NOTE

KEEPING UP WITH CHINESE CONSUMERISM: OFFSETTING CHINA'S INDIVIDUALLY GENERATED GARBAGE WITH REGULATORY AND SOCIAL MECHANISMS

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INTRODUCTION

China is transforming from its ancient agrarian beginnings into a modern, global economic powerhouse. In 2010, China's economy passed

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that of Japan's to become the second largest in the world.[1] The Chinese citizenry is changing along with the country's economic prosperity. The agrarian majority of the Chinese population is moving into the cities now more than ever to compliment the demand for cheap labor in constructing the buildings that house China's new urban enterprises.[2] Urbanization is occurring at a rate of 48%.[3] In 2005, more than one-third (36 percent) of China's population resided in cities, with the proportion estimated to increase to two-thirds by 2035—a rise from about 400 million to 900 million.[4] This means that the average incomes for city-dwelling Chinese are on the rise.[5] Average urban incomes in 2005 were around three times higher than rural incomes, and average urban incomes are expected to increase by 46.3% until 2015. Comparatively, rural incomes will only increase by around 27.9%.[6] Not only are average urban incomes on the rise, but changes in lifestyle are occurring as well.[7] Urban Chinese residents' discretionary consumption spending is increasing,[8] and there is an overall increase in consumerism occurring in urban Chinese areas.[9] Ma Jun, director of the Institute of Public and Environmental Affairs, noted,"[a]s China's urban population explodes, so does the quantity of waste it produces—by about 10% a year."[10] Serious garbage problems will arise if the increase in garbage generation is not carefully checked by way of limiting garbage generation, or by developing ways to collect and dispose of it.

China currently faces a crisis regarding its garbage-management, and that the damage will be greatly exacerbated if no measures are taken to

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1. David Barboza, *China Passes Japan As Second-Largest Economy*, NEW YORK TIMES, Aug. 16, 2010, at B1 (*available at* http://www.nytimes.com/2010/08/16/business/global/16yuan.html).

2. *See* JOHN FRIEDMANN, CHINA'S URBAN TRANSITION 57–76 (Univ. of Minn. Press 2005) (outlining the transition, beginning in the mid-1980s, of "tens of millions of 'peasants' . . . flooding into coastal cities, their suburbs, and the rural and semi-rural areas surrounding them."); s*ee also* JONATHAN GARNER, THE RISE OF THE CHINESE CONSUMER: THEORY AND EVIDENCE 61 (John Wiley & Sons, Ltd. 2005) (noting that "[p]opulation migration from the countryside to the cities has been and will be likely to remain huge and indeed involves unprecedented numbers of people and extreme changes in lifestyle within a single generation").

3. Fan Gang, Urbanizing China, China U.S. Focus, Feb. 14, 2011, *available at* http://chinausfocus.com/political-social-development/urbanizing-china/.

4. FRIEDMANN, *supra* note 2, at ix.

5. GARNER, *supra* note 2, at 61.

6. GARNER, *supra* note 2, at 69.

7. *Id.* at 64.

8. *Id.* at 69.

9. *Id.* at 77.

10. Ma Jun, *Solving the Incinerator Uproar*, CHINA DIALOGUE, Dec. 22, 2009, *available at* http://www.chinadialogue.net/article/show/single/en/3436.

offset the mounting crisis. This paper considers two aspects of China's garbage-management crisis while offering several suggestions on how those aspects may be improved. The first is the rapidly increasing amount of garbage being generated by individual citizens, and the second is how that increasing amount of garbage is overwhelming garbage collection systems in many areas of China. The forces driving China's increasing garbage pollution are China's unprecedented economic growth and inadequate garbage collection systems, which are unable to account for such an increase in garbage generation. In my paper I argue that, in order to combat the looming explosion with respect to garbage pollution in China, certain regulatory mechanisms must be implemented to improve garbage collection. Also, social mechanisms (i.e., altering public attitudes on garbage generation) must be part of the solution to ensure that China's garbage is dealt with in a way that is sustainable, given the massive increase in consumerism occurring in China today. China is familiar with both the regulatory and social mechanisms I propose, and they have been successful in other contexts. Thus, I posit that they are suitable for implementation in the garbage-management context in China. The regulatory mechanism I propose in the garbage generation context is to compel schools to educate students on garbage reduction. The social mechanism I propose in the garbage generation context is to make efforts in fostering a change of norms in individual consumption habits, and by achieving a "republican moment" through these norm changes. The regulatory mechanisms I propose in the context of garbage collection are to compel garbage segregation services everywhere garbage is collected, to compel or provide incentives for recycling systems, and to adopt litter control accounts in city and county treasuries. The social mechanism I propose in the garbage collection context is to use national pride as a stepping stone for changing norms on efficient garbage collection and for changing attitudes on littering.

The framework around which this paper analyzes garbage generation and collection is a comparison between two of the world's largest and most economically forceful nations: China and the United States. While the United States and China remain dissimilar in terms of their current overall developmental stages, the gap between the two nations is narrowing.

This paper, in Part II, sets forth the reasons why garbage pollution creates problems for humans and the quality of the natural environment. It lays a statistical foundation regarding the amount of garbage generated in China, while providing comparisons to the United States. A discussion follows on how the mounting garbage in China is causing problems in terms of garbage collection and how individuals are contributing to the problem. Several reasons are given as to why China's increasing garbage,

along with its problems, will lead to even more garbage generation in China's near future. Part III discusses China's existing regulatory mechanisms in dealing with its increasing generation of garbage, and how garbage is collected, while offering comparisons to the United States. Part IV examines several regulatory and social mechanisms that have been used in China successfully in the past. It also explores some mechanisms that, though they have not yet been used in China, have a high likelihood of success in China because they have seen success in the United States. The paper concludes by offering perspective into what China's garbage problem will likely become if no measures are taken to offset the problem.

I. GARBAGE GENERATION AND COLLECTION

This section provides information, including several individual accounts from Chinese citizens, on garbage to demonstrate the extent to which China's garbage management—generation and collection—systems are in need of reforms. Comparisons are made between the garbage management systems of China and the United States.

A. Garbage Generation

The United States was once, cumulatively, the largest garbage generator in the world.[11] The United States still generates the most garbage, per capita, worldwide. The Environmental Protection Agency (EPA) estimates that the average American discards 4.3 pounds of garbage per day.[12] In the United States, there are widespread criticisms, disgruntled citizens, and a plethora of literature on America's current garbage problem.[13] Of course, America was not always a major garbage generator. Like China, America was once largely agrarian and "[d]uring the seventeenth and eighteenth centuries most Americans threw almost nothing away; they were so poor that manufactured goods were almost totally absent from their lives."[14] In early colonial cities in America, people dumped their rejectamenta (organic

11. ELIZABETH ROYTE, GARBAGE LAND: ON THE SECRET TRAIL OF TRASH 11 (Little, Brown 2005).

12. *Id.*

13. *See generally* HEATHER ROGERS, GONE TOMORROW: THE HIDDEN LIFE OF GARBAGE 9 (The New Press 2005) ("How did we [Americans] get into this [garbage] mess? Consumption lies at the heart of American life and economic health, and intrinsic to consumption is garbage."); ROYTE, *supra* note 11, at 24 (" . . . Americans everywhere are producing steadily more waste. Politicians devise short-term solutions, and waste managers, who own the means of disposal, seem to hold all the cards.").

14. ROGERS, *supra* note 13, at 32.

or otherwise) in backyards or into the street to rot or be eaten by foraging hogs, dogs, and raccoons.[15] In the nineteenth century, Americans were conscious of the garbage that they generated; they sorted it and, in many instances, simply reused it; much of the municipal waste was composted.[16] It was not until industrialization and two massive world wars that America's economy boomed, consumerism rose, and garbage came under corporate influence, which, in turn, made garbage "good for business."[17] Throughout the twentieth century and into the present, America's vast amount of garbage generation was largely attributable to the rise in consumerism that the United States experienced during the nineteenth century. China recently overtook the United States as the largest garbage generator, cumulatively, worldwide.[18] Today, China has the most rapidly developing economy in the world. If the consumption habits of the Chinese citizenry lead to what occurred in America during the industrialization of the twentieth century, then the amount of garbage that China will produce will be staggering. China would likely become the greatest garbage generator, per capita, and garbage collection systems in many parts of China will be left unable to accommodate the huge amount of garbage.

