Bridging The Recyclate Gap
by
Credit Trading:

Certified Recycled Content

AGENDA

- Current Situation 2025: Recycling Crisis vs. High Ambition
- PPWR 2030: Recycled content quotas for plastic packaging
- Remaining challenges 2030:
    - EFSA approval for food-grade polyolefins not expected in time
    - Technical impossibility of recyclate on modern packaging machines
    - So far, design for recyclability activities not reaching market in time (flexible packaging: 40% PO-Flex waste)
    - Recyclate gap
- The Solution: Credit trading for recycled content

CURRENT SITUATION 2025

Recycling Crisis vs. High Ambition

Recycling crisis:

- Too little separate collection and sorting in EU
- So far, design for recyclability activities showing no impact on product quality, prices and yields in recycling
- Low recyclate utilisation rate, <7% high value PCR in plastic products
- Recyclers leaving the market due to too low virgin prices

EU **packaging and packaging waste regulation** (PPWR) with recyclate utilisation rates
of 10-35% by 2030

REMAINING CHALLENGES 2030

CONTACT SENSITIVE PACKAGING REQUIREMENTS 2030

EU Packaging Regulation (PPWR) foresees recycling rates of 10% - 35% by 2030

By 01/2029, the Commission will adopt a delegated act on the calculation/review of the recycled content

contact sensitve packaging(3)
(all except PET)

2030 > 10%

2040 > 25%

All other plastic packaging

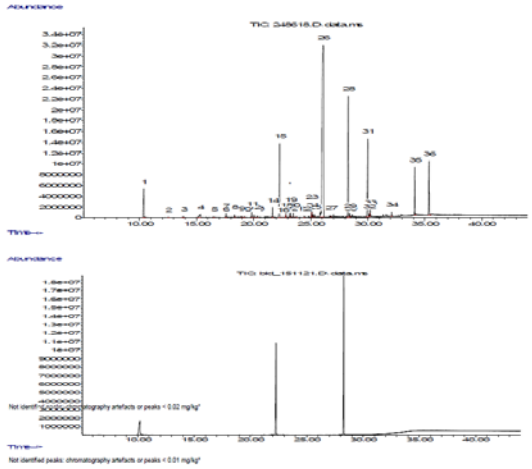
2030 > 35%

2040 > 65%

(3) This requirement excludes most medical or compostable packaging or plastic parts that account for less than 5 % of the total weight of a packaging format.

REMAINING CHALLENGES 2030

EFSA permit for food grade polyolefins not expected in time (cautionary principle)



11	19,84	N/MW	possibly branched Alkylester	N/P					
12	20,03	N/MW	probably Alkyloxyester	N/P	0,003	0,02			
13	20,34								
14	21,66	250	2-Ethylhexyl salicylate	118-60-5	0,01	0,06	NIAS (1)	-	50	see below
15	22,28		d-Nonadecane (IS)							
16	22,83	276	7,9-Di-tert-butyl-1-oxaspiro(4,5)deca-6,9-diene-2,8-dione	82304-66-3	0,004	0,02	NIAS (1)	-	0,09	see below
19	23,21	256	n-Hexadecanoic acid	57-10-3	0,02	0,10	CH-List A and (EU) No 10/20	FCM-No.: 105	none	Yes
20	23,48	284	Ethyl palmitate	628-97-7	0,01	0,03	(EU) No 10/2011	FCM-No.: 879	none	Yes
22	24,44	N/MW	possibly Alkyloitrate	N/P	0,002	0,01				
23	25,08	342	probably Tributyl aconitate	7568-58-3	0,01	0,07	NIAS (1)	-	1,8	see below
24	25,12	284	Octadecanoic acid	57-11-4	0,003	0,02	CH-List A and (EU) No 10/20	FCM-No.: 106	none	Yes
25	25,32	360	probably n-Butyl citrate	77-94-1	0,003	0,02	CH-List A	CH-ID No.: 94	0,05	see below
26	26,10	402	Tributyl acetyloitrate	77-90-7	0,67	4,04	CH-List A and (EU) No 10/20	FCM-No.: 138	none	Yes
29	28,41	N/MW	probably Alkylamide	N/P	0,002	0,01				
31	30,01	337	Erucylamide	112-84-5	0,10	0,63	CH-List A and (EU) No 10/20	FCM-No.: 271	none	Yes
33	30,22	N/MW	possibly sugar derivative	N/P	0,005	0,03				
34	32,10	N/MW	possibly Alkyloxyester	N/P	0,003	0,02				
35	34,13	646	Irgafos 168	31570-04-4	0,04	0,23	CH-List A and (EU) No 10/20	FCM-No.: 671	none	Yes
36	35,38	662	Irgafos 168 ox	95906-11-9	0,07	0,43	NIAS (1)	-	60	see below
	sum	N/MW	sum of branched hydrocarbons	N/P	0,12	0,72				
Sum					1,12	6,72				

