SEA circular
solving plastic pollution at source

country profile

CHINA

Socio-economic profile

The Peoples Republic of China (China) is often referred to as the "world's factory," given its huge manufacturing and export base. China's total surface area is 9.6 million sq. km. making it the third largest country by area in the world. China is also the world's most populous country. China's population in 2017 reached 1390.08 million, with 58.52% living in urban areas. The Gross Domestic Product (GDP) in 2017 was US$12.2 trillion, and GDP purchasing power parity per capita was US$16,800. The percent value added to the GDP was 7.9% by primary sector (agriculture, forestry, animal husbandry and fishery), 40.5% by industry, and 51.6% from the services sector. [i]

Coastal and marine ecosystem and economy

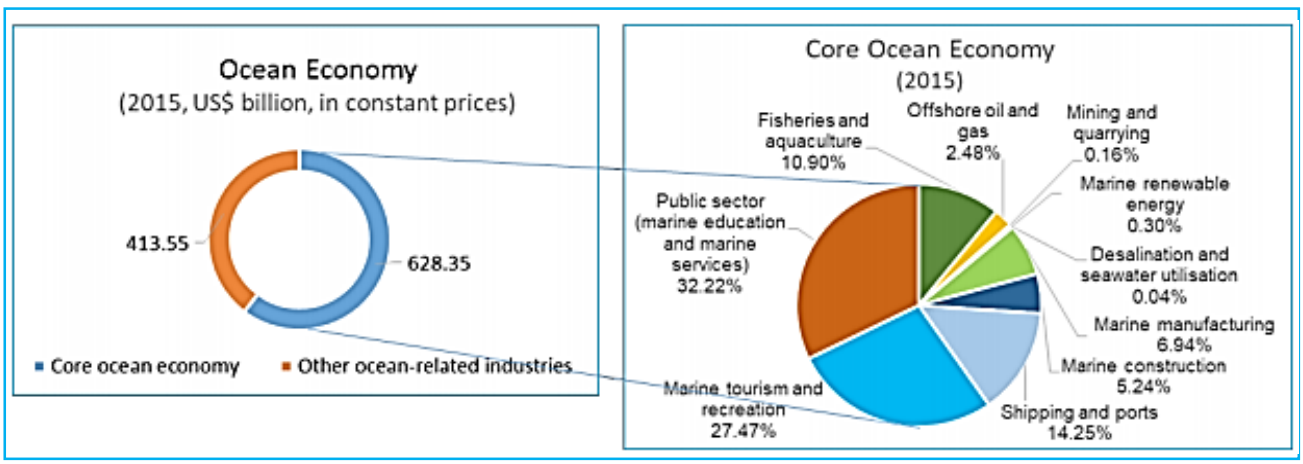
China is a large maritime country that includes the Bohai Sea, the Yellow Sea, the East China Sea and the South China Sea within its maritime border. China's coastline stretches to 18,000 km. with 43.3% of the national population living in coastal areas. China's marine economy's contribution amounts to roughly two-thirds of the national economy. In 2017, the Gross Ocean Product (GOP) was 7.7611 trillion yuan, an increase of 6.9% over 2016. GOP accounts for 9.4% of GDP.[ii] In 2015, China's ocean economy was US$1,041.9 billion.[iii]

China's marine environment has been deteriorating for many years. A series of problems such as pollution in coastal waters, a reduction of marine biodiversity and a decline in the bearing capacity of the sea area are hindering the sustainable development of the marine economy.

Marine plastic pollution has become a major problem, with China being the top contributors of the global marine plastic pollution.

China is taking major steps in conserving its coastal and marine environment. China has earmarked 7 billion yuan (US$991.70 million) for the clean-up of Bohai Bay, one of the country's busiest and most polluted waterways.

Similarly, the State Council has authorized the "ecological red line" system,[iv] with the demarcation of the border and calibration scheme expected to be completed by the end of 2020. Under this ecological red line scheme, the Nearshore Coastal Pollution Prevention and Control Program requires that the ecological protection red line area of the coastal waters be no less than 30%, and this 30% of its coastal waters completely off-limits to development.