China's cumulative garbage generation currently amounts to 148 million tons of garbage every year, the highest in the world.[19] That number is increasing at a rate of approximately ten percent per year.[20] In 2006, the city of Beijing alone generated 5,851,000 tons of garbage.[21] That number increased to 6,195,000 in 2007.[22] The amount of garbage that Beijing

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15. *Id.*

16. *Id.* at 9.

17. *Id.*

18. *China's Burning Trash a Global Hazard*, THE SEATTLE TIMES, Aug. 12, 2009 ("[China] surpass[ed] the United States as the world's largest producer of household garbage"), *available at* http://seattletimes.nwsource.com/html/nationworld/2009642712_chinaburn12.html; s*ee also* Thomas Dorn, Circular Economy In China, ISWA World Congress 2010 (Nov. 2010) *available at* http://www.iswa.org/uploads/tx_iswaknowledgebase/Dorn.pdf (stating that China exceeded the United States in generation of waste).

19. *China Gets ADB Loans To Clean Up Urban Garbage*, CHINA DAILY, Sept. 3, 2009, *available at* http://www.chinadaily.com.cn/bizchina/2009-09/03/content_8654428.htm.

20. China Waste Management 4 (Streams Technology Programme, Working Paper, 2004) *available at* http://akseli.tekes.fi/opencms/OhjelmaPortaali/ohjelmat/Streams/fi/Dokumenttiarkisto/Viestinta_ja_aktivointi/Julkaisut/Kansainvaliset_selvitykset/S24045_Waste_Management_Review.pdf; s*ee also China Gets ADB Loans To Clean Up Urban Garbage*, CHINA DAILY, Sept. 3, 2009, *available at* http://www.chinadaily.com.cn/bizchina/2009-09/03/content_8654428.htm.

21. 2008 Beijing Statistical Yearbook of Environmental Health (2008北京环境卫生统计年鉴), Beijing Municipal Administration (北京市市政管理委员会) (2008).

22. *Id.*

generates annually could create a mountain 360,000 square meters around and forty meters tall.[23] In 2003, Beijing residents generated 18,400 tons of garbage per day.[24] Of that garbage, only 8,000 tons of it was disposed of in accordance with the law, the rest of it "threatening the city like a bomb."[25] Given that Beijing is seen as one of China's most technologically advanced cities and, in some regards, one of its cleanest cities, the fact that only approximately 43% of the city's residents' generation of garbage is disposed of in accordance with the law has startling implications for the rest of the country. Shanghai, one of China's most populous cities with an estimated population of 19 million, generates 6 million tons of garbage per year.[26] It is estimated that annual Municipal Solid Waste (MSW) quantities across China will increase by 150% by 2030 when compared to quantities in 2007.[27]

Even though China generates more waste than the United States as a country in total, the Chinese urban resident still generates 740 pounds less waste annually than an American urban resident.[28] But because China's population[29] exceeds the United States' population[30] by nearly 4.4 times, the total waste generation in China is greater. Accordingly, the statistics above indicate that garbage generation from individual Chinese citizens is rapidly increasing.

One source of this increased amount of garbage is from the food industry. A study by the Hong Kong Bureau of Trade and Development found that Chinese residents' consumption of packaged food increased by

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23. *The Troubles of Municipal Solid Waste: China Has Become the Country with the Most Serious Garbage Problem*, GUANCHA YU SIKAO, July 17, 2009, *available at* http://news.sina.com.cn/c/sd/2009-07-17/102718242056.shtml.

24. *Id.*

25. *Id.*

26. *Garbage Suffocating Chinese Cities as Rapid Urbanization Continues*, PEOPLE'S DAILY ONLINE, Aug. 18, 2006, *available at* http://english.people.com.cn/200608/18/eng20060818_294215.html.

27. Longmire Harrison, *Merging Environmental and Energy Sustainability with Opportunities for U.S. Corporations*, 7 SUSTAINABLE DEV. L. & POL'Y 53 (2007) (in terms of weight, that means that China will generate 480,000,000 tons of MSW in 2030, compared to 190,000,000 tons in 2004).

28. *Id.*

29. United States Central Intelligence Agency, The World Factbook, CIA.GOV, https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html (last updated Sept. 27, 2011). (listing China's population at 1,336,718,015 as of July 2011).

30. United States Central Intelligence Agency, The World Factbook, CIA.GOV, https://www.cia.gov/library/publications/the-world-factbook/geos/us.html (last updated Sept. 27, 2011). (listing the United States' population at 313,232,044 as of July 2011).

10.8% from 2000 to 2008.[31] That is 4.2% higher than the average consumption of packaged foods in all of Asia.[32] Many products in China, such as oranges and napkins in restaurants, are now individually wrapped in plastic packaging.[33] This increased consumption of packaged foods is the result of China's economic growth, which has created a notable difference in the younger generations' purchasing habits as compared to the older generations' in China.[34] In past generations, agriculture was the primary focus. There were less material possessions, and what material possessions did exist were reused for other purposes rather than thrown away.[35] But over the last twenty years, the amount of garbage generated from packaged foods in China has tripled, reaching approximately 300 million tons annually.[36] One villager near the city of Zhengzhou in Henan Province, said of the matter, "[w]e didn't think that garbage was a problem before because we didn't have supermarkets, we didn't have fancy packaging, or an endless supply of food. But all of a sudden there is so much garbage and it is hard to know how to deal with it."[37] The packaged food industry encompasses chopsticks, the primary tool used for consuming food, which account for much of the garbage generated by the Chinese individual. Possibly hundreds of millions of chopsticks per day are used once and then thrown away.[38] It is estimated that, by 2013, the packaged food market in China will be valued at $195 million—a 74% increase from 2008.[39] If such estimations turn out to be correct, then more garbage will accumulate and instances of landfills being filled to capacity earlier than expected will

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31. *With China's Developing Economy, The Garbage Problem Is Becoming More Serious* (伴随经济发展 中国垃圾问题严重), THE EPOCH TIMES (大紀元), Oct. 19, 2009, *available at* http://www.epochtimes.com/b5/9/10/20/n2694135.htm (in Chinese).

32. *Id.*

33. DAN HOORNWEG ET AL, WASTE MANAGEMENT IN CHINA: ISSUES AND RECOMMENDATIONS 19 (East Asia Infrastructure Dep't, World Bank, Working Paper No. 9, 2005), *available at* http://siteresources.worldbank.org/INTEAPREGTOPURBDEV/Resources/China-Waste-Management1.pdf.

34. *See* GARNER, *supra* note 2, at 77 ("An older population consumes different products to a younger generation.").

35. Ban sui jing ji fa zhan zhong guo la ji wen ti yan zhong|chong (伴隨經濟發展中國垃圾問題嚴重) [*With China's Developing Economy, the Garbage Problem is Becoming More Serious*]. s*upra* note 31.

36. *With China's Developing Economy, supra* note 31.

