

# Data from the global plastics waste trade 2016-2018 and the offshore impact of China's foreign waste import ban

## An analysis of import-export data from the top 21 exporters and 21 importers

23 April 2019

### A. Executive summary

China's 2018 import ban on mixed 'recyclable' plastics snatched the veil off the global recycling system to uncover the wasteful and harmful nature of the recycling trade. Repercussions have been global. At present, plastic has no proper place to go.

Two core trends emerged from China's ban: (1) The majority of the plastics redirected to less-regulated countries/regions -- especially Southeast Asia, but also other areas that lack adequate restrictions to stop outsized imports, or any real capacity to manage the waste. (2) Globally, total plastics exports dropped by about half from 2016 to 2018. Former exporters now also sit with a surplus of waste, unprocessed or processed inadequately. The news media during this time reported disruptions to local recycling and waste management systems, both of lapses in collection<sup>1</sup>, and of collected recyclables sent to landfills and incinerators<sup>2</sup>, stockpiling<sup>3</sup>, and illegal export<sup>4,5</sup>.

This data analysis, which details exports and imports of plastic waste by the 21 top exporters and 21 top importers from January 2016 to November 2018, measures the breadth of the plastics crisis and the global industry's response to import bans. That is, banned exports redirect to the next unregulated importer in a quick, but inefficient, fashion.

Malaysia, Vietnam, and Thailand became early destinations in anticipation to China's ban. Within six months of the ban's full effect, by mid-2018, they each established their own restrictions. At that point, global plastics waste exports (most come from USA, Germany, UK, and Japan) redirected *en masse* to Indonesia and Turkey, which are two of the major current global importers. The report highlights the failure of recycling along two major fault lines, which will stress if plastics manufacturing continues to increase as projected by 40% in the next decade<sup>6</sup>.

<sup>1</sup> Trashed: China is forcing small-town America to stop recycling,

<https://www.scmp.com/news/world/united-states-canada/article/2183075/trashed-china-forcing-small-town-america-stop>

<sup>2</sup> Recycling: Where is the plastic waste mountain? <https://www.bbc.com/news/science-environment-46566795>

<sup>3</sup> Japan finds itself buried in plastic waste after China stops importing world's trash,

<https://www.rt.com/business/441847-japan-plastic-ban-china/>

<sup>4</sup> Tons of illegally imported plastic waste found in Lat Krabang district,

[http://thainews.prd.go.th/th/news/print\\_news/WNSOC6106020010019](http://thainews.prd.go.th/th/news/print_news/WNSOC6106020010019)

<sup>5</sup> Philippines rejects contaminated South Korean waste.

<https://www.ft.com/content/bffeace8-e892-11e8-8a85-04b8afea6ea3>

<sup>6</sup> \$180bn investment in plastic factories feeds global packaging binge.

<https://www.theguardian.com/environment/2017/dec/26/180bn-investment-in-plastic-factories-feeds-global-packaging-binge>

## B. Major research findings and key insights

### (1) Major findings

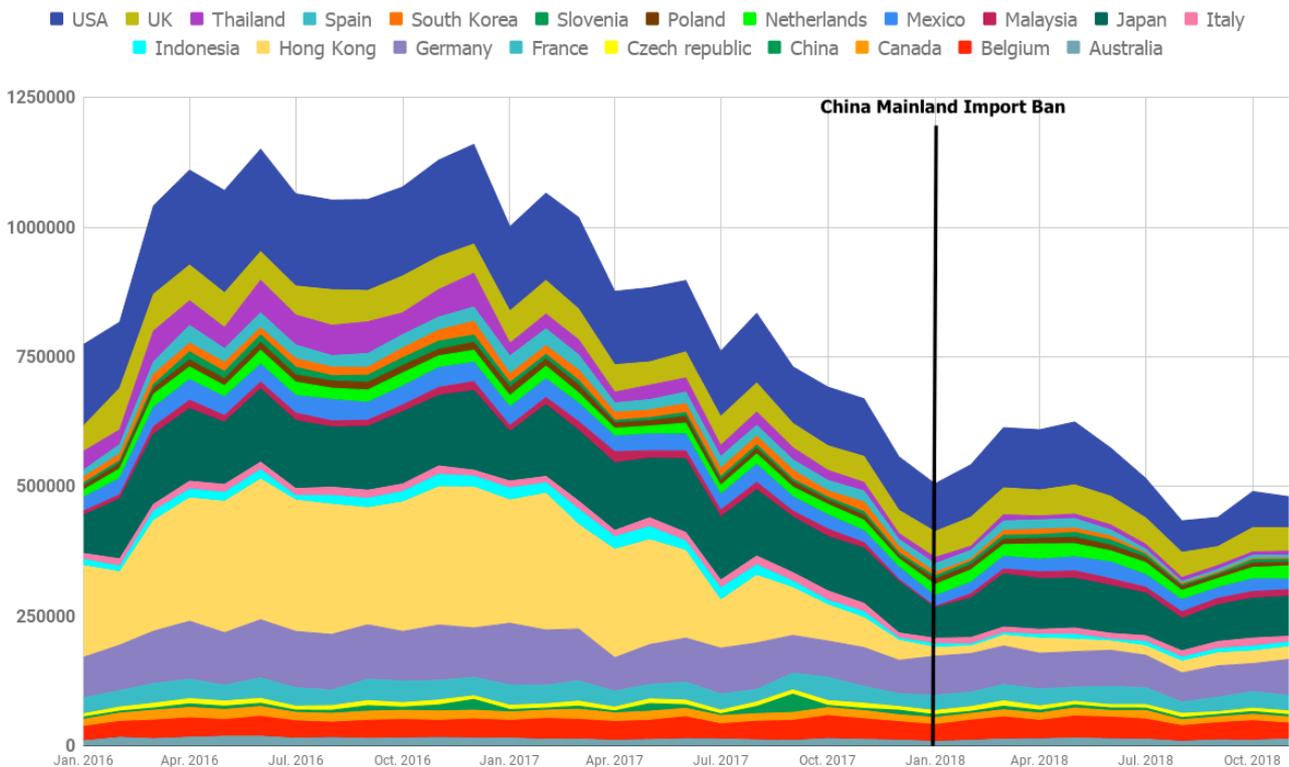
a. After peaking in late 2016, China's import of foreign waste closed almost entirely by early 2018, due to an across-the-board ban which impacted both China Mainland and Hong Kong, the latter which acted as an import-export hub for almost all of China Mainland's 2018 imports.

As China Mainland stopped taking in plastics, global exports clearly dropped. In 2018, global exports totaled around 50% of their 2016 numbers.

Waste also began to redirect, often through Hong Kong, around Southeast Asia. Hong Kong also takes less total waste than before, which may in part explain the massive decrease in exports. But there may be other causes of the drop, and consequences, that we cannot ignore.

	Total export of 21 top exporting countries/regions (in tons)	Total Jan - Nov export for the year	% change (Jan to Nov, year-on-year)	% change (Jan to Nov, compared to 2016)
2016	12,502,343	11,342,439	--	--
2017	9,986,811	9,429,562	-17%	-17%
2018	5,828,257*	5,828,257	-38%	-49%

**Table 1.** Changes in amount (tons) of plastic waste exports from top 21 exporting countries/regions in 2016 to 2018. \* Data from January to November only