REMAINING CHALLENGES 2030

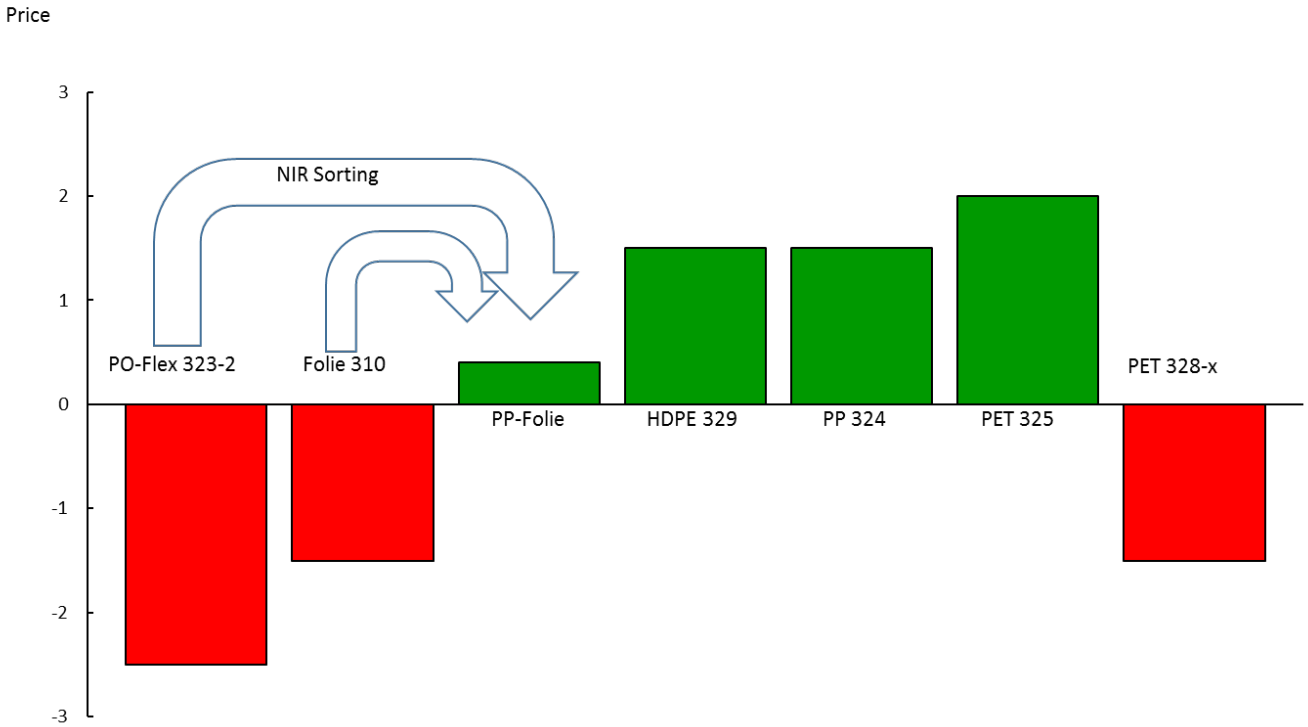
Technical impossibility of running recyclate on modern packaging machines (odour, colour, gels)