UN environment programme

COBSEA
COORDINATING BODY ON THE SEAS OF EAST ASIA

Sweden Sverige

Fisheries and aquaculture contributed US$68.5 billion in value added in 2015, and around 6 million people are employed in this sector.

Coastal and marine tourism had a value of US$172.63 billion. By 2015, employment in the coastal tourism industry reached 1,306,000, accounting for 3.7% of the employment in marine-related industries in China.

Ports and shipping contributed US$89.54 billion to China's GDP in 2015. Approximately 865,000 people were employed in this sector.

Plastics and plastic packaging

Production and usage

China is the biggest producer and exporter of plastic products, accounting for about 30% of the world's total.[v] According to the data from statista.com,[vi] China is the world's largest plastic producer as of 2013, accounting for nearly one fourth of the global plastics production.

Plastic production has increased steadily; 23.08 million tonnes (in 2005), 58.36 million tonnes (in 2012), and 75.31 million tonnes (in 2019). In 2012, the total sales value of the plastic product manufacturing industry in China amounted to 1.65 trillion yuan. The production and supply of plastic materials are dominated by large state-owned companies, while the majority of Chinese plastic product manufacturers are small private companies. The foreign-funded plastic industry in China had generated a total revenue of about 437 billion yuan in 2012.

The statistics show the export volume of plastic products from China in 2017 was around 11.68 million tonnes.[vii] Until recently, before the plastic import restriction under the China Sword Policy 2018, China was also the world's largest importer of plastic waste. Since 1992, China has imported 106 million metric tonnes of plastic waste, making up 45.1% of all cumulative global imports.[viii]

China's domestic consumption of plastic is increasing over the years. Per capita demand of plastic resin in 2015 was 45.1 kg,[ix] more than double that of 2005 (22 kg).[x]

The rise in e-commerce, food and beverage industry, automotive, health and cosmetic industry is contributing to increase in the plastic packaging industry. The Chinese packaging market was valued at 604,751.9 million units in 2016. Paper and board is the largest packaging type accounting for 213,501.8 million units in 2016.[xi] The packaging industry in China is expected to register a Compound Annual Growth Rate (CAGR) of 13.5% during the forecast period (2020-2025).[xii] During 2016-2021, food and soft drinks are expected to be the biggest market share gainers (by units), with reported share growth of 3% and 2% respectively.[xiii]

The agriculture sector uses about 2.5 million tonnes of plastic sheeting a year to prevent moisture evaporation, protect against weeds, and insulation in the off-season. The automotive industry, electrical and electronics, and the healthcare market are other sectors with high plastic use.[xiv] In 2013, the automotive applications topped China's demand for engineering plastics, accounting for 33% of consumption, followed by electrical/electronic (26%), and home appliances (19%).[xv]

According to another market research by technavio,[xvi] the flexible packaging market size in China will grow by about US$5 billion by 2022.

Packaging waste is a huge concern in China. Plastics are integral to most types of packaging, and the rise of e-commerce and delivery services continues to lead to significant amounts of waste.

The ecommerce market has been booming in China in last decade. In 2017, e-commerce courier volume was 40.06 billion pieces, which equals 8 million tonnes of waste generated.

Delivery packaging falls into two major categories – paper and plastic. Paper-made boxes account for 44% of all delivery packaging by number, and plastic bags make up for 34% of the total, with the rest being foam boxes, woven bags and other packaging types.

The e-commerce industry in 2017 consumed 800 million plastic woven bags used for transferring and transporting parcels. In China's megacities, the increase in express packaging waste accounted for 93% of the increase in solid waste, and in some large cities that share is as high as 85% or 90%. Parcel packaging waste contributes 40% of municipal solid waste.[xvii]

In 2015, some 7.5 billion plastic bags, 10 billion cardboard boxes and 17 billion meters of wrapping tape were used to ship China's parcels in 2015.[xviii] Cardboard boxes used in delivery are recycled (up to 8%), but nearly all the plastic packaging ends up burned or in landfills. Nearly 1.4 billion yuan (US$200 million) was spent to incinerate or bury delivery packing waste in 2018.[xix] Greenpeace reports that the volume of packaging material used by the e-commerce and express delivery sectors hit 9.4 million tonnes in 2018, and is expected to reach 41.3 million tonnes by 2025.