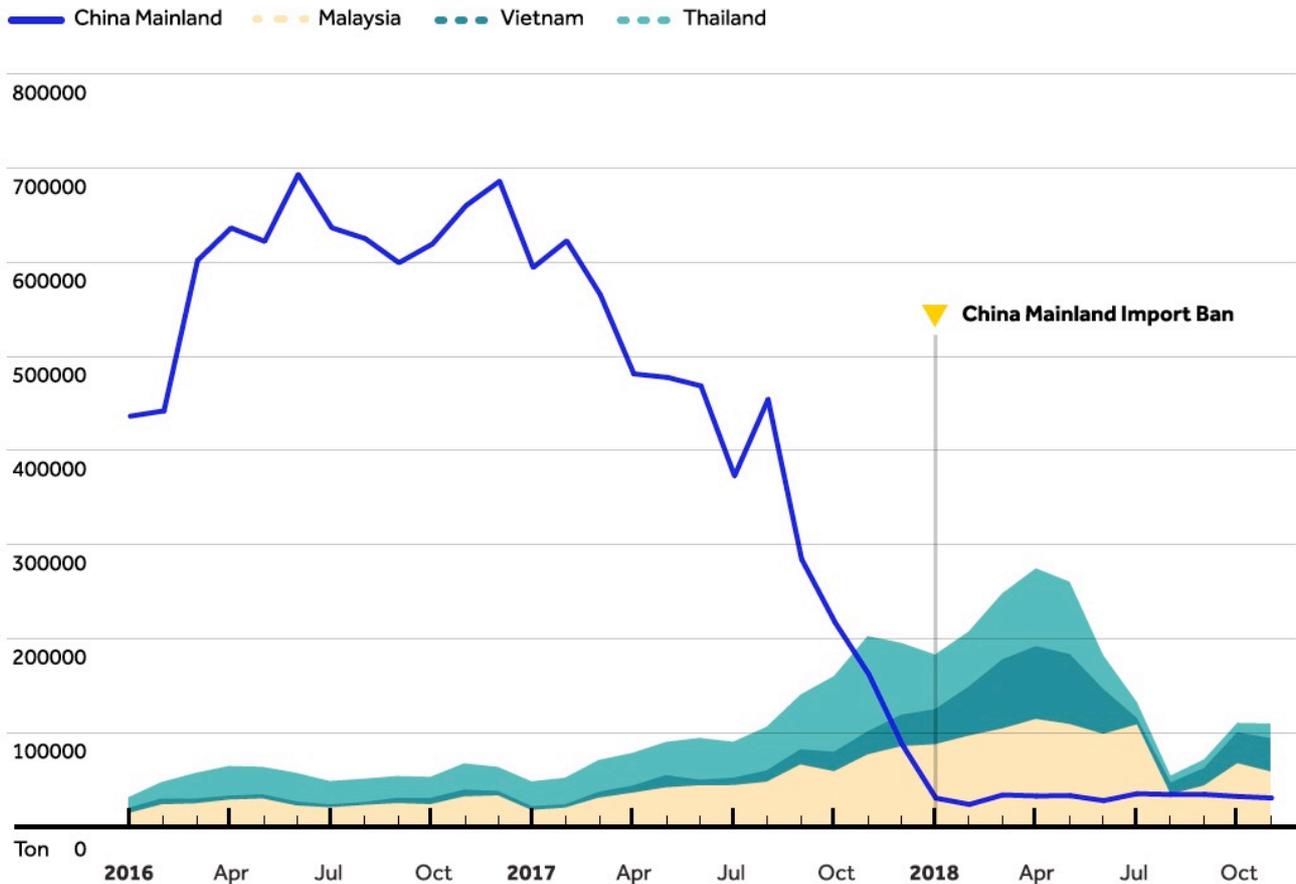


**Graph 1: Changes in plastic waste exports from top 21 exporting countries/regions between January 2016 and November 2018 (in tons per month)**

Plastic waste exports from the 21 top exporting countries/regions dropped steadily from mid-2016 to late-2018, from 1.1 million tons per month to 500,000 tons per month. Over that time period, total import also dropped at the same rate.

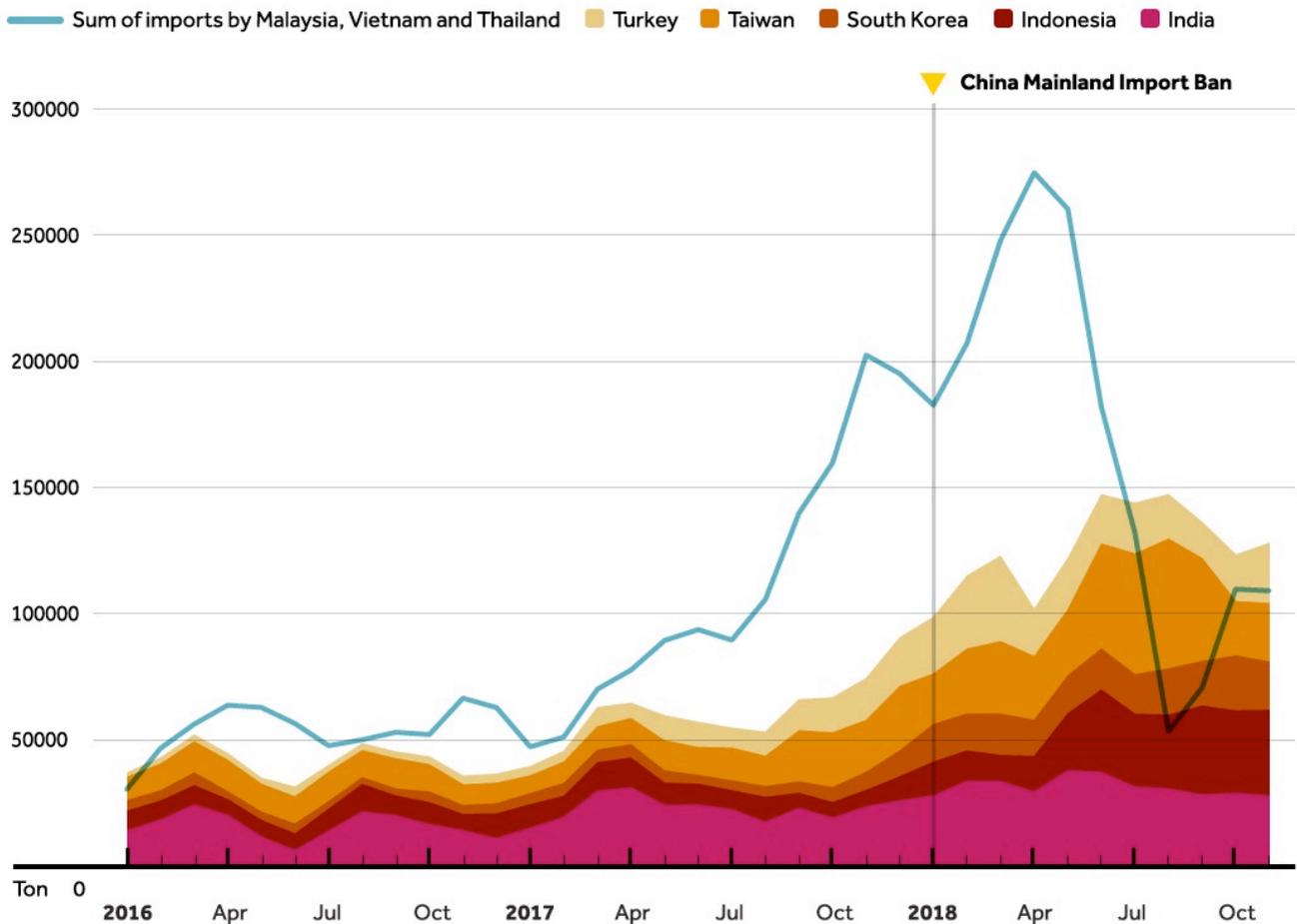
- Top 5 exporting countries/regions between January and November 2018 were: USA (16.5% of total export), Japan (15.3%), Germany (15.6%), UK (9.4%) and Belgium (6.9%).
- Top 5 importing countries/regions between January and November 2018 were: Malaysia (15.7% of total import), Thailand (8.1%), Vietnam (7.6%), Hong Kong (6.8%), and USA (6.1%).

b. Southeast Asia, in particular Malaysia, Vietnam, and Thailand became primary importing countries/regions of plastic waste from mid-2017 to mid-2018 (Graph 2). Many of them quickly imposed import restrictions around mid-2018 (more detail “Trade trends of 10 major plastic waste importing countries/regions”, pg. 4). These new import restrictions likely further contributed to the drop.



**Graph 2: Imports of plastic waste by China Mainland, Malaysia, Vietnam and Thailand between January 2016 and November 2018 (in tons per month)**

India, Taiwan, South Korea, Turkey, and Indonesia saw imports rise as new restrictions pushed imports down in Malaysia, Vietnam, and Thailand. But the second wave of new importing countries/regions saw a markedly smaller rise, which does not fully account for the drop in imports from the new restrictions in Malaysia, Vietnam, and Thailand (Graph 3).



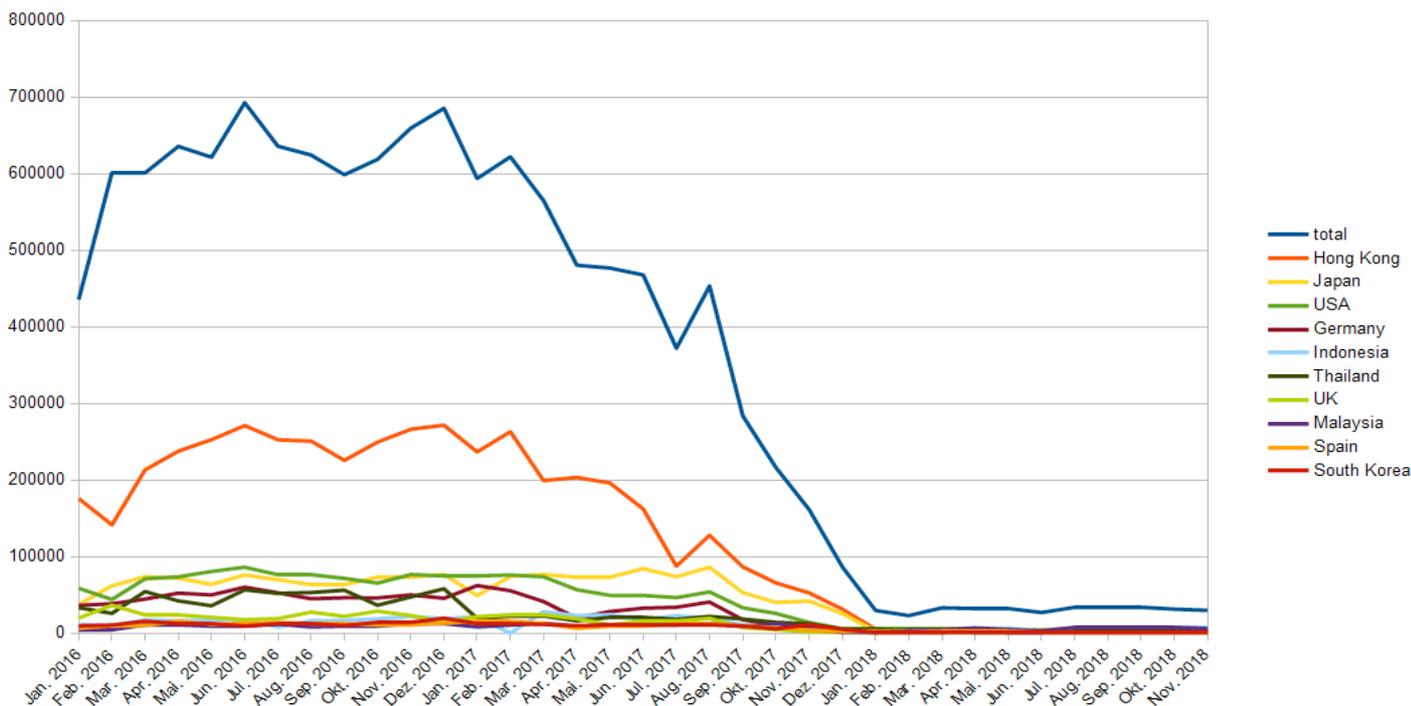
**Graph 3: Imports of plastic waste by Malaysia, Vietnam and Thailand vs. India, Taiwan, South Korea, Turkey and Indonesia between January 2016 and November 2018 (in tons per month)**

**(2) Trade trends of 10 major plastic waste importing countries/regions**

Months after China Mainland implemented its ban on plastic waste imports, the waste moved to Southeast Asia and other developing regions. The influx of waste became a topic of concern for local authorities. Some countries/regions followed the lead and either enacted restrictions or considered them. But some countries/regions remained inactive and maintained a fairly unregulated wastes import system.