REMAINING CHALLENGES 2030

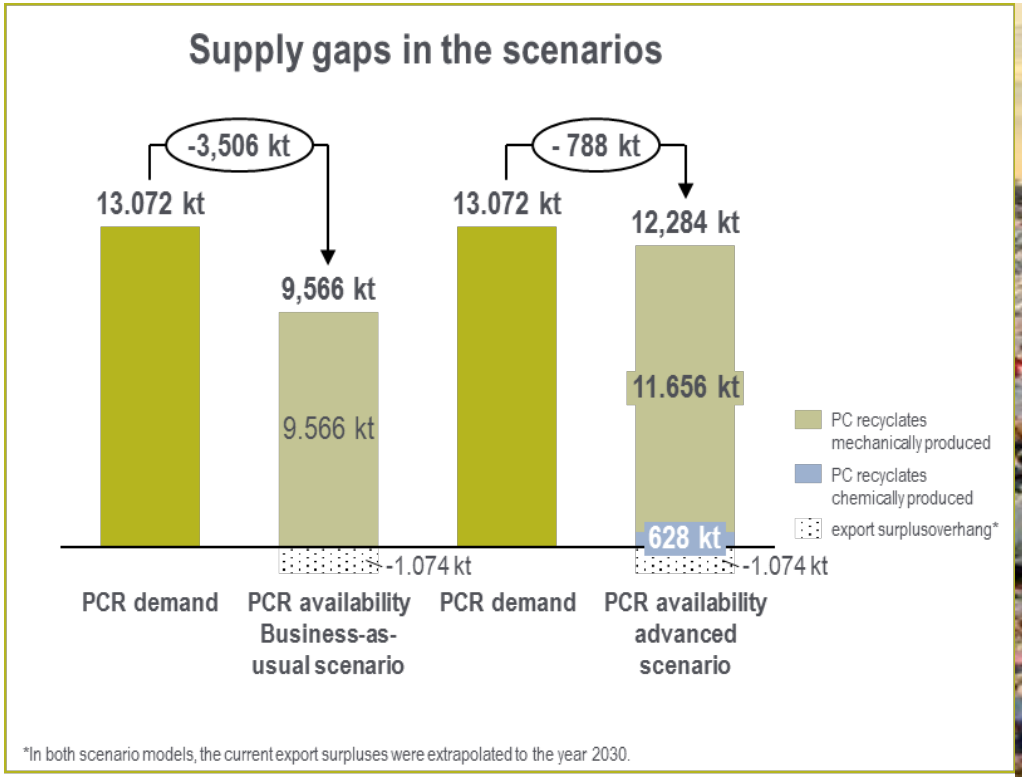
- Approx. 40% of all packaging cannot be “high value” recycled
- Taxes in England and Spain without impact

REMAINING CHALLENGES 2030

Recyclability vs. Circularity

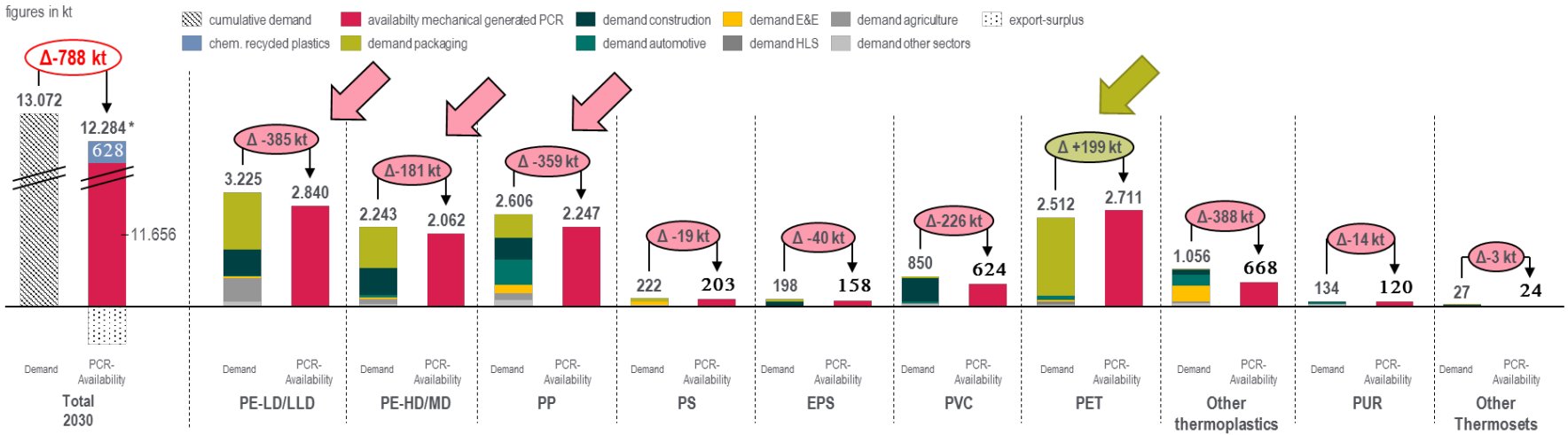


REMAINING CHALLENGES 2030



MAJOR PCR BOTTLENECKS

- GAP VARIES, IN PARTICULAR FOR POLYOLEFINS THAT ARE IMPORTANT FOR THE PACKAGING SECTOR



* Post-consumer recyclates produced less export surplus; the supply GAP is calculated taking into account an assumed export surplus of 1,074 kt (unchanged from 2022)
Chemically recycled plastics only partially reduce the supply gap. Different polymers are produced from the base materials (naphtha and monomer) depending on market demand

