies like the U.S. Occupational Safety and Health Administration as well as plans of action by groups like the UN Development Programme (UNDP). Nonetheless, it is an element that is frequently missing from waste processing operations that are poorly regulated or that contract work out to informal workers like waste pickers.

American organizations should invest in PPE provision programs in newly waste-importing countries because it is a simple, immediate way of protecting those most directly exposed to the health risks of waste processing. If enacted in tandem with a program that

promotes the safe disposal of waste that cannot be recycled, this policy will help address one of the largest negative externalities in the waste industry. The goods provided could come from American companies interested in partnering with development agencies, or provide the basis for growth in PPE manufacturing in waste-importing countries. Improving worker safety would help secure global compliance with industry standards, rather than allowing one standard for formal workers in the developed world and another for vulnerable workers in the developing world. This policy solution is a starting point for limiting the environmental and health problems that could lead to protests and instability.

- *Support recycling workers' associations.* One reason the environmental and health consequences of the recycling industry devastated China was that entire villages were devoted to processing waste.¹¹⁷ With the whole community involved in the recycling industry, diversification and alternative employment options were minimal, increasing the potential for abuse. The informal element to waste picking and processing leaves workers without legal recognition and protections. In many places around the world, waste pickers' associations protect workers from the pitfalls of informal work.¹¹⁸ Such associations often partner with development organizations like the UNDP for projects including educational initiatives, health programs, and contract standardization.¹¹⁹ Members of waste picker associations benefit from collective bargaining to formalize their work and achieve greater protections and profits. Some of the common goals of these associations include on-site facilities such as toilets, social protection schemes for workers and their families, and more equity in the distribution of profits.¹²⁰

U.S. organizations should support the formation of recycling workers' associations based on the waste pickers' model because it centralizes decision making and gives waste workers more bargaining power. It is easier to disseminate other goods, such as the PPE recommended above, if there is a central authority to hand it out to a list of members. Waste workers' organizations would help multinational corporations as well as local and national governments. These stakeholders would benefit from more unified input from individuals who traditionally struggle to have their voices heard. Clearer demands are easier to meet. The proposed organizational mechanism will help reduce environmental and health issues, in addition to channeling worker frustration into conversations instead of protests.

- *Promote customs partnerships between waste exporters and importers.* Improving the capacity and efficiency of customs offices is a well-recognized goal in international development.¹²¹ Two of the largest challenges to enforcing customs are corruption and lack of funding or equipment. Previous programs that improve customs enforcement have helped smuggling investigators by providing informational technology equipment and training on "anticorruption, anti-tax evasion and anti-smuggling techniques."¹²² Limiting corruption is an important initial step for attracting private investment, a significant positive side effect of this policy.¹²³

This customs partnership program offers many benefits to stakeholders. Governance organizations value reducing corruption, which is targeted by this policy. Multinational recycling companies would benefit from this approach because they would avoid media linkages to crime, exploitation, and perhaps protests of those very same problems. Lastly,

customs partnerships would help importer states improve customs capacity by providing funding and technical assistance. By enacting this policy, development and governance organizations can limit the corruption, protests, and institutional deterioration challenges associated with waste imports.

Conclusion

The recent changes in the global waste market pose a distinct threat to international stability, as well as development and governance objectives. Without policy action, labor-abundant democracies risk being overwhelmed with trash. Ensuing environmental degradation, health crises, and corruption challenge the stability of these importer states. While there may be opportunities in the long term for minimizing waste production in general and improving recycling systems globally, there is a significant danger in the short run of waste continuing to be sent abroad. Current policies to address the market shock include regulating the scrap plastic trade and banning waste imports. These ideas, however, either do not address the root of the issue or shift the problem to more vulnerable states. U.S. organizations can minimize the negative externalities of the scrap trade by ensuring PPE provision and use, supporting recycling workers' associations, and promoting customs partnerships between waste importers and exporters.

¹ Laura Parker. “China’s Ban on Trash Imports Shifts Waste Crisis to Southeast Asia.” National Geographic. November 16, 2018. <https://www.nationalgeographic.com/environment/2018/11/china-ban-plastic-trash-imports-shifts-waste-crisis-southeast-asia-malaysia/>.

² *Glossary of Recycling and Solid Waste Terms, Abbreviations, and Acronyms*, s.v. “Waste,” <https://www.ct.gov/deep/cwp/view.asp?q=438548>.

³ Brian R. Copeland. “International Trade in Waste Products in the Presence of Illegal Disposal.” July 17, 1989. <https://www.sciencedirect.com/science/article/pii/009506969190047M>.

⁴ Secondary commodities are items or materials that have already been used once. See: The World Bank. September 20, 2018. *Global Waste to Grow by 2050 Unless Urgent Action is Taken: World Bank Report*. <https://www.worldbank.org/en/news/press-release/2018/09/20/global-waste-to-grow-by-70-percent-by-2050-unless-urgent-action-is-taken-world-bank-report>.

