Review of Plastic waste generation and Trade in Asia

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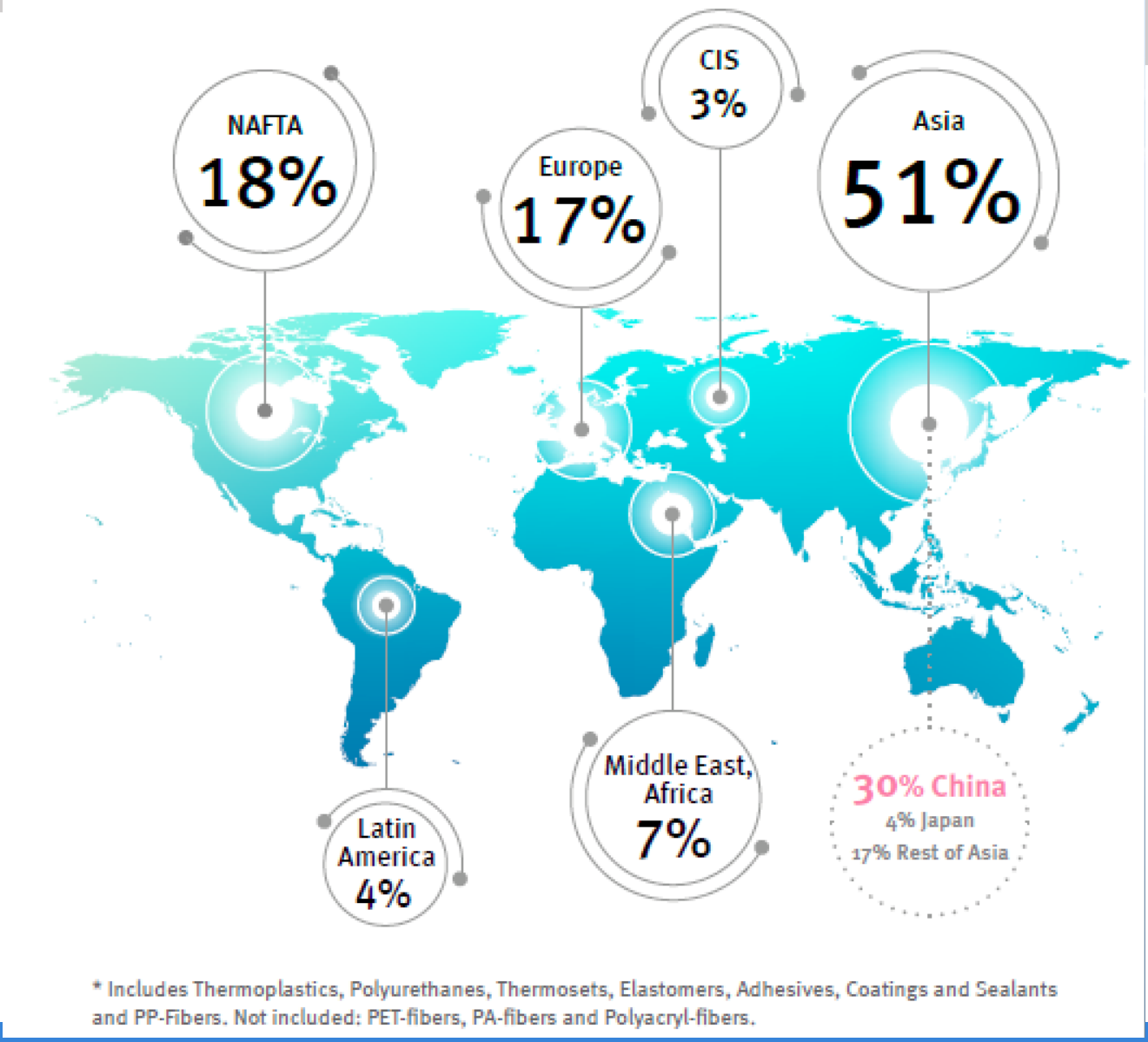
1、Plastic production



Distribution of global plastics Production (2018)

In 2018 Asia reached 51% of world's plastics production
World plastics* production:
359 million tonnes.

Source: Plastics – the Facts 2019
An analysis of European plastics
production, demand and waste data

2、Plastic waste generation

It is estimated, among top 20 countries or regions of plastic waste generation, 8 from Asia (2016)

Table 1. Countries with the highest plastic waste generation in 2016. Calculations using data reported in (*18*), with a refined estimate for the United States (bold text). EU-28 countries are reported collectively (italics).