Source: Conversio 12/24

THE SOLUTION

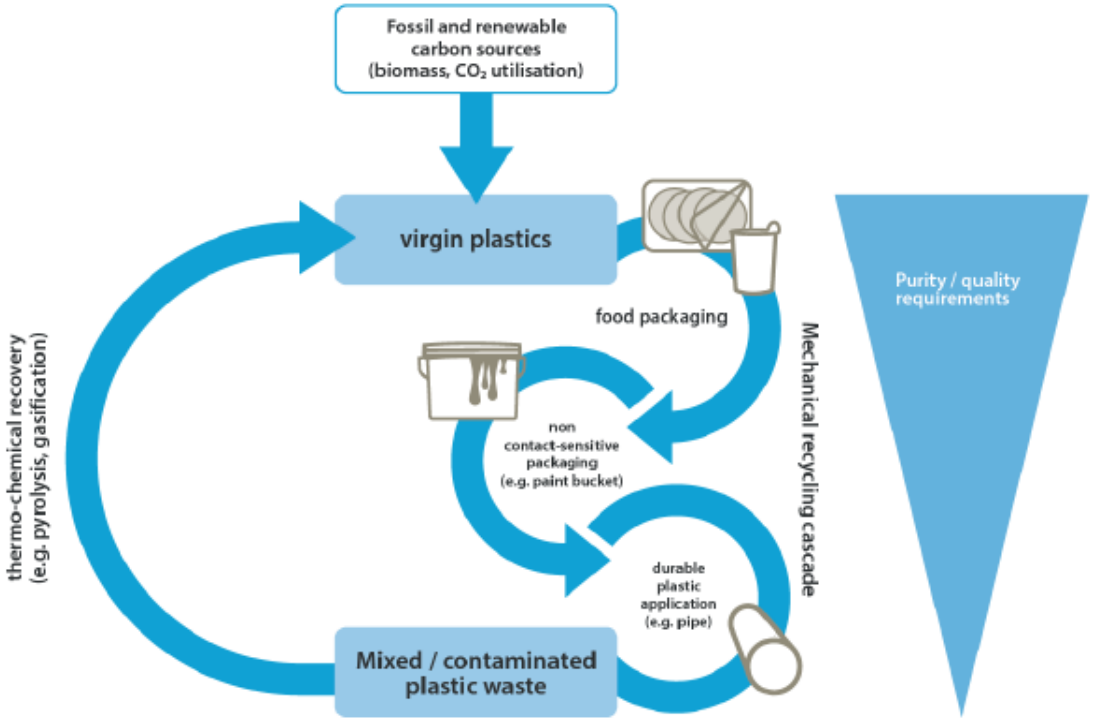
CERTIFIED RECYCLED CONTENT

Kofinanziert von der Europäischen Union

Ministerium für Umwelt, Naturschutz und Verkehr des Landes Nordrhein-Westfalen

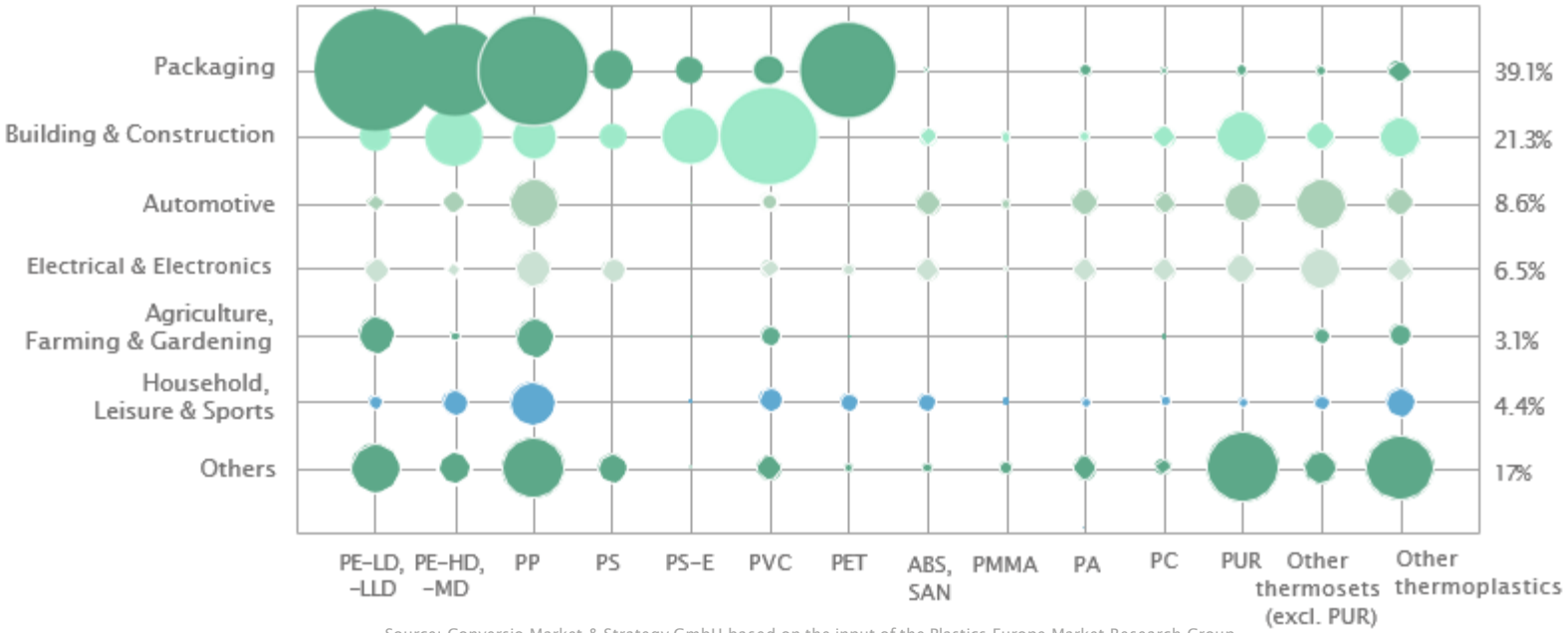
UNDERLYING PRINCIPLE

"Some product can use more, others less recycled materials.