Solid waste management

According to China's National Bureau of Statistics,[xx] 215 million tonnes of municipal solid waste (MSW) was generated in 2017, which was equivalent to 0.72 kg urban resident per day. The country had 1,013 waste management facilities (654 landfills, 286 incinerators, 73 others), which had the treatment capacity of 679,889 tonnes/day. Of the total MSW generated, 55.93% was landfilled, 39.32% incinerated, and 2.47% managed using other methods. There is no data for recycling.

Of the total MSW, plastic accounts for 11% (about 23 million tonnes). Only about 25% of plastic waste is recycled or utilized, remaining 14 million tonnes of waste plastic are discarded each year.[xxi] Before the 2018's National Sword Policy, restricting the import of plastic waste to China, the imported plastic recyclables waste also added another 12% to domestic plastic waste.[xxii]

Major problems of solid waste disposal in China are that except for cities, much of waste is not even collected, and of the collected waste it is estimated that as much as 10% disappears between collection and dump sites.[xxiii]

Landfill is still the main method to deal with MSW, and recycling of domestic waste is still low, and many of these landfills are located along the coast and waterways, with the risk of sweeping these wastes into the oceans.

Recycling rate are still low, and there is no data for MSW recycling rate. China, however, is in the process of expanding its capacity for incineration with energy recovery.

[xxi]

Figure 1: Market in plastics in China

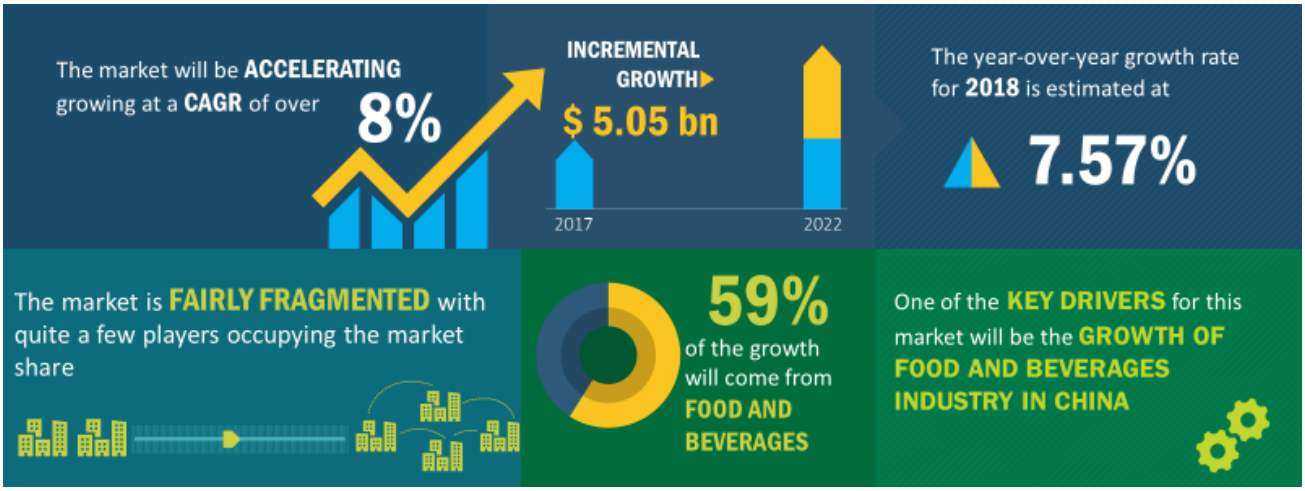
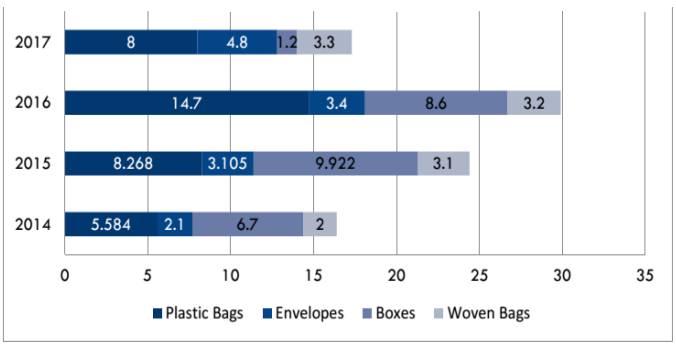