Country	Plastic waste generation (metric tons)	Total waste generation (metric tons)	% Plastic in solid waste	2016 Population (millions)	Per capita plastic waste generation (kg/year)
United States	**42,027,215**	**320,818,436**	**13.1**	**323.1**	**130.09**
United States	34,020,748	263,726,732	12.9	323.1	105.30
EU-28	*29,890,143*	*243,737,466*	*11.7*	*511.2*	*54.56*
India	26,327,933	277,136,133	9.5	1,324.5	19.88
China	21,599,465	220,402,706	9.8	1,378.7	15.67
Brazil	10,675,989	79,081,401	13.5	206.2	51.78
Indonesia	9,128,000	65,200,000	14.0	261.6	34.90
Russian Federation	8,467,156	59,585,899	14.2	144.3	58.66
Germany	6,683,412	51,410,863	13.0	82.3	81.16
United Kingdom	6,471,650	32,037,871	20.2	65.6	98.66
Mexico	5,902,490	54,151,287	10.9	123.3	47.86
Japan	4,881,161	44,374,189	11.0	127.0	38.44
Thailand	4,796,494	27,268,302	17.6	69.0	69.54
Korea, Rep.	4,514,186	18,576,898	24.3	51.2	88.09
Italy	3,365,130	29,009,742	11.6	60.6	55.51
Egypt, Arab Rep.	3,037,675	23,366,729	13.0	94.4	32.16
France	2,929,042	32,544,914	9.0	66.9	43.81
Pakistan	2,731,768	30,352,981	9.0	203.6	13.42
Argentina	2,656,771	18,184,606	14.6	43.6	60.95
Algeria	2,092,007	12,378,740	16.9	40.6	51.59
Malaysia	2,058,501	13,723,342	15.0	30.7	67.09

Source: Kara Lavender Law, etc. The United States' contribution of plastic waste
to land and ocean. Science Advances. 2020; 6

2、Plastic waste generation

Table 3. Countries with the highest mismanaged plastic waste generated by coastal populations in 2016. The two U.S. estimates (bold text) provide lower and upper bounds reflecting contributions from domestic litter (0.31 Mt), domestic illegal dumping (0.05 to 0.15 Mt), and inadequate management of plastic waste generated during the processing of imported U.S. plastic and paper scrap in countries with greater than 20% inadequately managed waste (0.15 to 0.99 Mt). Mt, million metric tons. HIC, high income; UMC, upper middle income; LMC, lower middle income.

Country	Mismanaged plastic waste (Mt)	Income status	Coastal population (millions)	Per capita plastic waste generation (kg/day)	% Plastic in solid waste	% Mismanaged waste
Indonesia	4.28	LMC	202.49	0.68	14.0	61
India	3.16	LMC	201.20	0.57	9.5	79
United States, upper bound	**1.45**	**HIC**	**117.94**	**2.72**	**13.1**	**2.98**
Thailand	1.16	UMC	26.73	1.08	17.6	62
China	1.07	UMC	270.94	0.44	9.8	25
Brazil	1.03	UMC	78.68	1.05	13.5	25
Philippines	1.01	LMC	92.06	0.39	10.6	74
Egypt, Arab Rep.	0.71	LMC	24.82	0.68	13.0	90
Japan	0.67	HIC	114.26	0.96	11.0	15
Russian Federation	0.62	UMC	10.93	1.13	14.2	98
Vietnam	0.57	LMC	59.46	0.34	12.2	64
United States, lower bound	**0.51**	**HIC**	**117.94**	**2.72**	**13.1**	**2.33**
Bangladesh	0.36	LMC	75.87	0.28	4.7	97
Kuwait	0.35	HIC	3.03	1.59	20.0	100
Oman	0.35	HIC	3.83	1.18	21.0	100
Dominican Republic	0.33	UMC	8.83	1.11	10.0	94
Malaysia	0.33	UMC	24.90	1.23	15.0	20
Mexico	0.27	UMC	24.48	1.20	10.9	23
Argentina	0.26	HIC	17.58	1.14	14.6	25
Peru	0.25	UMC	14.67	0.77	10.5	58
Italy	0.25	HIC	34.59	1.31	11.6	13

It is estimated, among top 20 countries or regions of mismanaged plastic waste generation by coastal populations, 11 from Asia (2016)

Source: Kara Lavender Law, etc. The United States' contribution of plastic waste
to land and ocean. Science Advances. 2020; 6