37. *Id.*

38. Juho Rissanen & Teemu Naarajärvi, *China Waste Management* 13, (Streams Technology Programme, Working Paper, 2004).

39. Ban sui jing ji fa zhan zhong guo la ji wen ti yan zhong|chong（伴隨經濟發展中國垃圾問題嚴重） [*With China's Developing Economy*, *the Garbage Problem is Becoming More Serious*], s*upra* note 31.

occur more frequently.[40] Additionally, print media, such as newspapers and magazines, are becoming thicker due to increased advertising. Obsolete electronics, due to the consumer's demand for newer versions, are also contributing to the waste stream.[41]

The United States, similarly, has experienced an influx of garbage as a result of the packaging industry. Ever since the 1930's, when many different types of plastics became available for various uses, the packaged foods industry skyrocketed. While waste related to organic food scraps went down, "packaging waste went up."[42] Packaging is the largest and fastest growing category of garbage in America.[43] There are numerous environmental problems associated with plastics entering the waste stream, including that plastic remains intact anywhere from 200 to 1,000 years and that buried plastic leaches hazardous materials into the water and soil.[44] Despite the dangers posed by plastics, the plastics industry in the United States continues to grow "at twice the annual rate of all other manufacturing combined."[45] Of course, plastics are not the only garbage entering the American waste stream. In 2003, Americans discarded "almost 500 billion pounds of paper, glass, plastic, wood, food, metal, clothing, dead electronics, and other refuse."[46] Instead of consumers buying products that are reusable, consumers finding uses for otherwise disposable objects, or companies manufacturing reusable items, 80% of United States products are used once and then discarded.[47]

B. Garbage Collection

Not only is garbage being generated in China like never before, it is also piling up where it should not, but the pileup is also adversely affecting the quality of both the human and natural environments. In "all but the most remote places"[48] in China, garbage is often seen dotted across the land,[49]

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40. *Id.*
41. Hoornweg, *supra* note 33.
42. ROYTE, *supra* note 11, at 21.
43. ROGERS, *supra* note 13, at 5.
44. *Id.* at 5
45. *Id.* at 6
46. *Id. at 2*
47. *Id. at 6*
48. RISSANEN, *supra* note 38, at 9.
49. Garbage Photos by Wang Haofeng, http://www.chinahush.com/2009/09/12/garbage-out-of-control-in-wuhan-village/.

rivers,[50] oceans,[51] and on streets—urban[52] and rural.[53] This stark reality makes clear that the garbage collection methods for ultimate disposal are lacking in China.

In the United States, garbage collection is controlled and regulated by both the government and private companies.[54] Federal, state, and local regulations dictate how garbage is collected. Municipalities enter into contracts with private companies, operating under those regulations, to collect the garbage. Most, if not all, municipalities enter into contracts with private companies to carry out garbage collection. The American garbage collection system is daunting:

> Collecting, sorting, processing, and ultimately disposing of the 630,000 tons of trash Americans generate each day requires an enormous infrastructure. The private waste services industry in the U.S. operates more than 100,000 trash collection trucks each day, collecting both residential and commercial garbage, employs about 270,000 people, and operates about 1,700 recycling processing facilities and more than 2,000 landfills and other disposal facilities nationwide.[55]

Garbage collection in America is a profitable business. Companies will go where profits are to be made. Generally, garbage in America is timely and effectively trucked to landfills.[56] Often, Americans are so unaware or

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50. *See Kuzhu River Drowning In Trash*, CHINA DAILY, July 7, 2009 (pointing out that the Kuzhu River, near the World Heritage Zhangjiajie National Forest Park in Zhangjiajie is infested with garbage which is believed to be littered by the increasing amounts of tourists in the area), *available at* http://www.chinadaily.net/china/2009-07/07/content_8385701.htm.

51. Alex Hoffard, *Plastics Pollution on South Sokos Island, Hong Kong*, ALEX HOFFARD PHOTOGRAPHY, Jan. 28, 2010, http://www.alexhofford.com/node/2292.

52. *See* Wu Sheng & Ren Guoyong, *A Gulou District Transfer Station Shuts Down and Trash Piles on the Street*, JS CHINA, Aug. 8, 2009 (detailing a situation in Nanjing, Jiangsu Province, in which garbage overtook a portion of a street due to the closure of a garbage transfer station), *available at* http://jsnews.jschina.com.cn/nj/200908/t140548.shtml.

53. *Who Can Take Care of This Road?* DAHE NEWSPAPER ONLINE, Mar. 27, 2009 (pointing out the need for a caretaker for a garbage-laden road in Zhengzhou, Henan Province), *available at* http://newpaper.dahe.cn/hnrb/html/2009-03/27/content_162944.htm (in Chinese).

54. *See* Hoornweg, *supra* note 33. (noting that "[i]n most countries, solid waste management is a municipal responsibility").

55. NATIONAL SOLID WASTES MANAGEMENT ASSOCIATION, RESIDENTIAL TRASH COLLECTION: AN ESSENTIAL SERVICE AT A BARGAIN PRICE 2, (2005), *available at* http://environmentalistseveryday.org/docs/research-bulletin/Research-Bulletin-Service-At-A-Bargain.pdf.

56. *See* ELIZABETH ROYTE, GARBAGE LAND: ON THE SECRET TRAIL OF TRASH 27–49 (Little, Brown 2005) (outlining the daily routine of New York City garbage collectors).

apathetic about what happens to their garbage once it is discarded and placed onto the street for collection that one New York City sanitation worker said, "[p]eople think there's a garbage fairy . . . . You put your trash on the curb, and then *pffft*, it's gone. They don't have a clue."[57]

Garbage collection systems are widely varied between Chinese cities and even among different parts of cities.[58] The discrepancy is attributable to the wealth of the city or the community within the city.[59] Residential garbage collection is sporadic in many Chinese cities. Some areas have collection services up to three times per day, while other areas have no collection whatsoever.[60] In urban China, waste collection is comprised of a two-tier system: primary and secondary collection. Primary collection includes storage and transportation of garbage from households to collection points. Secondary collection includes storage and transportation from collection points to points of treatment and disposal.[61] The primary collection mechanisms are more relevant to this paper, since they are responsible for ensuring that garbage is routed from individuals' homes to collection facilities, instead of becoming neglected piles of garbage that can end up in the streets or in waterways. Moreover, reliable primary collection mechanisms may give individuals an alternative to littering. While the primary collection mechanisms in urban China provide "a relatively high level of sanitation,"[62] the same cannot be said of collection mechanisms in rural China.

Last year, a resident of the city of Hanghzou in Zhejiang Province began a blog called "Odor Blog," in which he publishes his complaints about the garbage pileup in his district. He wrote in one entry, "[a]t 9:30 in the evening, when I come home after work, I can smell the rancid [pileup of] garbage as I walk through the gate entering our district. I dare not open my mouth to breathe deeply because the smell is particularly painful."[63] In March of 2010, in Changchun, the capital city of Jilin Province, heaps of garbage and snow mixed together caused major traffic problems and

57. ELIZABETH ROYTE, GARBAGE LAND: ON THE SECRET TRAIL OF TRASH 39 (Little, Brown 2005); s*ee also* HEATHER ROGERS, GONE TOMORROW: THE HIDDEN LIFE OF GARBAGE 11 (The New Press 2005) ("[M]any people have only a vague sense of where their discards go. They may think that trash is benignly and permanently disposed of in 'proper' places.").

58. RISSANEN, *supra* note 38, at 13.

59. *Id.*

60. Hoornweg, *supra* note 34, at 33.

61. RISSANEN, *supra* note 38, at 13.

62. *Id.* at 14.

63. *The Troubles of Municipal Solid Waste: China Has Become the Country with the Most Serious Garbage Problem*, GUANCHA YU SIKAO, July 17, 2009, *available at* http://news.sina.com.cn/c/sd/2009-07-17/102718242056.shtml.

residents complained of garbage trucks either not coming by regularly to collect the garbage, or garbage trucks passing by the garbage without stopping to collect it.[64]

While much of China's garbage ends up in landfills,[65] a staggering amount of garbage does not reach the landfills, but is littered on the ground instead. In urban Chinese settings, cities, as part of the primary collection mechanism, employ human street sweepers to collect the garbage that accumulates on the city streets. Additionally, the "shou po lan de"—garbage pickers—rummage the cities for the primary purpose of collecting the garbage that can be redeemed for cash or sold to industry for other purposes.[66] Wang Weiping, a Beijing government advisor, said that the city has over 170,000 garbage pickers who process one-third of Beijing's trash.[67] But in rural China, where it is estimated that 80% of all Chinese residents live,[68] garbage pickers are less likely to be seen because they make a living by migrating to the cities to work. In rural settings, "waste is either poorly managed or simply disposed of in rivers and on land."[69]

The village of Hongshan, near the city of Wuhan in Hubei Province, represents just one example of the problem of garbage pollution due to littering that is widespread in rural China. Wang Haofeng, a photojournalist for the Wuhan Morning News, photographed the littered village[70] and gave a brief description of the extent of the problem:

> [The littered area] is close to several universities and research institutes, where there are many restaurants, so large amounts of garbage are generated. The household-generated waste in this village is dumped at the entrance of

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64. *Heaps of Snow-Garbage Mix Make Travel Difficult For Changchun Residents*, CHINA GARBAGE NEWS, Mar. 25, 2010, *available at* http://chinagarbage.wordpress.com/2010/03/25/heaps-of-snow-garbage-mix-make-travel-difficult-for-changchun-residents; the Chinese version of this article can be found at http://news.163.com/10/0325/01/62J9LL4O000146BB.html.