## Countries/Regions with bans or restrictions on plastic waste imports

### a. China Mainland



Graph 4: Imports of plastic scraps coming into China Mainland (in tons), showing the top 10 export partners.

- In July 2017, as part of a campaign against foreign waste and environmental pollution, China notified the World Trade Organization that imports of household plastic waste and 23 other kind of solid wastes would be banned effective from 31 December 2017<sup>7</sup>. While plastic waste from industrial sources meeting a 99.5% purity level<sup>8</sup> could continue to be imported in 2018, China has further tightened the import of all plastic waste (included both household and industrial origins) effective from 31 December 2018<sup>9</sup>.
- China Mainland's import dropped from over 600,000 tons per month in 2016 to 30,000 tons per month since the beginning of 2018, and has since remained steady.
- In 2018, China Mainland still imported from Indonesia at 7,000 tons per month, Malaysia at 6,000 tons per month, the USA at 5,500 tons per month, and Japan at 4,000 tons per month.

<sup>7</sup> China notifies WTO of ban on plastic, paper, textile waste imports.

<https://www.reuters.com/article/china-environment/china-notifies-wto-of-ban-on-plastic-paper-textile-waste-imports-idUSL5N1K94IS>

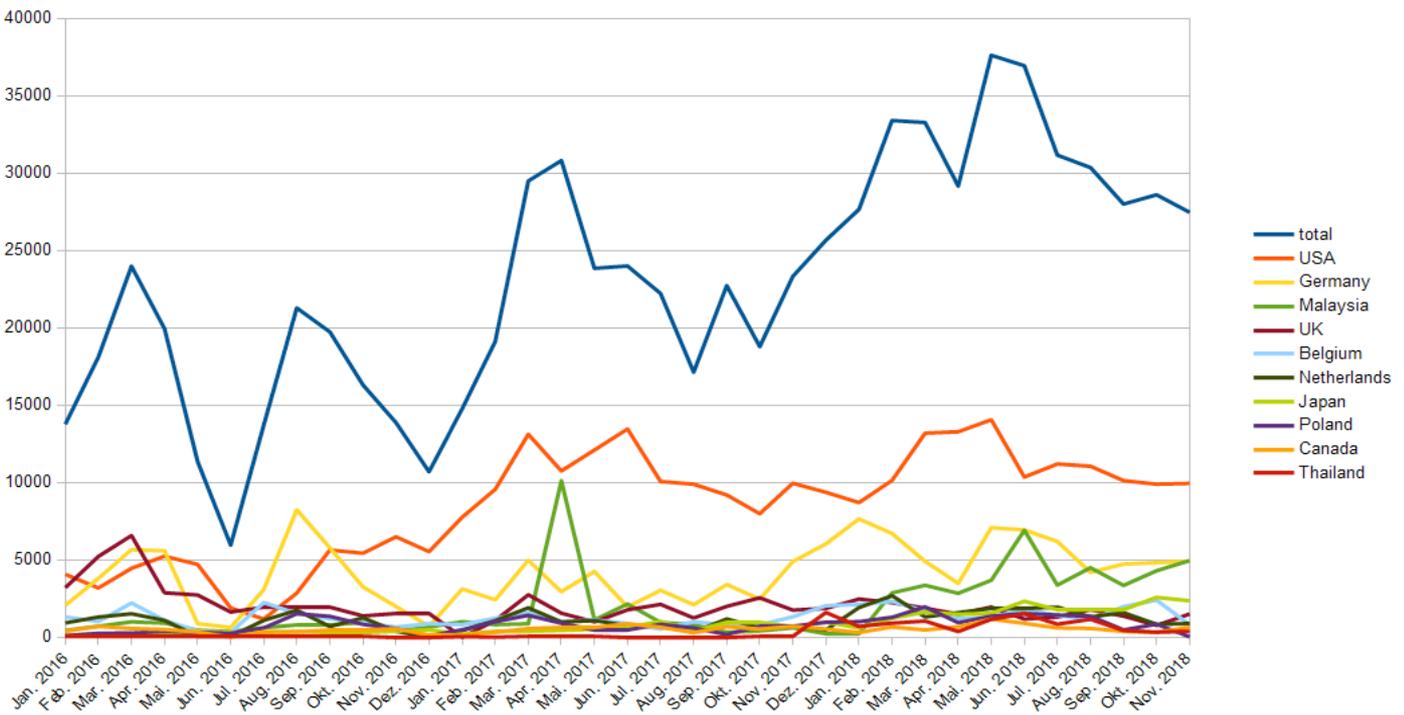
<sup>8</sup> Environmental protection control standard for imported solid wastes as raw materials - Waste and scrap of plastics.

<http://kjs.mee.gov.cn/hjbhzb/bzwb/gthw/gtfwwrkzbz/201801/W020180111497399479455.pdf>

<sup>9</sup> Notice from the Ministry of Ecology and Environment on the amendment of imported waste management list.

[http://www.mee.gov.cn/xxgk2018/xxgk/xxgk01/201804/t20180419\\_629582.html](http://www.mee.gov.cn/xxgk2018/xxgk/xxgk01/201804/t20180419_629582.html)

## b. India

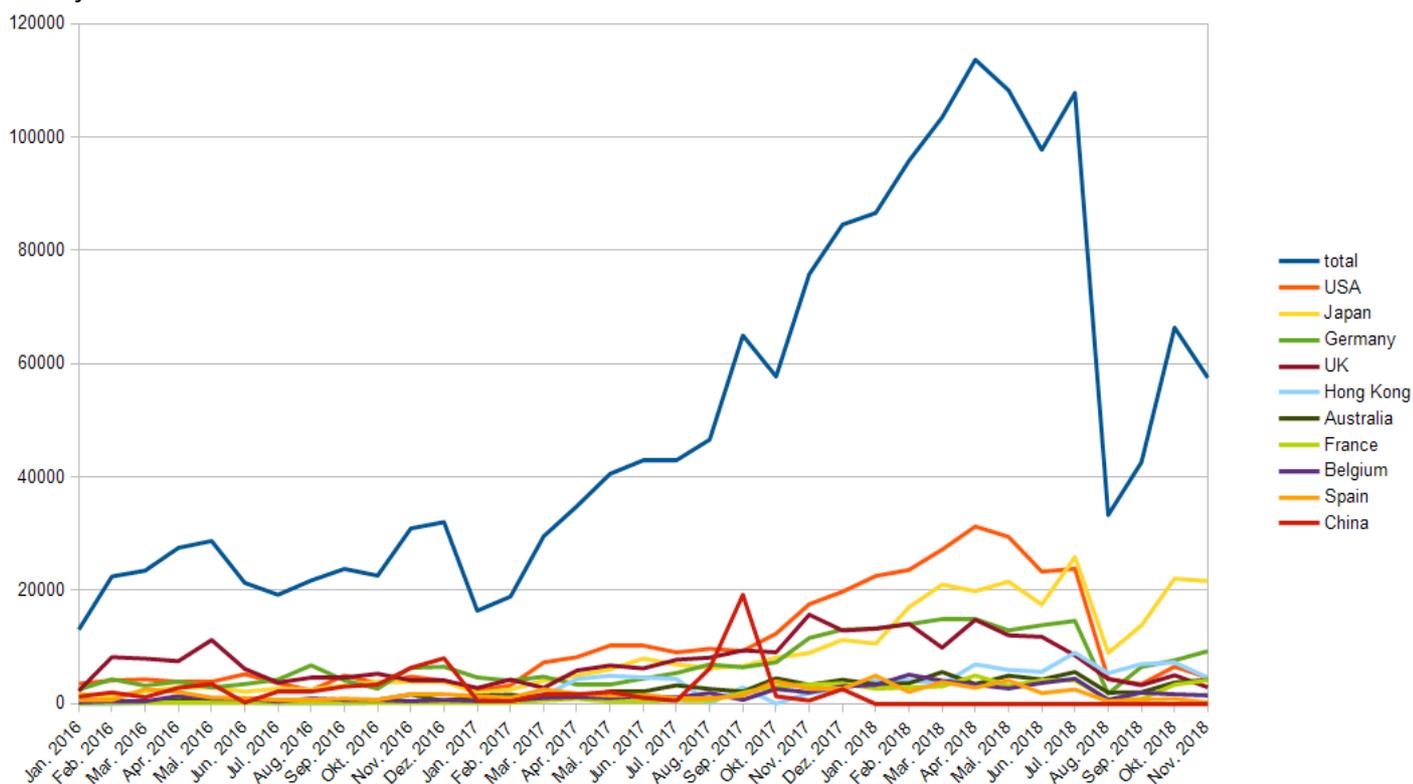


Graph 5: Imports of plastic scraps coming into India (in tons), showing the top 10 export partners.