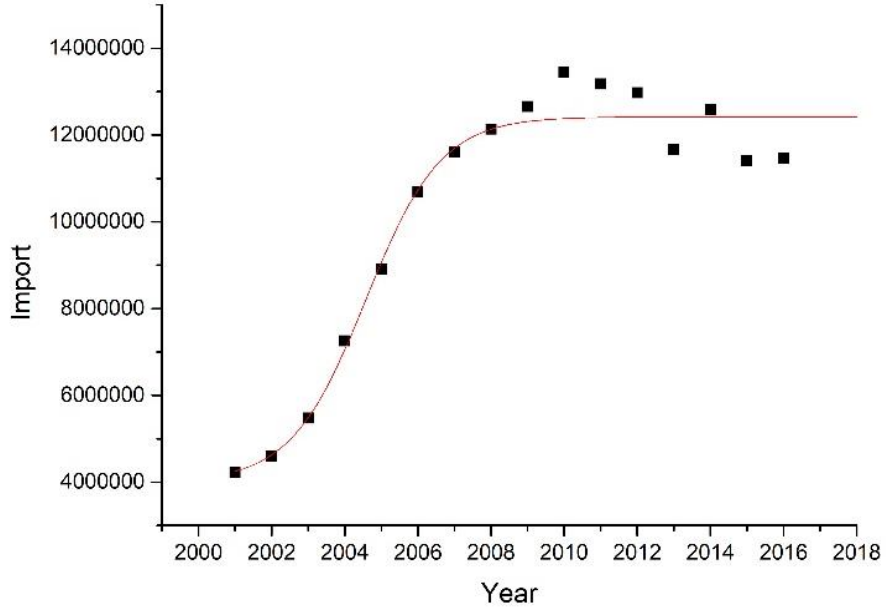
3、 Plastic waste trade

Plastic waste trade policies and impact

The logistic model was used to fit and analyze the data of plastic waste imported by Asia from 2001-2016

It can be found that the plastic waste import tends to be stable since 2013, in that time Chinese Customs launched a 10-month “Green Fence”. Without the adjustment of trade policies from 2017, **the predicted plastic waste import is 12.4 Mt** in 2017. **Compared with imported quantities in 2017, it has reduced about 2.9 Mt plastic waste import.**

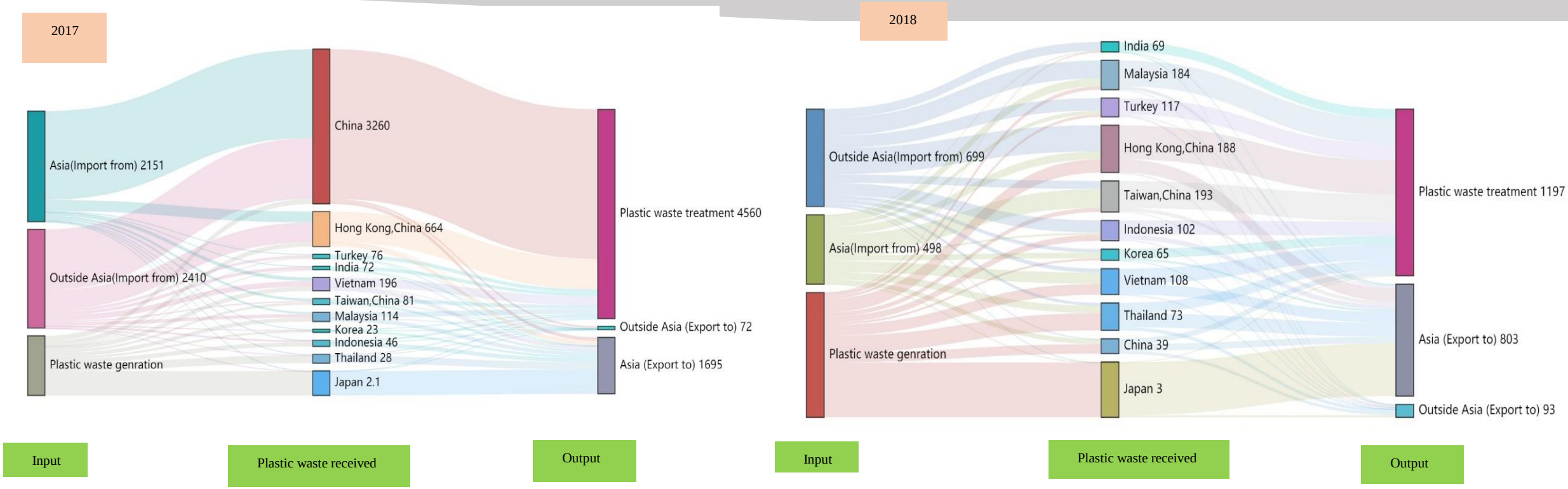
According to the analysis, about 50% of the plastic waste was imported from outside Asia, it can be found that the implication of **trade policies adjustment has prevented 1.4 million tons of waste plastic from flowing into Asia.**