65. *See* Longmire, *supra* note 28. (noting that landfills around Chinese cities amount to about 50,000 hectares [which is over 193 square miles]).

66. Erik Eckholm, *Amid Garbage and Disdain, China Migrants Find a Living*, N.Y. TIMES, Feb. 11, 2000, at A1 (noting that in 2000, there were 82,000 of these migrant workers scavenging through Beijing's garbage), *available at* http://www.nytimes.com/2000/02/11/world/amid-garbage-and-disdain-china-migrants-find-a-living.html.

67. Ian Ransom, *Beijing Recyclers Discarded in Games Security Sweep*, REUTERS, Jul. 10, 2008, *available at* http://www.planetark.com/dailynewsstory.cfm/newsid/49276/story.htm.

68. Chris Cynar et al, *China in Transition –The Impact at Home and Abroad*, 4 J. INT'L LAW & PRAC. 241, 251 (1995).

69. Li Zhiping, *Protection of Peasants' Environmental Rights During Social Transition: Rural Regions in Guangdong Province*, 8 VT. J. ENVTL. L. 337, 339 (2007).

70. Wang, *supra* note 49.

> the village, and no department is responsible for disposing of the garbage. Each time the garbage piles up so high that the flies become unbearable, someone sets fire to the mountain of garbage to smoke away the flies. Once set on fire, the garbage can sometimes burn continuously for several days. This approach of garbage disposal has existed for many years. A river beside the village is heavily polluted with much of this garbage, and has come to be known as the "garbage river."[71]

The municipal environmental sanitation administrative bureaus are responsible for daily garbage collection and transportation.[72] Municipal governments levy fees for the disposal of waste by residential, commercial, and industrial producers as part of general taxation.[73] The fact that the litter in villages like Hongshan is so extensive causes one to wonder where the municipal sanitation administrative bureaus are and where the villagers' tax money goes. Li Zhiping, a Professor of Law at Sun Yat-sen University in Guangzhou, has stated that "[w]aste has become the most serious pollution problem in rural environments. Some rural places have launched waste collection programs, but the waste collected is only moved to remote places instead of being handled because of the lack of unified planning, handling establishments, and facilities."[74] In the case of Hongshan, the garbage is not piled up in a remote place, but rather in a heavily traveled alleyway near several universities.[75]

Basic garbage collection mechanisms and infrastructure are likely insufficient in many other areas of China. As the sanitation department in Hankou stated, the department cannot keep up with the amount of garbage that individuals generate. Wang Jiuliang, an award-winning photographer who studies Beijing's landfills, has stated, "China has become a consumer society over the past 10 or 20 years. The authorities are working hard to solve the garbage problem, but it has emerged too quickly."[76] The problem is only going to get worse unless measures are taken to alleviate the garbage generation and collection insufficiencies. The remainder of this

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71. Wang, *supra* note 49.

72. He Pinjing & Shao Liming, *A Perspective Analysis on Municipal Solid Waste (MSW) Energy Recovery in China*, 9 J. ENVTL. SCI. 221, 221–25 (1997).

73. RISSANEN, *supra* note 38, at 9.

74. Zhiping, *supra* note 69, at 340–341.

75. Cite to Wang Haofeng.

76. Jonathan Watts, *Beijing to Sweeten Stench of Rubbish Crisis With Giant Deodorant Guns*, THE GUARDIAN, Mar. 26, 2010, *available at* http://www.guardian.co.uk/environment/2010/mar/26/beijing-rubbish-deodorant.

paper will focus on what regulatory measures, if any, are currently in existence to curb the amount of garbage that is generated by the individual and to compel satisfactory collection of such garbage.

II. EXISTING REGULATORY MECHANISMS

Despite the fact that no country besides China has ever experienced as large or rapid of an increase in garbage generation,[77] there are surprisingly very few regulatory mechanisms in place to offset the massive and increasing amount of garbage that is being generated. This section outlines China's existing regulatory mechanisms for dealing with garbage generation and collection, and concludes that the existing regulatory mechanisms are insufficient to handle the huge and ever-growing garbage generation predicament with which China is currently faced.

A. Garbage Generation

In a World Bank report identifying several critical solid waste management issues facing China, the first issue listed was "Waste Quantities, which have an "unsurpassed rate of growth in waste generation, dramatically changing composition, and minimal waste reduction efforts . . . .[78] This shows that the increasing amount of garbage generation is creating concern on an international level. This section will identify to what extent Chinese authorities have addressed, through regulatory measures, the growing concern over the increasing amount of individually generated garbage.

The primary regulatory mechanism for the prevention and minimization of individually generated garbage is the "Prevention and Control of Environmental Pollution by Solid Waste Law,"[79] which was promulgated by Order No. 31 of the President of the People's Republic of China on December 29, 2004. This nationwide law states that:

> Products and packing materials shall be designed and manufactured in compliance with the State regulations governing cleaner production. The administrative

77. Hoornweg, *supra* note 34, at 1.

78. *Id.*

79. Prevention and Control of Environmental Pollution by Solid Waste Law, Laws of the People's Republic of China, Asian Legal Information Institute, *available at* http://www.asianlii.org/cn/legis/cen/laws/pacoepbswl702 (last visited on Nov. 20, 2011).

> department for standardization under the State Council shall, on the basis of the economic and technological conditions of the State, in light of the prevention and control of environment pollution by solid waste and in compliance with the technical requirements of the products, take charge of formulating relevant standards to prevent environmental pollution by over-packing.
>
> The enterprises, which manufacture, sell, or import products and packaging materials included in the compulsory recovery catalog, according to law, shall recover the said products and packaging materials according to the relevant regulations of the State. The State encourages research institutions and manufacturers to conduct research in and manufacture thin-film sheetings and product-packaging materials that are easily recycled or treated, or are biodegradable.[80]

This law aims to use several methods to minimize the extent to which the individual generates garbage. First, it calls for manufacturers to comply with national regulations on "cleaner production."[81] Second, it mandates that the State Council formulate "relevant standards" to prevent garbage pollution caused by packaging.[82] Third, those manufacturers included in the "compulsory recovery catalog" are compelled to comply with State laws by "recover[ing]" certain types of packaging.[83] Lastly, the State "encourages" certain entities to research and develop environmentally sustainable packaging.[84] Provincial and city governments, as well as manufacturers, are compelled to follow laws such as this, which are promulgated by the National People's Congress. The environmental problems associated with China's serious garbage pollution, which are highlighted throughout this paper, call into question the effectiveness of this nationwide law. In the following sections of this paper, the control mechanisms of this law are analyzed in greater detail. I conclude that this law gives great latitude to those entities to which the law is directed and is an insufficient enforcement mechanism.