- India's import of plastic waste steadily rose from 12,000 tons per month in 2016 to 35,000 tons per month in mid-2018. Rising monthly imports from the US accounted for most of this rise. Then it dropped slightly to 30,000 tons per month, coming mainly from the USA at 10,000 tons per month, Germany at 5,000 tons per month, and Malaysia at 5,000 tons per month by November 2018.
- Since 2016, imports of plastic waste have been allowed only in Special Economic Zones. But in March 2019, Indian Government announced an import ban of plastic scraps effective from September 2019<sup>10</sup>.

<sup>10</sup> Six month timetable for India plastics restriction, <https://www.letsrecycle.com/news/latest-news/indias-plastics-import-restriction-begins/>

### c. Malaysia



Graph 6: Imports of plastic scraps coming into Malaysia (in tons), showing the top 10 export partners.

- Malaysia's imports rose steadily from 20,000 tons per month at the beginning of 2017 to 110,000 tons per month in early-2018, and then dropped to around 35,000 tons per month in August 2018, only the rise again to 60,000 tons per month.
- While the main partner before August 2018 was the USA, the rise after that mainly came from Japan at 20,000 tons per month and Germany at 10,000 tons per month.
- In July 2018, the Malaysian government revoked the import permits<sup>11</sup> for plastic waste, and stopped issuing scrap plastic import permits for three months. In October 2018, the government put levies on imported plastic waste<sup>12</sup> and announced plans to tighten requirements for factories to obtain such permits after the three-month freeze.
- More details can be found on The Recycling Myth Report from Greenpeace Southeast Asia<sup>13</sup> published on 27 November 2018.

<sup>11</sup> Illicit recycling factories exposed in Malaysia,

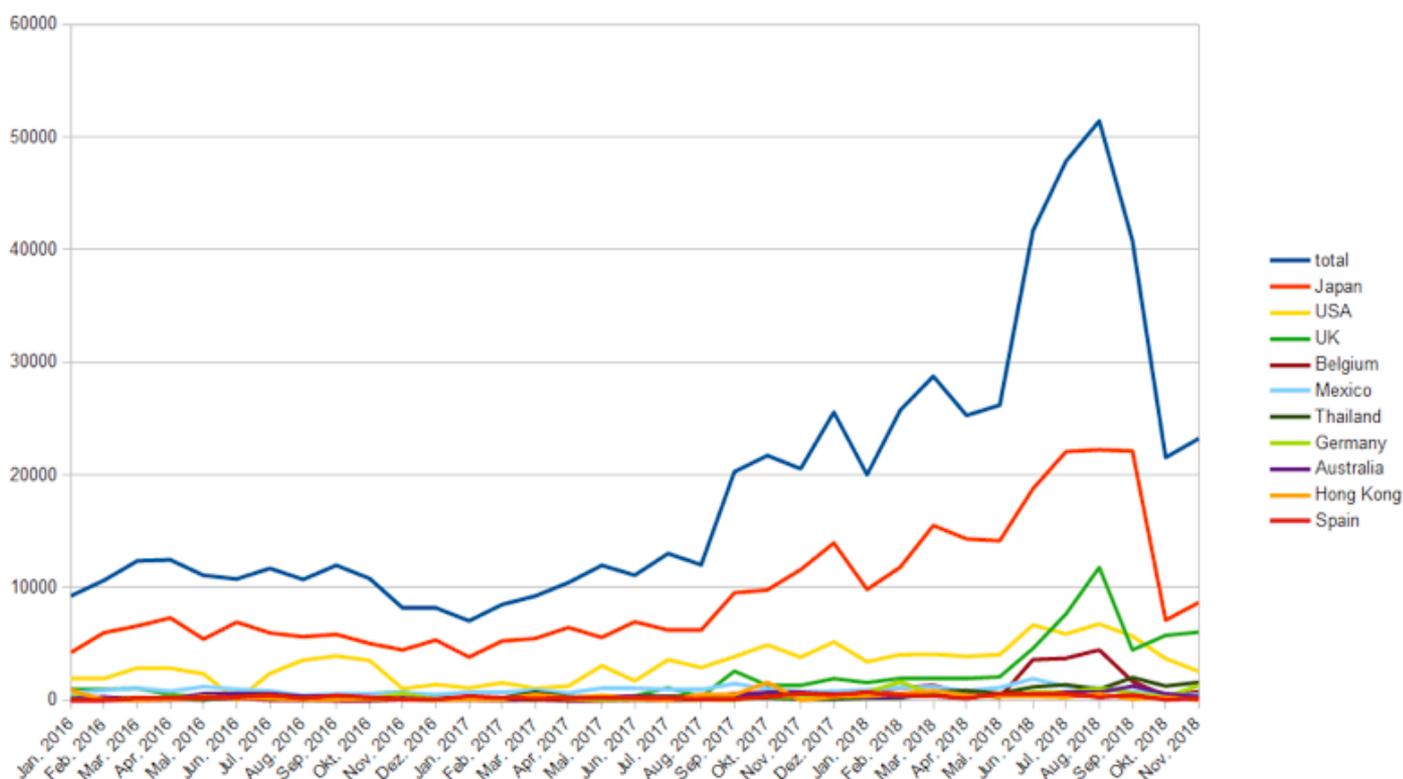
<https://www.straitstimes.com/asia/se-asia/illicit-recycling-factories-exposed-in-malaysia>

<sup>12</sup> Levy for plastic waste imports, <http://www.mida.gov.my/home/7161/news/levy-for-plastic-waste-imports/>

<sup>13</sup> The Recycling Myth - Malaysia and the Broken Global Recycling System,

<https://www.greenpeace.org/seasia/PageFiles/936685/The%20Recycling%20Myth%20-%20Malaysia%20and%20the%20Broken%20Global%20Recycling%20System.pdf>

#### d. Taiwan

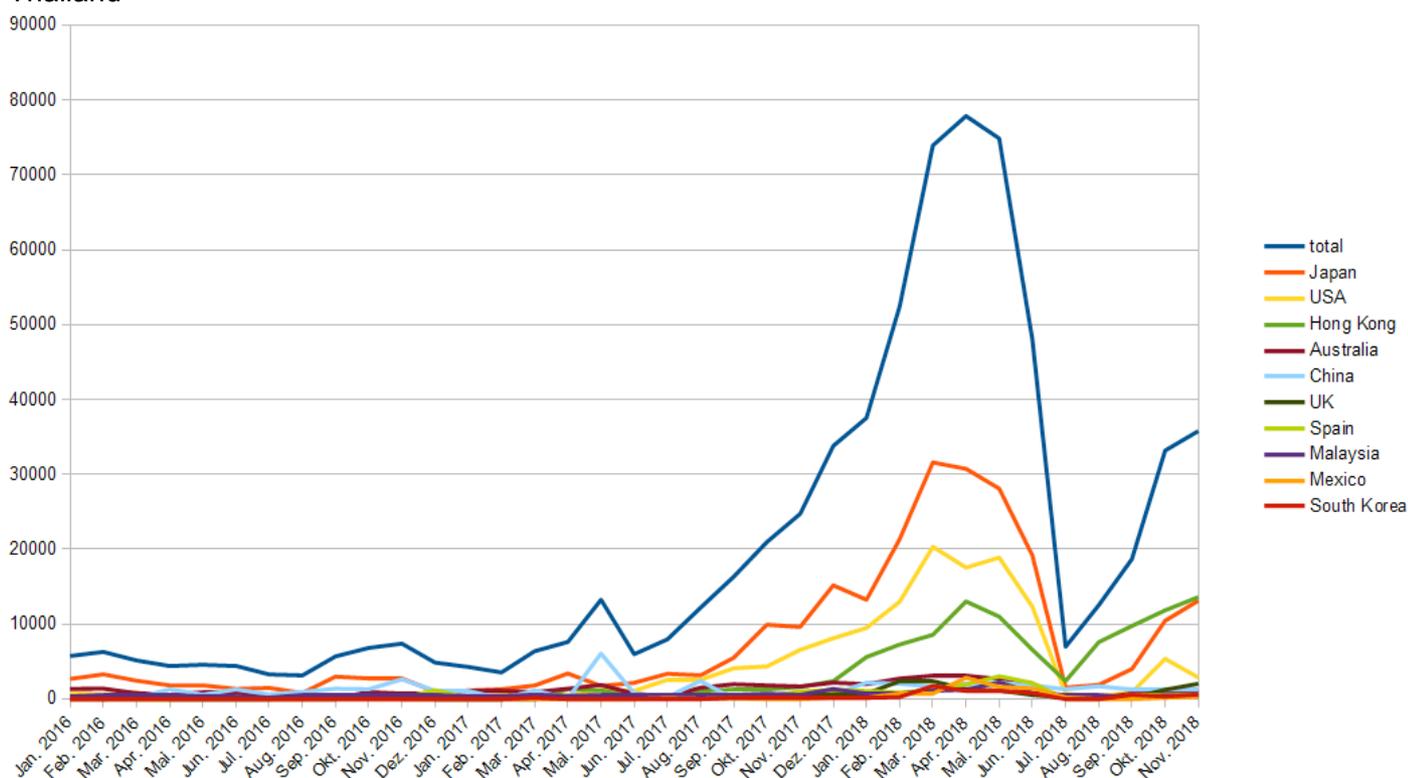


Graph 7: Imports of plastic scraps coming into Taiwan(in tons), showing the top 10 export partners.

