

Short version

of the study

„Status quo and forecast of demand and availability of post-consumer recyclates in 2030“

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On behalf of:

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Background

Plastics play an important role in the manufacturing of packaging, automobiles, electrical and electronic equipment and many other product applications. The use of recyclates is already more established in the packaging and construction sectors, the two most important application areas for plastics. In percentage terms, the highest recycled content is currently achieved in the agricultural sector, while in the automotive and electrical/electronic sectors their use is still very low. Current and future EU regulations¹, which also affect plastics from end-of-life vehicles (ELV) and waste electrical/electronic equipment (WEEE), are expected to drive the development of activities for the promotion of circular economy and plastics recycling in automotive and electrical/electronic applications. In conjunction with the discussion about a higher degree of circular economy and a significant reduction of CO₂ emissions, the use of recyclates produced from end-user waste, so-called post-consumer recyclates (PCR), will also play an important role in more and more sectors¹. In the area of packaging, the recently published Packaging and Packaging Waste Regulation (PPWR) is expected to result in challenging recycled content targets by 2030 and 2040. Risks may arise for the obligated economic stakeholders if recyclates are not available on the market in the required quantities and qualities.

This study determines the status quo of the use of post-consumer recyclates as well as recyclate demand and recyclate availability up to the year 2030 on the basis of a scenario analysis.

Purpose

The aim of the study is to determine data and information on the current quantities of plastic recycling and the use of recyclates. These amounts are compared with the supply and the demand of recyclates in 2030 using a forecast model so that potential supply gaps can be identified. For the survey of the status quo and the forecast for 2030 both the type of waste streams and the applications for the use of the recyclates shall be analysed. In this context, the

¹ ELV Regulation, Proposed ordinance on end-of-life vehicles, draft of 13th July 2023: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2023%3A451%3AFIN&qid=1689318552193>;

PPW Regulation, Ordinance on Packaging and Packaging Waste of 19th December 2024, <https://eur-lex.europa.eu/eli/reg/2025/14/oj>;

New circular economy plan (CEAP) 11th March 2020: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>

challenges for managing material streams are to be determined and the potentials for improving the supply of recyclates derived.

Scope

The study describes the status quo in terms of the demand of recyclates and their availability for the reference year 2022. Further, a two-scenario model is applied to determine the demand and availability of recyclates in 2030. The analysis is based on current and future legal requirements¹ in the form of recycled content targets and volumes of market-related demand in the individual sectors. The ‘business-as-usual scenario’ assumes moderate growth in mechanical recycling capacities, whereas the ‘advanced scenario’ assumes a significant increase in mechanical recycling capacities and it includes the establishment of chemical recycling. In order to enable a comparison of a possible demand gap, the demand for post-consumer recyclates was determined once and remains constant in both scenarios.

In the study, the production of recyclates is analysed according to defined waste streams, application areas and polymer types. The status quo has been analysed in the following nine countries: Belgium, France, Germany, Italy, The Netherlands, Poland, Sweden, Spain and the UK. The forecast for 2030 is based on an extrapolation for the EU-27+3² as a whole.

The following post-consumer waste streams were analysed in the study:

- **Household-related end-user waste:**
Residual household waste, light-weight packaging, bulky waste, waste electrical/electronic equipment (WEEE)
- **Industrial and commercial end-user waste:**
Mixed commercial waste, ELV (by treatment in car repair shops, dismantling and shredder light fraction), industrial packaging (by rigid and flexible packaging), other collection systems