Table 1: International coastal clean-up efforts and marine litter items (number) found in China[xxvii]

Country / location						People	KG	KM of coast	Total items collected
China						10,991	126,580	199.8	96,533
Cigarette butts	Food wrappers (candy etc.)	Straws stirrers	Plastic forks Knives spoons	Plastic beverage bottles	Plastic bottle caps	Plastic grocery bags	Other plastic bags	Plastic lids	Plastic cups plates
1,026	6,861	510	368	4,964	5,262	3,428	2,748	31	1,015

Figure 2: 2014-2017 Courier Packaging Composition (billion pieces)



Marine litter status

China ranks the world's top polluter with mismanaged plastic waste in the world, leaking an estimated 3.53 million metric tonnes of plastic wastes into the oceans.[xxiv]China dumped a total of 200.7 million cubic meters of waste into its coastal waters in 2018, a 27% rise on the previous year. According to the Ministry of Ecology and Environment (MEE), the majority of the waste was dumped in the delta regions of the Yangtze and Pearl rivers, both major industrial zones on China's eastern coast. China found an average of 24 kg of floating trash per 1,000 square meters of surface water last year, 88.7% of which was plastic. Plastic also dominated the waste found below the surface, including on the seabed.[xxv]

According to a 2017 study on 'Export of Plastic Debris by Rives into the Sea',[xxvi] around 90% of single-use plastic that pollutes oceans comes from 10 rivers, and 6 of which are in China (Yangtze River, Hai Hi, Yellow River, and Pearl River in China), and Amur in Russia (called Heilong Jang in China). The Mekong rises in China, but touches or crosses Myanmar, Laos, Thailand, Cambodia and Viet Nam on its way to the South China Sea.

Table 1 above also lists the plastic waste items collected during the International Coastal Clean-up effort in China.

Various citizen science initiatives have been taking place in China to assess, monitor and clean up marine plastic pollution.

Shanghai Rendu Ocean NGO Development Center in 2014 initiated the project "Watching Coastline — Scientific Monitoring". In 2017, 72 monitoring activities in 6 monitoring periods at 14 typical sites along China's coastline was conducted. Data showed that the quantity distribution density of all the beach litter was 1.34 items/m2 and the total mass distribution density of beach litter was 38.45 g/m2.

In terms of materials, plastic was the most pervasive (accounted for 77% of the total) along China's coastline. In terms of usage, packaging waste accounted for 48% and domestic waste 37%.[xxviii]

Action on marine plastic: Key stakeholders

Government

Collection, transportation, treatment and/or discharge management of municipal solid waste is the responsibility of the Ministry of Housing and Urban-Rural Development. The Ministry of Ecology and Environment (MEE) is also mandated to supervise efforts to prevent environment pollution; formulate and implement regulations for pollution of the air, water, sea, soil, noise, light, odour, solid waste, chemicals, and vehicles. The Ministry of Commerce is the authority responsible for Restoration and distribution supervision of recyclable waste materials.