- Taiwan's imports steadily rose from 10,000 tons per month in mid-2017 to 50,000 tons per month in mid-2018, then sharply dropped to 20,000 tons per month in late 2018. Its main export partner was Japan.
- Taiwan started restricting imports of plastic waste in October 2018<sup>14</sup>, which stated that only plastic waste of single source or single type is allowed. It's yet to be seen how Taiwan's import restrictions will affect Taiwan's actual import in the near future.

<sup>14</sup> Amendment of requirements for import of plastic and paper wastes from Environmental Protection Administration Executive Yuan, EOC (Taiwan), [https://enews.epa.gov.tw/enews/fact\\_Newsdetail.asp?InputTime=1071001135117](https://enews.epa.gov.tw/enews/fact_Newsdetail.asp?InputTime=1071001135117)

## e. Thailand



Graph 8: Imports of plastic scraps coming into Thailand (in tons), showing the top 10 export partners.

- Thailand's imports spiked to 75,000 tons per month in early-2018 with main exporters Japan, USA, and Hong Kong. Imports then dropped sharply below 10,000 tons per month by July 2018. Since then, it steadily rose to 35,000 tons per month in late-2018.
- In June 2018, the Thai government issued an order to temporarily prohibit imports of electronic and plastic waste<sup>15</sup>. Three months later, the government announced a forthcoming ban on foreign plastic waste imports by 2021<sup>16</sup>.

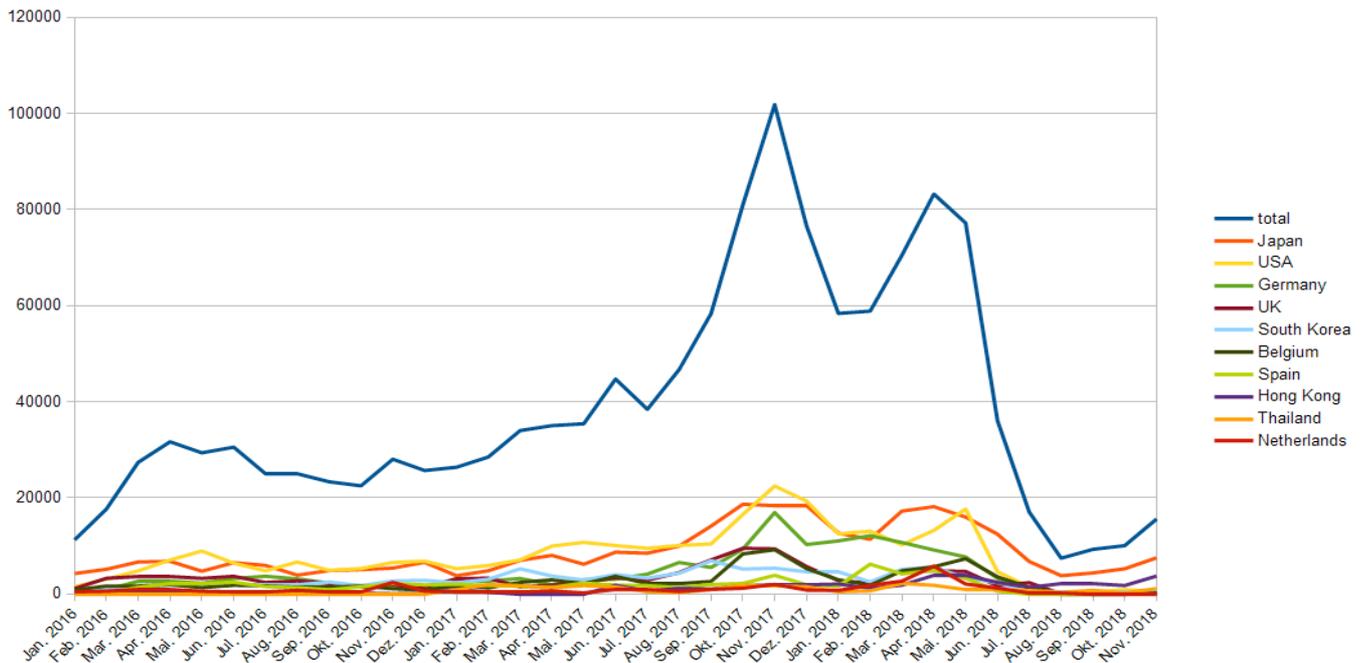
<sup>15</sup> Thailand halts imports of electronic, plastic waste,

<https://news.thaivisa.com/article/22337/thailand-halts-imports-of-electronic-plastic-waste>

<sup>16</sup> Thailand to ban foreign plastic waste imports,

[https://news.cgtn.com/news/3d3d774e796b444f7a457a6333566d54/share\\_p.html](https://news.cgtn.com/news/3d3d774e796b444f7a457a6333566d54/share_p.html)

## f. Vietnam



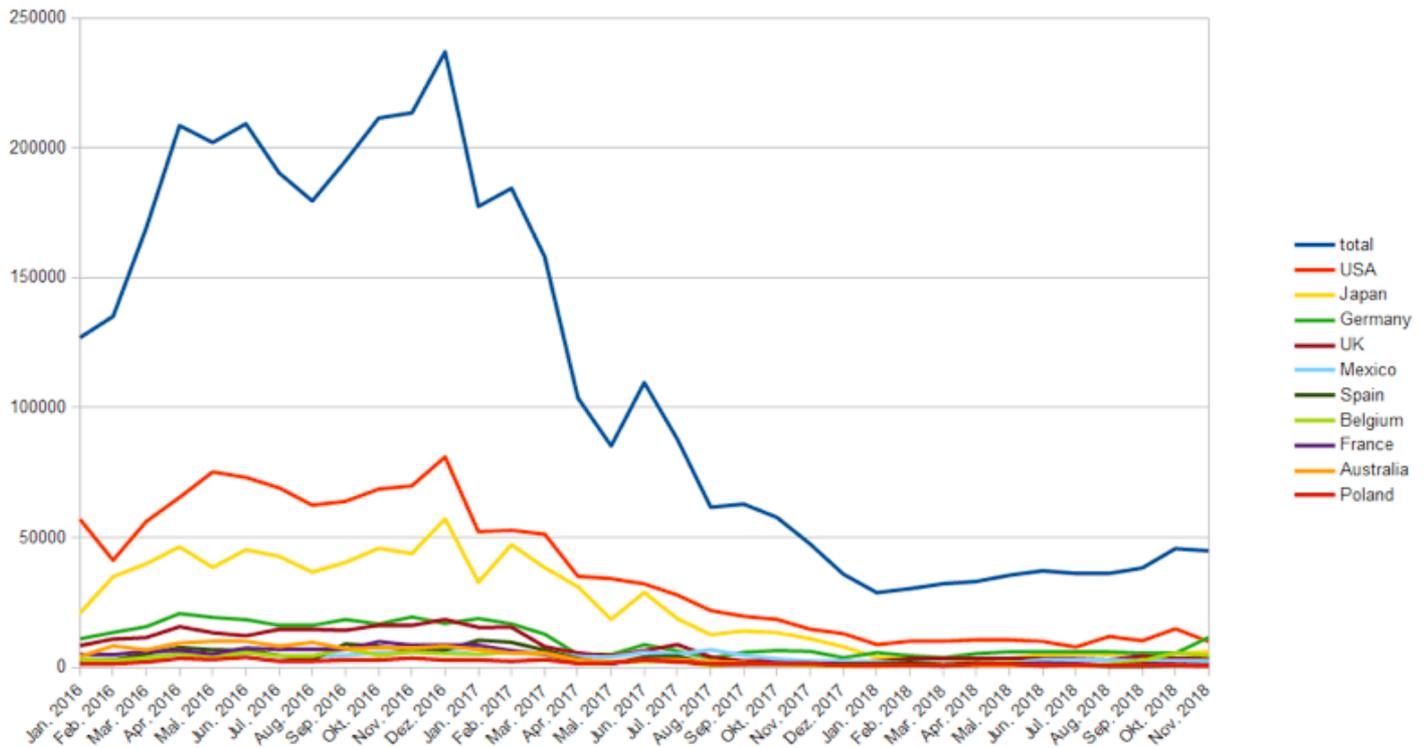
Graph 9: Imports of plastic scraps coming into Vietnam (in tons), showing the top 10 export partners.

- Vietnam's imports spiked to 100,000 tons per month in mid-2017 then dropped to 7,500 tons per month in mid-2018, with main exporters USA, Japan, Germany and the UK. In late-2018, the imports slightly to 16,000 tons per month.
- Since May 2018, major ports in Vietnam have banned scrap plastic imports until further notice. In July 2018, the Vietnamese government announced it will no longer issue new license for plastic waste import<sup>17</sup>.