The cascading use of recycled materials enables a long-lasting and energy-efficient use of materials. To allow for the economically **most efficient use** of recyclates a crediting system should be established."
(IK Industrievereinigung Kunststoffverpackungen e.V.)



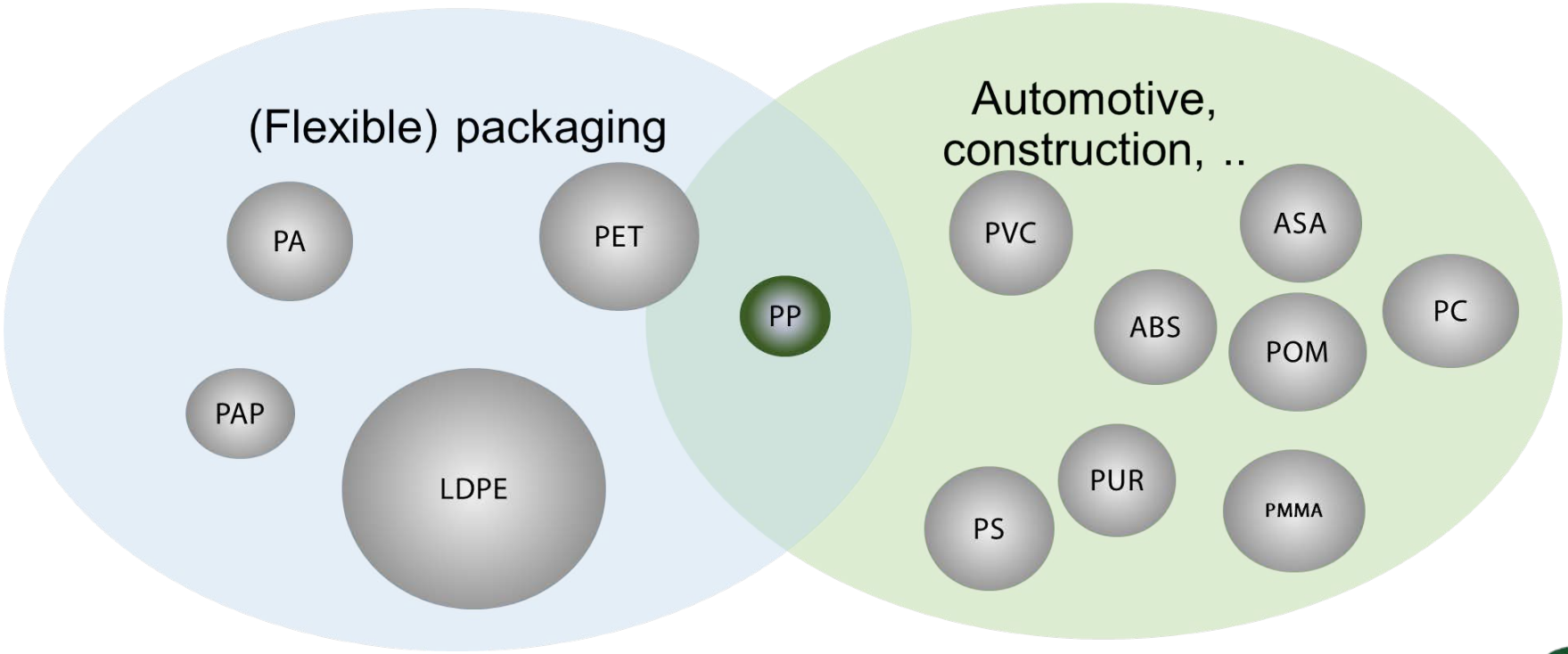
Source: IK Industrievereinigung Kunststoffverpackungen e.V.