⁵ E-waste is defined as electronic products nearing the end of their useful life due to obsolescence or degradation. It is the fastest-growing waste stream in the world. Large quantities of e-waste were brought to Asia both legally and illegally; 70 percent of e-waste went to Asia, primarily China, while the remaining 30 percent went to West Africa. Although not technically a hazardous waste, e-waste contains dangerous metals that are expensive to properly dispose of or recycle. E-waste was not targeted by recent policy changes, and therefore it will receive minimal attention in this paper. For more on the Basel Convention, see: Secretariat of the Basel Convention. “Overview.” Basel Convention. N.d. <http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx>

⁶ Trade in non-hazardous scrap is enabled by advances in recycling technology in the 1990s that made it economically viable to recycle previously used materials, rather than refine virgin materials. Another reason recycling boomed in the 1990s was corporation that built off the structure non-profit recycling activists had built in the 1970s and 1980s. The technology component was complemented by popular movements to reduce, reuse, and recycler. See: *Socio-Economic Review*, Volume 1, Issue 1, 1 January 2003, Pages 71–104, <https://doi.org/10.1093/soceco/1.1.71>.

⁷ He Qi. “Customs Strikes at Solid-Waste Sneaks.” China Daily. November 21, 2018. <http://www.chinadaily.com.cn/a/201811/21/WS5bf4a481a310eff303289fbb.html>.

⁸ For an example of illegal waste being sent back to its country of origin, see: Press Association. “Toxic Waste Illegally Shipped to Brazil as Recycling, says Environment Agency.” The Guardian. September 23, 2009. <https://www.theguardian.com/environment/2009/sep/23/brazil-recycling-illegal-waste>. For an example of fines on illegal waste exporters, see: “Two Waste Firms Fined in Illegal Export Case,” Champions of Environmental Health & Justice, October 10, 2011. <http://www.ban.org/news/2011/10/10/two-waste-firms-fined-in-illegal-export-case>.

⁹ Denise van der Kamp. “Will China’s Waste Ban Force a Global Clean-Up?” East Asia Forum. December 7, 2018. <http://www.eastasiaforum.org/2018/12/07/will-chinas-waste-ban-force-a-global-clean-up/>.

¹⁰ By its nature, trash with little value is easy to pass off and mislabel as lightly used. China has had a hard time controlling its selective imports of waste since the ban went into place in January 2018. Brian Taylor. “Another Plastic Scrap Crackdown Takes Place in China.” Recycling Today. December 20, 2017. <https://www.recyclingtodayglobal.com/article/plastic-scrap-china-crackdown-december-2017/>.

¹¹ Laura Parker. “China’s Ban on Trash Imports Shifts Waste Crisis to Southeast Asia.” National Geographic. November 16, 2018. <https://www.nationalgeographic.com/environment/2018/11/china-ban-plastic-trash-imports-shifts-waste-crisis-southeast-asia-malaysia/>.

¹² Studies have found that “disparate environmental standards” help explain the direction of the waste trade, as waste moves from states with strict environmental standards to states with more lax ones. See: Andrew B. Bernard and Pamela H. Chang, “Trade in Waste Among Developed Countries: Evidence and Origins,” *MIT Center for Energy and Environmental Policy Research* (1994): <http://hdl.handle.net/1721.1/50206>.

¹³ For more on EU waste management costs, see: Kara Moses. “China Leads the Waste Recycling Lead.” The Guardian. June 14, 2013. <https://www.theguardian.com/environment/2013/jun/14/waste-trade-china-recycling-rubbish>. In Germany specifically, landfill costs are so high that it is a prohibitively expensive method of disposal. See: Cole Rosengren. “Mittelstaedt: ‘There’s a Reckoning Coming’ For Recycling.” August 22, 2018. <https://www.wastedive.com/news/mittelstaedt-waste-connections-reckoning-coming-recycling/530652/>.

¹⁴ Charlotte Middlehurst. “Q&A: China’s Waste Ban Debate is ‘Misinformed’ and ‘One-Dimensional’.” China Dialogue. August 24, 2018. <https://www.chinadialogue.net/article/show/single/en/10789-Q-A-China-s-waste-ban-debate-is-misinformed-and-one-dimensional->.

¹⁵ “Frequently Asked Questions: Benefits of Recycling,” Stanford University, Accessed March 15, 2019. <https://lbre.stanford.edu/pssistanford-recycling/frequently-asked-questions/frequently-asked-questions-benefits-recycling>.

¹⁶ For example, plastic needs to be the same type (#7, or #1), but even if it is the same type, if two pieces are different thicknesses or have been processed slightly differently, they cannot be recycled together. The two products will have differences, such as melting point.

¹⁷ Josh Ocampo. “Americans Are Terrible at Recycling- This Is What Happens When You Put Something in the Wrong Bin.” *Mic*. August 28, 2018. <https://mic.com/articles/190974/americans-are-terrible-at-recycling-this-is-what-happens-when-you-put-something-in-the-wrong-bin#.HBGLFnzHk>.

Bourree Lam. “The Dangerous Life of a Trash Collector.” *The Atlantic*. September 1, 2016. <https://www.theatlantic.com/business/archive/2016/09/trash-collector/498233/>.