Analysis and fitting of Asian plastic waste import trends, tons

Source: Yangyang Liang, etc. An analysis of the plastic waste trade and management in Asia. Waste Management. 2021;119

3、 Plastic waste trade

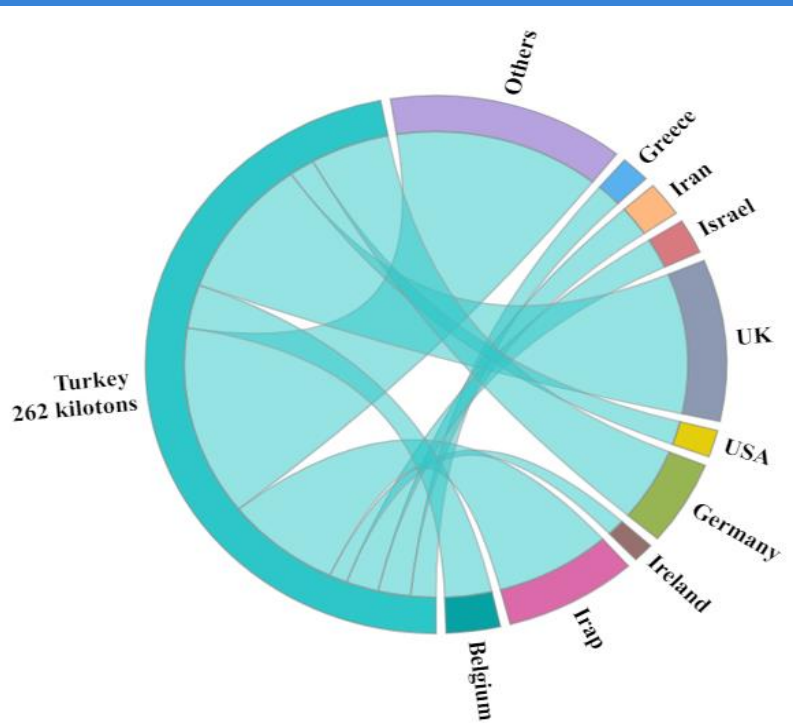


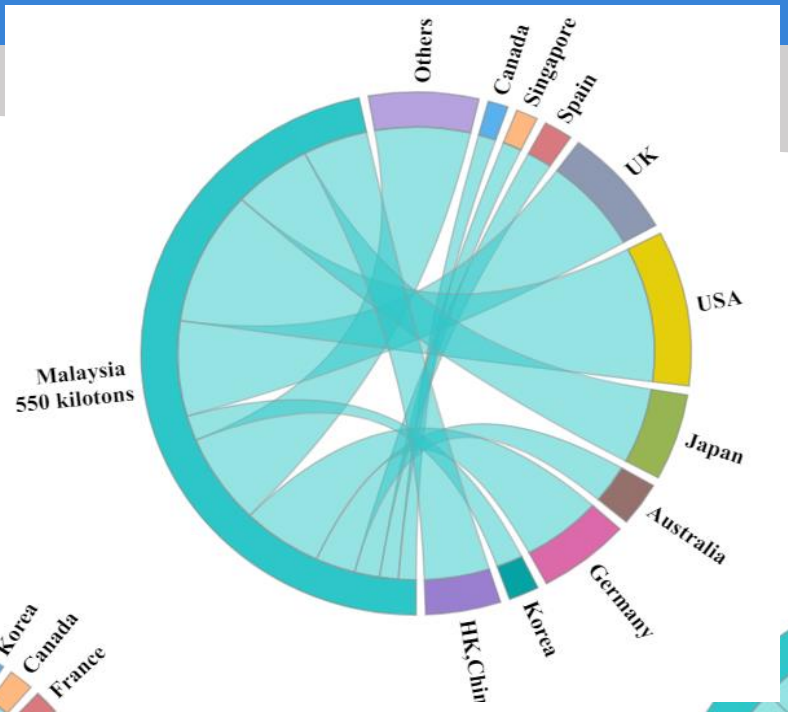
* “Plastic waste generation” is added here in order to balance input and output; it is not equal to the total waste generation.