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80. *Id.*
81. *Id.*
82. *Id.*
83. *Id.*
84. *Id.*

There have been government sponsored programs implemented in China to foster a sense of cleanliness and sanitation, such as "To Establish Cultural and Sanitary Cities Everyone Has a Responsibility," along with listing littering as one the "evils associated with uncultured and unsanitary cities."[85]

Beijing has also implemented a rather vague law that specifically aims to reduce the amount of garbage that is generated:

> Household garbage and other wastes in the municipality shall be disposed of according to the principles of qualification, harmlessness, and turning them into resources. Effective measures shall be taken to minimize the production of household garbage and other wastes, collect household garbage separately, and make comprehensive use of them so as to enhance the level of disposing of the household garbage and other wastes in harmless ways. According to the principle that the producer of garbage shall be obliged to dispose of the garbage produced, the producer of garbage shall be responsible for the expenses of disposing of household garbage.[86]

But laws such as these have been difficult to enforce.[87] Enforcing laws in China is difficult not only in the area of garbage management, but in other areas of the law as well.[88] It has been suggested that one reason behind poor enforcement of Chinese laws is that local officials, like those in charge of garbage management systems, need large amounts of financial resources from the central government just "to remain relevant and in power."[89] With regard to garbage management, this means that the financial resources that would normally go toward garbage management are used for purposes other than for what they were intended.

The Chinese government has recently taken more drastic and specific measures to minimize individually generated garbage. In June 2008, China began a nationwide initiative which forbade shops from handing out free plastic bags and also banned the production of "ultra-thin" (those thinner

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85. RISSANEN, *supra* note 38, at 13.

86. Beijing Municipal Regulations on City Appearance and Environmental Sanitation, Ch. 5, Sec. 2, Art. 55 (Oct. 1, 2002).

87. RISSANEN, *supra* note 38, at 13.

88. *See* John Lee, *China's Empty Land Reform*, THE GUARDIAN, July 4, 2009, *available at* http://www.guardian.co.uk/commentisfree/2009/jul/04/china-land-reform (noting that enforcement is poor in the area of Chinese land reform).

89. *Id.*

than 0.025mm)[90] plastic bags, in an attempt to decrease the amount of garbage pollution.[91] Regulations like these have proven successful in cities in other countries such as Australia,[92] Mexico,[93] and in United States cities, such as San Francisco.[94] Other United States cities, such as Los Angeles,[95] Seattle,[96] Boston,[97] Portland,[98] and Phoenix,[99] have begun thinking about implementing similar bans. The ban has had some success in China. It is estimated that some 40 billion plastic bags have been halted from entering the waste stream.[100] Sanitation workers in Beijing, Shanghai, and Guangzhou have reported that plastic waste has diminished by about 20 percent.[101]

But the ban on plastic bags, like many other laws in China, remains difficult to enforce. Many small family-owned businesses have begun to produce ultra-thin plastic bags to fill the niche for that market, which had before been filled by large manufacturers who have since gone out of business due to the ban.[102] Thus, it is reported that, "[p]lastic bags, especially those ultra-thin ones you often see hanging on trees or littering back streets, still rule the day at wet markets across the country."[103] A survey indicated that about 65 percent of small shops ignore the ban.[104]

Although some efforts are being made in the area of minimizing garbage generation, whether it be programs implemented to change

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90. *Plastic Bag Ban Saves 3m Tons of Oil a Year*, CHINA DAILY, Aug. 30, 2009, *available at* http://www.chinadaily.com.cn/bizchina/2009-08/30/content_8958112.htm.

91. *China Announces Plastic Bag Ban*, BBC NEWS, Jan. 9, 2008, *available at* http://news.bbc.co.uk/2/hi/7178287.stm.

92. Anne-Marie Byrne, *South Australian Plastic Bag Ban a Success!*, PLANET ARK, Nov. 5, 2009, *available at* http://plasticbags.planetark.org/news/display/91 (last visited on Aug. 15, 2011).

93. Elisabeth Malkin, *Unveiling a Plastic Bag Ban in Mexico City*, NEW YORK TIMES, Aug. 21, 2009, *available at* http://greeninc.blogs.nytimes.com/2009/08/21/unveiling-a-platic-bag-ban-in-mexico-city/.

94. David Gorn, *San Francisco Plastic Bag Ban Interests Other Cities*, NPR, Mar. 27, 2008, *available at* http://www.npr.org/templates/story/story.php?storyId=89135360.

95. *LA Plastic Bag Ban: Disposable Bags Outlawed by 2010*, HUFFINGTON POST, *available at* http://www.huffingtonpost.com/2008/07/23/la-plastic-bag-ban-dispos_n_114557.html.

96. Lynn Thompson, *Edmonds Council Votes For Plastic-Bag Ban*, SEATTLE TIMES, Jun. 4, 2009, *available at* http://seattletimes.nwsource.com/html/politics/2009298175_plasticbagban04m.html.

97. Gorn, *supra* note 94.

98. *Id.*

99. *Id.*

100. Yu Tianyu, *Domestic Retailers Still New At 'Green' Efforts*, CHINA DAILY, Sept. 14, 2009, *available at* http://www.chinadaily.com.cn/bw/2009-09/14/content_8686913.htm.

101. Li Xing, *Still More To Do After a Year's Plastic Bag Ban*, CHINA DAILY, May 28, 2009, *available at* http://www.chinadaily.com.cn/cndy/2009-05/28/content_7949489.htm.

102. *Id.*

103. *Id.*

104. *Id.*

attitudes on environmental consciousness or banning plastic bags, more regulation and enforcement will be needed to offset the increasing trend of consumerism that is occurring in China. Beijing has attempted to provide short-term solutions to the problems caused by the influx of consumerism and worries of environmental sanitation. Beijing's landfills, which surround the city and are called by some as the city's "seventh ring",[105] are filling up rapidly—they will meet their capacity in four years[106]—and are causing residents to complain about the stench that affects their everyday lives. In fact, the number of rubbish-related complaints in Beijing increased by 57% in 2009.[107] The government stated that it plans to spend more money on waste management, in particular on its recycling program,[108] but, for now, one landfill in Beijing, the Asuwei landfill, is being shot with 100 deodorant guns to relieve the stench emitting from the site.[109]

If China is serious about targeting its garbage problem, it will need to act fast and it will need to implement long-term solutions to offset the consumeristic lifestyle that its citizenry are beginning to adopt. Moreover, attitudes on any type of environmental consciousness are unlikely to change until the population is comprised mostly of those who have been educated on environmental awareness.[110] The World Bank, in a 2005 report, noted that, "Chinese authorities will not be able to stop the waste stream from growing; all they can do is reduce the rate of growth."[111]

B. Garbage Collection

The primary regulatory control for garbage collection in China is the "Prevention and Control of Environmental Pollution by Solid Waste Law".[112] This law sets forth that the responsible entities to oversee garbage collection are the administrative department of construction under the State Council, and the administrative departments for environmental sanitation under the local people's governments at or above the county level.[113] It

105. Watts, *supra* note 78.

106. *Id.*

107. *Id.*

108. *See id.* (noting that "[l]ess than 4% of Beijing's rubbish is recycled – the UK recycles 35% – but is still near the bottom of the EU recycling league.").

109. *Id.*

110. RISSANEN, *supra* note 38, at 13.

111. Hoornweg, *supra* note 34, at 20.

112. Prevention and Control of Environmental Pollution by Solid Waste Law, Laws of the People's Republic of China, Asian Legal Information Institute, *available at* http://www.asianlii.org/cn/legis/cen/laws/pacoepbswl702 (last visited on Nov. 20, 2011).

113. *Id.* Ch. I, Art. 10.

specifies that, "People's governments at or above the county level shall . . . promote [the] industrialized collection and treatment [of household waste], and gradually establish a sound social service system for prevention and control of environmental pollution by household waste."[114] Additionally, with respect to individually generated garbage, it states, "[u]rban household waste shall be cleaned up and transported in a timely manner, it shall gradually be classified in different categories for collection and transportation, and efforts shall be made to have it rationally utilized and turned into something innocuous through treatment."[115] Thus, the law focuses primarily on the collection and cleanup of garbage generated in urban settings, with the collection of garbage generated in rural settings to be specified and "formulated in local regulations."[116]

Municipal governments in urban settings have undertaken various measures to ensure a functionally operational garbage collection system. In the city of Hangzhou in Zhejiang Province, the municipal government, like that of many Chinese cities, has set up garbage collection points in residential communities.[117] In March of 2010, the city of Hangzhou implemented a garbage separation system by placing color-coded garbage bins in many of these residential communities to facilitate more efficient garbage collection.[118] However, after only several days of this garbage-separation program, it was found that the residents of these communities were not separating the garbage; instead, they were throwing all of their garbage into the same bins because they found the system too confusing.[119] To make matters worse, the garbage collecting trucks simply threw all of the garbage in the separated bins into the same part of the truck, defeating the purpose of separating the garbage in the first place.[120]

Garbage collection companies may enter into contracts with the municipality,[121] thus providing an economic incentive for effective garbage

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114. *Id.* Ch. III, Sec. 3, Art. 38.

