Experimental study: Using waste accounts for measuring plastic flows in the EU economy

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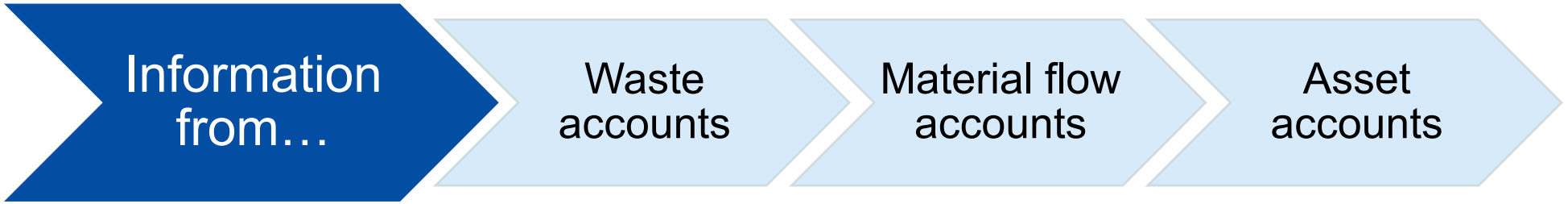
In this presentation…

1. Scope of study of flows of plastic
2. Main data sources used
3. Stages of the life cycle of plastics and main application sectors
4. Plastic (Sankey) flow diagram

1. Scope of study of flows of plastic



Including the quantification of imports, domestic production, consumption, recycling and other types of waste treatment

Description of life cycle of plastics and compared with main application sectors

As a result, a Sankey diagram is compiled, showing the plastic flows from plastic production to final treatment, including the circular flows back into the economy

Objective: reconcile figures on the same order of magnitude
Scope: waste collected and managed. No losses to the environment

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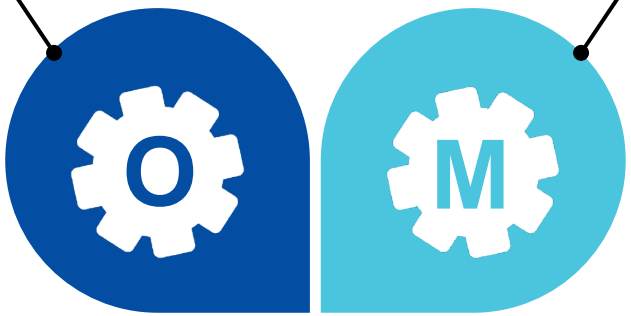
2. Main data sources used: **waste accounts**

Plastic flows is an example of application of **waste accounts project:**

Objective

- Pilot SEEA waste accounts for EU
- Build PSUT:
  - Supply: waste generation
  - Use: waste treatment & destination



Methodology

- Modelling with a flow perspective, 1 flow for each EWCStat category
- Composition of EWCStat categories is modelled
- Compatible with MFA
- Scope only EU-level, national level not possible

More information on https://circabc.europa.eu/ui/group/b01d2930-990e-44fb-9121-a9a6b00a1283/library/1de290d0-90ed-4b7c-8d15-e6354a0a1131/details

2. Main data sources used: **waste accounts**

Table 5: Domestic supply of plastic-containing waste categories and estimated share of plastic components, EU27, 2016

EWC-Stat category		Primary domestic waste supply	Estimated share of plastic components	
		1 000 t	weight-%	1 000 t
W05	Health care and biological wastes	1,570	30%	474
W074	Plastic wastes	10,340	100%	10,340
W08A	Discarded equipment	3,750	27%	1,008
W081	Discarded vehicles	6,240	11%	717
W0841	Batteries, accumulators wastes	1,010	10%	101
W101	Household and similar wastes	135,250	13%	17,583
W102a	Mixed, undifferentiated materials / packaging	9,990	58%	5,763
W102b	Mixed, undifferentiated materials / rejects	4,850	10%	485
W121	Mineral C&D wastes	12,578	2%	252
P-38.32.33	Plastic by-products	2,250	100%	2,250
Total domestic plastic waste supply		‘-	‘-	**38,972**