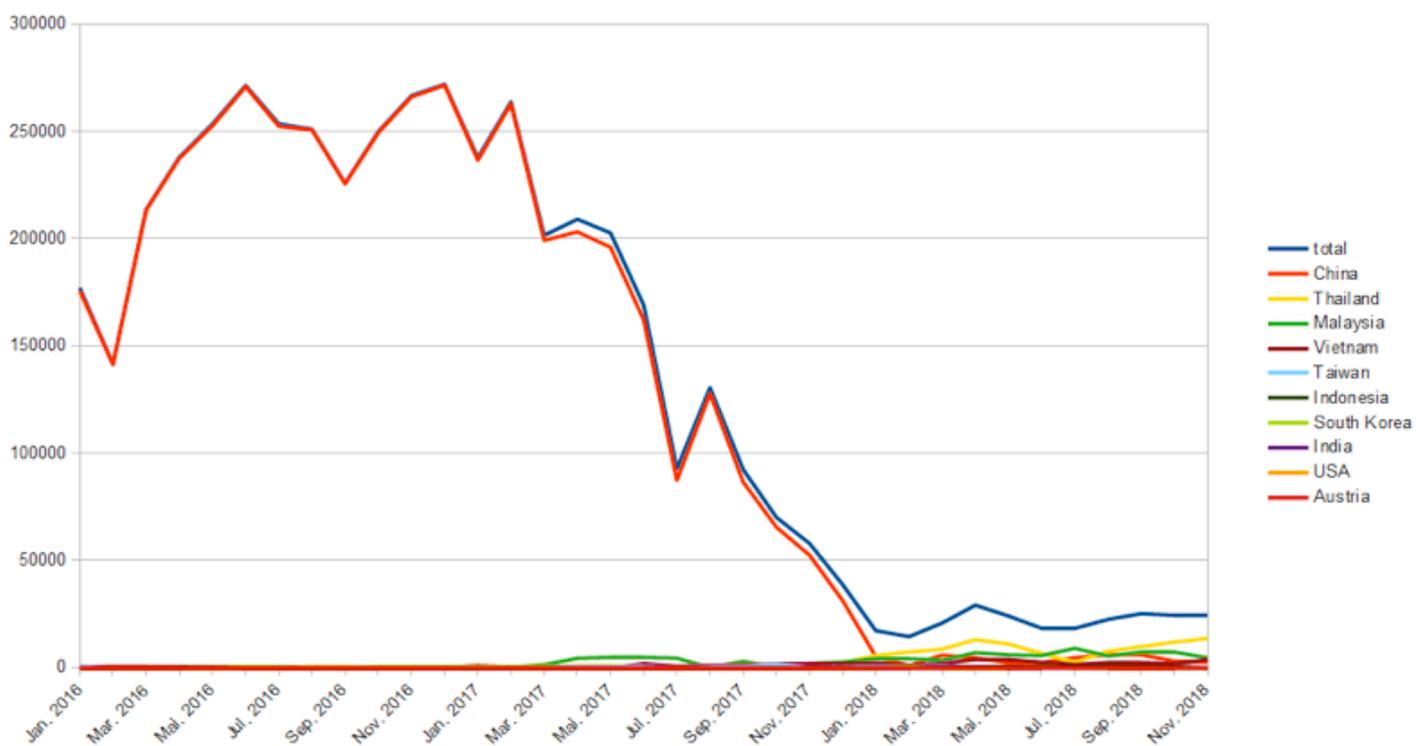
<sup>17</sup> Gov't will no longer grant licenses for waste imports, <http://news.chinhphu.vn/Home/Govt-will-no-longer-grant-licenses-for-waste-imports/20187/34304.vgp>

## Countries/Regions that have no restrictions or unclear policies on plastic waste import

### g. Hong Kong



Graph 10: Imports of plastic scraps coming into Hong Kong (in tons), showing the top 10 export partners.

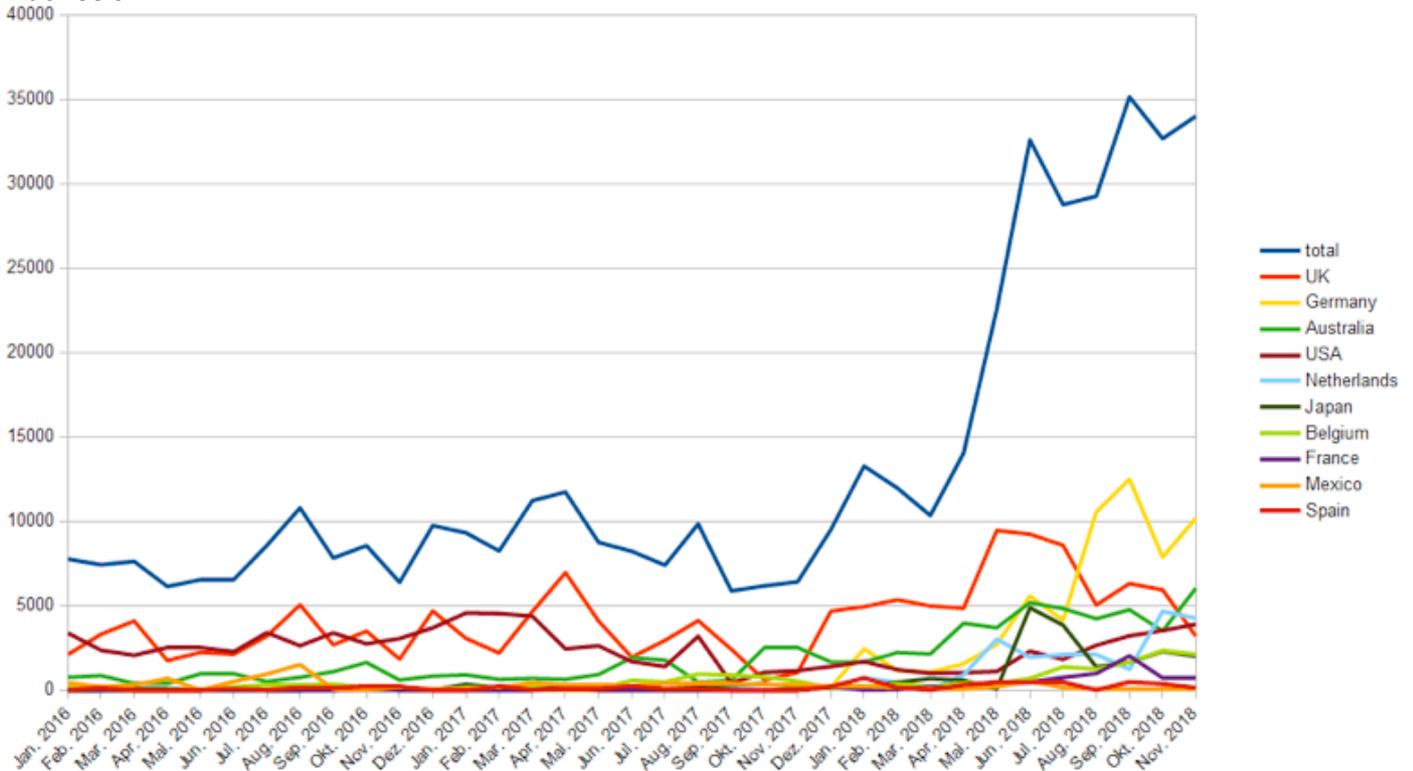


Graph 11: Exports of plastic scraps coming from Hong Kong (in tons), showing the top 10 import partners.

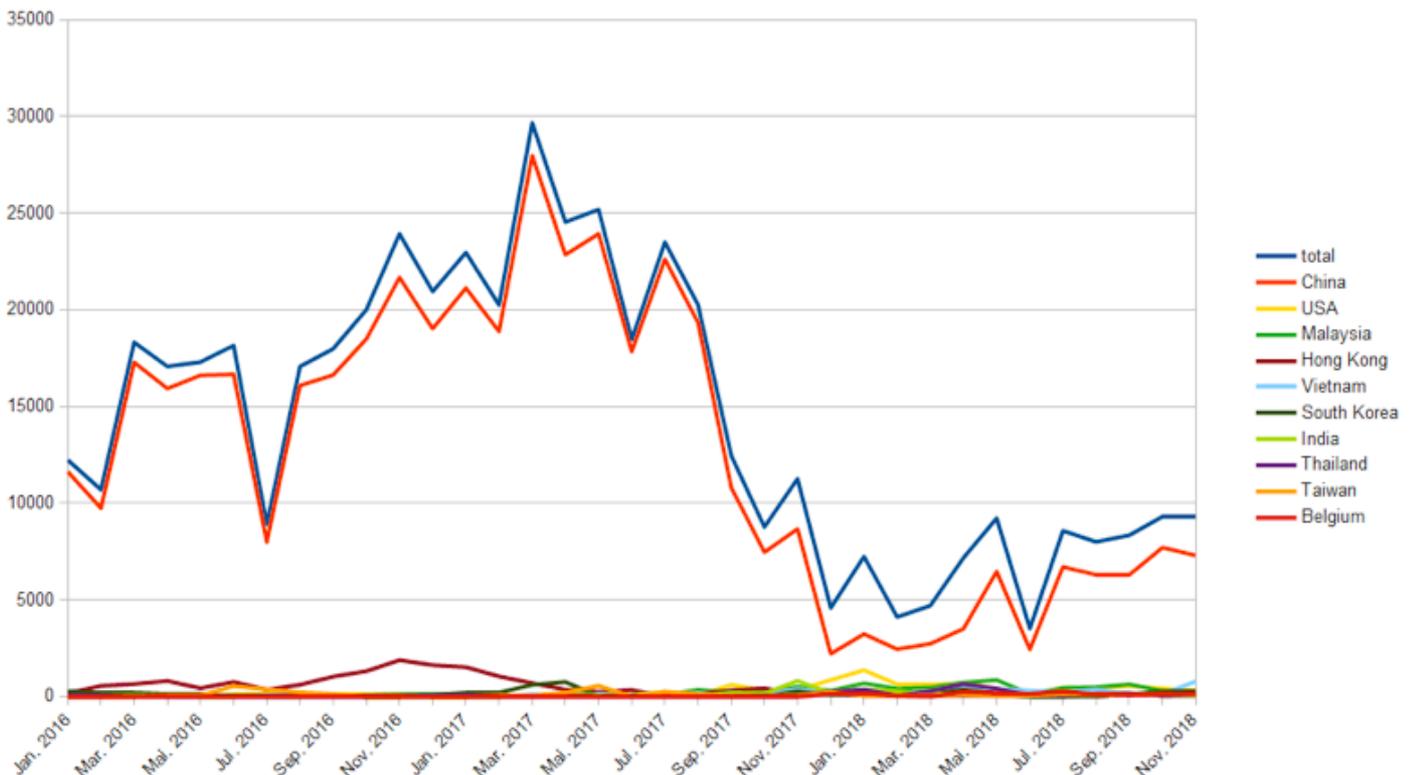
- Hong Kong was a major re-export hub of global plastic wastes to China Mainland. Before 2018, almost all of the plastic waste imported to Hong Kong was then re-exported to China Mainland.
- Hong Kong's imports dropped from over 200,000 tons per month in 2016 to 40,000 tons per month in early-2018, and since remained steady. The main export partners were the USA, Japan and Germany.