¹⁸ Companies could also train a robot to do take apart products, which is what Apple did with Daisy, a machine that takes apart phones. This is what some in the waste industry are confident will happen to handle the stringent purity standards that waste processors in the developed world keep missing. For more, see: Apple. April 19, 2018. *Apple Adds Earth Day Donations to Trade-In and Recycling Program*. <https://www.apple.com/newsroom/2018/04/apple-adds-earth-day-donations-to-trade-in-and-recycling-program/>.

¹⁹ *The Economist*, “A Chinese Ban on Rubbish Imports is Shaking Up the Global Junk Trade,” September 29, 2018, <https://www.economist.com/special-report/2018/09/29/a-chinese-ban-on-rubbish-imports-is-shaking-up-the-global-junk-trade>.

²⁰ China imported half of the world’s scrap plastic and paper; see: Noreen O’Donnell. “Recycling Breaks Down: US Struggles to Keep Plastic from the Dump.” *NBC News*. August 13, 2018. <https://www.nbcwashington.com/news/business/US-Struggles-With-What-to-Do-With-Tons-of-Recycled-Material-489971551.html>. China also imported half of the world’s scrap aluminum and 70 percent of scrap copper and copper alloy grades; see: Jared Paben. “How China Import Policy Could Shape Metals Markets.” *E-Scrap News*. September 28, 2017. <https://resource-recycling.com/e-scrap/2017/09/28/china-import-policy-shape-metals-markets/>.

²¹ Kara Moses. “China Leads the Waste Recycling Lead.” *The Guardian*. June 14, 2013. <https://www.theguardian.com/environment/2013/jun/14/waste-trade-china-recycling-rubbish>.

²² Damian Carrington. “Waste Crime is ‘The New Narcotics,’ says Environment Agency Chief.” *The Guardian*. September 22, 2016. <https://www.theguardian.com/environment/2016/sep/22/ea-chief-waste-is-the-new-narcotics>.

²³ United Nations Environment Program, *Waste Crime—Waste Risks: Gaps in Meeting the Global Waste Challenge* (United Nations, 2015), available from <http://web.unep.org/ourplanet/september-2015/unep-publications/waste-crime-waste-risks-gaps-meeting-global-waste-challenge-rapid>.

²⁴ Damian Carrington. “Waste Crime is ‘The New Narcotics,’ says Environment Agency Chief.” *The Guardian*. September 22, 2016. <https://www.theguardian.com/environment/2016/sep/22/ea-chief-waste-is-the-new-narcotics>.

²⁵ In all, the *Khian Sea* visited 12 different states/regions, before illegally dumping the ash in the ocean two years after it initially loaded its toxic cargo. Greenpeace, “The Toxic Ships,” June 2010, <https://www.greenpeace.org/archive-italy/Global/italy/report/2010/inquinamento/Report-The-toxic-ship.pdf>.

²⁶ Andrew C. Revkin. “New York Tries to Clean Up Ash Heap in the Caribbean.” *The New York Times*. January 15, 1998. <https://www.nytimes.com/1998/01/15/nyregion/new-york-tries-to-clean-up-ash-heap-in-the-caribbean.html>.

James Ridgeway. “Dumping on Haiti.” *The Village Voice*. January 13, 1998. http://archive.ban.org/ban_news/dumping_on_Haiti.html.

²⁷ Mark Jaffe. “Garbage Barge (Khian Sea).” *The Encyclopedia of Greater Philadelphia*. 2016. <https://philadelphiaencyclopedia.org/archive/garbage-barge-khian-sea/>.

²⁸ Mitchel Cohen. “Haiti and Toxic Waste.” *Counterpunch*. January 22, 2010. <https://www.counterpunch.org/2010/01/22/haiti-and-toxic-waste/>.

²⁹ Dr. Amarendra Bhushan Dhiraj. “Study: The Top Importers (And Exporters) of the World’s Plastic Waste and China Won’t Accept Plastic Trash Anymore.” *Ceoworld Magazine*. June 27, 2018. <https://ceoworld.biz/2018/06/27/study-the-top-importers-and-exporters-of-the-worlds-plastic-waste-and-china-wont-accept-plastic-trash-anymore/>. Note: in the study from *Ceoworld Magazine*, the United States is listed as the world’s second largest exporter of plastic waste, coming second to Hong Kong. Given that Hong Kong exports its plastic waste to mainland China, the United States is considered the world’s largest exporter of plastic waste in that it exports across borders. For more on protests of the waste trade in waste-importing countries, see: Manny Mogato. “Philippines to Protest Export Waste from Canada.” *ABS-CBN News*. July 31, 2015. <http://news.abs-cbn.com/nation/07/31/15/philippines-protest-export-waste-canada>. There were also protests of the side effects of waste imports, like air and water pollution, in Malaysia. See: CGTN, “Thailand to Ban Foreign Plastic Waste Imports,” October 16, 2018. https://news.cgtn.com/news/3d3d774e796b444f7a457a6333566d54/share_p.html.

³⁰ Chito Chavez. “6,500 Tons of Mixed Wastes to be Shipped Back to S. Korea.” *Manila Bulletin*. January 2, 2019. <https://news.mb.com.ph/2019/01/02/6500-tons-of-mixed-wastes-to-be-shipped-back-to-s-korea/>.

