



Recycling plastic parts in automotive industry, challenges and targets in Europe 2030

Towards recycled plastics content targets in new passenger cars sold in the EU market

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Joint Research Centre of the European Commission



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Outline

1. Policy context and objective of the JRC feasibility study
2. Plastics in vehicle: a state-of-play
3. Proposed policy options
4. Perspectives (...and potential future work!)

Disclaimer: The information and views expressed do not necessarily reflect an official position of the European Commission or of the European Union.



Design of policy circular measures

EC's proposal (July 2023) for a Regulation on:
Circularity requirements for vehicle design and on
management of end-of-life vehicles



What are the problems? (Why is EC involved?)



Lack of circularity in design and production

Existing laws have not led to better eco-design of cars nor to an increase in use of recycled materials



Poor quality of vehicle waste treatment

Low-quality scrap steel, insufficient separation of materials, low plastics recycling rates



High dependency on imported raw materials

Automotive industry consumes vast amounts of raw materials, many of which (such as rare elements for electric motors) must be imported



1/3 of vehicles go "missing"

Around 3.5 million vehicles disappear without a trace from EU roads each year - and are exported, or disposed of illegally



Weak governance and lack of cooperation

Lack of financial accountability and not enough cooperation between manufacturers and recyclers



1/3 of vehicles by mass are not regulated

Lorries, motorcycles, buses are not covered by the current end-of-life vehicles rules

Objectives & JRC approach



Objectives

- Consolidate data and knowledge about use of recycled plastics / ELV plastics treatment
- Suggest technical proposals to enhance plastic recycled content



Value chain approach

OEMs, plastics manufacturers, suppliers, recyclers, experts



Technical / Scientific datasets and models

Analyse of literature and available datasets (Facts & Figures)
On-going initiatives (e.g. CPA) and industrial technological developments



Targeted consultation

Inputs from Open Public Consultation
Bilateral discussions with industrial front-runners or experts
Workshops with professional associations



Plastics in vehicles: a state of play

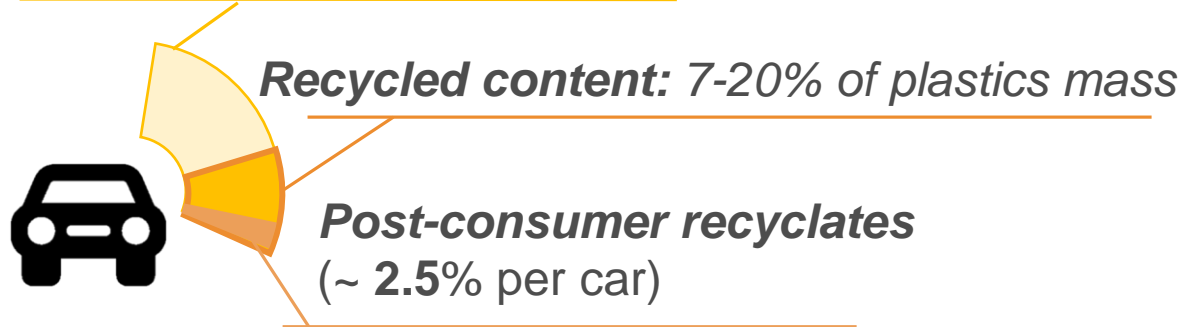


Why is a recycled content target for plastics deemed appropriate?

Product (Plastic demand)

Automotives: 3rd biggest EU end-use market (10%, 4.5 Mtonnes of plastics)

Plastics share in passenger cars: ~16% (200kg)



Important disparities between front-runners and average market (e.g. for ratio pre/post-consumer)



Waste (End-of-life vehicle - ELV)



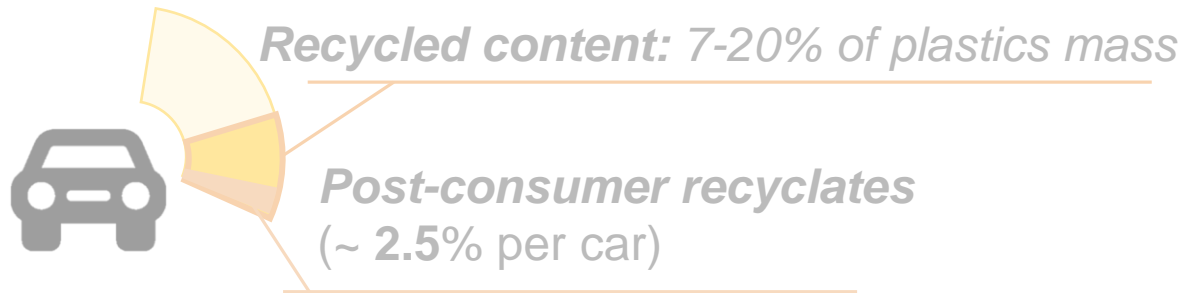
→ In theory, **recyclability** of vehicles is **very high: 85%** by law (current ELV directive)...