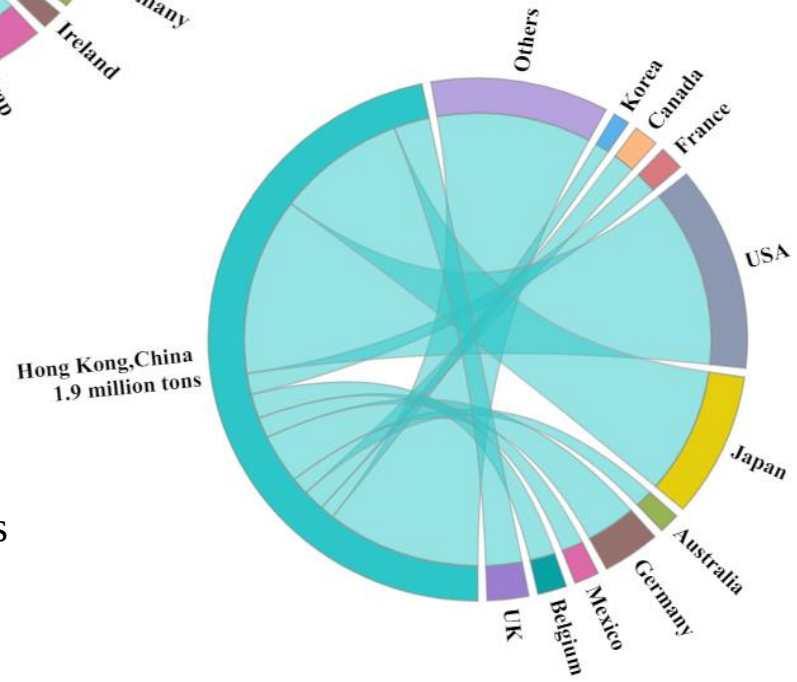
Plastic waste trade flow in typical Asian countries and regions (in millions of dollars), in 2017 and 2018

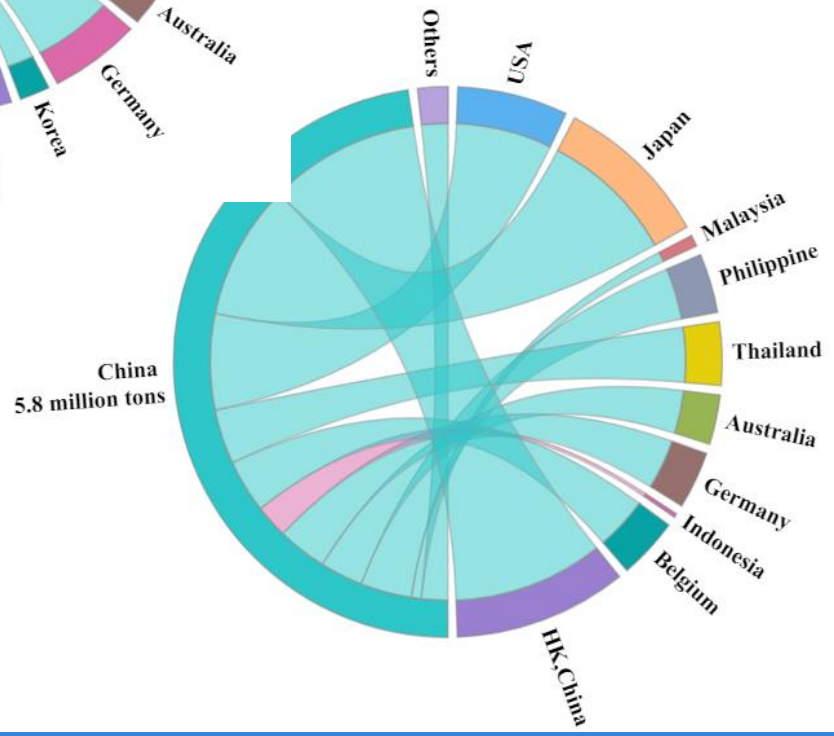
Source: Yangyang Liang, etc. An analysis of the plastic waste trade and management in Asia. Waste Management. 2021;119