³¹ For more on Russia, see: Evan Gershkovich. “Thousands Protest Against Moscow’s Plan to Dump Its Trash in Russian Regions.” *The Moscow Times*. February 3, 2019. <https://www.themoscowtimes.com/2019/02/03/thousands-come-out-in-protest-against-moscows-plan-to-dump-its-trash-on-russian-regions-a64376>. For more on Lebanon, see: Alan Taylor. “Lebanon’s #YouStink Anti-Government Protests.” *The Atlantic*. August 24, 2015. <https://www.theatlantic.com/photo/2015/08/lebanons-youstink-anti-government-protests/402163/>. For more on Italy, see: Emma Johanningsmeier. “Italians Protest in Rome About Dismal State of the City.” *The New York Times*. October 27, 2018. <https://www.nytimes.com/2018/10/27/world/europe/virginia-raggi-rome-garbage-rally.html>.

³² For instance, this was often the case with the infant industries supported by import-substituting industrialization (ISI). The introduction of an industry that had not previously existed in a country, such as manufacturing shoes, meant that people were suddenly employed in that sector. As a result, there was a new constituency with wealth and an interest in preserving their industry, even if that was not beneficial to the country as a whole. In the case of ISI, the costs outweighed the benefits because large subsidies and protective tariffs were required to keep infant industries afloat. In the case of the waste trade, integrated and clean waste management is better for the entire country, but worse for waste pickers. There would therefore be an incentive for waste pickers to fight against an integrated waste system that displaces or excludes them. For more, see: Jeffrey Frieden. *Global Capitalism: Its Fall and Rise in the Twentieth Century* (New York: W.W. North, 2007), 311.

³³ Hari Kumar and Kai Schultz. “‘The Dump Killed My Son’: Mountains of Garbage Engulf India’s Capital.” *The New York Times*. June 10, 2018. <https://www.nytimes.com/2018/06/10/world/asia/india-delhi-garbage.html?fbclid=IwAR1maYaTIZwfAjo-3XwAkxVBO797xGIBS0SO8tsThjZyq2y-YemYiSNcO3k>.

³⁴ Adam Minter. “Plastic, Poverty, and Pollution in China’s Recycling Dead Zone.” *The Guardian*. July 16, 2014. <https://www.theguardian.com/lifeandstyle/2014/jul/16/plastic-poverty-pollution-china-recycling-dead-zone>.

³⁵ Aria Bendix. “Staggering Photos Show One Small Town Covered in 19,000 Tons of Plastic Waste.” *Business Insider*. February 20, 2019. <https://www.businessinsider.com/malaysia-town-plastic-waste-china-photos-2019-2#instead-of-handing-over-un-recyclable-scrap-and-parts-to-waste-centers-the-illegal-factories-cut-costs-by-burning-those-scrap-releasing-noxious-fumes-6>.

³⁶ Examples of carcinogenic chemicals released by plastic include mercury, dioxins, and polychlorinated biphenyls. For more, see: Aria Bendix. “Staggering Photos Show One Small Town Covered in 19,000 Tons of Plastic Waste.” *Business Insider*. February 20, 2019. <https://www.businessinsider.com/malaysia-town-plastic-waste-china-photos-2019-2#instead-of-handing-over-un-recyclable-scrap-and-parts-to-waste-centers-the-illegal-factories-cut-costs-by-burning-those-scrap-releasing-noxious-fumes-6>.

³⁷ Information on Malaysia comes from: Aria Bendix. “Staggering Photos Show One Small Town Covered in 19,000 Tons of Plastic Waste.” *Business Insider*. February 20, 2019. <https://www.businessinsider.com/malaysia-town-plastic-waste-china-photos-2019-2#instead-of-handing-over-un-recyclable-scrap-and-parts-to-waste-centers-the-illegal-factories-cut-costs-by-burning-those-scrap-releasing-noxious-fumes-6>. Waste site remediation is similar expensive in other parts of the world. In the United States, Environmental Protection Agency officials assessed that the cost to conduct remedial construction at nonfederal waste-dumping sites would be between USD 335 to 681 million each year for fiscal years 2010 to 2014. For more, see: United States Government Accountability Office, “EPA’s Estimated Costs to Remediate Existing Sites Exceed Current Funding Levels, and More Sites Are Expected to Be Added to the National Priorities List,” May 2010, <https://www.gao.gov/assets/310/304124.pdf>.

³⁸ Min Jeong Kang, Antonia Rangel, Mickael Camus, and Colin F. Camerer, “Hypothetical and Real Choice Differentially Activate Common Valuation Areas,” *Journal of Neuroscience* 31, no. 2 (January 2011): 461-468, <https://www.jneurosci.org/content/31/2/461>.

³⁹ The World Bank, “What a Waste : A Global Review of Solid Waste Management,” March 2012, https://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1334852610766/What_a_Waste2012_Final.pdf.

⁴⁰ In lower-middle income states, waste disposal costs will increase by four-fold. The World Bank, “What a Waste : A Global Review of Solid Waste Management,” March 2012, https://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1334852610766/What_a_Waste2012_Final.pdf.