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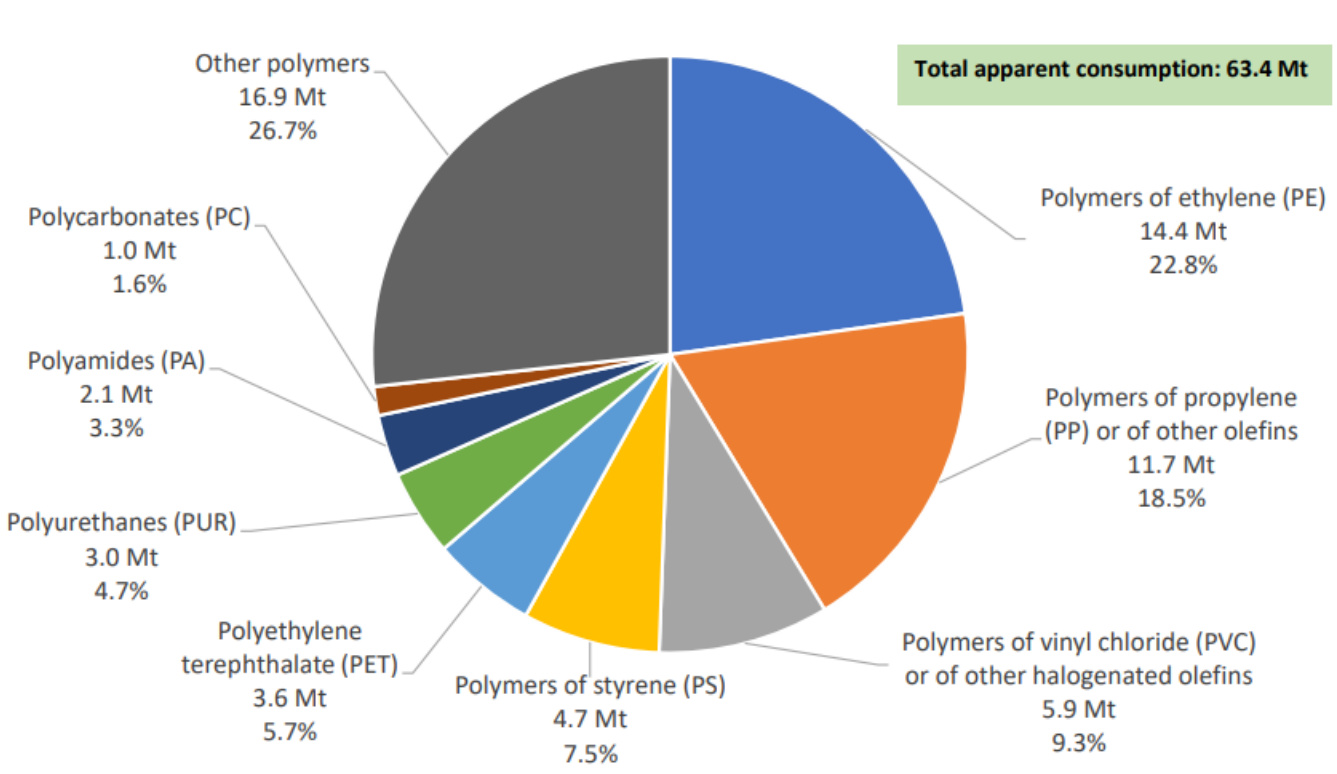
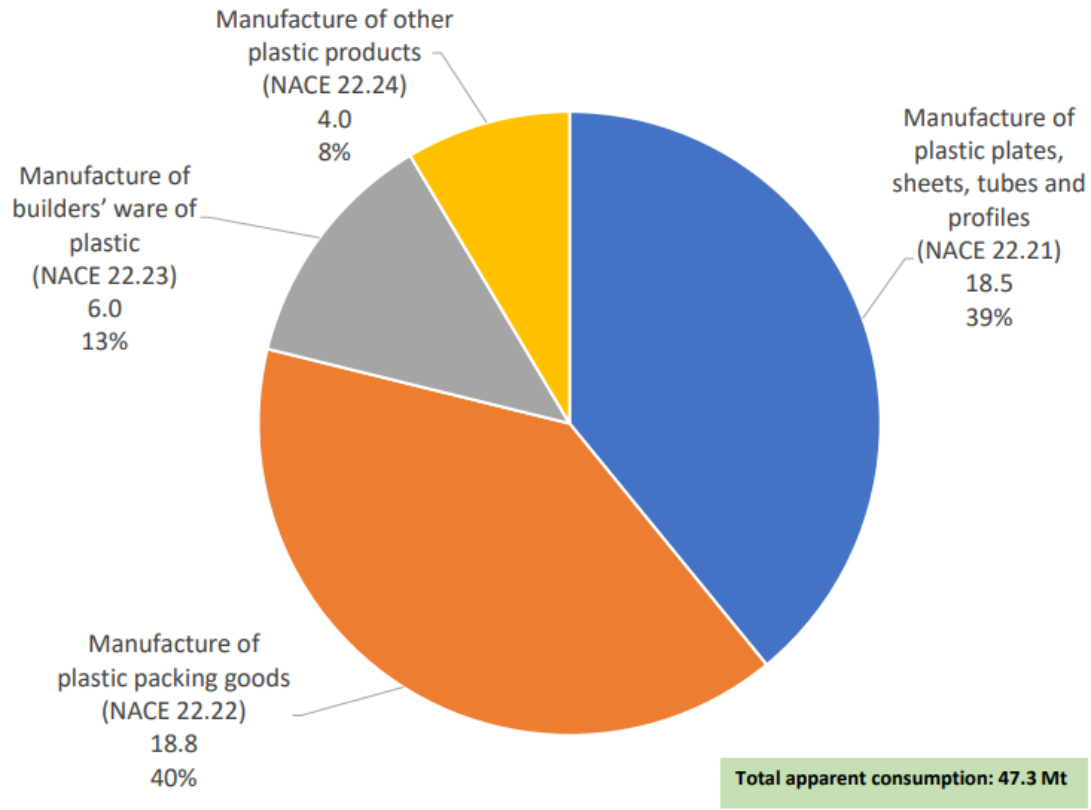
2. Main data sources used (continued)