For coastal and marine, the Department of Marine Ecology and Environment (under the Ministry of Ecology and Environment) supervises the national marine environment protection and marine pollution control caused by land-based pollutants and coastal construction projects. Supervision of marine environment; organization of survey, surveillance, supervision, assessment, and scientific research of marine environment; national marine environment protection against pollution damage from construction projects and wastes dumped into the sea is done by the State Oceanic Administration (under the Ministry of Natural Resources). The Maritime Safety Administration (under the Ministry of Transport) investigates the pollution accidents.

The Director, Division of International Ecological and Environmental Conventions, Department of International Cooperation, Ministry of Ecology and Environment serves as the contact person for the Coordinating Body on the Seas of East Asia (COBSEA).

Private sector

China's current waste management system has two parts. The first is formal and government-run, with contracted companies that manage collection, incineration, landfill disposal, and composting. China's transition to a more circular economy requires the private sector and other stakeholders to collaborate to improve the current plastic (packaging) waste situation the country is facing. The Chinese central government has established a variety of relevant associations for plastic packaging and sustainability. The chairmen of most of the associations are elected from official government departments or from the leading companies in their respective industries. These associations play a crucial role in the implementation of the regulations. Some of these associations include; China Plastic Recycling Association (CPRA), China Synthetic Resin Association Plastic Recycling Branch, China Association of Circular Economy (CACE), China Plastics Processing Industry Association (CPPIA) etc. Civil societies, environmental NGOs, students, foundations and citizens all are participating to take responsibility for their waste and contributing in reducing marine plastic pollution. The second part of the system is entirely private and involves millions of "informal" workers who collect, store, and sell waste. Plastic bottles, bags, and containers are collected frequently in the informal sector and like paper and cardboard, plastics are one of the materials of highest value to the informal sector.

Policy frameworks on MSW and marine litter

Global frameworks on marine litter

China is a contracting party of the United Nations Convention for the Law of the Sea (UNCLOS). Part XII of UNCLOS deals with 'Protection and preservation of the marine environment' and requires states to take all measures necessary to prevent, reduce and control pollution of the marine environment from any source. These measures aim to minimize to the fullest possible extent the release of toxic, harmful or noxious substances.

China is a party to The 1972 Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (London Convention) (accession date: 14 November 1985). Article IV Number 1(a) of the Convention states: 'The dumping of wastes or other matter listed in Annex I is prohibited'. Paragraph 4 of Annex I specifies persistent plastics and other synthetic materials (e.g. nettings and ropes), which might float or remain in suspension in the sea in a manner that could interfere with fishing, navigation, or other legitimate uses of the sea. Paragraph 11(d) of Annex I calls for the maximum removal of materials capable of creating floating debris or contributing to marine pollution from vessels and platforms or other man-made structures at sea. These provisions indicate that the Convention is still generally applied to discharges from land-based and not sea-based litter.

China has ratified the Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL) in 1997 (Date of entry into force or succession: 21 February 1989). MARPOL is the key international agreement to prevent marine environment pollution caused by ships' operational and unintended activities. Annex V, enforced since 31 December 1988, specifically addresses the issue of plastic dumping from ships: 'The disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products which may contain toxic or heavy metal residues, is prohibited'. Besides prohibition of plastic waste disposal, Regulation 3 number 2 of the Convention also calls for stricter regulations on mixed garbage discharge.

China is a party to (ratification date: 17 December 19918 October 1993) the Basel Convention on the Control of transboundary Movements of hazardous Wastes and Their Disposal (Basel Convention) since 1997. On 26 October 2001, China ratified the Ban Amendment was adopted by the third meeting of the Conference of the Parties in 1995 (ratification date: 01 May 2001). The 14th Meeting of the Conference of Parties to the Basel Convention in May 2019 agreed to include mixed, unrecyclable and contaminated plastic waste exports into the control regime that requires the consent of importing countries before waste exports can proceed. The amendment will be effective in January 2021. Subsequently, the Basel Convention Plastic Waste Partnership (PWP) was established by the Conference of the Parties to the Basel Convention through its decision BC-14/13 adopted during its fourteenth meeting held in April/May 2019 and was launched officially on 12 November 2019 in Palais Eynard in Geneva. The PWP aims to improve and promote the environmentally sound management of plastic waste at the global, regional and national levels and in the long-term, to eliminate the discharge of plastic waste and microplastics into the environment, in particular the marine environment. Membership to the Plastic Waste Partnership working group is open to Parties to the Basel Convention and other stakeholders dealing with the different aspects of prevention, minimization and management of plastic waste.