3、 Plastic waste trade



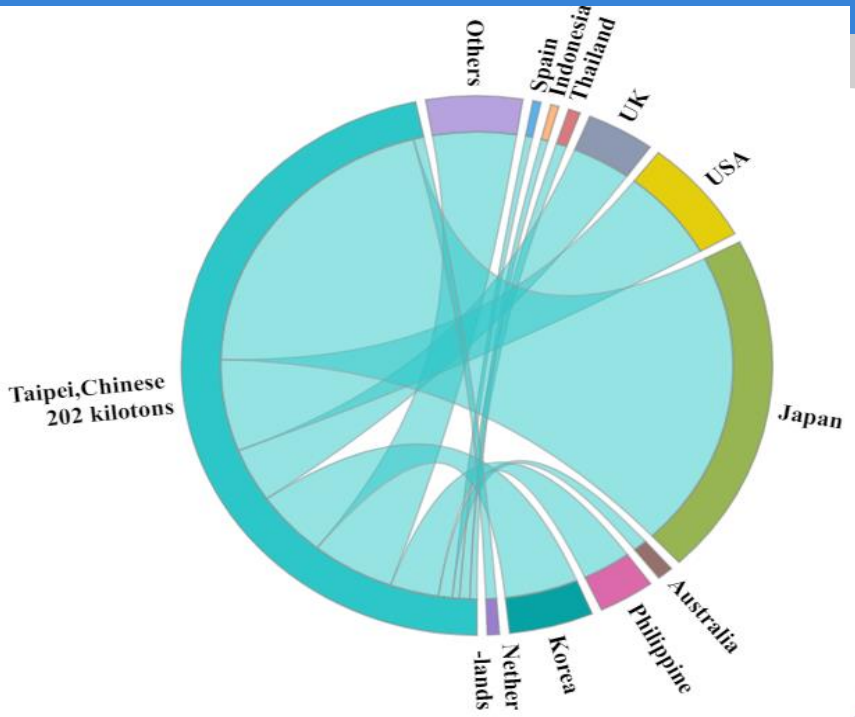


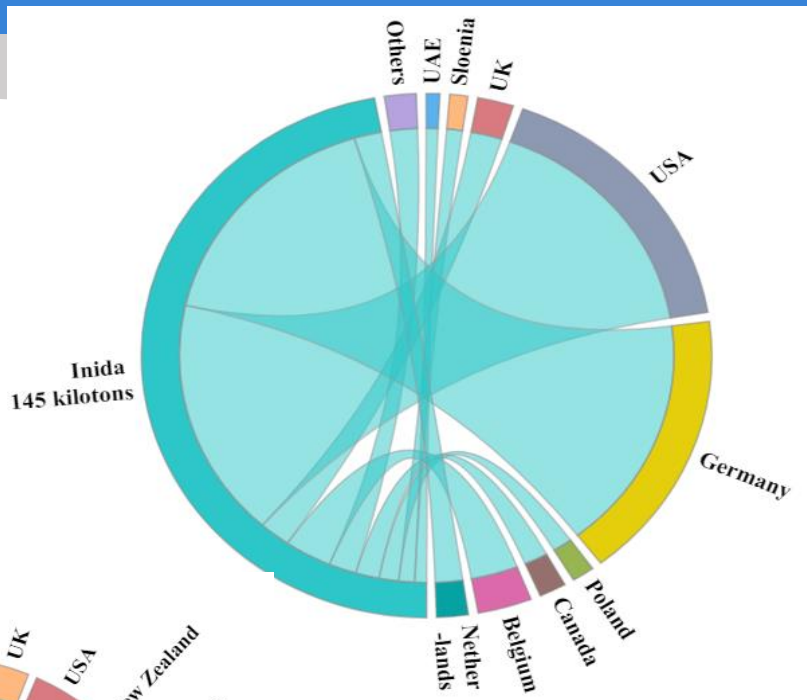


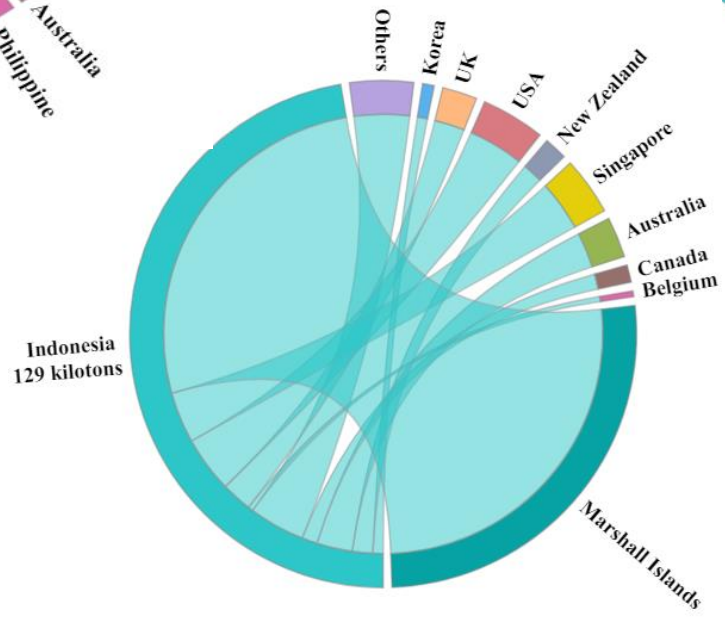


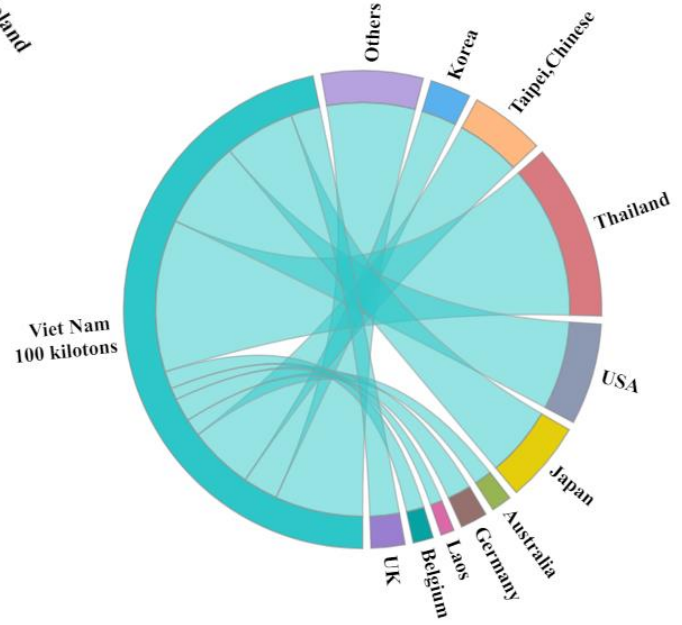
The main waste plastics exporters to typical countries and regions in Asia (2017)