- **Production and trade statistics**





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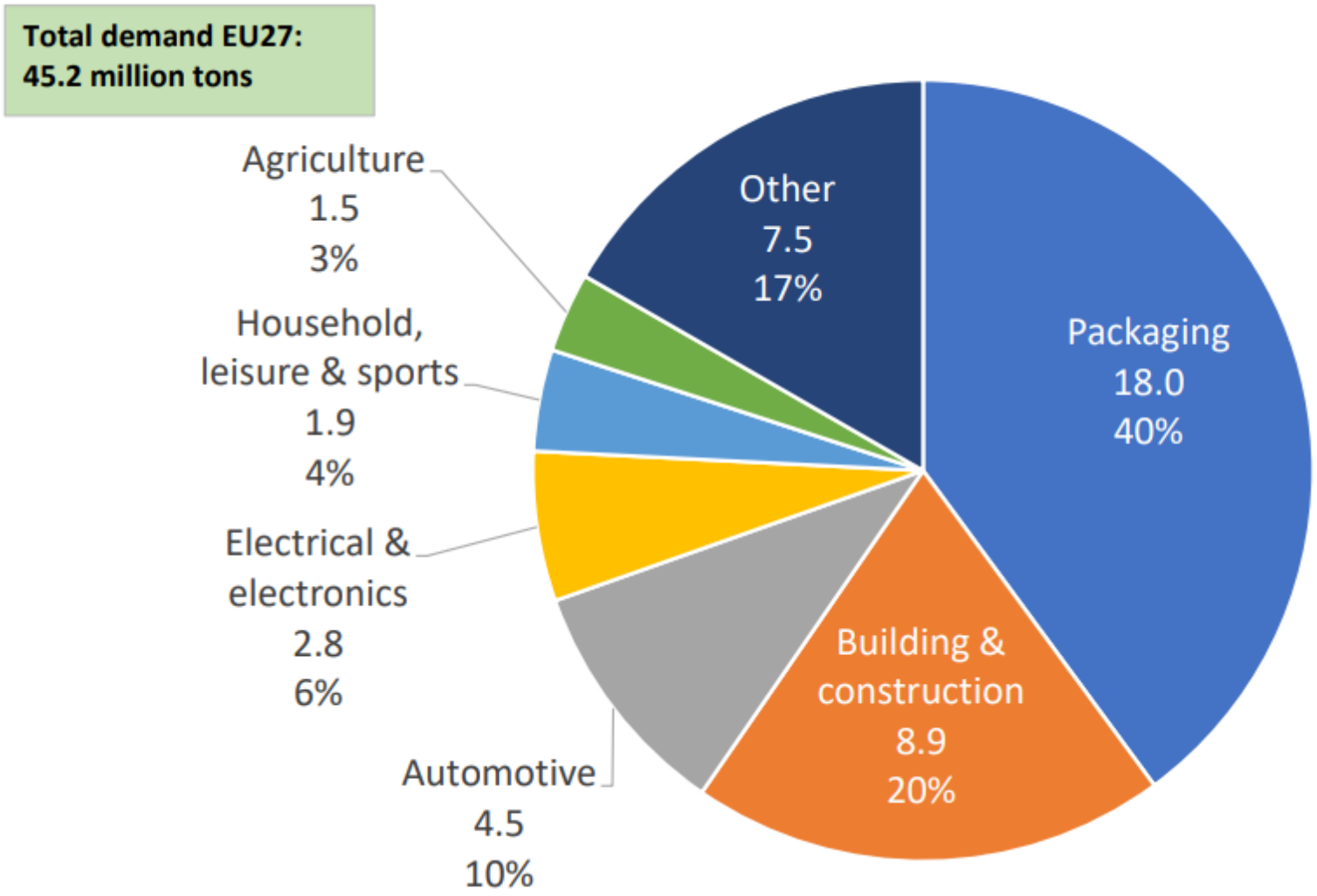
2. Main data sources used (continued)

- **Data from PlasticsEurope**



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2. Main sources selected (continued)

- **Data from the Circular Plastics Alliance (CPA)**

Segment	Ref. Year (s)	European converters plastic demand	Tonnes of plastic waste collected	Tonnes sorted for recycling	Percentage sorted for recycling	Tonnes recyclate produced in the EU	Percentage recyclate production out of sorted for recycling
Agriculture[3]	2019	721,500[4]	756,000[5]	756,000[6]	100%	334,000	44%
Automotive[7]	2019	5,100,000	1,500,000	350,000	23%	150,000	43%
Building & Construction[8]	2018	10,137,600[9]	1,746,000	450,000	26%	340,000	76%
Packaging[10]	2016-2019	20,428,800	16,119,000	6,955,000	43%	3,906,000	56%[11]
WEEE (Household only	2016	1,749,030	752,500	717,589	95%	561,373	78%
Total		**38,136,930**	**20,873,500**	**9,228,589**	**58%**	**5,291,373**[12]	**59%**

Reference year: 2016

Geographic coverage: EU 27

- **Monitoring data for packaging, end-of-life vehicles (ELV) and waste electrical and electronic equipment (WEEE)**