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Waste (End-of-life vehicle - ELV)



6.1 Million ELVs in 2019
~ 1 Mt of collected plastics waste

Poor quality of vehicle waste treatment due to insufficient materials separation:

Limited "Design for Recycling" practices

Lack of economic incentives to recover plastics (volatility of oil market)

Only ~19% of ELV plastics go to recycling (and with limited valorisation)

However, **Post-Shredder technologies** are already mature and could be widely deployed across the EU

Increasing recycled plastics demand (market pull) through a mandatory RC target will **unlock investments** in recycling, **triggering higher quantity and better quality** of recyclates



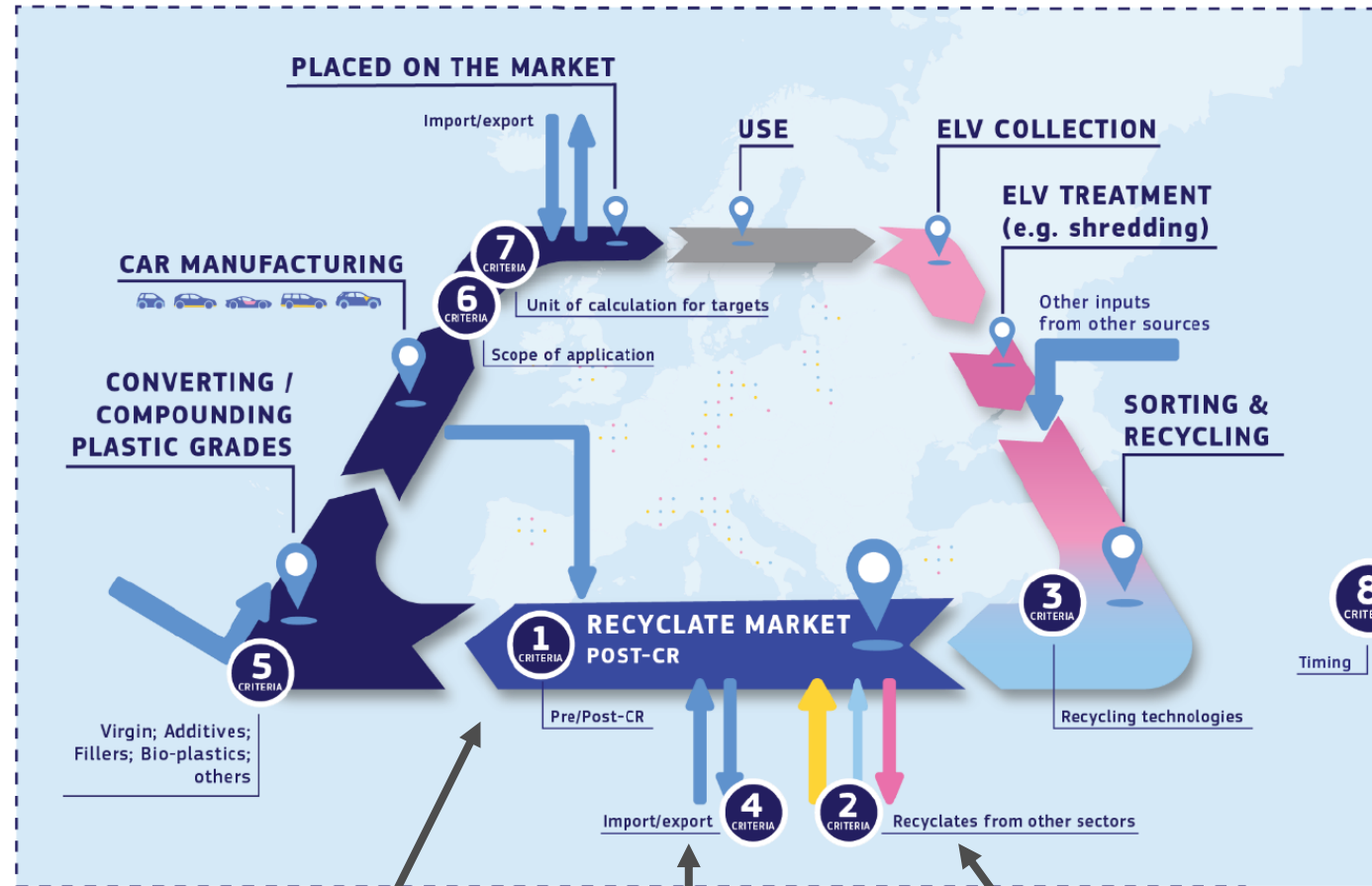


Proposed policy options



What should the targets look like ? - Criteria definition:

Criteria ⑥
 Part level
 Car level
 Fleet level



Criteria ⑧
 Time of implementation

Criteria ①
 Pre-CR
 Post-CR

Criteria ④
 EU source
 Non-EU source

Criteria ②
 Closed loop
 Open loop

How to quantify the appropriate level for the target?

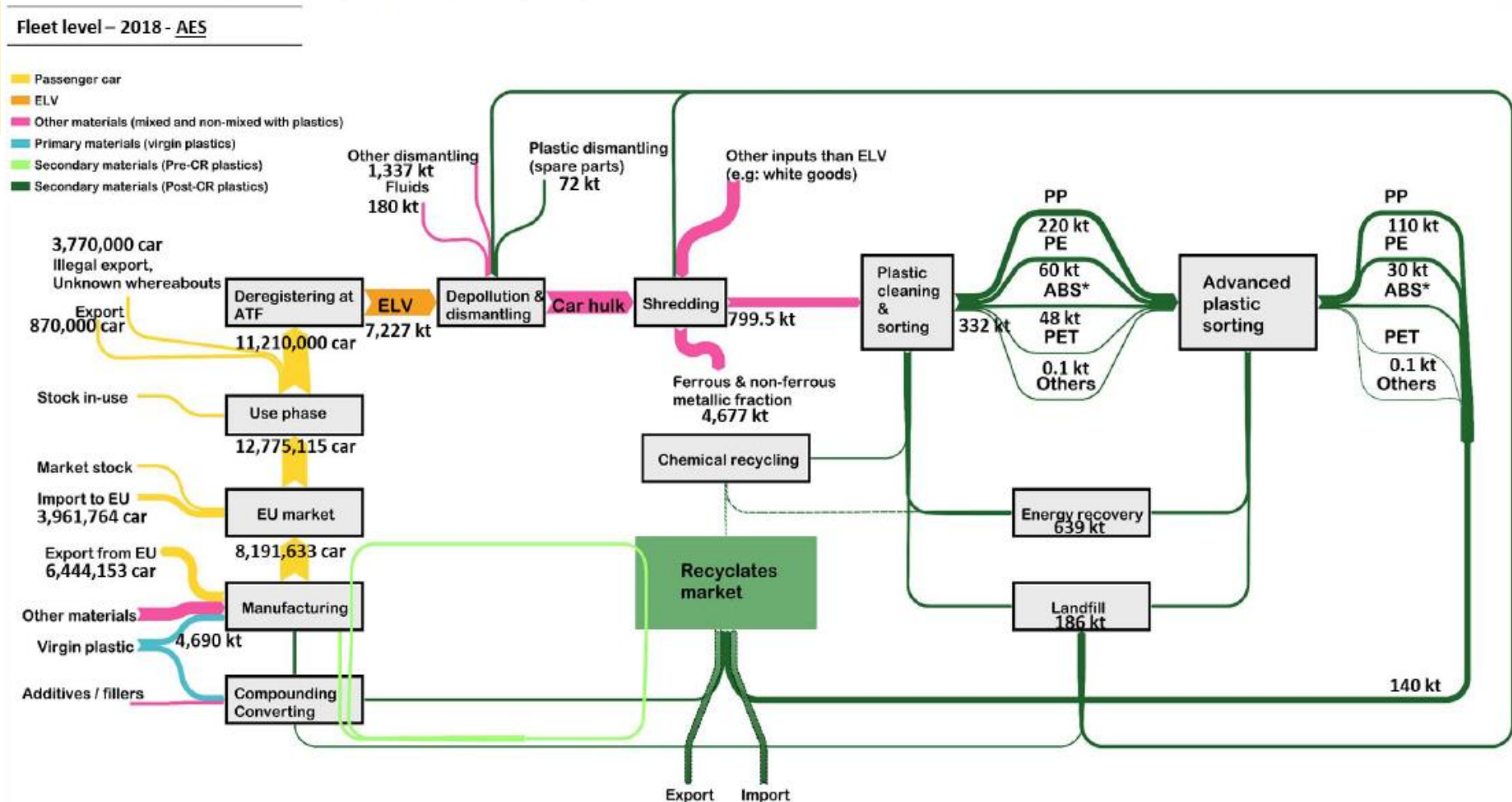
Impact assessment of proposed policy options