115. *Id.* Ch. III, Sec. 3, Art. 42.

116. *Id.* Ch. III, Sec. 3, Art. 49.

117. *Hangzhou Launches Garbage Separation System*, CHINA GARBAGE NEWS, Mar. 25, 2010, *available at* http://chinagarbage.wordpress.com/2010/03/25/hangzhou-launches-garbage-separation-system and http://www.hangzhou.com.cn/hzwtv/tvhzxz/2010-03/25/content_3199461.htm (in Chinese).

118. *Id.*

119. *For Hangzhou Residents, Garbage Separation is Like a Confusing 'Multiple-Choice Quiz'*, SINA NEWS, Mar. 26, 2010, *available at* http://news.sina.com.cn/c/2010-03-26/063517276482s.shtml (in Chinese).

120. *Id.*

121. The Central People's Government of the People's Republic of China, Municipal Solid Waste Management Practices, Ch. 3, Art. 18, June 5, 2007, *available at* http://www.gov.cn/ziliao/flfg/2007-06/05/content_636413.htm (in Chinese).

collection. In addition, garbage collectors and street sweepers usually comprise the largest single group of employees in cities, with an estimated 1,300,000 formally employed in the urban garbage collection system.[122] But even with these regulatory efforts, garbage is still mounting in places where it should be collected. The Kuzhu River, near the Zhangjiajie National Forest Park in northern Hunan Province, is one such place where it is evident that garbage collection systems for households are insufficient. The river is polluted with thousands of tons of garbage, most of which is packaging from household things—like washing powder—floating downstream.[123]

Laws against littering often go hand-in-hand with garbage collection regulatory measures. The laws against littering in some cities subject offenders to fines. In Beijing, it is illegal to litter "rinds, peels, nuts, cigarette butts, waste paper, chewing gum, plastic bags, packaging materials, and other wastes."[124] Violators are subject to fines of anywhere between 20–50 Renminbi.[125] But, as discussed with regard to laws aimed at lowering garbage generation, these laws, aimed at preventing littering and thus making garbage collection more succinct and efficient, are poorly enforced.[126] These laws are similar to those intended to decrease garbage generation because neither are properly enforced. The pollution of the Kuzhu River, and others like it, provides some evidence of the lack of enforcement of the anti-littering laws.

III. PROPOSALS FOR MORE EFFECTIVE PREVENTION OF INDIVIDUALLY GENERATED GARBAGE AND BETTER GARBAGE COLLECTION

This section offers proposals for alleviating the environmental problems associated with the increasing amount of domestic garbage in China, both at the generation stage and at the collection stage. The proposals are in the form of regulatory and social mechanisms. My proposal to improve curbing excessive garbage generation in China is to compel schools to educate students on garbage reduction—a regulatory mechanism that has seen some success in the United States and is likely to be successful in China given

122. Hoornweg, *supra* note 34, at 25.

123. Wang Qian, *Kuzhu River Drowning in Trash*, CHINA DAILY, July 7, 2009, *available at* http://www.chinadaily.net/china/2009-07/07/content_8385701.htm.

124. Beijing Municipal Regulations on City Appearance and Environmental Sanitation, Ch. 5, Sec. 1, Art. 53 (Oct. 1, 2002).

125. *Id.*

126. RISSANEN, *supra* note 38, at 13.

China's centralized education system. One proposal to improve garbage collection is to require administrative agencies with powers over garbage collection to offer garbage segregation services to various entities, including individual residents—a regulatory mechanism. Some Chinese cities have begun to offer segregation services on a trial basis, and those services have shown early signs of success. A social mechanism, on the other hand, may be starting grassroots organizations that encourage and financially support methods to raise public awareness and environmental consciousness on garbage-related issues. While grassroots environmental organizations in China are not as common as in the United States, they are beginning to have more prominence in China as younger generations are being exposed to environmental causes abroad and are making connections between foreign environmental organizations and domestic needs for such organizations. A combination of both a social and a regulatory mechanism would generally alter individual activity in the way of dealing with garbage by changing social norms. However, for norms to change individual behavior, regulatory measures such as public education, sanctions, and other market-based incentives must be initiated.[127]

A. Garbage Generation

1. Regulatory Mechanisms

Regulating the way individuals generate garbage, like other regulatory mechanisms aimed at individual behavior in the context of the United States, has, according to some, "failed or not been tried because of the monumental task and cost of regulating personal behavior, the intrusiveness of doing so, and the inhibiting fear of political backlash should regulation be attempted."[128] However, while regulating individual behavior is politically difficult in the United States, regulating individual behavior in China is done routinely[129] and is easier, given China's centralized politburo,

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127. Hope M. Babcock, *Assuming Personal Responsibility for Improving the Environment: Moving Toward a New Environmental Norm*, 33 HARV. ENVTL. L. REV. 117 (2009) (arguing that changing societal norms by way of regulatory mechanisms is one way to change individuals' environmentally destructive lifestyles).

128. Hope M. Babcock, *Global Climate Change: A Civic Republican Moment for Achieving Broader Changes in Environmental Behavior*, 26 PACE ENVTL. L. REV. 1, 2 (2008).

129. Most notably, China's One-Child Policy, but also in pollution control, internet accessibility, formation of political groups, and journalistic practices. *See* Peter Walker, *Beijing Olympics: 1.5m Cars Banned From Roads in Last-Ditch Smog Effort*, THE GUARDIAN, July 21, 2008, *available at* http://www.guardian.co.uk/world/2008/jul/21/china.olympicgames2008 (indicating that individuals are regulated by way of when they may drive their automobiles); *See also China Launches Strict New*

because there is less political opposition to delay the implementation of such regulations.[130]

Rather than regulating individuals directly, some states in the United States have chosen to enact laws aimed at rewarding and encouraging garbage reduction in its schools. One such law is Washington State's "Waste Reduction and Recycling Awards Program in K-12 Public Schools—Encouraging Waste Reduction and Recycling in Private Schools."[131] That law requires public schools, and encourages private schools, to develop waste reduction and recycling programs.[132] The class of students that achieves the greatest waste reduction and recycles the most will be given a monetary award of not less than five thousand dollars.[133] Programs such as these could be viable in China, so long as they are embedded in the Chinese educational system. The advantage that China has is that such a program could be mandatory in the vast majority of schools, since the vast majority of schools in China are public. Such programs would likely have the multi-effect of saving the schools money by reducing their garbage collection fees and also educating young students on how to effectively reduce, reuse, and recycle garbage that would otherwise enter the waste stream.

2. Social Mechanisms

Some scholars have argued that what is needed to change individual behavior for the better in environmental protection is a "republican moment."[134] A "republican moment" in this context refers to a kind of epiphany wherein an individual gains awareness of environmental issues,

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Internet Controls, THE ASSOCIATED PRESS, Feb. 23, 2010, *available at* http://finance.yahoo.com/news/China-launches-strict-new-apf-3357266098.html?x=0&.v=5 (indicating that individuals are regulated in internet domain name registration).

130. *See Flowering Friendliness? China's Prime Minister, Wen Jiabao, Offers Some Gestures of Conciliation*, THE ECONOMIST, Mar. 5, 2010 (noting that Prime Minister Wen applauded China's socialist system for its "quick decision-making, effective [organization] and an ability to 'concentrate resources to accomplish large undertakings'") *available at* http://www.economist.com/world/asia/displayStory.cfm?story_id=15640891&source=most_commented.