+ Other sources, where available…

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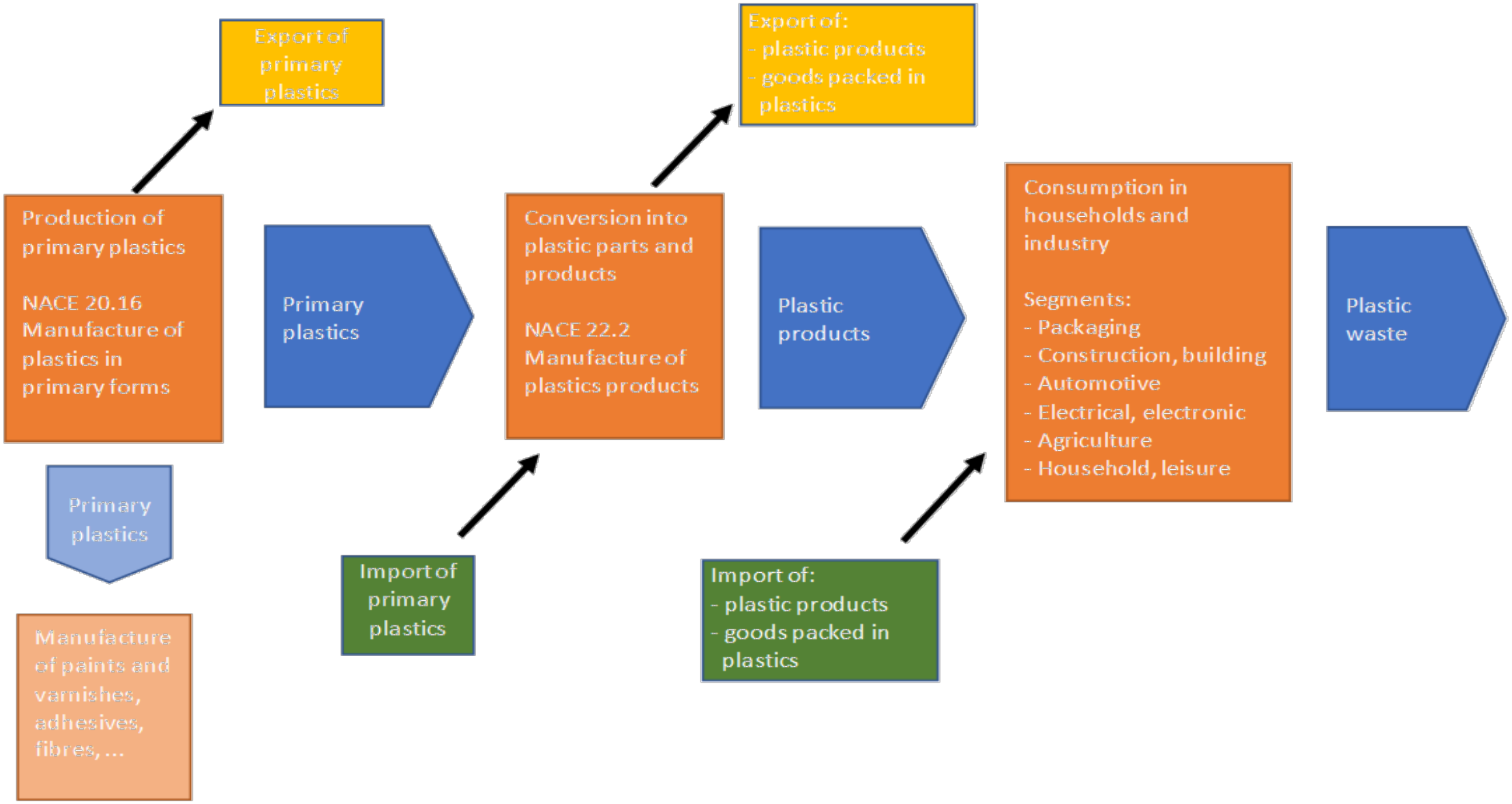