For complete impact assessment, see the report



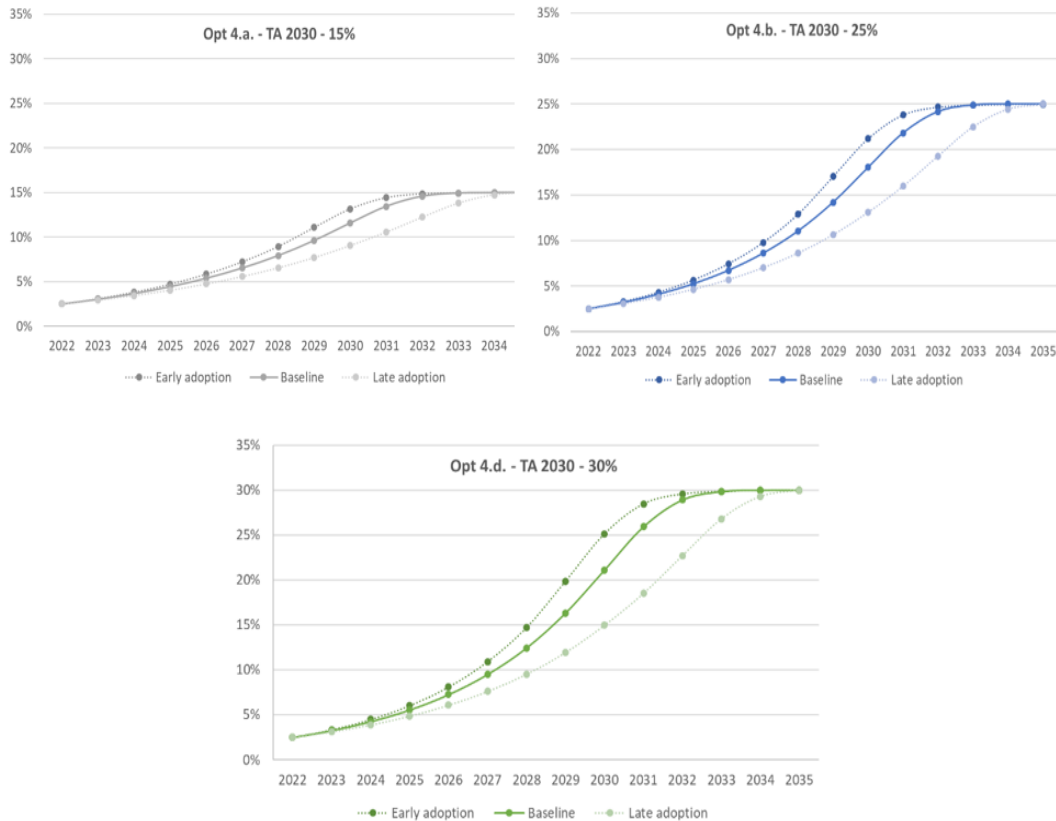
Material flows analysis:
current state of play for plastics consumption and recycling in the sector

Figure 16: Sankey diagram of plastic recyclates production in 2018 at fleet level. Units are in kt. AES data were used based on EU-27.



How to quantify the appropriate level for the target?