⁴¹ United Nations Environment Programme, “Plastic Recycling: An Underperforming Sector Ripe for a Remake,” January 2, 2019, <http://web.unep.org/environmentassembly/plastic-recycling-underperforming-sector-ripe-remake>. UNEP is pushing recycling of metals and plastics. Although not in the text of the Paris climate accords, reducing waste through recycling was on many policymakers’ minds when the accords were negotiated. See: Eric Lombardi. “What Does the Paris Climate Agreement Say About Waste?” *Waste 360*. February 18, 2016. <https://www.waste360.com/waste-reduction/what-does-paris-climate-agreement-say-about-waste>.

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- ⁴² Kimiko de Freytas-Tamura. “Plastics Pile Up as China Refuses to Take the West’s Recycling.” *The New York Times*. January 11, 2018. <https://www.nytimes.com/2018/01/11/world/china-recyclables-ban.html>.
- ⁴³ CalRecycle, “Text of Timeline of China’s Import Policies and Response From Affected Parties Chart,” March 14, 2019, <https://www.calrecycle.ca.gov/markets/nationalsword/timelinetext>.
- ⁴⁴ Editorial Staff. “From Green Fence to Red Alert: A China Timeline.” *Resource Recycling*. February 8, 2019. <https://resource-recycling.com/recycling/2018/02/13/green-fence-red-alert-china-timeline/>.
- ⁴⁵ *Ibid*.
- ⁴⁶ Catherine Early. “China Renews Clampdown on Waste Imports.” *ChinaDialogue*. July 31, 2017. <https://www.chinadialogue.net/article/show/single/en/9954-China-renews-clampdown-on-waste-imports>.
- ⁴⁷ Cody Boteler. “ISRI: No ‘Panacea’ on Import Restrictions—What China Wants is More Complicated.” *Waste Dive*. April 2, 2018. <https://www.wastedive.com/news/china-situation-scrap-import-green-fence-national-sword-blue-sky/520306/>. Although the waste import ban and “National Sword” are two separate policies, coverage has blurred the “linguistic line” between the actions on material quality and customs enforcement, resulting in the use of “National Sword” as a catchall name for the market shock; see Editorial Staff. “From Green Fence to Red Alert: A China Timeline.” *Resource Recycling*. February 8, 2019. <https://resource-recycling.com/recycling/2018/02/13/green-fence-red-alert-china-timeline/>.
- ⁴⁸ Colin Staub. “Chinese Customs enforcement Ramps Up With Blue Sky 2018.” *Resource Recycling*. March 13, 2018. <https://resource-recycling.com/recycling/2018/03/13/chinese-customs-enforcement-ramps-up-with-blue-sky-2018/>.
- ⁴⁹ CalRecycle, “National Sword and China’s Restriction on the Import of Recycable Material,” March 6, 2019, <https://www.calrecycle.ca.gov/markets/nationalsword>.
- ⁵⁰ Cheryl Katz. “Piling Up: How China’s Ban on Importing Waste Has Stalled Global Recycling.” *Yale Environment 360*. March 7, 2019. <https://e360.yale.edu/features/piling-up-how-chinas-ban-on-importing-waste-has-stalled-global-recycling>. Doggedness on the part of Chinese customs authorities, combined with the abrupt announcement of the restrictions, initially led to waste piling up in exporter warehouses. In Australia, for instance, there was a 1.3 million-ton backlog of recyclable waste in response to China’s ban. In January 2019, a year after the Australian recycling industry was rocked by the Chinese waste import ban, it was unclear whether local councils were handling excess waste by exporting, stockpiling, reprocessing, or dumping it in landfills. Although the alternative routes for Australian waste are unclear, it is certain that the Chinese policy change had negative effects on the Australian recycling industry, which employs around 50,000 people. For more, see: Dominic Cansdale. “What’s Changed On Year Since the Start of Our Recycling Crisis?” *ABC Ballarat*. January 10, 2019. <https://www.abc.net.au/news/2019-01-11/australias-recycling-crisis-one-year-on-whats-changed/10701418>. In addition, the policy changes have led many small American recycling plants have shut down. For more, see: Katie Pyzyk. “China Ban Prompts Oregon County to Suspend Recycling Program.” *Waste Dive*. May 29, 2018. <https://www.wastedive.com/news/china-ban-prompts-oregon-county-to-suspend-recycling-program/524447/>., Kelly Maile. “Coastal Recycling Closes its Doors.” *Recycling Today*. January 23, 2019. <https://www.recyclingtoday.com/article/coastal-recycling-closes-its-doors/>.
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- ⁶⁹ For example, low-income states have more obstacles to customs risk management and struggle to systematically manage human resources and customs risk management tools and data. The people charged with enforcing regulations in lower income states have access to less sophisticated law enforcement means. J. Hintsa, et al. "Customs risk management (CRiM): A Survey of 24 WCO Member Administrations." WCO. February 28, 2011. http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/enforcement-and-compliance/activities-and-programmes/risk-management-and-intelligence/crim-survey/cbra_crim_report_final_mar2011.pdf. Regulatory enforcement is further linked to wealth by the anecdotal and survey evidence that corruption is "more prevalent in

developing states than in rich ones.” Corruption worsens enforcement ability. For more, see: Benjamin A. Olken and Rohini Pande. “Corruption in Developing Countries.” February 2012. <https://economics.mit.edu/files/7589>.