131. Waste reduction and recycling awards program in K-12 public schools—Encouraging waste reduction and recycling in private schools, WASH. REV. CODE § 70.95C.120 (2008).

132. *Id.*

133. *Id.*

134. *See* Daniel A Farber, *Politics and Procedure in Environmental Law*, 8 J.L. ECON & ORG. 59, 66 (1992) (arguing the 1970 Earth Day was a "republican moment" that fueled many individuals' and institutions' environmental awareness); *see also* Michael P. Vandenbergh, *The Social Meaning of Environmental Command and Control*, 20 VA. ENVTL. L.J. 191, 212 (2001) (classifying as a "republican moment" the public's response to the environmental crises of the late-1960s and early 1970s).

and changes his/her previously environmentally-destructive lifestyle. It is when such an epiphany comes to pass that the "environmental citizen" is created.[135] Some believe that a prime example of a "republican moment" came in the United States in response to environmental disasters in the late 1960s and early 1970s, which gave rise to the birth of Earth Day, the first environmental holiday, and an unprecedented amount of Congressional support for environmental legislation.[136] Sweeping Federal environmental laws were passed as a result of this "republican moment," including the National Environmental Policy Act (NEPA), the Clean Air Act (CAA), and the Clean Water Act (CWA), to name just a few. Hope M. Babcock, an American legal scholar who has written extensively on the "republican moment," believes that a new "republican moment" is currently happening in the United States in the context of global climate change. She believes that individual Americans should harness and expand the momentum of the global climate change "republican moment" in order to make a difference in how individuals behave with respect to environmental awareness.[137]

China is in the unique position to more easily foster a republican moment among its citizens than is the United States. Such a movement in China could lead to enormous environmentally-beneficial changes in the way individual Chinese citizens behave with respect to garbage generation. There are several reasons why China can more easily achieve a republican moment. First, China has a centralized politburo. If faced with a national crisis, then the Central Government can swiftly enact legislation in an attempt to alleviate a problem without competing-party opposition. As Victor Chu, Chairman of First Eastern Investment Group in Hong Kong, said, "[i]t is more challenging for democratic systems [to make unpopular, but necessary changes] because every day they come under public pressure and every short period they have to go back to the polls [, however,] China [can] make long-term strategic decisions and then execute them clinically."[138] This can be seen in the nationwide ban on plastic bags, discussed above. It can also be seen through national education campaigns, such as the "Patriotic Education Campaign" that began in the early 1990s.[139]

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135. Babcock, *supra* note 127, at 3.

136. *Id.*

137. *Id.*

138. Katrin Bennhold, *As China Rises, Economic Conflict With West Rises Too*, THE NEW YORK TIMES, January 26, 2010, *available at* http://www.nytimes.com/2010/01/27/business/global/27yuan.html?hp.

139. *See* Zheng Wang, *National Humiliation, History Education, and the Politics of Historical Memory: Patriotic Education Campaign in China*, INT'L STUDIES Q. 52, 783-806 (2008) (explaining that the Patriotic Education Campaign is an attempt at "ideological reeducation").

Indeed, one way to create or modify norms and to influence perceptions about the acceptability of certain behaviors is by enacting a law or issuing a regulation mandating certain behavior.[140] Some suggest that the mere proposal of a new law or regulation will cause "a jump to a new [behavioral] equilibrium."[141] Second, Chinese citizens largely get their news and information from state-controlled media. Chinese state-controlled media are regularly compelled to either report on certain news, or, if given the option to report on a piece of news, are compelled to report that piece of news in a particular way. While the "republican moment" is a social mechanism that can lead to policy changes at the regulatory level and to changes in individual behavior, it is not always self-activating. For a republican moment to occur, individual citizens need to be educated and mobilized to change personal behavior. In China, with respect to garbage pollution, it would be relatively easy for the Chinese central government to initiate public-awareness campaigns in formal education settings on the virtues of garbage segregation, recycling, composting, and reducing the amount of garbage individuals generate. The media could also play a role, assuming it has permission from the government, by reporting on garbage pollution issues. The media has already begun to report on such issues.[142] Education through formal campaigns brought about by the legislative process and mobilization of the public on garbage pollution issues through media will foster a sense of civic republicanism among the Chinese general public.

The "[republican] moment must be seized if a new norm of individual environmental responsibility is to materialize and a reawakened environmental citizen who takes greater responsibility for her personal behavior is to emerge."[143] In the context of climate change in the United States, individual practices, such as driving big, powerful cars, using a lot of electricity, generating a lot of waste, and collectively sending pollution in massive amounts to often distant waterways and airsheds, are examples of environmentally destructive behavior.[144] Unlike in the United States, where personal lifestyle choices are currently beyond the scope of environmental laws,[145] individuals in China are routinely regulated and, in the relative

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140. Babcock, *supra* note 127, at 13.

141. *See id.* (quoting Robert D. Cooter, *Three Effects of Social Norms on Law: Expression, Deterrence, and Internalization*, 79 OR. L. REV. 1, 21 (2000)).

142. *See Hundreds Protest Guangzhou Incinerator*, SHANGHAI DAILY, Nov. 24, 2009, *available at* http://www.shanghaidaily.com/sp/article/2009/200911/20091124/article_420472.htm.

143. Babcock, *supra* note 127, at 3.

144. William D. Ruckelshaus, *Stopping the Pendulum*, 12 ENVTL. F. 25, 26-7 (Nov. Dec. 1995).

145. Babcock, *supra* note 127, at 5.

infancy of Chinese environmental laws, could easily be included in regulatory mechanisms for preventing excessive garbage generation.

In order for China to offset the increasing amount of garbage being generated by an increasingly consumeristic society, the country could implement the above-described methods to build toward a "republican moment" among its citizens regarding garbage awareness.

As an alternative to the government being the instigator of norm modification, environmental groups can fill this role.[146] All that is needed are some sort of "norm entrepreneurs," who are "self-appointed champions of particular values or rules of behavior,"[147] to initiate changes in individual environmental behavior. Environmental groups in the United States have the benefit of having: (1) experience in educating the public; (2) expertise in environmental problems, in using the media for information dispersal, and in local organizing and coalition building; (3) the ability to simplify complex environmental information; and (4) more trust from citizens than does the government.[148] In China, there are far fewer environmental groups than in the United States. Although the Chinese government restricts their practices to some extent, environmental groups in China are increasing in number.[149] Yet, student-led environmental groups have had some success in promoting environmental values. "In 2004, on Earth Day, a reported 100,000 Chinese college students in 22 provinces participated in environmental activities organized by university groups."[150] Environmental groups should help by distributing information to the general public about ways to limit consumption of products that add massive amounts of garbage to the waste stream.

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146. *See id.* at 17 (arguing that environmental groups, not the government, should take on the role of the norm entrepreneur).

147. Geoffrey P. Miller, *Norms and Interests*, 32 HOFSTRA L. REV. 637, 639 (2003); *see also* Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903, 909 (1996).

148. Babcock, *supra* note 127, at 17

149. *See* Elizabeth Economy, *Testimony on China's Environmental Movement*, COUNCIL ON FOREIGN RELATIONS, Feb. 7, 2005, *available at* http://www.cfr.org/publication/7770 (last visited on Dec. 18, 2009) ("until the Chinese government removes its restrictions on NGO registration and otherwise supports the development of civil society, the environmental movement may remain limited in size, as well as forced to operate under the shadow of knowledge that political caprice or shifting political winds could force them to pull back from their efforts, or risk being shut down entirely.").

