BKV PLASTICS CONCEPTS RECOVERY

Report 2024/2025

Thinktank and competence center of the **PLASTICS INDUSTRY**

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BKV – THINK TANK AND COMPETENCE CENTRE OF THE PLASTICS INDUSTRY

The BKV compiles data and facts on the topics of resource efficiency and the circular economy of plastics, and makes this information available, without discrimination, to interested market players and users.

ENVIRONMENTAL TOPICS

The BKV offers its expertise on environmental issues with regard to the use and recycling of plastics, irrespective of the particular application.

DATA AND FACTS

The BKV has a broad network of experts, whom it can draw on.
The solid data basis is valued by many users and is widely acknowledged.

VISIBLE PRODUCT RESPONSIBILITY

The BKV is thus a visible part of the producer responsibility of the plastics industry. Its shareholders are coming from the sectors of plastics producers, plastics converters and plastics machinery manufacturers.

Circular economy with plastics is the main aim of a future-looking plastics industry. It is both a complex and a challenging target, because the economic viability of the industry is under pressure. Signs of this include the reduction in incoming orders and sales as well as high energy costs, bureaucracy and a shortage of skilled labour. For this reason, the industry is stepping up its efforts for innovative and open-technology solutions. It is putting its hope in a supportive framework, for example with the Clean Industrial Deal of the new EU Commission. Key topics such as affordable energy and reduction of bureaucracy have already been addressed there. Hopes are also being placed in the freshly elected German Government by expecting a rapidly recovering and sustainable environment for our industry. On this basis and according to the latest surveys, a brightening of the economic sentiment is expected in 2025.

For the future viability of the plastics industry, especially with regard to circular economy and climate protection, the BKV is a central platform with its studies and projects. In this way, BKV generates fundamental principles for fact-based discussions that bring together a wide range of stakeholders, such as industry, administration, science and NGOs. Here, special mention should be made of the Symposium, in which the results of the studies and projects are made available to the specialist public and jointly discussed.

The BKV as a competence centre for the plastics industry is a unique platform in which plastics producers, converters and machinery are combined under one common umbrella. Through these joint efforts, it becomes possible to successfully contribute to solutions for a competitive, sustainable and modern plastics industry.

MATTHIAS STECHHAN

LYONDELLBASELL, DIRECTOR POLYOLEFINS SALES EUROPE NORTH, CHAIRMAN OF THE BKV ADVISORY BOARD

In the past financial year, BKV has compiled a number of fundamental studies with respect to the circular economy of plastic. Particular attention has not only been paid to the production and application of plastics, but also to the value chain, through to the utilisation of recyclates and by-products.

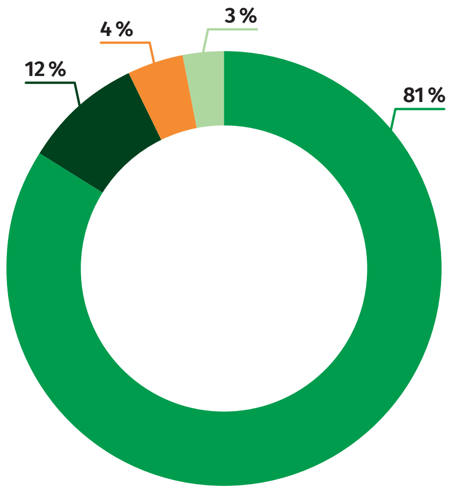
Current political discussions in Germany and Europe require targets for recycled content in various fields of application, especially with regards to the Packaging and Packaging Waste Regulation (EU-PPWR) and the drafts of the End-of-Life Vehicles Regulation (EU-ELVR). Our studies have not only determined the status quo about the use of recyclates, but also undertook an estimate for the future up to 2030. Further studies demonstrate the complexity of the varied waste structure, the understanding of which is of fundamental importance as a source of raw material for recycling, and, in the end, the utilisation of recyclates. One of the key results is that the efforts towards circular economy of plastics must be massively expanded on different levels.

The task now is to utilise the results in the context of the relevant discussions, not only within the industry, but also beyond and incorporate them in a fact-based dialogue. BKV is ready for this with its experts and its expertise as a competence team for plastics.

