4-1-2011

B.Y.O.B. (Bring Your Own Bag): A Comprehensive Assessment of China's Plastic Bag Policy

Mary O'Loughlin

Follow this and additional works at: <https://digitalcommons.law.buffalo.edu/belj>

Part of the [Environmental Law Commons](#)

Recommended Citation

Mary O'Loughlin, *B.Y.O.B. (Bring Your Own Bag): A Comprehensive Assessment of China's Plastic Bag Policy*, 18 Buff. Env'tl. L.J. 295 (2011).

Available at: <https://digitalcommons.law.buffalo.edu/belj/vol18/iss2/4>

This Article is brought to you for free and open access by the Law Journals at Digital Commons @ University at Buffalo School of Law. It has been accepted for inclusion in Buffalo Environmental Law Journal by an authorized editor of Digital Commons @ University at Buffalo School of Law. For more information, please contact lawscholar@buffalo.edu.

B.Y.O.B. (BRING YOUR OWN BAG): A COMPREHENSIVE ASSESSMENT OF CHINA’S PLASTIC BAG POLICY

Mary O’Loughlin *

Table of Contents

I. EXECUTIVE SUMMARY	297
A. Abstract	297
B. Policy Implementation	298
C. Policy Enforcement	298
D. Public Response	298
E. Policy Effects	298
F. Future Prognosis	299
II. THIS REPORT: REPORT STRUCTURE AND METHODOLOGY	299
III. THE POLICY	299
A. China's Plastic Bag Policy	299
B. China's Overuse of Plastic Bags	301
C. China's Government's Rationale for Limiting Plastic Bag Use	302
D. Successful Plastic Bag Reduction Policies in Ireland and Washington	303
IV. POLICY IMPLEMENTATION	305
A. Partial Policy Implementation	306
B. Stores Implementing the Policy	306
C. Stores Not Implementing the Policy	307
D. Government Efforts to Improve Implementation	309
V. POLICY EFFECTS:	311
A. Decline in Plastic Bag Use	311
B. Growing Support for Reducing Plastic Bag Use	312
C. Unintended Consequences of the Plastic Limit Order	313

* This paper was compiled by Ms. O’Loughlin, during her time as a Fulbright Research Fellow from September 2009- July 2010.

VI. POLICY SHORTCOMINGS	314
A. Shortcomings of the Current Plastic Limit Order	315
B. Possible Remedies for Policy Shortcomings of the Plastic Limit Order.....	315
VII. SUPPLEMENTARY POLICY RECOMMENDATIONS:	318
A. Raise the Price.....	318
B. Promote the Use of Plastic Bag Alternatives.....	318
C. Encourage Plastic Bag Recycling	322
D. Discourage the Use of Plastic Packaging.....	325
VIII. CONCLUSION:.....	326

Our country consumes a huge amount of plastic shopping bags each year. While plastic shopping bags provide convenience to consumers, this has caused a serious waste of energy and resources and environmental pollution because of excessive usage, inadequate recycling and other reasons.

--Chinese State Council

I. EXECUTIVE SUMMARY

A. Abstract

On June 1, 2008, the Chinese government enacted a nationwide policy prohibiting all stores from freely distributing plastic bags to customers. This new policy requires retailers to charge a nominal fee for plastic bags and to provide purchasable bags meeting certain quality requirements to improve their potential reusability. Retailers, including everything from grocery and clothing stores to farmer's markets and food stalls, individually determine how much to charge for their bags and get to keep all related proceeds. The policy is an effort to mitigate the "white pollution" that is choking China's landscape, as well as to preserve valuable resources such as oil. Currently, the Chinese population uses up to *3 billion plastic bags each day*, which consumes 37 million barrels of crude oil each year in production. Plastic bags take up to 1,000 years to break down, producing toxic petro-polymers and occupying valuable landfill space in the process.

Unlike past environmental regulation in China, which typically targeted specific business sectors or polluters, this policy directly affects everyone nationwide by requiring *every* individual to take economic and environmental responsibility for his plastic bag use. Using this type of individualized policy approach to confront an environmental challenge is novel, creative, and—if successful—potentially prescient of a new Chinese approach to fighting the battle against pollution.

B. Policy Implementation

After ten months of study and data collection, I found implementation of China's plastic bag policy to be *partial* at best. Most major supermarket and convenience store chains, particularly foreign-owned ones, have implemented the policy; however, the majority of other types of retailers have not.

C. Policy Enforcement

Policy enforcement by local authorities remains weak and erratic. Local police do not conduct regular or effective spot checks on retailers to ensure policy implementation. Central government oversight on local enforcement appears to be inadequate, as well.

D. Public Response

The Chinese government has achieved partial success in fostering general awareness among the population about the plastic bag policy; nonetheless, many remain under informed about what the policy entails and when it should be applied. Many consumers, regardless of their level of familiarity with the policy, have yet to curb their regular use of plastic bags, continuing to expect and accept plastic bags when doing their shopping and snacking.

E. Policy Effects

Plastic bag use has declined in major chain grocery and convenient stores where the policy is enforced. Bag use elsewhere has yet to show indications of abating; especially when considering most retailers still distribute free plastic bags. As a result, Chinese plastic bag overconsumption continues to threaten fragile environments and overflowing landfills. The creation of a plastic bag recycling program or the adoption of environmentally friendly bags beyond beta development stages remains wanting.

F. Future Prognosis

Chinese plastic bag overconsumption continues to represent a major national environmental challenge. Until the Chinese government dramatically improves enforcement and awareness of the plastic bag policy, and adopts some supplementary measures to bolster its effectiveness, China's plastic bag consumption is unlikely to significantly decline. As a result, plastic bags will remain a major source of environmental pollution in China for the foreseeable future.

II. THIS REPORT: REPORT STRUCTURE AND METHODOLOGY

For the past ten months, September 2009 through July 2010, I lived in Wuhan, China and traveled throughout the country conducting research and recording my observations of China's plastic bag distribution policy. The following report is a summarization and analysis of my findings, as well as my recommendations for bolstering the efficacy of this policy in the future.

After outlining China's plastic bag regulatory scheme and its underlying rationale, I evaluate its implementation and the effects of the policy on bag usage, plastic waste, and consumer attitudes. I conclude the report by suggesting methods for improving compliance and reducing domestic bag use.

I used three primary data sources when writing my report: observational data (firsthand visits to stores, markets, eateries, recycling centers, garbage sites, etc.), anecdotal data (in-person interviews and small scale surveys), and reported data (secondary sources such as government reports, nongovernment organization reports, private company reports, newspaper articles, online information, etc.). I have cited these secondary sources in my endnotes.

III. THE POLICY

A. China's Plastic Bag Policy

On June 1, 2008, the Chinese government introduced a nationwide policy aimed at reducing the country's use of plastic

bags.¹ The policy is effectuated by two regulations. The first bans the production, sale, and use of “ultrathin” plastic bags—any bag that measures less than 0.025 millimeters thick.² The second prohibits retailers from providing customers with free plastic bags, requiring that they instead sell the bags to their customers for a nominal fee.³ Retailers may set this fee themselves as long as the fee is not below the wholesale cost of the bag. These fees typically average between 0.1-0.4 RMB (0.01 USD-0.06 USD). Retailers who do not comply with the policy risk facing fines of up to 10,000 RMB (US\$ 1,464).² The official name of this policy in Chinese is

《国务院办公厅关于限制生产销售使用塑料购物袋的通知》or The General Office of the State Council Notice on the Restriction of the Production, Sales, and Use of Plastic Shopping Bags,” but most among the general public simply refer to this two-part policy as 《限塑令》 or the “plastic limit order”.