⁷⁰ The purpose of recycling is to reduce reliance on virgin materials, so that is an achievable short-term goal. For the specific example of the Gulf states, paper scrap would matter far more than plastic scrap, because plastic is a byproduct of oil that they could easily produce on their own. Trade always fosters economic connections between states. While cost-imposition was most likely not the primary goal of Chinese waste policy changes, it was a noticeable side effect. Companies and communities in the global North struggled to cope with the new costs that arose when China exited the market.

⁷¹ Xi’s government is sending clear global and domestic signals that it values the environment. Top-down action on the environment also signals that the government will take the lead and that Chinese environmental activists are on a short leash. Michael Standaert. “As it Looks to Go Green, China Keeps a Tight Lid on Dissent.” *Yale Environment* 360. November 2, 2017. <https://e360.yale.edu/features/as-it-looks-to-go-green-china-keeps-a-tight-lid-on-dissent>.

⁷² Sweden already imports large amounts of waste (X tons per year) because it incinerates it for energy in WTE plants.

⁷³ Thomas H. Rasmussen. “Not in My Backyard: The Politics of Siting Prisons, Landfills, and Incinerators,” *State & Local Government Review*, 24, no. 3, 1992, pp. 128–134. *JSTOR*, www.jstor.org/stable/4355046.

⁷⁴ Narelle Towie. “Burning Issue: Are Waste-to-Energy Plants a Good Idea?” *The Guardian*. February 27, 2019. <https://www.theguardian.com/environment/2019/feb/28/burning-issue-are-waste-to-energy-plants-a-good-idea>.

⁷⁵ Anne Davies. “Sydney Waste Incinerator Should Be Binned, Department Says.” *The Guardian*. April 10, 2018. <https://www.theguardian.com/australia-news/2018/apr/11/western-sydney-waste-incinerator-department-nsw>.

⁷⁶ European Environment Agency, “EEA Report No7/2012: Movements of waste across the EU’s internal and external borders,” October 31, 2012, <https://www.eea.europa.eu/publications/movements-of-waste-EU-2012>.

⁷⁷ Liat Clark. “Sweden to Import 800,000 Tonnes of Trash to Burn for Energy.” *Wired*. October 29, 2012. <https://www.wired.co.uk/article/sweden-imports-garbage-for-energy>.

⁷⁸ Gokce Saracoglu and Sandra Laville. “Turkey’s Plastic Waste Imports From the UK are Booming—But At What Cost?” *The Guardian*. October 18, 2018. <https://www.theguardian.com/environment/2018/oct/18/uk-plastic-waste-imports-to-turkey-boom-but-at-what-cost>.

⁷⁹ There would be weak or poorly enforced regulations like the ones in China before the current push.

⁸⁰ Again, the example here is China, which ignored domestic activists’ attempts to better regulate the recycling industry. In weaker regimes, the protests could be much costlier to suppress. However, in an authoritarian regime, it is difficult to gather broad support for protests of issues that impact a minority of people already on the margins of society, such as waste pickers. See: Greene, Samuel A., *Moscow in Movement: Power and Opposition in Putin’s Russia*, Stanford: Stanford University Press, 2014, Ch. 7, “Road Rage” & Ch. 8 “Seizing the Moment” pp. 167-201; 214-218. Problems whose effects are not fully felt for a long time, like pollution or climate change, often struggle to gain traction in any setting. See: Robert Gifford. “The Dragons of Inaction: Psychological Barriers That Limit Climate Change Mitigation and Adaptation.” *American Psychological Association*. 2011. <https://psycnet.apa.org/fulltext/2011-09485-005.html>.

⁸¹ There are some scholars that argue that authoritarian regimes are actually better positioned to take action on environmental issues. For more, see: Mark Beeson, “The Coming of Environmental Authoritarianism,” *Environmental Politics* 19, issue 2, March 30, 2010, <https://doi.org/10.1080/09644010903576918>. On the other hand, analysis of “eco-authoritarian” states show that profit is the dominating force behind environmental policies. The latter view adds weight to concerns about environmental degradation in authoritarian states. Stephan Ortman, “Environmental Governance under Authoritarian Rule: Singapore and China,” *Southeast Asia Research Center Working Paper No. 189*, 2016, http://www.cityu.edu.hk/searc/Resources/Paper/16100610_189%20-%20WP%20-%20Dr%20Ortmann.pdf.

⁸² Scholarship dating back to the 1950s supports Lipset’s notion that “the more well-to-do a nation, the greater the chances it will sustain democracy.” See: Seymour Martin Lipset, “Some Social Requisites of Democracy: Economic Development and Political Legitimacy,” *The American Political Science Review* 53, no. 1 (March 1959): 75. See also: Adam Przeworski. “Democracy and Economic Development.” New York University Department of Politics. Accessed March 15, 2019. <https://pdfs.semanticscholar.org/2675/792b4b3806af246ba811e9bfdc13c3525a1.pdf>.