DR. INGO SARTORIUS

MANAGING DIRECTOR OF BKV GMBH

RAW MATERIAL BASIS FOR THE MARKET SUPPLY WITH PLASTICS



- Plastics on primary raw material basis
- Recyclates from PC (post-consumer) waste
- By-products
- Recyclates from PI (post-industrial) waste

HIGHLIGHT

PLASTICS FLOW IN GERMANY

The report "Plastics flow in Germany" records every two years the data for the circular economy related to plastics. The latest survey for Germany in 2023 was completed by Conversio Market & Strategy GmbH on behalf of the BKV and with the support of 15 other associations and organisations at the end of 2024. Supporters are the associations of the plastics value chain, including the recycling branches and the industry trade union IGBCE and – what is new – also the association of the automotive industry, VDA.

The study gathers facts and figures for plastics through its entire life cycle, i.e. from raw material production, through plastics conversion, consumer use and end-of-life management up to the utilisation of recyclates in new products.

The current situation is characterised by the following major aspects:

· Compared with the previous survey for Germany in 2021, the current volumes in 2023, both of produced and of converted plastics, have declined significantly, by over 17 % and around 9 % respectively. The decline reflects the reduced demand of the down-stream industries.

· The proportion of non-fossil raw materials for plastics conversion has risen in the same period from previously around 16 % to now 19 %. It has thus been possible to significantly increase the contribution of recycling through the utilisation of recyclates that are produced from end-user waste, so-called post-consumer recyclate (PCR), on the one-hand side as well as from industrial waste, so-called post-industrial recyclate (PIR), on the other-hand side and from by-products of industrial production.

The latest edition of the survey "Plastics flow in Germany" contains numerous other details, among other things on the use of polymers in various applications, plastics consumption and the different assessments of recorded plastic waste.

Like all studies, the report "Plastics flow in Germany" is available via the BKV homepage, see www.bkv-gmbh.de/studies.html.

PLASTIC RELEVANT WASTE STREAMS AND POTENTIAL OF PLASTIC RECYCLING FROM COMMERCIAL END-USER WASTE

With the study entitled "Plastic relevant waste streams in Germany 2023", the BKV is following up on a previous analysis of plastic relevant waste streams in Germany 2019 and is basically continuing the concept of that study.

The aim of the current study is, as then, to examine in detail the composition of household and commercial plastic-relevant end-user waste and its treatment and recovery, especially with regard to plastics and its relevance in the respective waste stream.

The most important results for the year 2023 are:

- A total of 58 m tonnes of end-user waste has been collected, of which 24 m tonnes were attributed to household and 34 m tonnes to commercial waste.
- These waste streams contain an average of approx. 5.6 m tonnes of plastic (just under 10 %), with approx. 14 % plastic in household and approx. 7 % in commercial waste.
- The plastic concentration varies – depending on the waste stream – from 4 % to 88 %, with a variance in the plastic load between 0.06 m and 1.3 m tonnes.
- The recycling share of the fractions from the collected waste streams of usable or processed fractions fluctuates significantly between <8 % (residual waste and ELV) and >85 % (packaging of segregated plastics waste).
- Separate collection and recycling systems (e.g. ERDE – Crop Plastics Recycling; Rewindo – Plastic window recycling) have a high recycling rate in Germany of approx. 75 %.

The results make clear the key importance of the separate collection of plastics-containing waste streams and their treatment into ingrade sorted fractions. After all, segregated waste streams are highly suitable for mechanical recycling, which is characterised by high recycling volumes in the segments. Compared with this, mixed waste, above all with regard to technical and economic aspects, remain a challenge: Heterogenic or mixed plastic-containing waste streams are sent predominantly for energy recovery.

Particularly plastics-containing waste streams from the commercial end-user segment have a potential for recycling that has so far not been adequately utilised. In the study "Potential of plastic recycling from commercial end-user waste" the situation is described in more detail. In addition to detailed data and facts on the plastic waste, the potential of this waste with regard to improved material utilisation is shown and recommendations for action are derived from this.