The State Council, China’s chief executive body, issued the plastic limit order by way of formal directive in the spring of 2008.^{3,4} In May of the same year, three other government departments—the Ministry of Commerce, the National Development and Reform Commission, and the State Administration for Industry and Commerce—introduced a joint supplementary provision to enforce and expand the scope of the State Council’s initial plastic bag directive. In their auxiliary ruling, the three departments laid out detailed stipulations for the

¹ A full text of the plastic bag policy directive issued by the State Council and supplemented by the Ministry of Commerce, the National Development and Reform Commission, and the State Administration for Industry and Commerce in its original form can be found on the Chinese government’s website (http://www.gov.cn/jflfg/2008-05/15/content_975809.htm)

² *China finds plastic bag habit hard to break*, CHINA DAILY, (May 28, 2009), http://www.chinadaily.com.cn/china/2009-05/28/content_7951007.htm

³ *Id.*

⁴ *Id.*

⁴ China’s State Council is responsible for enacting administrative regulations that are relevant to national and constitutional law. See XIANFA art. 89 (1982)(P.R.C.). Under the State Council, the Commission for the Protection of Environmental and Natural Resources (ENRPC) coordinates environment protection work and develops environment-related policies and guidelines.

⁵ Stephanie Beyer, *Environmental Law and Policy in the People’s Republic of China*, 5 CHINESE J. INT’L L., 185, 188 (2006).

implementation and enforcement of the bag policy. These bodies compiled their stipulations in a document known as *The Administrative Measures for the Paid Use of Plastic Bags at Commodity Retailing Places*.⁵

The main goal of this policy, as determined by the various government bodies, is to reduce China's plastic bag consumption and pollution. Additionally, this policy seeks to improve public awareness about environmental issues, such as waste production and resource preservation. The policy represents a component of the central government's environmental legislative overhaul, which it initiated in the lead-up to the 2008 Beijing Summer Olympics.⁶ Unlike past domestic environmental policies, this policy is unique in that it theoretically requires every Chinese citizen to participate in its implementation.

B. China's Overuse of Plastic Bags

Prior to the implementation of the new bag policy, China's 1.4 billion people used an estimated 3 billion plastic bags per day and disposed of more than 3 million tons of them per year.⁷ Several contributing factors explain this massive consumption and waste.

First, the Chinese habit of making many individual shopping trips to purchase their weekly consumables encourages extensive plastic bag use. Many Chinese shop daily, preferring to buy their groceries in smaller quantities to maximize freshness, accommodate limited storage space, and ease transport (the majority of Chinese still do not own a car). As a result of this tendency to shop frequently, shoppers often end up with half-filled plastic bags, many of which contain only one or two items, on any given shopping trip.

Second, many Chinese shoppers buy some or all of their groceries at farmer's markets (also called "wet markets"), rather

⁶ Yingling Liu, *China Watch: Plastic Bag Trumps Market and Consumer Efforts*, ENVIRONMENTAL NEWS NETWORK (June 30, 2008), <http://www.enr.com/pollution/article/37512>.

⁷ *China's bag ban, one year later*, CHINA DIALOGUE (July 10, 2009), <http://www.chinadialogue.net/article/show/single/en/3158-China-s-bag-ban-one-year-later>.

⁸ Liu, *supra* note 6

than at supermarkets. The set-up of these farmer's markets encourages more plastic bag use. At such markets, each seller mans his or her own individual stall, usually only selling a few types of goods. The shoppers move from one stall to the next, inspecting the proffered goods and making purchases. This style of shopping encourages more use of plastic bags because often the shopper only purchases one or two items at each stall. Since items are priced on the spot according to their weight, each item is bagged separately as to allow the shopkeeper to weigh each individually, an additional use of plastic bags.

Third, Chinese street food vendors distribute much of their consumables (*xiaochi* 小吃)-"snack or appetizer"- in small ultrathin plastic bags. They favor this distribution method because it is inexpensive, convenient, and relatively sanitary. Chinese street food is popular nationwide; its production and distribution is heavily under-regulated in most parts of the country.

Fourth, Chinese shoppers have grown accustomed to using excessive amounts of plastic packaging, including bags, in recent years. Excessive packaging has become associated with cleanliness and quality control in the minds of Chinese consumers. Since plastic is cheap, especially in China, which serves as the world's factory for consumable plastic products, producers have little independent incentive to change this mindset and reduce plastic packaging.

Finally, Chinese consumers do not efficiently recycle their used plastic bags. Domestic plastic bag recycling programs still remain in their early beta stages, making finding a venue for recycling bags a real challenge for even the most committed eco-citizen in China. Likewise, Chinese grocery stores and local trash collection centers have yet to follow the West's lead by providing receptacles for used plastic bags. Chinese consumers simply dispose of their used plastic bags in the nearest garbage can or onto the street.

C. China's Government's Rationale for Limiting Plastic Bag Use

Beginning in 2008, the Beijing government publicly acknowledged the nation's overconsumption of plastic bags and

the negative impact of such consumption on the environment. In particular, it highlighted the dual threats that overuse posed to ecological stability and energy security.

As emphasized by the government, China's plastic bag waste represents a major challenge to its national ecological stability. Discarded bags primarily end up in official landfills and unofficial dumping sites. Very few of them get recycled. Once discarded, these bags usually take between 200 and 1,000 years to break down—producing toxic petro-polymers in the process. A significant portion of these single-use carrier bags never make it into the garbage processing system at all; instead, they end up littering streets, floating in trees, and clogging up waterways. This type of visible plastic pollution has become so prevalent in recent years that locals refer to it by its own specific name: "white pollution" (白色污染).

Plastic bag production negatively impacts China's energy security, as well, due to its consumption of valuable crude oil. According to the China Chain Store & Franchise Association, China uses nearly 37 million barrels (5 million tons) of crude oil each year to produce plastic bags—1,300 tons of which is used daily to produce shopping bags for supermarkets alone.⁸ This amount represents the equivalent of one-third of the country's total oil imports.⁹ Thus, in a joint effort to ensure China's ecological stability and protect its energy supply, the Chinese government adopted its new plastic bag policy.

D. Successful Plastic Bag Reduction Policies in Ireland and Washington D.C.

International evidence suggests that a properly enacted plastic bag levy can significantly reduce the use of plastic bags among consumers. Take, for example, Ireland's experience with a similar plastic bag limit policy. When Ireland introduced its levy

⁹Yvonne Chan, *China ban saves 40 million plastic bags*, BUSINESS GREEN (May 26, 2009), (<http://www.businessgreen.com/business-green/news/2242886/china-plastic-bag-ban-effective>).

¹⁰Liu, *supra* note 6; *Irish bag tax hailed success*, BBC NEWS WORLD EDITION (August 20, 2002), <http://news.bbc.co.uk/2/hi/Europe/2205419.stm>.

on plastic bags in 2002, it was the first of its kind anywhere in the world. The levy, or the PlasTax as it is known, applies to all retailer-provided bags made wholly or partly of plastic (with a few specific exemptions as acknowledged in the related legislation). Since the levy's introduction eight years ago, Ireland reduced its plastic bag use by 90% and per capita usage fell from an estimated 328 bags to just 21 bags annually.¹⁰ At 0.22 EUR (0.27 USD) per bag, the policy has generated over 120 million EUR (146 million USD) for the state-run Environmental Fund, paying for waste recycling and garbage collection initiatives.¹¹

Local Irish authorities bear the primary responsibility for PlasTax enforcement. They regularly conduct spot checks on retail outlets ensuring the bag levy is properly implemented and punishing violators appropriately when necessary.^{12,13} Local authorities created a complaint hotline, where consumers are able to contact their local Environmental Awareness Officers about possible PlasTax violations.¹⁴ So far, these tip-offs have proved to be quite helpful.