- Exports also dropped drastically from around 250,000 tons per month in 2016 to around 25,000 tons per month in 2018. The plastic waste now mainly goes to Malaysia, Thailand, Vietnam and China Mainland.
- The government has not announced any restrictions on plastic waste import.

#### h. Indonesia



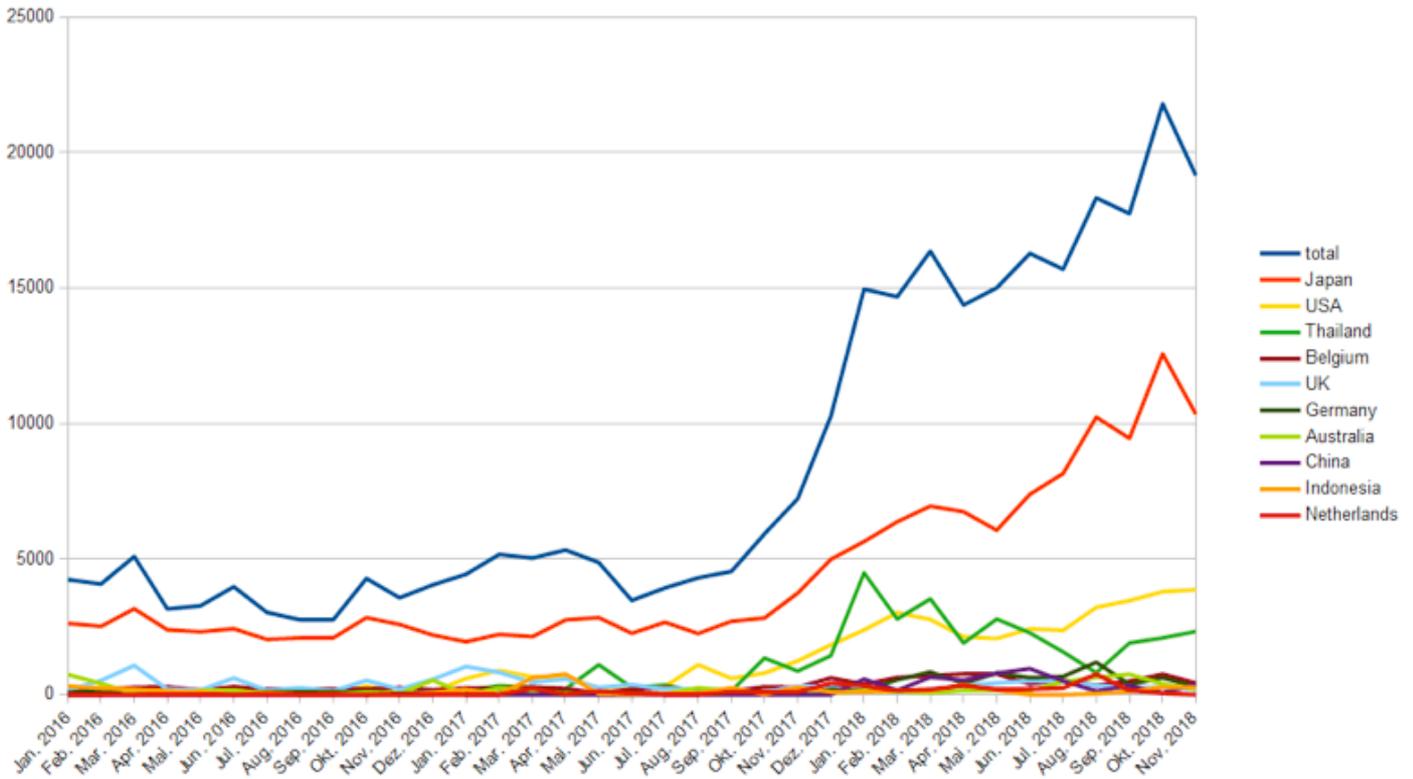
Graph 12: Imports of plastic scraps coming into Indonesia (in tons), showing the top 10 export partners.



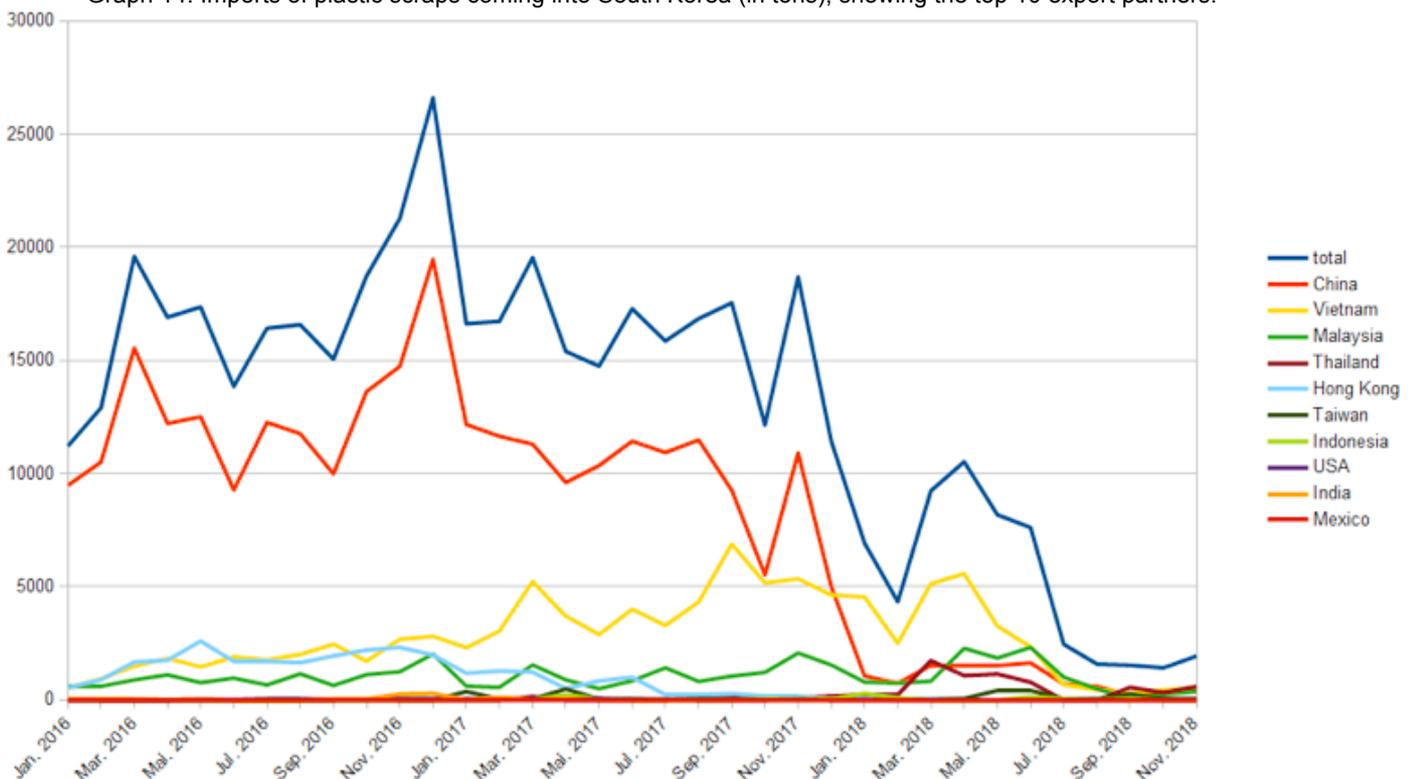
Graph 13: Exports of plastic scraps coming from Indonesia (in tons), showing the top 10 import partners.