Here is a summary of the main results relating to 2022:

- Of the approx. 2.5 m tonnes of commercial plastic waste recorded in the year 2022, an average of only 35 % was recycled. The remaining two thirds were treated by energy recovery.
- The recycling share varies considerably with the different collected waste streams. Whereas with commercial plastics packaging, at least 85 % are recycled, only around 1 % is sent for recycling when it comes to the partial flows of the mixed commercial waste and in construction/demolition waste. The recycling share of the other collected waste streams such as from shredding facilities thus range in the middle at a low level.
- The study has identified the greatest potential to increase the recycling at the mixed commercial waste streams and the construction/demolition waste, which together account for a good million tonnes and are nowadays almost entirely treated by energy recovery.

The study derives from the results that increased separate collection and segragation of the material streams can help to improve recycling with regard to volumes and quality. The treatment of commercial plastic packaging waste is a positive example, here. Proposed measures include both innovation such as modern sorting and recycling technologies including chemical recycling as well as a more consistent implementation or tightening-up of the Commercial Waste Ordinance.

Both studies, which were carried out by Conversio Market & Strategy GmbH, can be obtained via the BKV homepage, see www.bkv-gmbh.de/studies.html.

MARKET FORECAST OF THE AVAILABILITY OF RECYCLATES

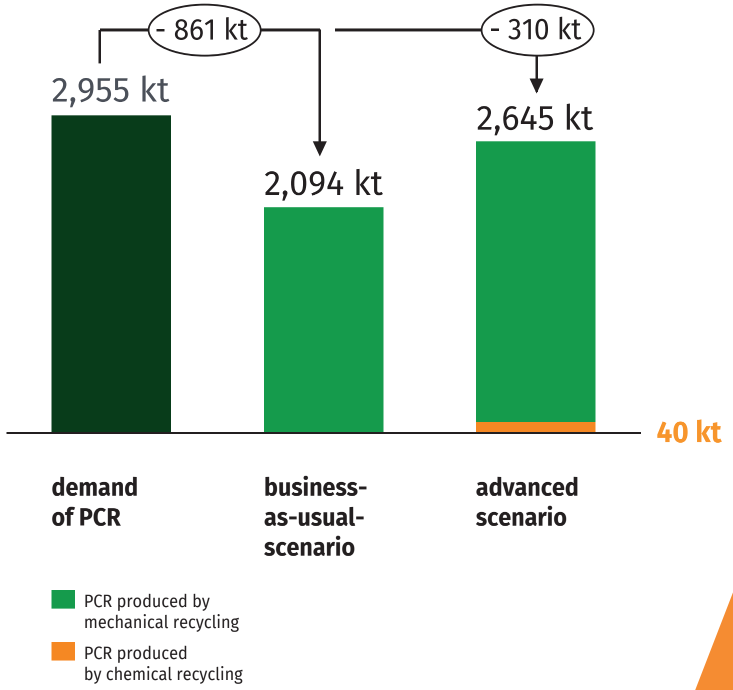
The key element of circular economy is the utilisation of recyclates in new products. Legal rules such as the European Packaging and Packaging Waste Regulation (EU-PPWR) and also the submitted draft of the End-of-Life Vehicles Regulation (EU-ELVR), set firm targets for the recycled content. In addition, individual industries and companies have voluntarily announced minimum targets for the use of recyclates.

Against this background, the latest study from the BKV, "Status quo and forecast of demand and availability of post-consumer recyclates in 2030", has examined the use of post-consumer recyclates in Germany and Europe and estimated the demand and the availability of recyclates up until 2030. By comparing the supply and the demand of recyclates, possible supply gaps are identified.

These gaps are estimated for 2030 with the following two scenarios. The "business-as-usual" scenario is based on a moderate growth of mechanical recycling. The „advanced scenario" assumes both a significant growth in mechanical recycling and in the establishment of chemical recycling. The data are determined in detail for Germany and extrapolated to EU 27+3.

In the forecast for 2030, the demand for post-consumer recyclates, PCR, in EU 27+3 is estimated at 13,072 kt. Whereas in the business-as-usual scenario a difference between supply and demand of 3,506 kt is determined, the difference in the advanced scenario is 788 kt.