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Malaysia massively increased the amount of waste it imported in 2018. While the government is now planning on banning plastic imports in the next few years, in October 2018, the Housing Minister said that the government “does not want to miss out on a business that could be worth billions.” A Ananthalakshmi and Emily Chow. “Swamped With Plastic Waste: Malaysia Struggles as Global Scrap Piles Up.” Reuters. October 25, 2018. <https://www.reuters.com/article/us-malaysia-waste/swamped-with-plastic-waste-malaysia-struggles-as-global-scrap-piles-up-idUSKCN1MZ0P4>.

⁸⁴ For more on states being overwhelmed by waste imports, see: Katie Pyzyk. “China’s New Role in the Global Recycling Economy.” Waste Dive. October 23, 2019. <https://www.wastedive.com/news/china-new-role-global-recycling-economy/540282/>. For more on the environmental and health dangers of sudden increases in recycling, see also: The Straits Times, “Illicit Recycling Factories Exposed in Malaysia,” September 26, 2018, <https://www.straitstimes.com/asia/se-asia/illicit-recycling-factories-exposed-in-malaysia>.

⁸⁵ A recent EU report said that the waste industry is one of the most “prone to corruption.” Thomas Webb and Nick Churchward. “Preventing Bribery in the Waste Industry.” Recycling Waste World. November 15, 2016. <http://www.recyclingwasteworld.co.uk/in-depth-article/preventing-bribery-in-the-waste-industry/148187/>.

⁸⁶ Poland is not a particularly weak or lawless country, but it struggled in 2018 with environmental crime. The Chinese import ban drove up the price of waste disposal in the United Kingdom, so criminals would get paid to take the British trash and then they would dump it in Poland and light it on fire. Marcin Goettig. “Poland Vows to Fight Illegal Waste Dumps After Toxic Fires.” Reuters. May 29, 2018. <https://uk.reuters.com/article/us-poland-waste/poland-vows-to-fight-illegal-waste-dumps-after-toxic-fires-idUKKCN1IU1QZ>.

⁸⁷ Even when there is not any more waste coming in, the cost of cleaning up the waste already in-country is enormous. In the case of a Malaysian dump site, no one wants to buy the land where waste was dumped. Simply moving the waste to a concrete factory, where it could be sealed up and disposed of, would cost USD 615,000. Yvette Tan. “Plastic Pollution: One Town Smothered By 17,000 Tonnes of Rubbish.” BBC News. February 13, 2019. <https://www.bbc.com/news/world-asia-46518747>.

⁸⁸ Cole Rosengren, “WasteDive.com Editor on the Changing Recycling Market,” personal interview by Liz Rosen, February 12, 2019.

⁸⁹ It is worth noting that since January 2018, recycling facilities have begun look toward MRFs with increased sorting power. See: Brian Taylor and Deanne Toto. “Investing to Compete.” Recycling Today. May 2, 2018. <https://www.recyclingtoday.com/article/north-american-plastics-recycling-investments/>. One specific company investing heavily in more advanced MRFs is Recology, whose new installations include optical sorters. See: Rina Li. “Recology Leans Into Recycling Solutions with \$33M San Francisco Upgrades.” Waste Dive. January 22, 2019. <https://www.wastedive.com/news/recology-recycling-solutions-san-francisco-upgrades/546519/>. The industry journalist Cole Rosengren argued that automation would be more likely to improve domestic recycling than recycling of imported material. However, developed states that currently import waste, like Sweden, also sort waste in their own factories when it arrives as bales, meaning that capital advances can benefit recyclers of waste generated domestically and abroad. See: Peter Karlsson. “Sustainable Waste to Energy Technology: How waste becomes an environmentally friendly key resource for a sustainable society.” accessed February 14, 2019. http://task32.ieabioenergy.com/wp-content/uploads/2018/06/10_Peter-Karlsson_Malaren-energi_Sustainable-WtE-technology.pdf.

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⁹⁴ Artan Rama & Andi Bora. “Albania is Drowning in its Garbage.” Exit. July 8, 2017. <https://exit.al/en/2017/08/07>

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⁹⁶ Transparency International Secretariat, “Albania Lacks Independent Oversight Institutions, Leaving the Door Open to Corruption,” Transparency International, September 8, 2016. https://www.transparency.org/news/pressrelease/albania_lacks_independent_oversight_institutions_leaving_the_door_open_to_c.

⁹⁷ *The World Factbook* 2016-2017. Washington, DC: Central Intelligence Agency, 2016. <https://www.cia.gov/library/publications/the-world-factbook/geos/al.html>.

⁹⁸ The actions of Italian waste mafias are viewed as particularly unfair as Albanian citizens use 20 percent of their income to pay for ineffective waste management services. For more, see: Wiebke Feuersenger. “Albania Struggles with Environmental Challenges.” DW. Accessed March 14, 2019. <https://www.dw.com/en/albania-environment-challenges/a-16343222>.