² The 27 countries of the European Union plus Norway, Switzerland and the UK

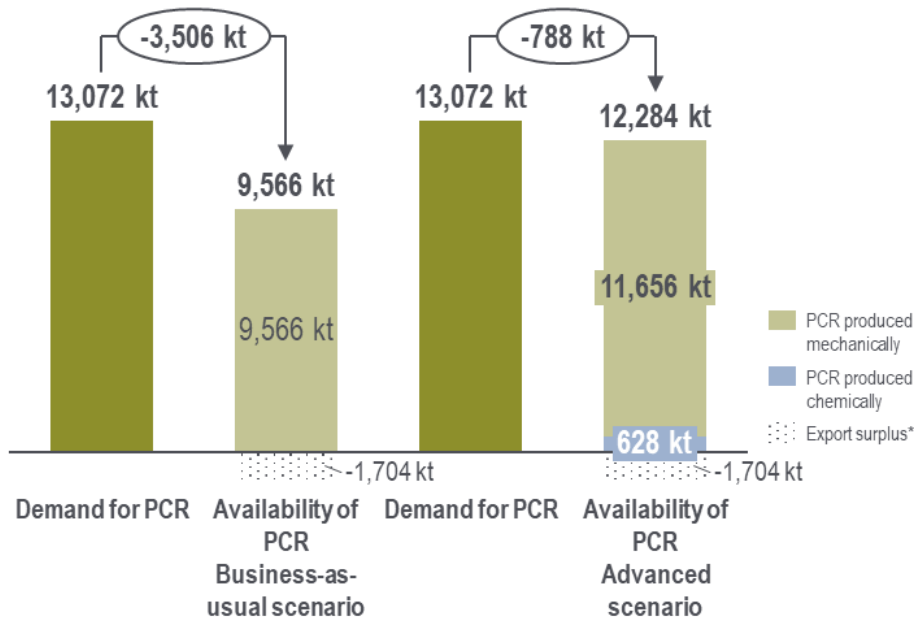
Furthermore, the waste streams were analysed in detail with regard to:

- **Areas of origin of recyclates by application:**
Packaging, construction, automotive, household/leisure/sports, agriculture/gardening/forestry and others
- **Polymer types:**
PE-LD/LLD, PE-HD/MD, PP, PS, EPS, PVC, PET, other thermoplastics, PUR und other plastics

Results

Related to the base year 2022, approximately 32.3 million tonnes of plastic waste were collected in the EU-27+3. Thereof, about 16.4 million tonnes were treated in sorting plants and then sent for recycling. Of the approximately 7.7 million tonnes produced post-consumer recyclates, around 6.7 million tonnes remain in the EU-27+3, taking into account foreign trade. Around 79% of the total output of recyclates was generated from packaging waste and the corresponding separately collected waste streams. From this amount, around 44% of recyclates were produced from the collection of light-weight packaging waste and around 35% from the separate collection of commercial/industrial packaging waste. PET and polyolefins (PE-LD, PE-HD, PP) accounted for around 83% of recyclates.

In the forecast estimation for 2030, the total demand for plastic recyclates in the EU-27+3 is determined on the basis of expected legal PCR content targets for individual sectors as well as additional market-driven demand. On this basis, PCR demand in the EU-27+3 is calculated at 13,072 tonnes. Taking into account the legal and the market-related demands of the respective sectors and the PCR availability, the business-as-usual scenario results in a supply difference of around 3,506 kt compared to the demand. In the advanced scenario, the difference results to about 788 kt.



Supply gap for PCR in EU-27+3 in 2030
in the business-as-usual scenario (left) and advanced scenario (right)

In both scenarios, significant improvements in the waste collection, sorting and recycling infrastructure were assumed, taking into account different growth rates. Also in both scenarios, the current export surplus was extrapolated to the year 2030. In the advanced scenario, a 73% higher output of the amount of recyclates compared to 2022 was assumed and, respectively, significantly higher growth rates of 7.1% p.a. including chemical recycling. Despite these improvements, both scenarios result to a supply gap.

Conclusions

The results clearly show that the total PCR demand – based on both legally required minimum quantities of recycled content and quantities from market-related demand – is unlikely to be complied. Without significant additional investment in mechanical and chemical recycling, there will be a supply gap of 3,506 kt in EU-27+3 in 2030. Significant additional investment in mechanical recycling and the establishment of chemical recycling will reduce the PCR supply gap to 788 kt. However, these analyses do not take into account the qualities of PCR required by the individual sectors and companies. Therefore, the actual bottleneck of supply may even

be greater, as the material qualities, which are required in many application fields today, are not sufficient to substitute virgin material with recycled material with the same product functionality.

The long version of the study can be ordered on the website of BKV GmbH:

<https://www.bkv-gmbh.de/study-availability-of-recyclates.html>

Further studies of BKV GmbH: <https://www.bkv-gmbh.de/studies.html>