Ireland popularized the PlasTax among the public through effective marketing campaigns. According to an editorial in the *New York Times*, "[p]lastic bags were not outlawed, but carrying them became socially unacceptable — on a par with wearing a fur coat or not cleaning up after one's dog."¹⁵ Within a year of the levy's introduction, 91% of those polled believed that the policy was "a good idea" and 90% brought reusable or long life bags with them to do their shopping.¹⁶ Through a combination of rigorous

¹¹ *Irish bag tax hailed success*, BBC NEWS WORLD EDITION, (August 20, 2002), <http://news.bbc.co.uk/2/hi/Europe/2205419.stm>.

¹² Henry McDonald, *Ireland plans to double plastic bags tax*, GUARDIAN, Sept. 25, 2009, at 28, available at <http://www.guardian.co.uk/world/2009/sep/24/ireland-tax-plastic-bags>.

¹³ *FAQs*, DEPARTMENT OF THE ENVIRONMENT, HERITAGE & LOCAL GOVERNMENT, <http://www.environ.ie/en/Environment/Waste/PlasticBags/FAQs> (last visited Apr. 18, 2009).

¹⁴ *Plastic Bag Environmental Levy*, CITIZENS INFORMATION (Apr. 04, 2011), http://www.citizensinformation.ie/categories/environment/waste-management-and-recycling/plastic_bag_environmental_levy.

¹⁵ Elisabeth Rosenthal, *Motivated by a Tax, Irish Spurn Plastic Bags*, N.Y. TIMES (Feb. 02, 2008), <http://www.nytimes.com/2008/02/02/world/Europe/02bags.html?pagewanted=1&r=1>.

¹⁶ *Information on Plastic Bag Levy*, KILDARE COUNTY COUNCIL,

policy enforcement and an effective awareness campaign, the Irish government has succeeded in generating a sound plastic bag policy model.

Similarly, on January 1, 2010, America's national capital, Washington D.C., introduced a new 0.05 USD levy on all plastic bags distributed at food and grocery establishments. In the months preceding its introduction, D.C. officials widely publicized the coming levy and ensured that retailers understood its requirements. This careful policy preparation and enforcement paid off; in the tax's first month, plastic bag use dropped by 87%. According to a recent assessment of the effects of the levy produced by the D.C. Office of Tax and Revenue, food and grocery establishments reduced the average monthly number of plastic bags they gave out by 19.5 million—from 22.5 million before the levy to 3 million bags following its implementation."¹⁷

As in the example of Ireland, D.C.'s effective communication and strict enforcement of its policy to reduce plastic bag use proved productive, and resulted in a substantial drop in distributed bags. The successes of these international examples indicate that a properly implemented and enforced plastic bag levy in China should produce similarly reductive results.

IV. POLICY IMPLEMENTATION

A. Partial Policy Implementation

China has achieved partial implementation of the Plastic Limit Order. The majority of major chain grocery stores, shopping centers, and convenience stores have implemented the Order—with most now charging between 0.1-0.4 RMB (0.01 USD-0.06 USD) for an appropriately thick plastic bag. Stores in major cities, particularly in eastern China, seem to implement the policy most consistently. Foreign-owned brand name chain stores tend to represent the policy's most diligent

[http://kildare.ie/CountyCouncil/Environment/PlasticBagLevy/\(Ir.\)](http://kildare.ie/CountyCouncil/Environment/PlasticBagLevy/(Ir.)).

¹⁷ Samuel Fromartz, *Plastic Bag Use Plummets in D.C.*, CHEWSWISE, (April 10, 2010), <http://www.chewswise.com/chews/2010/04/dc-drop-kicks-plastic-bags.html>.

adherents. Less regularly, but not uncommonly, government-operated stores, such as those in airports or at designated tourist sites, implement the policy.

Virtually all other domestic retailers, including farmer's market sellers, food stall vendors, private shopkeepers, and restaurateurs, have yet to implement the policy. In my ten months of research, I found only two retailers from this latter category that charged for bags, although some retailers had at least replaced their ultrathin plastic bags with slightly sturdier ones or substituted reusable bags in place of single-use ones. This lack of adherence in the domestic retail sector represents a major hole in policy implementation. Until the Chinese government can secure adherence to its policy across this sector of the retail market, implementation of its Plastic Limit Order will remain partial at best.

B. Stores Implementing the Policy

Based on my personal observations, most major domestic chains and all major foreign-owned chains charged their customers for plastic bags. My interview subjects, who included chain grocery store workers in Guangzhou, Wuhan, and Shanghai, and convenience store personnel in Beijing, Nanjing, and Jinghong in Yunnan province, corroborated these findings. Likewise, the responses received in a survey I administered to foreigners living across China supported my findings about the tendency of major chains to implement the Order.

Several studies and newspaper articles published during the past year in China also support these findings. In the summer of 2009, three Chinese environmental NGOs, including Friends of Nature, Green Longjiang, and Green Tuoling, conducted a comprehensive seven-city survey in Beijing, Lanzhou, Harbin, Guangzhou, Chengdu, Zhengzhou, and Hangzhou evaluating the implementation of the plastic bag policy. According to the survey's findings, 85% of large grocery stores and shopping centers in these cities followed the Order.¹⁸

¹⁸ Li Dong, *More to Do on Plastic Bag Ban*, CRIENGLISH, (Nov. 9, 2009), <http://english.cri.cn/7146/2009/11/09/2161s527893.htm> (P.R.C.).

To a lesser extent, some government-affiliated stores, such as those in airports and at tourist sites, have implemented this policy. At the Wuhan airport, for example, the snack shops charged 0.3-0.5 RMB for a plastic bag, depending on size. In contrast, similar snack shops in airports in Yunnan Province did not charge for plastic bags and instead automatically bagged purchased items free of charge. Highly regulated tourist site-related stores, such as those servicing the Shanghai Expo, often charge for plastic bags, while most others, such as at the Great Wall just outside of the nation's capital, still liberally distribute free bags to customers.

C. Stores Not Implementing the Policy

Despite the impressive achievement of widespread policy implementation in large chain stores and some government stores, implementation in all other retail sectors remains weak. Among the most consistent and common violators of the policy are small-scale retail operators such as agricultural market sellers and street vendors, many of whom remain unwilling to implement the policy for fear of being undercut by noncompliant competitors.¹⁹

One technique used to quantify the lack of compliance among small-scale operators was a series of case studies (15 in total). For each study, I began by randomly selecting a single street in a given city. I counted the total number of retailers on the selected street (street level only), and categorized each retailer by the products and/or services offered therein. After establishing the number and nature of the retailers on the street, I went into each store to determine whether it provided and/or charged for plastic bags. Through these case studies, I sought to gain a better general sense of how the “average city street” in China was responding to the new plastic bag policy. I determined that the vast majority of retailers continue to provide their customers with free plastic bags.

¹⁹“‘限塑令’难落实 ‘无偿塑料袋’还在用” (‘Plastic Limit Order’ is hard to implement—‘free plastic bags’ continue to be used), *四川新闻* (Sichuan News) [China], Dec. 28, 2009 (<http://sichuan.scol.com.cn/nxw/20091228/20091228113934.htm>); “中国‘限塑令’提高国人环保意识” (China’s ‘Plastic Limit Order’ raises Chinese environmental awareness), *新华网* (Xinhua News Online) [China], May 23, 2009 (http://news.xinhuanet.com/environment/2009-05/23/content_11422982.htm)

In at least three of my case studies, 100% of all retailers were in violation of the Plastic Limit Order.