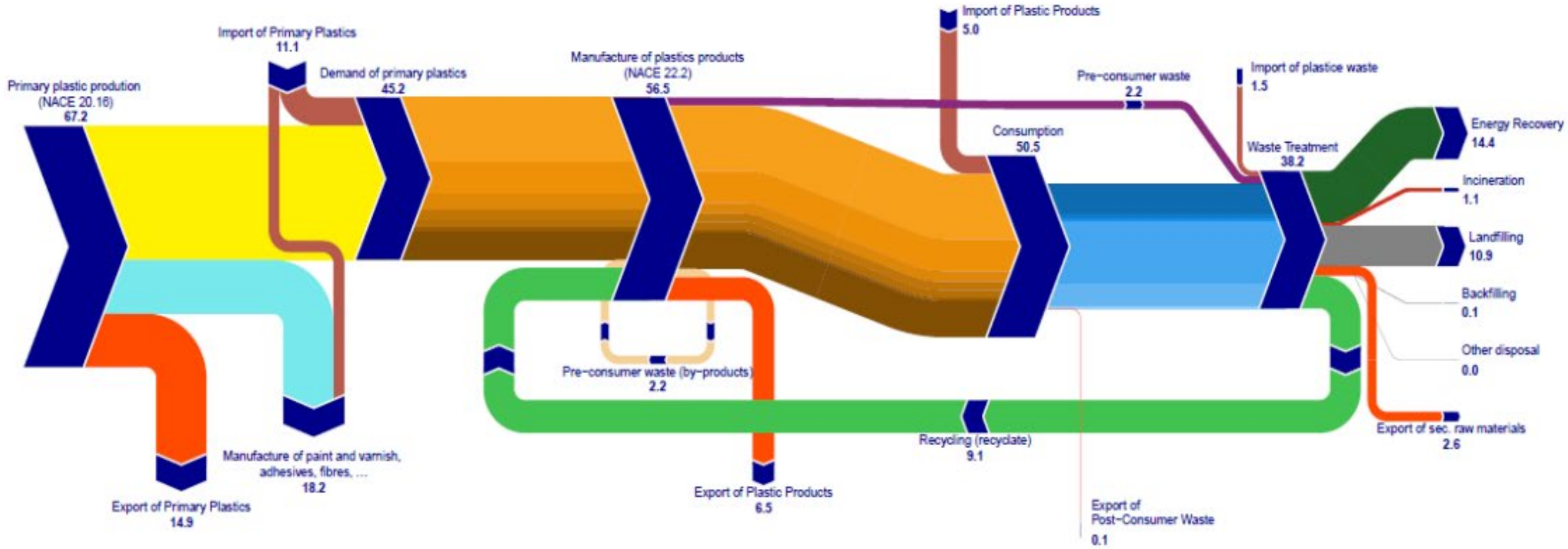
3. Stages of life cycle of plastics and main application sectors