EUROPEAN PLASTICS CONVERTERS' DEMAND BY APPLICATION AND TYPE



Source: Conversio Market & Strategy GmbH based on the input of the Plastics Europe Market Research Group (PEMRG) The above data are rounded estimations.
Demand data are built on estimations of quantities bought by European converters, including imports.
Demand for recycled plastics and bio-based/bio-attributed plastics is not included.
Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.
Numbers behind this graph are available upon request. Plastics –
the Facts figures on PA only cover PA6 and PA66.

DIVERSITY OF POLYMERS IN INDUSTRY



Cooperation?

Why don’t we connect the two sectors working together already?

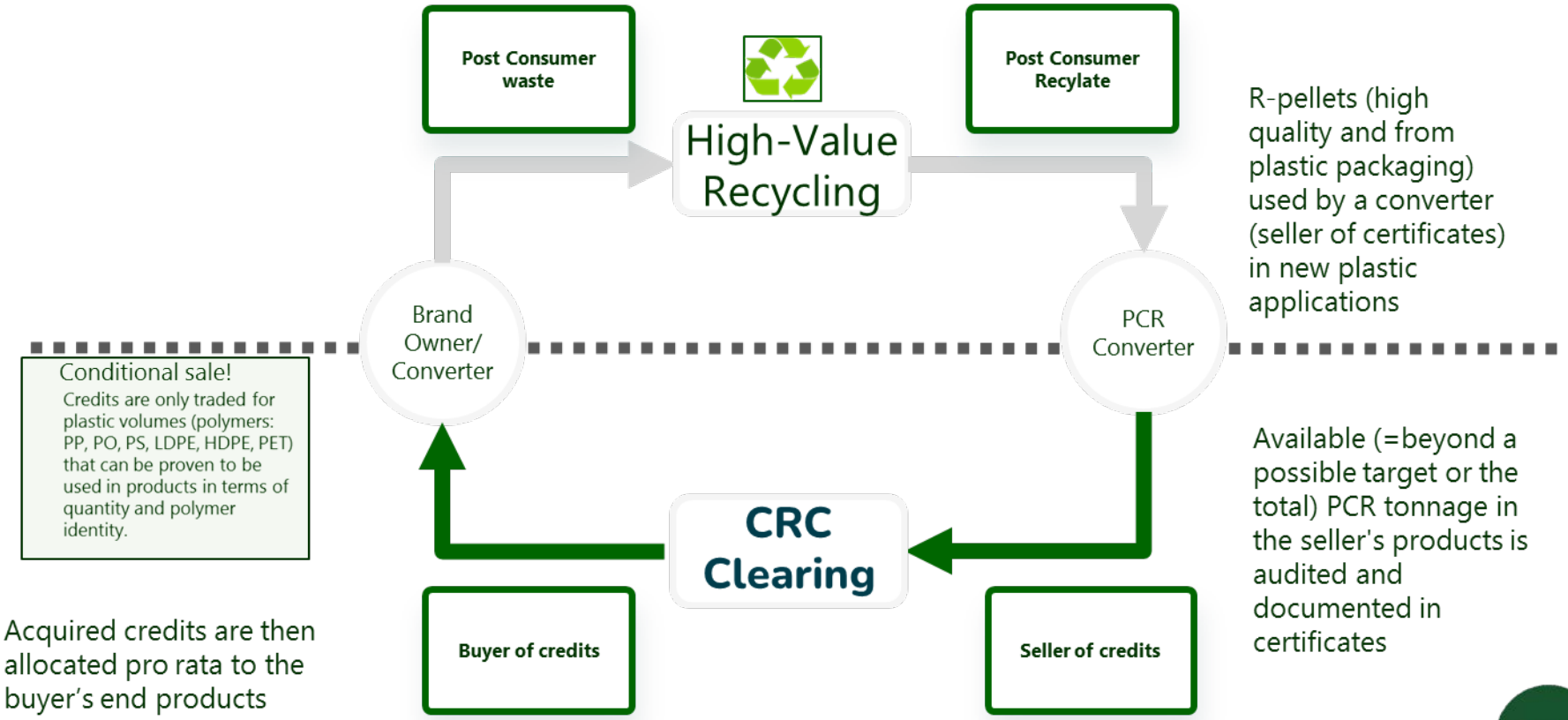
contact sensitve packaging[3] (all except PET)