3、 Plastic waste trade







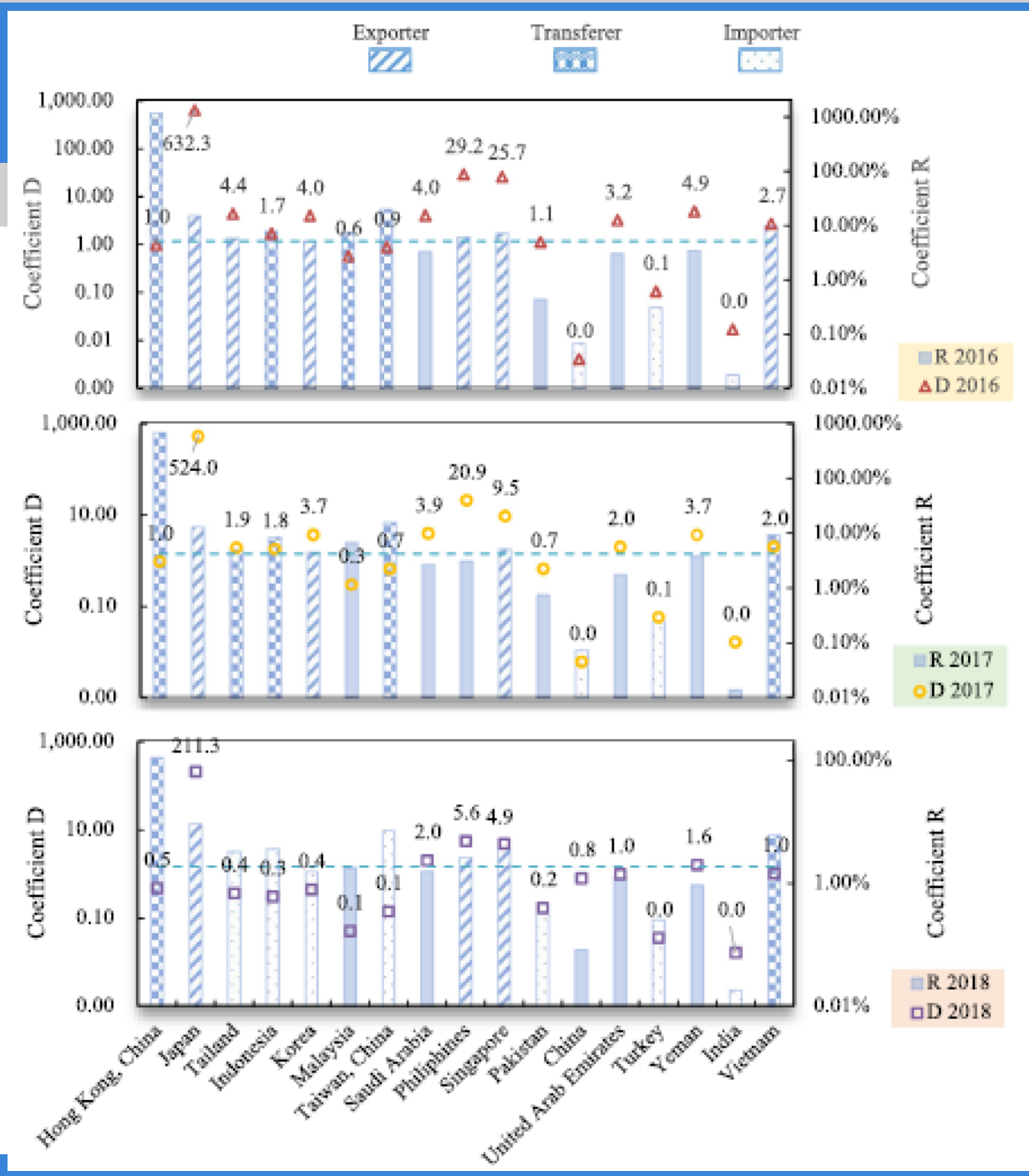


The main waste plastics exporters of typical countries and regions in Asia (2017)

3、 Plastic waste trade

Plastic waste trade policies and impact

- A country’s role in the plastic waste trade can change, however, with policy trends.
- In 2017, Thailand became a transferrer, and Malaysia acted as an Importer.
- In 2018, Thailand, Indonesia, Korea, Taiwan (China) and Pakistan became main importers, while the transfer quantity of Hong Kong (China), declined noticeably.



Source: Yangyang Liang, etc. An analysis of the plastic waste trade and management in Asia. Waste Management. 2021;119

4、 Some thoughts

Asia is focus center of both plastic production and plastic waste generation, transboundary movement and disposal. National policy will be more likely affect international situation

Distinguish between Y48 and B3011?

Identification between waste and raw material?

End-of-life product and end-of-waste material?

How to balance economic development and environment protection?

Reduction of plastic production VS promotion of plastic waste management

4、 Some thoughts

End-of-waste criteria

Basel Convention

- Glossary of terms (2015)
- Possibilities for waste to cease to be waste include:
- (i) It has been prepared for reuse
- (ii) It has undergone a recycling operation and that operation is completed
- (iii) It has otherwise gained end-of-waste status as a result of a recovery operation

EU

- three specific regulations establishing end-of-waste criteria for priority waste streams: iron, steel and aluminium scrap (2011), glass cullet (2012), and copper scrap (2013)

China

- Recycling materials for brass (GB /T 38470-2019)
- Recycling materials for copper (GB /T 38470-2019)
- Recycling materials for cast aluminum alloys (GB /T 38472-2019)
- More is coming…….

source:
http://www.basel.int/Implementation/LegalMatters/LegalClarity/Glossaryofterms/SmallIntersessionalWorkingGroup/tabid/3622/Default.aspx