Take, for example, one representative case study I conducted on an average local shopping street called Guang Ba Lu (广八路) in Wuhan, the capital city of central China's Hubei province on the Yangtze River. This well-trafficked street services two of the city's major university campuses, Wuhan University and Huazhong Normal University, and is regularly patrolled by local law enforcement. There are 224 retail venues on Guang Ba Lu, including: 93 clothing, shoe and accessory stores, 43 restaurants, 16 food vendors, 15 hardware stores, 9 non-chain convenience stores, 7 drink stores, 5 fruit stalls, 5 specialty food stores, 5 hair salons, 4 electronics stores, 3 housing agents, 3 bicycle stores, 2 health clinics, 2 lottery ticket depots, 2 banks, 2 recycling centers, 1 dentist, 1 pharmacy, 1 book store, 1 pool hall, 1 music store, 1 DVD store, and 1 non-chain grocery store. Of these retailers, over 95% distributed plastic bags to their customers free of charge. Moreover, the 5% of retailers that did not provide customers with plastic bags (the pool hall, lottery ticket depots, banks, housing agents, and recycling centers) did not appear to be doing so out of deference to the national plastic bag policy, rather, they simply did not offer customers anything that would necessitate a plastic bag. Notably, of the 224 retailers on Guang Ba Lu, none complied with the Plastic Limit Order.²⁰ In my interviews with these small-scale Guang Ba Lu retailers, many openly acknowledged their violation of the plastic bag policy. As one local fruit seller patiently explained to me, "I cannot charge for plastic bags because if I charge for my bags, but other sellers around me do not, then my customers will simply go to one of them instead. And I don't blame them for doing so. In fact, I would too."²¹ Likewise, a man standing on the sidewalk selling fresh garlic cloves from a wheelbarrow stated he sells each clove for about 0.5 RMB (0.07 USD). "How can I justify requiring my customer to buy a bag that costs almost as much as the garlic clove

²⁰ Upon inquiry at Guang Ba Lu's two recycling centers, both refused to accept plastic bags, directing me to put them in the regular garbage piles out front of the recycling centers instead.

²¹ Interview conducted by Mary O'Loughlin with local shopkeeper (name withheld) in Spring 2010.

inside of it?” he asked.²² In the course of my interviews, I also learned that many sellers continue to give out ultrathin plastic bags because they cost substantially less than the legal plastic bags. The average ultrathin plastic bag costs about 0.005 USD while its legal counterpart costs roughly four to six times that amount. According to these small-scale vendors, the plastic bag policy is simply unsustainable for their business model. They have no choice but to violate the policy in an effort to continue to attract customers.

D. Government Efforts to Improve Implementation

The State Administration for Industry and Commerce (SAIC), one of the government bodies charged with oversight of the Plastic Limit Order, has publicly acknowledged implementation of the policy remains incomplete. In June 2009, the SAIC issued a circular recommending market managers encourage their vendors to comply with the Order. The SAIC suggested these management divisions arrange a special telephone number for consumers to report policy violators, publicize the plastic ban in prominent areas, sign a joint letter of indemnity with their vendors reiterating the repercussions both would suffer if caught in violation of the policy, and limit bag distribution to special authorized bag sellers. The SAIC also took the opportunity to remind market managers they would ultimately be held responsible for any policy violations committed by their vendors.²³

In a few cases, this reiteration of the plastic bag policy appears to have had a positive effect on retail behavior. According to an article in the *Xinhua News*, some farmer’s market managers in Hangzhou City, capital of Zhejiang Province in China’s eastern corridor, now require their vendors to provide standard thickness plastic bags for customers in accordance with the policy.²⁴ To enforce this requirement, the managers collect a 3,000 RMB (439

²² Id.

²³ *Market Operators Held Responsible For Illegal Use Of Plastic Bags*, CHINA CHAIN STORE & FRANCHISE ASSOCIATION (June 22, 2009), <http://www.chinaretail.org/shownews.asp?id=846>.

²⁴ “市场强收3000元环保袋押金 杭州一农贸市场歇菜了”(Market strongly requests 3000 RMB in deposits for environmentally plastic bags— Hangzhou farmer’s market stopped business), *新华网* (XINHUA NEWS) [China], Dec. 23, 2009 (<http://www.xinhuanet.com/chinanews/2009-12/23/content18572041.htm>)

USD) deposit from each vendor. In the subsequent event that a vendor gets caught by authorities for distributing inferior quality ultrathin bags, the manager uses the deposit money to cover the cost of the fine levied, which range from 100 RMB for a first offense, 200 RMB for a second offense, and 1,000 RMB for a third offense (15 USD, 29 USD, and 146 USD, respectively). Upon a fourth offense, the manager will close the vendor's stall entirely. This mandate has received a mixed response from vendors, many of whom argue that 3,000 RMB represents too much money to tie up in a deposit. Some vendors have even organized strikes over the mandate. Nonetheless, a handful of market managers continue to pursue new policies such as this one to try to find ways to ensure that their vendors comply with the Plastic Limit Order.

According to the deputy director and secretary-general of the International Food Packaging Association, Dong Jinshi, the well-trafficked Dongjiao Market (东郊市场) in Beijing, which grosses over 3 billion RMB (439 million USD) in annual sales, enacted a similar program in coordination with the Chinese government to ensure customers pay for the plastic bags that they receive.²⁵ The program controls plastic bag distribution inside the market by permitting only a few pre-authorized stallholders to sell plastic bags (six in total). These bags are then used for carrying goods purchased throughout the market. To ensure regular vendors do not violate this system, each must pay a deposit of 30,000 Yuan (4,393 USD) along with the monthly space rental fee. Punishments are levied if a vendor violates the system—including loss of deposit or even removal from the market. The program stipulates that the prices of the available plastic bags must be clearly marked. In theory, this bag regulatory model represents a potential method for encouraging compliance with the plastic limit policy.²⁶

Despite these select efforts, the government has had little impact on the distribution of plastic bags among the vast majority

²⁵ Dongjiao Market Address: 北京市朝阳区西大望路甲12号 (“Number 12, Xidawang Street, Zhaoyang District, Beijing City”)

²⁶ Note: I write “in theory” because my research suggests that this model has yet to be fully implemented at the Dongjiao Market. On a recent data collection visit to this market in June, I received free plastic bags from multiple vendors and witnessed no government oversight during the duration of my shopping experience.

of small-scale retailers. Most retailers remain unwilling to adopt the policy until their competitors do so first. Most of these retailers feel little legal or financial pressure to become “first-adopters” of the policy since they know it is, at least currently, unlikely they will face negative repercussions for noncompliance. Many of these small vendors live hand-to-mouth with little cash to spare or save; many could, simply, not afford the government-advocated deposit-compliance system. Until the government tailors compliance incentives and enforcement conducive to small business holders, the policy implementation across this sector will remain critically inhibited.

V. POLICY EFFECTS

A. Decline in Plastic Bag Use

Plastic bag use in stores that charge for bags has declined significantly. According to a survey conducted by the China Chain Store & Franchise Association, plastic bag use at supermarkets across the country declined by 66% over the 12-month period following its introduction—with use at foreign and domestic supermarkets dropping by 80% and 60% respectively. The survey reported that this reduction in bag use saved an estimated total of 40 billion plastic bags and 1.6 million tons of oil.²⁷ Prior to June 2008, supermarkets accounted for one-third of all plastic bags used in China.²⁸ An article in *People’s Daily Online* (*Rennin Wang* 人民网) reported that plastic bag use in supermarkets in southern China’s Guangzhou City dropped by almost half upon introduction of the Plastic Limit Order.²⁹ Likewise, a similar article reported that some supermarkets in Beijing reduced their plastic bag

²⁷ Chan, *supra* note 9; *Anniversary of Plastic Limit Order: Save 40 Billion Plastic Bags in supermarkets*, CHINA CHAIN STORE & FRANCHISE ASSOCIATION (June 3, 2009), <http://www.chinaretail.org/shownews.asp?id=766>; “限塑令实施一年” (Plastic Limit Order implemented for one year), *新华网(Xinhua News)* [China], June 1, 2009 (http://news.xinhuanet.com/environment/2009-06/01/content_11443883.htm).