Regional frameworks on marine litter

China is one of the four member States (Korea, Japan, China, Russia) of the Northwest Pacific Action Plan (NOWPAP) one of UNEP's regional sea programmes. These member states share marine litter data and discuss how to tackle marine litter problem in Northwest Pacific region.

China is also a member country of the COBSEA. COBSEA is one of 18 Regional Seas programmes for the sustainable management and use of the marine and coastal environment.

The East Asian Seas Action Plan brings together nine countries - Cambodia, People's Republic of China, Indonesia, Republic of Korea, Malaysia, the Philippines, Thailand, Singapore and Vietnam - in development and protection of the marine environment and coastal areas through addressing land-based marine pollution; strengthening marine and coastal planning and management; and sharing marine environmental management experiences and policies towards strengthened regional governance..

National policy frameworks on municipal (plastic) waste management

Circular Economy Promotion Law 2008 - defines the circular economy as activities that reduce, recycle, and recover products (Article 2). Enterprises must develop strategic management systems to cut resource consumption and waste generation to be able to raise the level of waste recycling and resource recovery (Article 9). Further, enterprises are responsible for recovering, reusing, and disposing of waste based on regulations (Article 15). The State is obliged to encourage citizens to use recycled products (Article 10) and establish buildings to facilitate waste collection and recycling (Article 41).

In 2015, China revised the Solid Waste Pollution Preventing and Control Law. The revised version of the law clearly defined the government and enterprises' responsibilities in solid waste disposal. It also added information that the government should encourage the development of a circular economy. The revised law regulated and limited the discharge and import of industrial solid waste.

The current 13th Five Year Plan (2016– 2020) keeps the circular economy and low-carbon economy as key focus areas for policy. It introduces binding targets relevant for the circular economy, emphasizes the importance of an Extended Producer Responsibility (EPR) framework, and proposes to further strengthen municipal waste management and the remanufacturing industry. The plan aims to achieve a 73% reuse rate for industrial solid waste and a 90% treatment rate for domestic waste in rural areas by 2020.

China announced its National Sword Policy 'Prohibiting the Import of Foreign Waste from the Country and Promoting the Implementation of the Reform of the Management System for Solid Waste Import' effective from 1 January 2018, banned the import of most plastics and other materials headed for that nation's recycling processors, which had handled nearly half of the world's recyclable waste for the past quarter century.

In 2019, the National Development and Reform Commission issued the new policy, announcing plastic bags banned across all cities and towns in 2022, though markets selling fresh produce will be exempt until 2025. The production and sale of plastic bags that are less than 0.025 mm thick, and plastic film less than 0.01 mm thick for agricultural use will also be banned. The restaurant industry must reduce the use of single-use plastic items by 30%. Hotels have been told that they must not offer free single-use plastic items by 2025.

National policy frameworks on marine litter

The fundamental legislation in the marine environmental protection area is the Marine Environment Protection Law. The Marine Environment Protection Law has undergone four amendments (1999, 2013, 2016 and 2017) since its promulgation on August 23, 1982. This Law is the basic law for the protection of marine environment, which provides an overall regulation on pollution control, ecosystem protection and resources conservation. Prevention and control of pollution is the core part of the Marine Environment Protection Law, which is stipulated in five chapters separately as:

(1) Prevention and Control of Pollution Damage to the Marine Environment Caused by Land-based Pollutants;
(2) Prevention and Control of Pollution Damage to the Marine Environment Caused by Coastal Construction Projects;
(3) Prevention and Control of Pollution Damage to the Marine Environment Caused by Marine Construction Projects;
(4) Prevention and Control of Pollution Damage to the Marine Environment Caused by Dumping of Wastes; and,
(5) Prevention and Control of Pollution Damage to the Marine Environment Caused by Vessels and Their Related Operations.