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¹⁰⁰ Some may question whether Honduras is a democracy. According to the 2019 Millennium Challenge Corporation scorecard, Honduras received passing marks on democratic rights (although the country struggled with corruption). The MCC has previously signed and implemented a compact with Honduras. For more on Honduran PET recycling, see: RTGE Staff. “Herbold System Processes PET bottles in Honduras.” Recycling Today. March 17, 2017. <https://www.recyclingtoday.com/article/herbold-invema-plastic-pet-bottle-recycling-honduras/>. The decision to focus on Honduras and rather than other Central American states was based on country-specific context. El Salvador signed on to a proposed amendment to the Basel Convention to regulate plastic scrap trade, meaning that they are at least aware of the problem. Costa Rica does a lot of recycling but is known as an extremely eco-aware country and mainly imports scrap from other Latin American states. These two states are essentially more aware of the problem at a regulatory level and thus less likely to fall prey to over-importing than Honduras. Other countries, such as Guatemala and Nicaragua, show no evidence of involvement in international scrap trade and would be less likely to qualify for democratization aid programs from groups like the Millennium Challenge Corporation. The similarities between Honduras and these latter states, however, mean that focusing on Honduras could create an instructive framework for preventing or mitigating problems in those states. Mexico is a state with some existing recycling capacity that may enter the global recycling market soon and that bears some similarities with Honduras.

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¹⁰² Honduras had the most deaths of environmental activists per capita over a five-year period. David Hill. “Honduras is World’s Number One for Killing Environmental Activists.” The Guardian. April 22, 2015. <https://www.theguardian.com/environment/andes-to-the-amazon/2015/apr/22/honduras-worlds-number-one-killing-environmental-activists>. and Natalie Gallón. “Honduras: The Deadliest Place to be an Environmental Activist, New Report Says.” CNN. February 8, 2017. <https://www.cnn.com/2017/02/02/americas/honduras-environmental-activism/index.html>.

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¹⁰⁶ Tom Baxter and Liu Hua. “24 Reasons Why China’s Ban on Foreign Trash is a Wake-Up Call for Global Waste Exporters.” South China Morning Post. December 31, 2017. <https://www.scmp.com/comment/insight-opinion/article/2126098/24-reasons-why-chinas-ban-foreign-trash-wake-call-global>.

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¹⁰⁸ IPEN, “Basel Amendment Could Further Slow US Plastic Exports,” August 2, 2018, <https://ipen.org/news/basel-amendment-could-further-slow-us-plastic-exports>. 185 states and the EU are parties to the convention; the US and Haiti have signed it but not ratified it. 185 states and the EU are parties to the convention; the US and Haiti have signed it but not ratified it. For more on the proposed amendment, see: Giulia Carlini. “One Small Edit for a Legal Text, One Giant Leap for Addressing Plastic Pollution: A New Plastic Waste Proposal for the Basel Convention.” Center for International Environmental Law. August 30, 2018. <https://www.ciel.org/plastic-waste-proposal-basel-convention/>.

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- ¹¹⁹ United Nations Development Programme, “New Solid Waste Recovery and Recycling Contract Improves Livelihood of Waste Pickers in Jordanian Landfills,” accessed March 14, 2018, http://www.jo.undp.org/content/jordan/en/home/ourwork/our_stories/new-municipal-solid-waste-recovery-and-recycling-contract-improv.html.
- ¹²⁰ United Nations Environment Program, “Health and Safety Guidelines for Waste Pickers in South Sudan,” October 2013, https://wedocs.unep.org/bitstream/handle/20.500.11822/19536/health_safety_guidelines_waste_SouthSudan.pdf?sequence=1&isAllowed=y.
- ¹²¹ Non-development groups like INTERPOL also have a large role to play in improving customs enforcement. For more, see: INTERPOL, “Operation 30 Days of Action: Final Report,” December 2017, <https://www.interpol.int/Search-Page?search=Final+Report+of+Operation+30+Days+of+Action>. American governance and development groups have previously approved and backed substantial anti-corruption programs that target customs enforcement. For instance, the Millennium Challenge Corporation (MCC) approved an anti-corruption initiative in Ukraine in 2006. See: MCC, “Millennium Challenge Corporation Board Approves Anti-Corruption Initiative in Ukraine,” June 17, 2006, <https://www.mcc.gov/news-and-events/release/release-061606-mccboardapproves>. In Guatemala, the MCC funded activities that included “improving control of cargo movement at ports, assessing the adequacy of information technology systems, and identifying and preventing illicit activity among tax and customs officials and employees.” For more, see: MCC, “Domestic Resource Mobilization,” Accessed March 14, 2019, <https://www.mcc.gov/initiatives/initiative/domestic-resource-mobilization>. The MCC is helping with customs in sub-Saharan Africa as part of the African Growth and Opportunity Act. See: MCC, “Regional Partnerships,” Accessed March 14, 2018, <https://www.mcc.gov/news-and-events/feature/regional-partnerships>.
- ¹²² This example of previous capacity-building programs was part of a MCC-threshold program implemented in the Philippines in 2006 by USAID. MCC, “Philippines Threshold Program,” Accessed March 14, 2019, <https://www.mcc.gov/where-we-work/program/philippines-threshold-program>.
- ¹²³ Export.gov, “Sao Tome & Principe Country Commercial Guide,” Accessed March 14, 2019, <https://www.export.gov/apex/article?id=Sao-Tome-and-Principe-Corruption>.