²⁸ Chan, *supra* note 9.

²⁹ “限塑首日:广州超市用袋减四成 街市仍见塑料袋”(First day of the Plastic Limit: Guangzhou grocery stores reduced bag use by 40%, street markets still see plastic bags in use), *人民网* (People’s Daily Online) [China], June 2, 2008 (<http://env.people.com.cn/GB/7328636.html>).

distribution by up to nine-tenths since the introduction of the policy.³⁰

Foreign-owned retailers have also reported similar reductions in plastic bag use at their Chinese locations. Within the first twelve months of the policy's introduction, IKEA Beijing cut its plastic bag distribution by 67%. An executive at French retail giant Carrefour reported that its plastic bag use fell 70% throughout China. Wal-Mart, which operates over 100 stores in China, recorded an 80% drop in plastic bag distribution.³¹ Wal-Mart worker, Wu Dan, who has worked at Wal-Mart in Beijing for the past two years, stated prior to the plastic bag policy, he used about two bundles of bags per work shift each day--each bundle contains about 100 bags. Twelve months after the implementation of the policy, he used less than half of a bundle during his shift. He attributed this 75% drop to people's willingness to put more items into fewer bags, as well as, their increasing tendency to bring their own bags to the store.

B. Growing Support for Reducing Plastic Bag Use

Generally speaking, shoppers nationwide have embraced the new policy without complaint. Unlike in the United States, where preliminary attempts to introduce bag charges provoked bitter debate and reactionary newspaper editorials, overall Chinese reception to the bag charge has been largely positive. A study in the *People's Daily* reported 80% of the population supports the spirit of the plastic bag policy, citing the need to promote environmental consciousness whenever possible.³²

The Chinese population has shown an increased willingness to use ecologically friendly bag alternatives, as it comes to better understand the environmental dangers associated with plastic bag overconsumption. Particularly over the last two years, a growing number of shoppers use reusable "*huanbao*"

³⁰ Liu, *supra* note 6.

³¹ *Plastic Bag Use in Supermarkets Drops 2/3*, PEOPLE'S DAILY ONLINE ENGLISH (Aug. 27, 2009), <http://English.people.com.cn/90001/90776/90882/6741053.html>.

³² *Id.*

(环保), “environmentally friendly”, bags made from materials such as cloth, polyethylene, and hemp to carry their purchases. Shoppers have also shown an increased willingness to refuse plastic bags offered to them at stores, if they are able to comfortably carry their purchases without a bag.

C. Unintended Consequences of the Plastic Limit Order

This policy has had an uneven impact on various production sectors related to the plastics industry. For example, an increasing demand for purchasable rubbish bags, presumably to replace the supply of shopping bags people once used to hold their trash, escalated business for domestic trash bag producers. In response, the Standardization Administration of the People's Republic of China is currently speeding up the formulation of standards for trash bags, degradable trash bags, and other products.³³

The ban on ultrathin plastic bags and free plastic carriers caused some wholesale bag producers to close their doors entirely, due to an inability to continue to turn a profit under the new restrictions. The most notable closure to date occurred fewer than two months after the policy's introduction. In February 2008, Suiping Huaqiang Plastic, China's biggest plastic bag manufacturer, closed its production doors. Suiping, employed 20,000 people, and earned most of its 2.2 billion RMB (322 million USD) from the annual production of 250,000 tons of bags. Suiping reported it could no longer operate a profitable business with the introduction of the ban. According to a company management official, “over 90% of our products are on the limit list, so the only way forward for the factory is closure.”³⁴ Many other factories and suppliers have also had to shut down or suffer significant losses as a

³³ *Plastic Bag Use in Supermarkets Drops by 75 pct*, PEOPLE'S DAILY ONLINE (May 22, 2009), <http://english.people.com.cn/90001/90776/90882/6663682.html> (P.R.C.).

³⁴ Jonathan Watts, *China's Biggest Plastic Bag Maker Closes After Ban*, THE GUARDIAN, Feb. 27, 2008, at 19, available at <http://www.guardian.co.uk/world/2008/feb/27/china.plasticbags>.

result of the government's implementation of the new plastic bag policy.

VI. POLICY SHORTCOMINGS

A. Shortcomings of the Current Plastic Limit Order

China's Plastic Limit Order remains imperfectly implemented, enforced, and understood by the public. As evidenced by the findings in the preceding sections of this report, the primary shortcomings that continue to hamper this policy from realizing its full potential include the following:

First, the policy remains inadequately implemented by small-scale enterprises—particularly small shops and markets. The consumption of billions of plastic bags daily, including substantial quantities of ultrathin bags, continues due in part to this lack of compliance. The government has done little to try and improve policy implementation in this sector.

Second, the policy remains ineffectively enforced by government authorities, whom carry out only irregular and largely ineffective policy inspections. Without regular inspections to ensure compliance—and demanding fines from those who are not—retailers have little incentive to comply. Currently, the authorities announce inspections before they occur, providing retailers ample opportunity to temporarily enact measures in compliance with the plastic bag policy so as to pass the inspection, undermining the purpose of the inspection entirely. Once the inspection is complete, the retailers return to their previous non-compliant ways.³⁵

Third, a substantial portion of the public remains ill informed. Despite improving awareness, many Chinese still remain inadequately educated regarding the environmental repercussions associated with gratuitous plastic bag use and, thus, the need to limit their consumption. Even among those who do understand the value of conserving plastic bags, many have yet to adjust their

³⁵ Xiufeng Xing, *Stiduf of the Ban on Free Plastic Bags in China*, 2 J. OF SUSTAINABLE DEV. 156, 157 (Mar. 2009), available at <http://www.ccsenet.org/journal/index.php/jsd/article/view/299/267>.

habits accordingly.³⁶ Undoing a generation's worth of acculturation to using single-use plastic bags remains an ongoing challenge.

Fourth, the policy lacks supporting measures to help it achieve its goal of reducing plastic bag waste. Without parallel measures to reduce plastic bag consumption in other aspects of consumer culture, such as those used to package foods or collect rubbish, the Plastic Limit Order's effectiveness at reducing plastic waste will remain severely limited.

Fifth, the policy will also have trouble achieving its ultimate goal of reducing plastic bag waste so long as the most common single-use plastic bag alternative remains a reusable non-biodegradable polyethylene (plastic) bag. Similar to single-use plastic bags, reusable plastic bags also pose a threat to the environment; they require oil input for their production and take many centuries to break down upon disposal. Alternative reusable bags should be made out of biodegradable and/or sustainable materials, instead.³⁷

B. Possible Remedies for Policy Shortcomings of the Plastic Limit Order

The following are a list of suggested policy remedies I have compiled based on my research, which could help improve the efficacy of the Plastic Limit Order.

First, China's central government could require local police to take more responsibility for Plastic Limit Order enforcement. Local police are the most practical body to enforce this policy because their offices are generally overstaffed. They have the surplus manpower available to take on policy enforcement work. Local officers frequently have some familiarity with the locality in which they operate; that could prove useful for conducting inspections or following up on reported violations.