http://openstd.samr.gov.cn/bzgk/gb/index;
http://ec.europa.eu/environment/waste/framework/end_of_waste.htm.

5、 Activities undertaking by BCRC China

Title of the Project: Capacity Building on Environmentally Sound Management of Single-use Plastic and its Waste in Asia-pacific Countries

Source: SGP, BRS Secretariat

Countries of project implementation: Cambodia, Myanmar, Sri Lanka

Project duration: 12 months

Activities: 1) Establish Inventory and standards for sing-use-plastic and its waste in Asia-pacific countries; 2) Propose the policy options for single-use-plastic and its waste in Asia-pacific countries; 3) Develop Regional strategy on single-use plastic and its waste

5、 Activities undertaking by BCRC China

Title of the Project: Sino-Norwegian Cooperation Project on Capacity Building for Reducing Plastic and Microplastic Pollution(SINOPLAST)

Source: Norwegian government

Countries of project implementation: China

Project duration: 48 months

Activities: 1) Baseline for litter, plastic waste and microplastics established for China; 2) Environmental monitoring capacity of litter and microplastics improved; 3) Reduced amount of litter and plastics in selected catchments; 4) A management tool for plastic measures, transport and fate developed; 5) Cost-benefit and societal impacts analysis carried out for a suite of identified measures; 6) Increased capacity and awareness on plastic waste and pollution in China

5、 Activities undertaking by BCRC China

Title of the Project: Revision of “Technical Specifications for Pollution Control during Collection and Recycle of Waste Plastics of China”

Source: Ministry of Ecology and Environment of China

Countries of project implementation: China

Project duration: 12 months

Activities: 1) investigate recycling and disposal situation of plastic waste in China; 2) revise the technical specifications adopted 2007

THANK YOU!

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