2030 > 10%

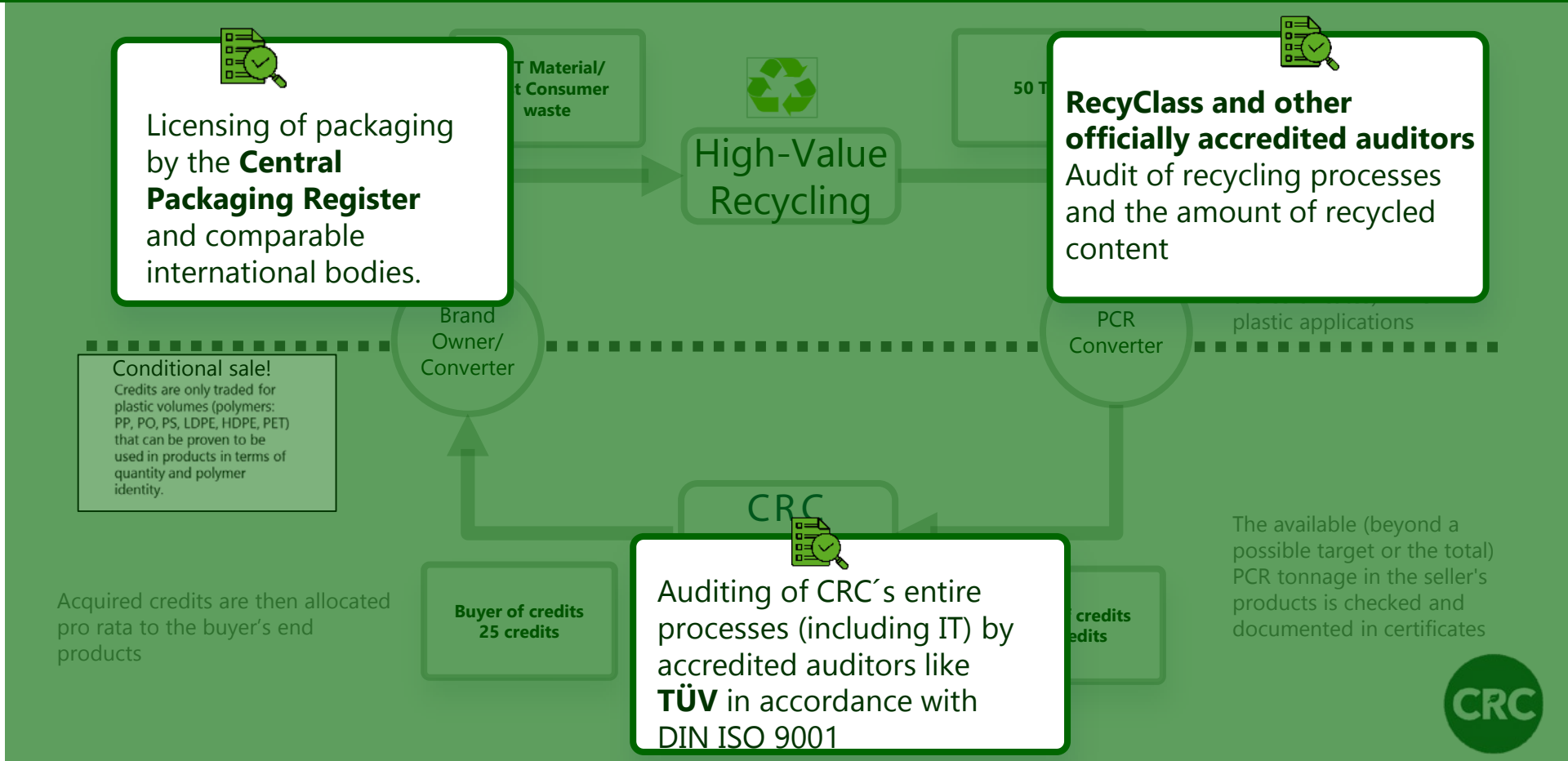
2040 > 25%

Automotive, household, sports, leasure, construction, ...

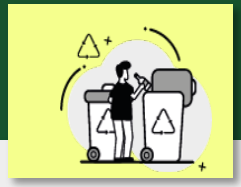
THE ENTIRE COLLABORATION SYSTEM



TRACEABILITY, EFFICIENCY



BENEFITS IN SUMMARY



Utilisation of existing sorting routes and infrastructure

- ✓ No additional bureaucracy, efficient
- ✓ Strengthening the existing recyclate market

Optimisation of the recycling ecosystem through economic incentives

Certificates will be scarce, with prices higher than the prices for physically available recyclates

- ✓ Optimisation of the packaging design
- ✓ Increasing the qualitative quantity of recyclate for all sectors

Promotion of high-value recycling = replacing fossil-based plastics in typical polymer applications. (Definition according to German Central Body ZSVR, PPWR (Art 3.1 (41)

- ✓ Contribution to decarbonisation

Proof of recyclability through officially recognised test procedures

- ✓ Quality, traceability, safety

STRENGTHENING THE CIRCULAR ECONOMY FOR PLASTIC PACKAGING IS CLIMATE PROTECTION

OUR FUNDING JOURNEY

INITIAL SITUATION

- GHG EMISSION REDUCTION
- WASTE VOLUMES CONTINUE TO RISE
- UNSUFFICIENT RECYCLING RATES
- LOW RECYCLATE USE TARGETS
- 40% OF PACKAGING IS NOT RECYCLABLE (MIXED COMPOSITES)

FOUNDING

- FOUNDING "CERTIFIED RECYCLED CONTENT CRC" IN 2022/ GERMANY, NRW
- INNOVATIVE CERTIFICATE TRADING WITH THE AIM OF INCREASING THE USE OF RECYCLED MATERIALS. **THE MASS EQUIVALENT CREDITSYSTEM**

- POINT OF THE GERMAN GOVERNMENT´S CIRCULAR ECONOMY STRATEGY