³⁶ “限塑令实施一年” (Plastic Limit Order implemented for one year), *新华网(Xinhua News)* [China], June 1, 2009 (http://news.xinhuanet.com/environment/2009-06/01/content_11443883.htm)

³⁷ Note: The plastic limit policies in Ireland and Washington, D.C. do not adequately encourage sustainable bag use either. They too should consider doing so as well.

Local authorities could conduct spot checks on all types of retail shops to ensure policy compliance. Unannounced and, preferably, undercover “checks” could occur on a regular and frequent basis, ensuring that the retailer: 1) charges the prescribed amount for each plastic bag distributed, 2) notifies the consumer about the plastic bag charge through prominently displayed signs 3) itemizes the plastic bag charge on the consumer’s purchase receipt, 4) only distributes plastic bags thicker than .025 mm, and 5) only distributes free plastic bags to customers when applicable exemptions apply. Local authorities could complete a full standard write-up of their inspection to submit to a central database accessible to both local and central government after each “spot check.” Swift and appropriate punitive action against the infringing retailer could occur when authorities discover policy violations.³⁸

Second, local enforcement efforts need to be monitored by the central government, which could maintain the right to intervene if it determines local enforcement inadequate. Methods for overseeing local enforcement efforts include: 1) conducting regular reviews of local authorities’ official report findings, 2) conducting random spot checks on retailers already checked by local authorities to ensure that findings by the two bodies are the same, 3) meeting with local retailers and inquiring about their experiences with local authorities enforcing the Plastic Limit Order, and 4) following up promptly on any civilian complaints about local authority enforcement techniques. Should the central government detect wrongdoing by its local counterparts, it could respond with swift and severe action to discourage other local police from following suit.

Third, the Chinese government could create a hotline for consumers to contact about policy violations. This technique would help local authorities to learn about violators more quickly and to schedule their spot checks more effectively. Moreover, by actively engaging the public in policy enforcement, the public would feel more personally connected with the policy—likely improving awareness and support for the policy over time.

³⁸ Note: the Irish authorities used a similar approach to policy enforcement through local authorities upon introduction of their plastic bag levy beginning in 2002. It has proven to be a very effective technique.

Fourth, the Chinese government could do a better job improving awareness about the Plastic Limit Order among the general population. To achieve improved awareness, the government could devise a succinct standard message to describe the policy. This message could clearly outline the policy's two main components: 1) consumers must pay for every bag received and 2) consumers should not accept ultrathin plastic bags. Additionally, this message could briefly highlight the environmental rationale behind the policy.

Once devised, the government could then actively publicize this message through television ads, radio commercials, newspaper articles, internet notifications, text messages, government website feature stories, school assemblies, and public awareness events held in high traffic areas such as parks, shopping centers, and in front of banks. It could seek to publicize this message in a memorable and visually engaging way, perhaps by selecting a popular personality to act as the policy's spokesperson or by hiring a top marketing company to devise strategies to publicize and communicate the policy. The government could even think about adopting a mascot, such as those created for the Olympics and for the Shanghai World Expo, as these seem to be particularly popular among the Chinese public.

Fifth, the government could require retailers to provide more prominent notification about their plastic bag policies to customers. As of now, stores usually only have small signs announcing the plastic bag charge in the cash register area. More prominent signage would improve consciousness and awareness about the policy. Likewise, the government could ensure that retailers itemize the plastic bag charge on all customer receipts, as the law stipulates.

Sixth, the government could encourage employers and schools to promote policy awareness among their workers and students by organizing special events on the topic. To ensure that these events adhere to the government's message about the policy, the government could compile a Plastic Limit Order Press Kit. This press kit could include presentation materials to be used by the awareness event coordinator such as an easily digestible policy briefing, visual aids, and literature for distribution to the audience. Press kits ought not include reusable polyethylene bags for distribution.

Seventh, the government could ensure that students learn about the risks of plastic bag refuse in school by incorporating the topic into regular environment education curriculums. By educating the next generation about the need to use more environmentally friendly bag alternatives before they have fully formed their shopping habits, perhaps future consumers will use fewer bags than their predecessors.

VII. SUPPLEMENTARY POLICY RECOMMENDATIONS

In addition to improving enforcement and awareness about the Plastic Limit Order, the government could also consider enacting supplementary measures to reduce plastic bag use. Suggestions for such supplementary modifications include:

A. Raise the Price

Consumers modify their plastic bag habits largely based on cost, as reflected in other national markets such as Ireland. . In China, the average price for plastic bags ranges from 0.1-0.4 RMB—a nominal sum for most, particularly those who are able to afford living in big cities and frequenting large grocery stores. At these current rates, the cost of plastic bags do not act as a major fiscal deterrent to their use. By raising the price of bags, however, consumers might curb their plastic bag purchases.

B. Promote the Use of Plastic Bag Alternatives

The use of environmentally friendly carrier bag alternatives, such as biodegradable plastic bags, degradable plastic bags, and traditional carrier bags needs to be promoted more efficiently.

Biodegradable starch and plastic bags represent one of the most viable existing alternatives. Unlike regular plastic bags, they break down through a natural organic process, and more quickly than their traditional polyethylene counterparts, often in a matter of months. They do not produce any harmful byproducts in the

process.³⁹ These bags can be made out of a variety of renewable sources such as corn, potato, tapioca, and wheat, as well as, nonrenewable sources such as oil-based polymers that utilize an additive to enable biodegradation (the latter are often referred to as “oxo biodegradable” bags).⁴⁰ Until recently, many businesses and individual consumers avoided using biodegradable bags, considering them to be too expensive or too weak to serve their function properly. As the bags have declined in price and improved in strength over the past few years, however, demand for these bags among businesses and individuals has increased dramatically.

Businesses across the world now provide biodegradable bags to their customers. In Spain, for example, Carrefour began replacing its plastic carrier bags with biodegradable potato starch bags.⁴¹ Similarly, major Mexican chain stores, Soriana and Comercial Mexicana, began offering customers oxo biodegradable plastic bags; these take fewer than two years to fully breakdown in a landfill. In both countries, participating stores report receiving positive consumer feedback for their environmentally progressive bag-related efforts.

Bag production companies, themselves, are also beginning to produce and promote biodegradable plastic bags for purchase by individual consumers. One company in particular, a U.S.-based biodegradable plastic bag company called Green Genius, took a leading role in this nascent market. Beginning in 2009, Green Genius mass-produced, distributed, and sold biodegradable plastic bags, utilizing a new scientific technology to ensure rapid plastic bag biodegradation. Green Genius injected an additive called EcoPure into its plastic bags, to achieve this outcome. The additive bonds organic “nutrients” to the plastic’s molecular structure, and when discarded in a microbe-rich environment, such as a landfill, the bag’s microbes are attracted to the embedded “nutrients” and colonize on the plastic. After colonizing, the microbes then begin feeding on the nutrients, breaking down the plastic into basic organic matter, biogas, biomass, and water.

³⁹ See Marek Koutny, Jaques Lemaire & Anne-Marie Delort, *Biodegradation of Polyethylene Films with Prooxidant Additives*, 64 CHEMOSPHERE 12432006.

⁴⁰ See *id.*

⁴¹ Olwen Mears, *End of an Era for Plastic Bags*, EITB NEWS (Sept. 22, 2009), <http://www.eitb.com/news/society/detail/247562/end-of-an-era-for-plastic-bags>.