- Indonesia's imports sharply rose from 10,000 tons per month in late-2017 to 35,000 tons per month in late-2018. The main partners were Germany at 10,000 tons per month, Australia at 6,000 tons per month, Netherlands, USA and UK at 4,000 tons per month.
- Exports once went almost exclusively to China Mainland, and peaked at 25,000 tons per month in mid-2017. They dropped to 9,000 tons per month in 2018.
- The government has not announced any restrictions on plastic waste import.

i. South Korea



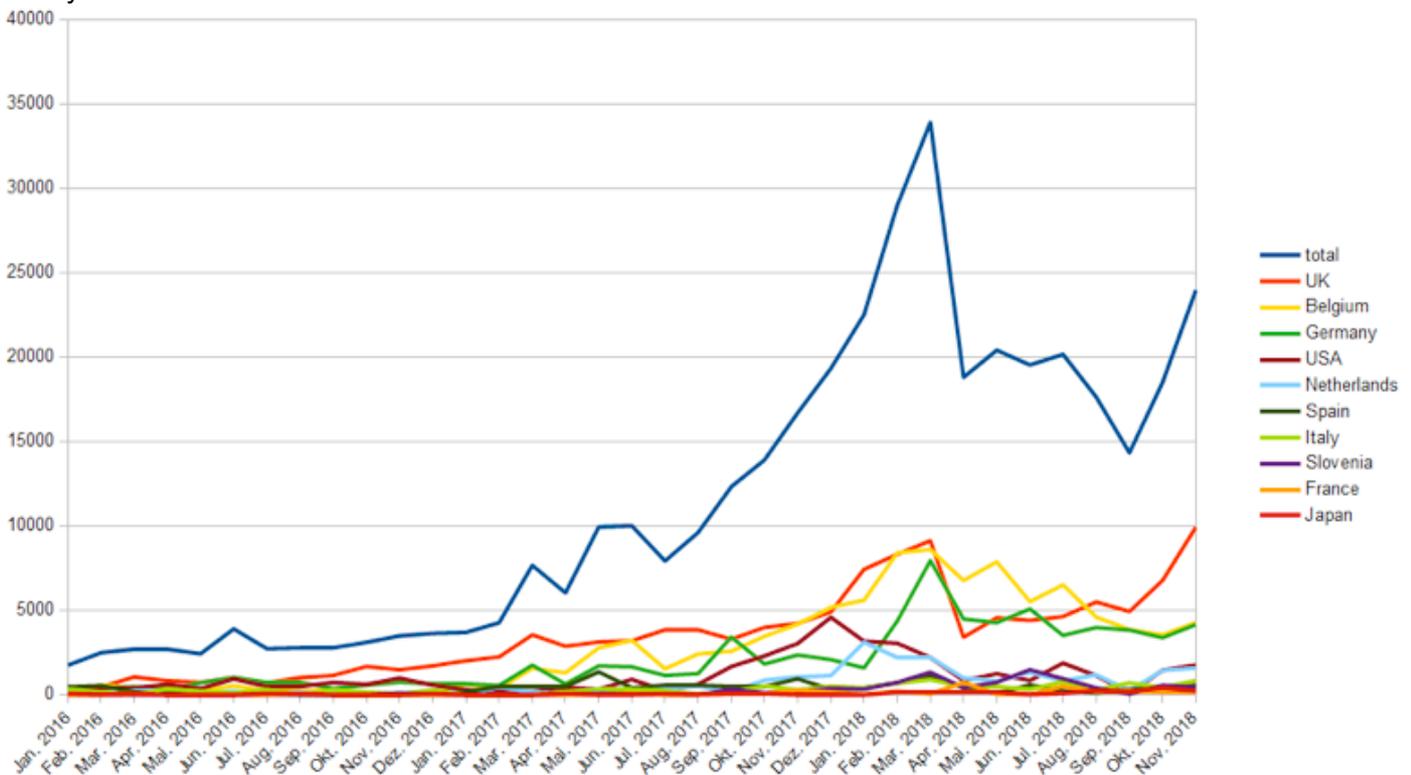
Graph 14: Imports of plastic scraps coming into South Korea (in tons), showing the top 10 export partners.



Graph 15: Exports of plastic scraps coming from South Korea (in tons), showing the top 10 import partners.

- South Korea saw a large increase of imports from 5,000 tons per month in late 2017 to 20,000 tons per month in late 2018, mainly climbing imports from Japan at 10,000 tons per month, the USA at 4,000 tons per month and Thailand at 2,000 tons per month.
- This huge increase of imports has caused a drop in prices for recyclable collected locally, making it economically unattractive to recycle the plastic waste generated within South Korea<sup>18</sup>. Trash started to pile up on the streets with some recyclers resorting to exporting plastic waste illegally to the Philippines<sup>19</sup>.
- Before 2018, South Korea's exports went primarily to China Mainland at 15,000 tons per month. By late 2018, South Korea's export dropped to 2,000 tons per month.

#### j. Turkey



Graph 16: Imports of plastic scraps coming into Turkey (in tons), showing the top 10 export partners.

- Turkey's imports rose sharply from 4,000 tons per month in early 2016 to 33,000 tons per month in early 2018. Imports then dropped to 20,000 tons per month in mid-2018, and has remained quite steady.
- There was a sharp increase in import from the UK at 10,000 tons starting October 2018.
- The government has not announced any restrictions on plastic waste import.

<sup>18</sup> In South Korea, a lesson to be learned from a plastic waste crisis.

<https://www.channelnewsasia.com/news/cnainsider/south-korea-plastic-waste-crisis-reducing-recycling-china-10805292>

<sup>19</sup> Korea takes flak for illegal waste export to Philippines. [https://www.koreatimes.co.kr/www/nation/2018/12/371\\_260197.html](https://www.koreatimes.co.kr/www/nation/2018/12/371_260197.html)

## C. Countries/regions selection and Data Sources

- The research looked into global import and export data of plastic waste, as declared under HS code 3915, between January 2016 and November 2018.
  - HS codes, also known as the Harmonized Commodity Description and Coding System, are a standardized international system to classify globally-traded products.
- Data sources: pre-April 2018 data was taken from UN Comtrade database<sup>20</sup>, while post-April 2018 data was taken from a variety of relevant national statistics<sup>21,22,23,24,25,26,27,28,29,30,31,32,33</sup>.
- We identified the world's top 21 plastic waste export countries/regions by looking into export numbers of plastic waste over two time periods, (i) from April to September 2017 pre-China ban, and (ii) from April to September 2018, post-China ban.
  - The list of exporting countries/regions included in the analysis are: Australia, Belgium, Canada, China Mainland, Czech Republic, France, Germany, Hong Kong, Indonesia, Italy, Japan, Malaysia, Mexico, the Netherlands, Poland, South Korea, Slovenia, Spain, Thailand, UK, and USA.
- Based on the world's 21 top exporting countries/regions identified, we then identified their corresponding top importers, as well as countries/regions that showed a sudden change of import/export due to the China's import ban starting mid-2017.
  - The final list of importing countries/regions included in the analysis are: Austria, Belgium, Canada, China Mainland, France, Germany, Hong Kong, India, Indonesia, Italy, Malaysia, Mexico, Netherlands, Poland, South Korea, Spain, Taiwan, Thailand, Turkey, the USA, and Vietnam.
- The aggregated import-export data for plastic waste between these top 21 exporters and 21 importers provided the basis of the analysis.

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<sup>20</sup> UN Comtrade Monthly Trade Database, United Nations Statistics Division, <https://comtrade.un.org/monthly/Main/Data.aspx#>

<sup>21</sup> Eurostat Database, European Commission, <https://ec.europa.eu/eurostat/de/data/database>

<sup>22</sup> Australian Department of Foreign Affairs and Trade, Australian Department of Foreign Affairs and Trade Statistics Section, <https://dfat.gov.au/pages/default.aspx>

<sup>23</sup> Canadian International Merchandise Trade (CIMT), Statistics Canada Government of Canada, <https://www5.statcan.gc.ca/cimt-cicm/home-accueil?lang=eng>

<sup>24</sup> Hong Kong Interactive Data Dissemination Service for Trade Statistics, Census and Statistics Department Government of Hong Kong, <https://tradeids.censtatd.gov.hk/Index/>

<sup>25</sup> SYSTEM ON INDIA'S MONTHLY TRADE, Department of Commerce GOVERNMENT OF INDIA, <http://commerce-app.gov.in/meidb/comcntq.asp?ie=i>

<sup>26</sup> Indonesian Information Systems Statistics Service, Indonesian Directorate for Dissemination of Statistics, <https://silastik.bps.go.id/v3/index.php/site/index/>

<sup>27</sup> E-Stat - Site for Japanese Government Statistics, Statistics Bureau Japanese Ministry of Internal Affairs and Communications, <https://www.e-stat.go.jp/en/>

<sup>28</sup> Malaysia's External Trade Statistics Database, Department of Statistics MALAYSIA, <https://metsonline.stats.gov.my/>

<sup>29</sup> Mexican System of Commercial Informacion Via Internet SIAVI, Jorge Mexican Secretary of Economy, <http://187.191.71.239/>

<sup>30</sup> Official Korean Trade Statistics, Korea Customs Service, [https://unipass.customs.go.kr:38030/ets/index\\_eng.do](https://unipass.customs.go.kr:38030/ets/index_eng.do)

<sup>31</sup> Official Taiwanese Trade Statistics, Taiwanese Bureau of Foreign Trade, <https://cus93.trade.gov.tw/FSCE010F/FSCE010F/>

<sup>32</sup> Thailand Official Trade Data, Thailand Ministry of Customs, <http://tradereport.moc.go.th/TradeEng.aspx>

<sup>33</sup> USA Trade Data Online, US Census Bureau, <https://usatrade.census.gov/>