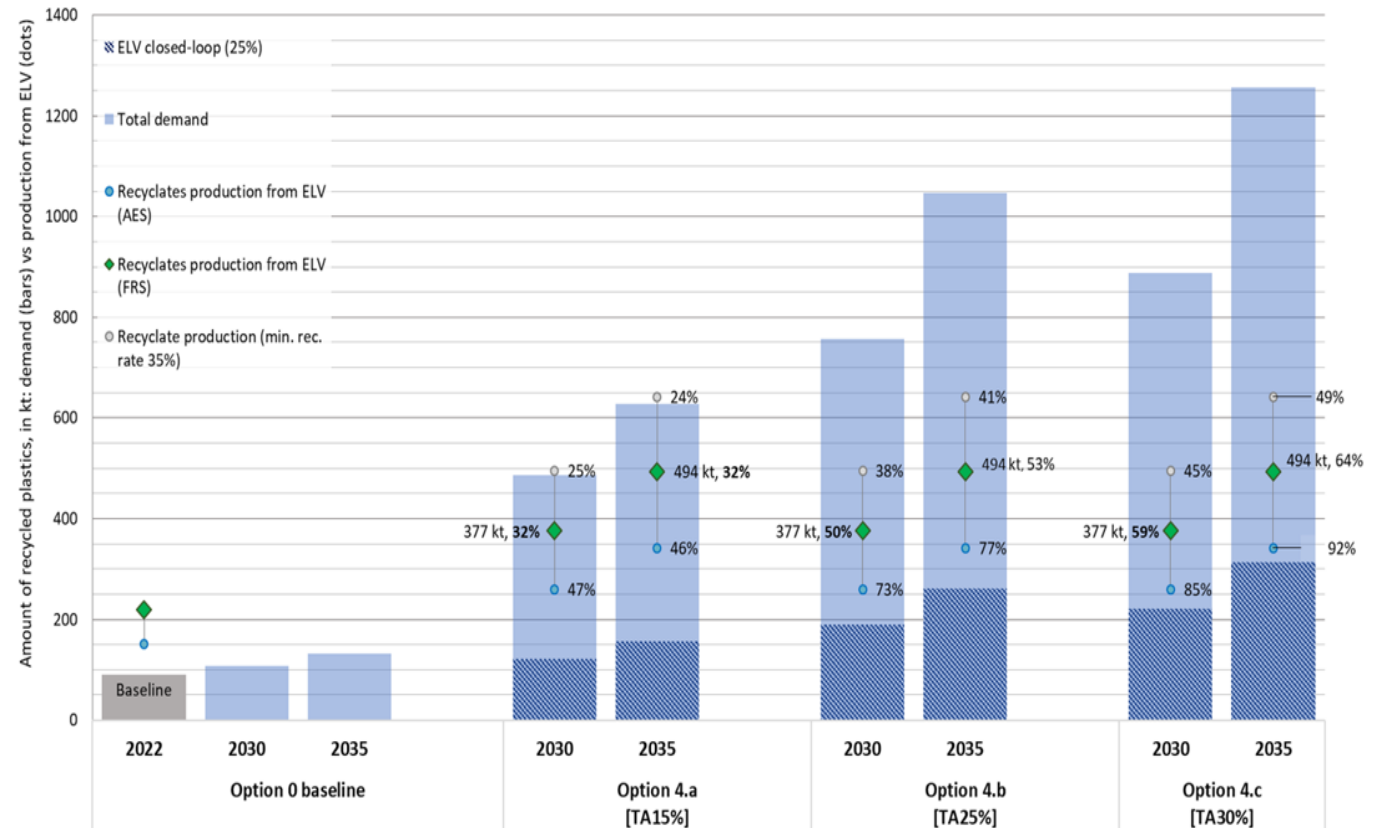
Modelling of the recycled content increase within the EU fleet of new vehicles



Supply / Demand balance

additional demand vs. forecasted production for recycled plastics from end of life vehicles and other sectors (e.g. packaging)

Figure A5.6: Amount of recycled plastics according to policy options for 2030 and 2035, in kt. Demand (bars and hatches) vs Production from ELV sources (dots). The % indicates the share of ELV recycled plastics that should be re-injected in the automotive industry to achieve the closed-loop criterion (25%).



ELV Regulation proposal

Art 6(1) - Minimum recycled content for plastics



Article 6 Minimum recycled content in vehicles

The plastic contained in each vehicle type that is type-approved as of [OP: Please insert the date = the first day of the month following 72 months after the date of entry into force of the Regulation] under Regulation (EU) 2018/858 shall contain a minimum of 25 % of plastic recycled by weight from post-consumer plastic waste.

At least 25 % of the target set out in the first subparagraph shall be achieved by including plastics recycled from end-of-life vehicles in the vehicle type concerned.

**Waste stream:
Post-consumer only**

Timeline

**Application scope of
the target: vehicle-type**

**Proposed level of the target and
unit of calculation: 25% by wt.**

**Minimum closed-loop criteria: 25%
of the total plastic recycled content**



For the complete list of target's features and associated criteria, see JRC report



What's next?