150. *Id.*

B. Garbage Collection

1. Regulatory Mechanisms

The way garbage is collected in China needs to undergo major changes. Currently, its collection services are inadequate to meet the demand of the growing amount of garbage being generated around the country.[151]

One regulatory mechanism available to improve the garbage collection system in China is to require the appropriate administrative departments to provide garbage segregation services. The World Bank considers this mechanism to be the most important for China as it advances its garbage collection infrastructure.[152] Garbage segregation services provide the individual garbage generator with the option of placing garbage in separate or "segregated" containers, such as recyclable, compostable, or burnable. While higher collection costs are associated with garbage segregation and it requires compliance from garbage generators in order for the service to make an impact,[153] garbage segregation services provide multiple functions. Garbage segregation paves the way for advanced waste management programs, such as recycling, composting, and incineration[154] (discussed below), because such programs are nearly impossible to undertake when all types of garbage are collected in a mixture. Segregation also increases the ability for such advanced techniques to be implemented successfully since "non-contaminated dry waste is more easily recycled"[155] and it improves the quality of compost and optimizes incineration.[156] Additionally, garbage segregation services will increase awareness of the severity of China's garbage problems among the general population, thereby reducing the rate of growth in garbage generation.[157] Finally, with the optimization of advanced management techniques, garbage segregation increases the likelihood that there will be guaranteed financial returns because the costs

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151. *See generally The Troubles of Municipal Solid Waste: China Has Become the Country with the Most Serious Garbage Problem*, GUANCHA YU SIKAO, July 17, 2009 ("With the rapid urbanization and economic development, China's urban waste problem has become increasingly prominent."), *available at* http://news.sina.com.cn/c/sd/2009-07-17/102718242056.shtml (last visited on Nov. 20, 2011).

152. Hoornweg, *supra* note 34, at 33.

153. *Id.*

154. *Id.* at 32.

155. *Id.* at 34.

156. *Id*.

157. *Id*.

of garbage collection can be better allocated by segregating different types of garbage and financing for the services is more easily obtained.[158]

Offering garbage segregation services could be very successful in China. Currently, several Chinese cities are offering garbage segregation services on a trial basis, and the programs are showing signs of success, although more education is needed to bolster the effectiveness of the garbage segregation programs. As discussed above, the city of Hangzhou implemented garbage separation services on a trial basis, but the citizens were confused as to how to use it.[159] However, increased education could alleviate such confusion.

Another regulatory mechanism available to Chinese lawmakers is to establish a mandatory or voluntary incentive-based recycling system for individuals. The administrative agency could mandate such regulations to garbage collecting companies so that the companies would be required to offer recycling services in residential areas. Much of the individually generated waste stream contains recyclable materials, such as papers, plastics, glass, and metals. Moreover, each of these materials has a market-based monetary value.[160] Requiring garbage-generators to sort out recyclable materials (garbage segregation) would add costs to the administrative agency, but the monetary value of the recyclable materials would offset at least some of the cost of obtaining the recycled materials. Currently, the recycling rates in China are lower than most other countries.[161] The recyclable materials that enter the Chinese waste stream are rapidly increasing. Paper is one such material, and it has a relatively high recyclability. Thus, it should be a "priority commodity for planners of recycling programs to address."[162]

Making a mandatory or voluntary incentive-based recycling system has a high likelihood for success in China because there is already a demand for many recycled goods as informal recycled-product industries are beginning to emerge. Several Chinese cities' entire economies thrive on the recycling of plastics, including Wen'an city, about 120 kilometers south of Beijing.[163] Therefore, at least with regard to the recycling of plastics, building the infrastructure to handle such a monumental task as recycling the 52 million

158. *Id*.

159. *For Hangzhou Residents, Garbage Separation is Like a Confusing 'Multiple-Choice Quiz'*, *supra* note 117.

160. Hoornweg, *supra* note 33, at 26.

161. *Id.*

162. *Id.* at 27.

163. *Garbage In, Pollution Out*, China Net, Mar. 18, 2010, available at http://www.china.org.cn/2010-03/18/content_19631882.htm (last visited on Sept. 4, 2011).

tons of plastic that China consumes each year[164] has for the most part already been finished by private enterprises. All the government needs to do is increase segregation services in the cities and build collection centers to which the trucks can bring the recyclable materials, which will then be sent to the already-existing recycling centers. Industries that produce plastic bottles made from recycled plastic are reported to be "just around the corner" in their emergence in the Chinese market.[165]

With respect to the collection of littered garbage, additional funding is needed to undertake an effective system. Local and provincial governments could create a specific account within the treasury to be used exclusively for the collection of litter and to raise awareness among the general public on the subject. In the United States, such programs are promulgated at the State level. Washington State, for example, has created the "Waste reduction, recycling, and litter control account."[166] The Washington State legislature indicated that monies in the account are to be used for: (1) litter collection programs; (2) conducting biennial litter surveys; (3) raising statewide public awareness; (4) ensuring compliance; and (5) purchasing "equipment that will enable the department to account for the greatest return on investment in terms of reaching a zero litter goal."[167]

Creating a specific account in Provincial-level treasuries to combat litter could be a useful way for China to curb its litter problem, in the same way that it has worked in the United States. In urban areas, such accounts exist already, and are used to employ street sweepers to clean up litter. But in the countryside and in smaller cities, street sweepers are more seldom seen. If the account is created at the Provincial-level, with a certain percentage allocated to all areas in the province, instead of the treasury account at the city-level only, all areas of the province will benefit from litter-control programs.

2. Social Mechanisms

Before regulatory measures are carried out to address garbage collection issues, a social mechanism could be employed to encourage

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164. *Id.*

165. *Recycled Plastic Bottles – Just Around the Corner to Open the Chinese Market*, ARTICLESBASE, Apr. 19, 2010, available at http://www.articlesbase.com/business-articles/recycled-plastic-bottles-just-around-the-corner-to-open-the-chinese-market-2181043.html (last visited Sept. 14, 2011).

166. Waste Reduction, Recycling, and Litter Control Account, RCW 70.93.180, *available at* http://apps.leg.wa.gov/RCW/default.aspx?cite=70.93.180 (last visited on Nov. 20, 2011).

167. *Id.*

individuals to take garbage collection issues seriously—as a matter of national pride. Chinese national pride has proven to be an effective way to mobilize the People's Republic of China.[168] China's youth of today are known for their loyalty to the State and national pride.[169] If the government, through state-run media, were to run patriotic advertising campaigns on environmentally friendly garbage collection practices and anti-littering, which portrayed litterers and non-recyclers, for example, polluting a clean, healthy China, a sense of national pride might come about which would encourage individuals to attribute patriotism to environmentally friendly garbage collection practices.

CONCLUSION

The amount of garbage that is generated in China is staggering and that number is on the rise. China is becoming wealthier, and its citizens are consuming more. China should not make the same mistakes the United States made with respect to over-consumption and garbage generation. According to the former Prime Minister of Norway and former Chair of the United Nation's World Commission on the Environment and Development, "[i]t is simply impossible for the world as a whole to sustain a Western level of consumption for all. In fact, if 7 billion people were to consume as much energy and resources as we do in the West today, we would need ten worlds, not one, to satisfy our needs."[170] China is the most populous nation in the world. The United States and China should be examples for the rest of the world on smart garbage management, and lead the way in its continued development.

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168. *See China Spacewalk Fires National Pride*, SPACE DAILY, Sept. 28, 2008 (noting that when Chinese astronauts completed their first spacewalk, there was an "outpouring of national pride . . . with ordinary citizens and state-run media hailing it as a historic national achievement.") *available at* http://www.spacedaily.com/reports/China_spacewalk_fires_national_pride_999.html (last visited on Nov. 20, 2011).

169. Matthew Forney, *China's Loyal Youth*, NEW YORK TIMES, Apr. 13, 2008, *available at* http://www.nytimes.com/2008/04/13/opinion/13forney.html?_r=1&em&ex=1208232000&en=3f78fd18ca46542b&ei=5087_ (last visited on Nov. 20, 2011).

170. Kari Nordheim-Larson, The Minister of Dev. Cooperation of the Kingdom of Nor., Address to the International Conference on Population and Development, Sept. 9, 1994, *availablehttp://www.un.org/popin/icpd/conference/gov/940909221821.html*.