- FUNDED BY Kofinanziert von der Europäischen Union | Ministerium für Umwelt, Naturschutz und Verkehr des Landes Nordrhein Westfalen
- BROAD INDUSTRY SUPPORT

Wuppertal Institut · bvse · GKV Gesamtverband Kunststoffverarbeitende Industrie e.V. · IK Industrievereinigung Kunststoffverpackungen e.V. · elipso · kunststoffland NRW e.V.

THE TEAM BEHIND CRC

We combine the expertise of plastic conversion and high-quality recycling

Dr. Dirk Textor
Managing Director

25+ years experience in plastic (packaging) recycling. **Chairman of Plastic Recycling** section of **bvse e.V**. (German Association of Secondary Raw Materials and Recycling). Strong international and national network.

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Ansgar Schonlau
Managing Director

Ansgar Schonlau is an **international packaging expert with over 25 years experience** in the plastics industry. He has covered different sales and management roles, always striving for sustainable, cost-effective products and processes. Since 2018, Ansgar is owner of the climate-neutral and highly innovative packaging manufacturer Maag.

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Dr. Michael Scriba
Managing Director

Dr Michael O.E. Scriba is a pioneer of the circular economy for packaging. He played a key role in the introduction of the Green Dot in Germany and developed the mtm plastics group into one of the largest polyolefin recyclers in Europe. As chairman and advisor to important industry organisations and as a shareholder of a recycler, he actively shapes and advises the plastics recycling value chain.

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THANK YOU