End-of-life vehicles Regulation

New rules for the design and end-of-life management of vehicles aim to protect the environment, decarbonise production and reduce raw material dependencies, benefiting EU industries



Brussels, 13.7.2023
COM(2023) 451 final

2023/1284 (COD)

**Commission proposal: 13 July 2023
Co-decision process between Parliament
and Council starting soon**

Proposal for a

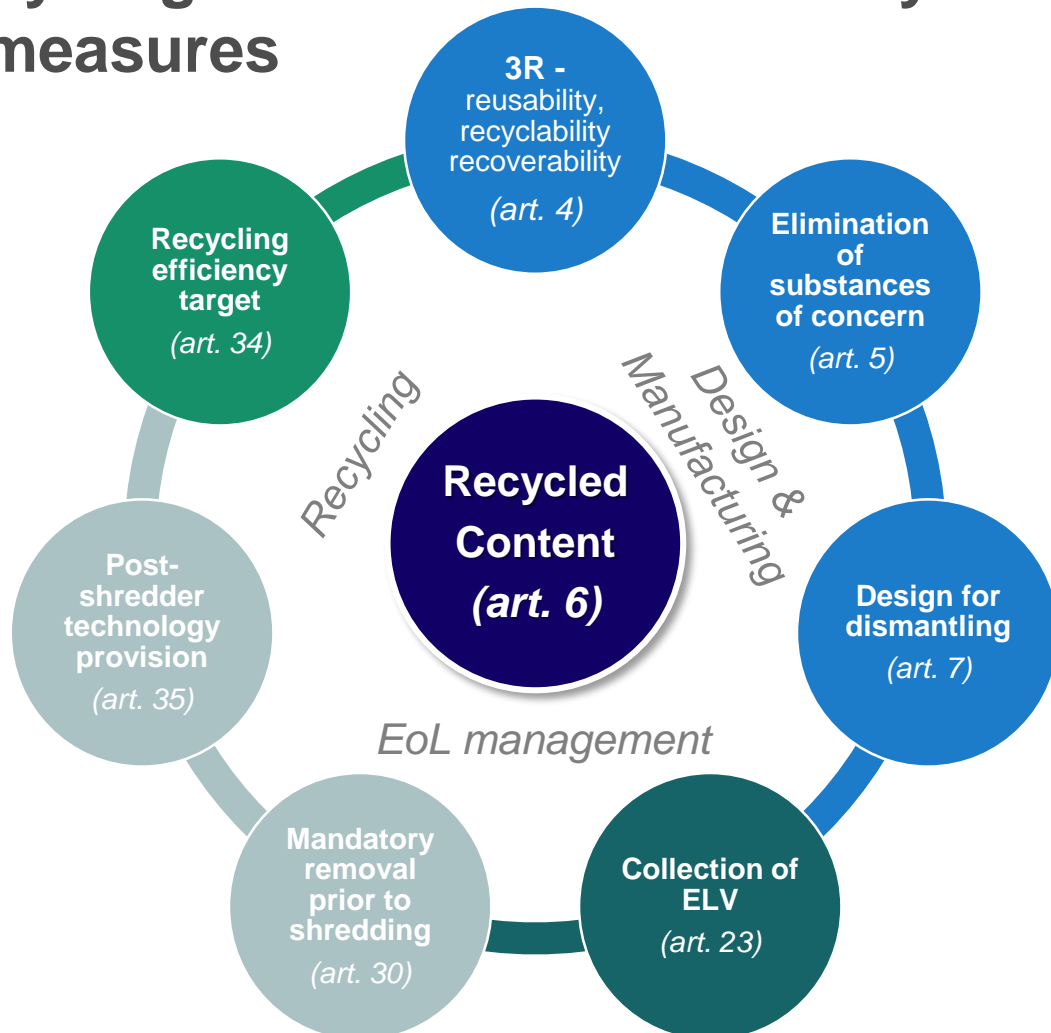
REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on circularity requirements for vehicle design and on management of end-of-life vehicles, amending Regulations (EU) 2018/858 and 2019/1020 and repealing Directives 2000/53/EC and 2005/64/EC



Further prerequisites for implementation of the article 6(1) on recycled content targets

- Synergies with other circularity measures



- Standardised calculation rules (e.g. definitions, calculation method, quality requirements)



CSN EN 45557 - General method for assessing the proportion of recycled material content in energy-related products

- Certification schemes to ensure traceability

Some examples of certification schemes already available

RecyClass



- Verification (e.g. via IMDS, Digital product passport, etc.)

THE INTERNATIONAL MATERIAL DATA SYSTEM



Thank you

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