Besides the national Law, there are about 15 national regulations since the 1980s issued by the State Council to regulate the marine and coastal environment:

- Administrative Regulation on the Prevention and Control of Pollution Damages to the Marine Environment by Vessels
- Administrative Regulation on the Prevention and Control of Pollution Damages to the Marine Environment by Coastal Engineering Construction Projects
- Administrative Regulation on the Prevention and Treatment of the Pollution and Damage to the Marine Environment by Marine Engineering Construction Projects
- Regulations of the People's Republic of China on the Control over Dumping Wastes into the Sea Waters
- Regulations of the People's Republic of China Concerning Environmental Protection in Offshore Oil Exploration and Exploitation.
- Regulations on Prevention of Environmental Pollution by Ship Breaking

Besides the national laws and regulations, the local coastal provinces and cities have also issued local laws and local regulations on marine environment protection. These laws and regulations have further improved the marine environment protection legal system.

Fiscal incentives

In a bid to promote the country's circular economy, China through the 'Circular on Adjustments of VAT Treatment to Products and Services Output through Comprehensive Utilization of Resources (caishui [2011] No.115)' offers to reduce or eliminate value-added tax (VAT) burdens on enterprises that recycle wasted resources during production. Starting from August 1, 2011, services of waste disposal and sludge treatment will enjoy an exempt 80% VAT imposition, and 50% VAT refund upon collection of metals produced with the use of industrial metal wastes- including waste plastic and recycled plastic products produced with the use of waste plastics, waste PVC products, and aluminium composite paper packaging materials.[xxix]

For consumers, China—bag laws also require retailers to charge consumers a minimum amount for bags to discourage plastic waste generation. Similarly, in Shanghai, citizens are given incentives and penalties to influence their waste generation and management behavior. Green Accounts, an automated credit bound with a smartphone, the Green Account records every correct classification of waste and will then give credits, which could be used to exchange for some goods.

On the contrary, Laws and regulations have been introduced for the whole process of throwing, collection, transportation, and disposal of waste. According to the Shanghai Municipal Solid Waste Management Regulation, for those who fail to properly classify and/or throw waste will be fined 50 to 200 yuan, and waste transportation enterprises that mix the classified waste will be fined 5000 to 50,000 yuan.[xxx] In a bid to boost compliance, Shanghai has listed fines of up to US$14,500 for business and government organizations who violate certain recycling rules.[xxi]

Conclusions

China has long been battling its plastic obsession and marine plastic pollution. China has become not only a top producer of plastic, accounting for nearly 30% of global production, but also a top consumer.

At the same time, China has announced stringent policy and actions aimed at keeping plastic out of the terrestrial and marine environments. One of the biggest efforts made was the introduction of the National Sword Policy banning the import of plastic waste. The central government laid out plans aiming to increase recycling to 35% of waste by 2020 in nearly 50 major urban centers.

Municipal authorities in China's capital, Beijing, have amended the city's laws pertaining to waste disposal with provisions that are expected to come into effect in early 2020. Shanghai, the financial capital, is piloting waste segregation and a recycling system. The country has also announced measures to ban plastic bags and other single-use plastic items, and keeping circular economy and low-carbon economy as key focus areas for policy. It also emphasizes the importance of an EPR framework for waste management.

Nonetheless, China has to push further, and enforce stringent measures and tackle ever increasing plastic packaging waste (also from e-commerce sector). China must strengthen the source control of plastics debris, and encourage extended producer responsibility and related mechanisms to involve producers, importers and retailers in addressing the entire plastic value chain. The country must also support and strengthen integrated sustainable waste management system – infrastructure development and financing for improved waste collection and treatment systems in cities and rural areas. A national action plan on marine plastic pollution control with comprehensive use of fiscal, taxation and market measures, and regulatory measures needs to be established for marine plastic pollution prevention.

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