4. Sankey diagram



4. Sankey diagram (continued)

Detailed data by plastic segments

Outflows of converters demand		Outflows of NACE 22.2		Outflows of consumption	
Segment	Quantity	Segment	Quantity	Waste category	Quantity*
Packaging	18.0	Packaging	18.2	W05 Heath care waste	0.5
Construction	8.9	Construction	8.9	W074	8.1
Automotive	4.5	Automotive	3.0	W08A	1.0
Electro-, electronical	2.8	Electro-, electronical	2.3	W081	0.7
Households, leisure	1.9	Households, leisure	2.3	W0841	0.1
Agriculture	1.5	Agriculture	0.7	W101	17.6
Other	7.5	Other	10.1	W102 packaging	5.8
				W102 paper rejects	0.5
				W121 mixed C&D waste	0.3
Total	45.2		45.5		34.5

* The total figure is lower than the total amount of waste treated of 38.2 t due to imports (1.5 Mt) and pre-consumer plastic waste (2.25 Mt), which is shown in the Sankey diagram as separate flow. Part of the import 0.7 Mt and the pre-consumer waste is shown in under the category W074, so that the amount of W074 is also lower than in Table 6.

Conclusions…

1

Data quality:

- Limited data on pre-consumer waste available.
- PlasticsEurope data reflects primary plastics, not consumption.
- Production/trade statistics less reliable for plastic products, potentially underestimated.
- Imports/exports cover pure plastic products, not plastics in products or packaging.
- Used goods (vehicles, EEE) imports/exports not considered.

2

Waste accounts:

- Results compared to other sources, generally reasonable.
- Plastic packaging recycling likely overestimated due to underestimated losses
- Recycling rates based on PPWD-data measure sorting output, not final processed amount.
- Composition data crucial for waste flow model, especially for mixed waste categories.

More information: https://circabc.europa.eu/ui/group/b01d2930-990e-44fb-9121-a9a6b00a1283/library/b1e41bf3-ec32-409b-a07b-13639dcc073e/details

Thank you

Feedback to ESTAT-WASTE-STATISTICS@ec.europa.eu
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