Green Genius produces a variety of domestic use plastic bags presently, including garbage, kitchen, and food bags, all of which are advertised as costing the same amount and being as strong as their non-biodegradable rivals.⁴² Other bag producers are beginning to produce biodegradable alternatives for home use. For example, online pet supplies provider, Gear 4 Dogs, recently began selling the DOO-n-GO—an 100% oxo biodegradable plastic bag for picking up after pets.⁴³

Degradable plastic bags also represent a viable alternative to regular plastic bags. Degradable bags break down through “degradation”—the process by which moisture, heat, or UV light breaks down very large molecules into small ones. Degradable bags are commonly made out of polyesters, bacteria based polymers, manufactured from hydrocarbons, oil or gas. Similar to biodegradable bags, degradable ones break down faster and more completely than do their polyethylene counterparts. They usually take longer to break down than do biodegradable bags, however, and also require a catalyst such as a heat or light source to do so. Due to their eco-friendly appeal, some major grocery stores have begun to offer degradable bags. Starting in 2006, UK-based supermarket giant Tesco began to exclusively distribute degradable bags at all of its domestic stores, which break down into elements such as water and carbon dioxide within 60 days.⁴⁴

Traditional carriers represent a third viable alternative to plastic bag carriers. China did not begin using plastic bags in significant quantities until the 1990s.⁴⁵ Until then, most people carried reusable alternative carriers made out of jute, cloth, wood, straw, or bamboo. These traditional carriers represent environmentally favorable options because they are reusable and are composed of biodegradable products.

⁴² Green Genius, “Frequently Asked Questions,” *Green Genius Website* (<http://www.thegreengenius.com/proof/faq.php>)

⁴³ GEAR4DOGS, *Doo-n-Go Biodegradable Bags*, <http://www.gear4dogs.com/doongo-biodegradable-bags> (last visited Apr. 18, 2011).

⁴⁴ *All Tesco Bags to be Degradable*, BBC NEWS (May 10, 2006), http://news.bbc.co.uk/2/hi/uk_news/4758419.stm.

⁴⁵ “中国‘限塑令’提高国人环保意识” (China’s ‘Plastic Limit Order’ raises Chinese environmental awareness), *新华网 (Xinhua News Online)* [China], May 23, 2009 (http://news.xinhuanet.com/environment/2009-05/23/content_11422982.htm)

Many grocery stores in China encourage the use of these traditional carriers. In the summer of 2009, German supermarket chain Metro stopped selling plastic bags at 38 of its Chinese outlets, instead encouraging customers to bring their own carriers.⁴⁶ Wal-Mart's China outlets introduced 15 different reusable bag options for sale, including several traditional carrier options.⁴⁷ Tesco recently began to offer a reusable "Bag for Life" option, which is made from recycled materials and comes with a lifetime guarantee.

Likewise, private individuals and companies have recognized the potential popularity of traditional carriers and promote their sale. In 2007, British fashion accessories designer, Anya Hindmarch created a stir in the fashion world when she designed the cloth tote bag "I'm Not A Plastic Bag." The tote bag, which she produced in collaboration with the global social change movement We Are What We Do, became an instant hit, selling out across the world and reselling online for ten times its original price. The bags proved to be so popular that *Vanity Fair* selected them as the goodie-bags for guests at the magazine's 2007 Oscar night party.⁴⁸ Similarly, soft drink multinational PepsiCo, in collaboration with Envirosax, a world leader in designer reusable bags, have together developed a line of eco-friendly "Pepsi Bags" made out of recycled polyethylene terephthalate material, otherwise known as RPET. RPET is made from 100% post-consumer recycled materials such as soda bottles and plastic bags.⁴⁹ These bags represent a potential additional revenue source for PepsiCo, as well as, an opportunity to advertise the company's environmentally sensitive business model—and all from leftover garbage that the company itself produced in the first place!

Anecdotal evidence suggests that some Chinese are willing to use traditional carriers. In Yongjia, in Zhejiang province, for

⁴⁶ *Metro China Drops Plastic Bags*, CHINA CSR (June 10, 2009), <http://www.chinacsr.com/en/2009/06/10/5410-metro-china-drops-plastic-bags/>.

⁴⁷ Wal-Mart, *Plastic Bag Initiative*, 2009 GLOBAL SUSTAINABILITY REPORT, 2009, <http://walmartstores.com/sites/sustainabilityreport/2009/enwplasticbags.htm>.

⁴⁸ Denise Winterman, *It's in the bag, darling*, BBC NEWS MAGAZINE (Apr. 25, 2007), http://news.bbc.co.uk/2/hi/uk_news/magazine/6587169.stm.

⁴⁹ *Pepsi Turns Bottles Into bags*, OUR ORDINARY LIFE (Oct. 25, 2009), <http://www.ourordinarylife.com/2009/10/pepsi-turns-bottles-into-bags/>.

example, an ordinary farmer surnamed Chen began handing out bamboo baskets to locals in an attempt to discourage the use of plastic bags. Local residents approved of his efforts so much that not only did they begin using the carriers, but they also elected him to a local government office. According to Chen, "Electing me as an NPC deputy is an indication itself that our country is more and more aware of environmental issues."⁵⁰ Since his election in 2008, Chen has continued to distribute baskets. In 2009, he even managed to send some to Copenhagen in time for the international climate change summit held in December.⁵¹

C. Encourage Plastic Bag Recycling

At present, plastic bag recycling in China remains relatively nonexistent. Unlike in the West, Chinese grocery stores do not offer plastic bag reuse receptacles and Chinese recycling centers do not accept plastic bags. Chinese people do not have the option to recycle their plastic bags because their country lacks the necessary facilities and systems to process the bags for reuse. This lack of a workable recycling program represents a failure on the part of the Chinese government to develop one.⁵² So far, the government has made little political effort to expand its plastic bag recycling programs beyond well publicized and celebrated pilot

⁵⁰ Yu Jingjing & Fu Shuangqi, *Farmer Lawmaker Pushes for Green Ideas in More Eco-aware China*, XINHUA NEWS AGENCY (Mar. 9, 2010), http://news.xinhuanet.com/english2010/china/2010-03/09/c_13203743.htm.

⁵¹ A Note about paper bags as a proposed alternative: While paper bags have received much positive promotion in recent years as a more "sustainable alternative" to plastic bags, including by Whole Foods, Starbucks, and, most recently, the US State of California, I chose to omit them as a potential sustainable bag alternative as I remain unconvinced they represent a more environmentally friendly option, for four main reasons. First, paper bags take about four times as much energy to produce as do plastic bags and use raw tree materials in the process. Second, the paper manufacturing process used to produce paper bags releases pollutants into the environment due to the chemicals and water supplies required for manufacturing production. Third, pound for pound, recycling paper is much more cost intensive than recycling plastic. And, finally, paper bags still take time to breakdown in a landfill, filling up valuable space as demand for garbage repositories continues to grow.

⁵² "中国'限塑令'提高国人环保意识" (China's 'Plastic Limit Order' raises Chinese environmental awareness), 新华网 (Xinhua News Online) [China], May 23, 2009 (<http://news.xinhuanet.com/environment/2009-05/23/content11422982.htm>)

initiatives, despite the growing demand and need for such a program.

According to a recycling report by U.S.-based Moore Recycling Associates, substantial preliminary evidence exists to suggest a simple recycling program could help countries to reduce their domestic waste. In America, for example, the study found plastic bag and film recovery increased 28% since 2005, primarily due to greater consumer access to collection programs, as well as, the development of new markets for the recycled materials including backyard decking, fencing, railings, shopping carts, and new bags.⁵³ By offering bag recycling receptacles in prominent places and developing a system to process these bags, the Chinese government could similarly reduce its country's bag waste.

China has acknowledged its deficiency in plastic bag recycling. According to Li Jing at the National Development and Reform Commission (NDRC)—the organizational body which helps oversee environmental legislation in China—plastic recycling requirements “are still low, or non-existent, and we’re working on that.”⁵⁴ According to an interview with Chinese Dialogue (中国对话) in mid 2009, Chinese Ministry of Commerce official Li Jiajian told reporters the government had recently run plastic-bag recycling trials in 26 provincial capitals, as well as, in all local administrative centre cities.⁵⁵ In any event, the government still has much work to do with regard to the development of this sector.

Many individuals have proposed innovative and creative ways to reuse plastic bag. Governments across the world, including China's, should encourage such efforts. For example, a group of researchers at Pennsylvania State University's College of Agricultural Sciences Center for Plasticulture recently developed a prototype machine to convert plastic waste into fuel. This fuel, nicknamed Plastofuel, can be co-fired with coal at existing power

⁵³ Andy Soos, *Where Have the Plastic Bags Gone?* ENVIRONMENTAL NEWS NETWORK (Mar. 19, 2010), <http://www.enn.com/pollution/article/41123>.

⁵⁴ *China's Bag Ban, One Year Later*, *supra* note 7.

⁵⁵ *Id.* Although, as a side note, I was living in Wuhan, which is a provincial capital, at this time where, in theory, a bag recycling trial should have been in place. However, I found no evidence of such a trial program.

plants to produce energy.⁵⁶ Likewise, Trex Company Inc., a leading manufacturer of alternative decking products in the United States, produces its building materials from millions of pounds of recycled and reclaimed plastic and waste wood.⁵⁷ Through its reclamation efforts, the company recycles over 1.3 billion grocery retail bags annually.⁵⁸

In India, K.K. Plastic Waste Management, founded by Ahmed Khan and his brother Rasool Khan, built more than 745 miles of roads using 3,500 tons of plastic waste. Mixing this plastic waste with asphalt, the brothers form a compound called polymerized bitumen. Not only is this bitumen compound more sustainable than traditional pavement, it partially comprises recycled plastic, but it is also considerably stronger and more durable than regular asphalt, lasting an average of one to two years longer.⁵⁹

Affresol, a Welsh prefabricated house making company, developed the technology to build affordable low carbon homes from recycled waste plastic. The building material, which is called Thermo Poly Rock (TPR), is made through a low energy cold process that converts plastic waste into a strong structural element. Each house consists of approximately 18 tons of waste material that would otherwise end up in a landfill. TPR is also stronger and lighter than concrete, waterproof, fire retardant, rot resistant, and is a natural insulator. The average TPR house has a life cycle of more than 60 years and is 100% recyclable at the end of its life. As of now, Affresol forecasts it will build and sell 3,000 homes per annum, primarily to those seeking affordable public housing. In the process of doing so, Affresol will recycle 40,000 tons of waste.⁶⁰

⁵⁶ *Plastofuel*, PLASTIC HARVEST, <http://www.plasticharvest.psu.edu/plastofuel.html> (last visited Apr. 18, 2011).

⁵⁷ *14 schools set for recycling*, SUFFOLK NEWS HERALD (July 21, 2010), <http://www.suffolknewsherald.com/2009/10/27/14-schools-set-for-recycling/>.

⁵⁸ *Our Story*, TREX, <http://www.trex.com/company/our-story/index.htm> (last visited Apr. 18, 2011).

⁵⁹ Mridu Khullar, *Plastic Roads Offer Greener Way to Travel in India*, N.Y. TIMES (Nov. 13, 2009), <http://www.nytimes.com/2009/11/14/business/global/14plastic.html>.

⁶⁰ Anthony Clark, *Modular homes made from recycled plastic*, PLASTICS & RUBBER WEEKLY (Feb. 26, 2010), <http://www.prw.com/subscriber/featured2.html?cat=1&featuredid=1267180929>.

D. Discourage the Use of Plastic Packaging

While reducing the number of plastic bags that consumers receive an important start to reducing plastic waste and white pollution, this endeavor alone should not represent the sum total of China's reduction efforts. The Chinese government needs to also take measures to minimize the use of unregulated plastic packaging that is currently used to wrap prepackaged goods and restaurant food items. According to the environmental watchdog website China.org, this unregulated packaging represents the *majority* of the country's plastic consumption.⁶¹

The government should discourage gratuitous plastic wrapping of restaurant dishware. In recent years in China, it has become increasingly common for restaurants to provide patrons with disinfected tableware tightly sealed in plastic shrink-wrap. According to a China Economic Net article, this packaging, which is currently not recycled or regulated, represents a major source of pollution. The city of Changchun alone discards an estimated 85 tons of disinfected tableware packaging annually. Despite efforts by environmental advocates to persuade the city government to address the problem, calls to reduce such plastic waste have been largely ignored.⁶²

China needs to encourage the use of sustainable plastic packaging. The California-based environmental nonprofit Earthshell now provides biodegradable packaging and biodegradable picnic utensils to fast-food giant McDonald's in some of its U.S. stores. China should encourage McDonald's to do likewise in its 20 Chinese locations, as well. Minneapolis-based Cargill Dow LLC, Novamont Spa of Novara of Italy, and the German BASF Group also have all begun supplying restaurants across the globe with biodegradable (usually corn starch) packaging to replace traditional nonreusable plastic supplies.⁶³

⁶¹ Xi Mi, *Just say no to plastic garbage*, CHINA DAILY (Dec. 19, 2007), <http://www.china.org.cn/English/environment/236135.htm>.

⁶² “消毒餐具包装膜挑战限塑令 使用规范应尽快出台”(Sterilized tableware plastic packaging presents a challenge to the Plastic Limit Order—Implementation specification should be released soon.) 人民网 (People's Daily Online), April 21, 2010 (<http://env.people.com.cn/GB/11418479.html>)

⁶³ Stewart Taggart, *Two Words: Biodegradable Plastic*, WIRED (Apr. 25, 2002), <http://www.wired.com/science/discoveries/news/2002/04/51871>.

These companies have helped countries reduce their plastic packaging waste substantially.

VIII. CONCLUSION

After thirty years of rapid industrialization, China's environmental problems have reached a head: 25% of China is now desert, 30% of farmland regularly receives acid rain, 40% of the country suffers from soil erosion, 65% of its forests have disappeared, and 75% of its freshwater is unfit for drinking or fishing. China hosts 16 of the world's 20 most polluted cities and produces 254 million tons of garbage annually—representing a third of the world's annual trash and garbage output. In 2009, it surpassed the US as the world's largest national emitter of greenhouse gases and, at current rates, the International Energy Agency reports it will emit twice as much carbon dioxide as all the countries of the Organization for Economic Cooperation and Development combined.⁶⁴

Environmental degradation and pollution is taking a toll on the country's health, economy, and stability. Lung-related diseases have become the nation's leading cause of death and pollution-related cancer rates have skyrocketed. According to Chinese environment expert Elizabeth Economy, pollution costs the Chinese economy between 8 % and 12% of its gross domestic product, annually. In 2005, China's State Environmental Protection Agency (SEPA) reported 51,000 environment-related protests.

The reality of Chinese industrialization is now becoming evident—as is the need for solutions. The Plastic Limit Order represents a new and different approach by China in its search for sustainable solutions, directly engaging all individuals in the massive effort to clean up the country. While this policy has yet to achieve the ultimate results that it seeks—massive reduction in plastic bag use at all retailers nationwide—the initial limited success it has enjoyed suggests the potential promise of this policy.

⁶⁴ To learn more about the current state and regulation of China's environment, see Woodrow Wilson Center International Center for Scholars' China Environment Forum, http://wilsoncenter.org/index.cfm?topic_id=1421&fuseaction=topics.home (last visited Apr. 18, 2011).

If properly strengthened and supplemented, this policy has the potential to massively reduce China's plastic bag use. This policy has the chance to shift the approach that the Chinese government currently takes toward solving its environmental challenges—by giving every individual the chance to be part of the solution.