The overall demand for PCR in Germany is correspondingly lower and will amount in 2030 to 2,955 t. In the business-as-usual scenario, the difference between supply and demand results to 861 kt, and in the advanced scenario to 310 kt.



SUPPLY GAPS OF PCR IN GERMANY 2030

The results show that, with the given assumptions, the total PCR demand can presumably not be met. The supply gap for PCR in Germany in the business-as-usual scenario is nearly 30 % (861 kt), and in the advanced scenario, around 10 % (310 kt). In Europe, related to EU 27+3, up until 2030 in both scenarios, gaps in the supply of PCR are expected to be in the same range, namely 27 % in the business-as-usual scenario and 6 % in the advanced scenario. The material quality needed for individual industries or companies for the use of recyclates have not been considered as part of the study, so that the actual supply bottleneck may be even greater.

The study is available via the BKV homepage, see: www.bkv-gmbh.de/studies.html.

STUDIES AND PROJECTS

OVERVIEW The BKV is the competence centre of the German plastics industry for sustainability of plastic products with a view to resource efficiency and circular economy. Its task is to provide data for a fact-oriented discussion. The demand for data and facts results from the present or foreseeable issues from industry, science, politics and society. This forms the basis for the conception and selection of the projects tackled by BKV. A preselection of the topics to be dealt with is made by BKV's Technical Committee, which is composed of experts from the shareholders of BKV.

The topics covered by BKV in its project work can be subdivided into the following six areas:

MARKET DATA:
Sound data and facts are a key aspect for the BKV. The "plastics flow" is the prime example of a validated database for plastics through its entire life cycle.

PLASTICS IN THE ENVIRONMENT:
Comprehensive studies on plastics in the environment, through both terrestrial and aquatic discharges into the environment, the methodology of the entry pathways and numerous special editions are dealt with here.

CIRCULAR ECONOMY:
The topics of circular economy and resource efficiency cover the contribution of plastics to climate protection as well as issues involving the sustainable availability of raw materials on the market. Here, the circulation of carbon is a key aspect.

LEGAL FRAMEWORK:
Observing and evaluating existing and future legislation forms the basis for plastic markets with constantly more complex requirements on the material and its application.

RECYCLING TECHNOLOGIES:
This section is concerned with the investigation of technology-neutral recycling and recovery paths for plastics-containing material streams. It covers optimisation of mechanical recycling in the context of the collection and treatment as well as techno-economic analysis of complementary chemical recycling processes, in order to use less waste for energy recovery in the future.

STANDARDISATION:
The BKV is engaged in the Plastics Committee of the German Standardisation Body DIN, both as co-chair in the Board of the Plastics Committee as well as participating the working committees of plastics recycling and environmental aspects.

STUDIES ON CIRCULAR ECONOMY:

STUDY	COSTS
Status quo and forecast of demand for and availability of post-consumer recyclates in 2030	2025. 76 pages. Price EUR 1.250 (plus VAT) Short version: free of charge (German language only)
Potential of plastic recycling from commercial end user waste	2025. 104 pages. Price EUR 800 (plus VAT) Short version: free of charge (German language only)
Plastic relevant waste streams in Germany 2023	2025. 65 pages. Price EUR 600 Euro (plus VAT) Short version: free of charge (German language only)
Plastic flow in Germany 2023	2024. 108 pages. Price EUR 800 (plus VAT) Short version: free of charge (German language only)
Comparison of different standards for assessing the recyclability of plastic packaging	2023. 57 pages. Price EUR 400,- Euro (plus VAT) Short version: free of charge
Plastics Flow in Germany 2021	2022. 121 pages. Price EUR 600 (plus VAT) Short version: free of charge (German language only)
Economic assessment of instruments for promoting the recycling of plastics	2022. 76 pages. Price EUR 950 (plus VAT) Short version: free of charge (German language only)

For more information on the studies go to: www.bkv-gmbh.de/studies.html

STUDY	COSTS
Potential for the use of recycled plastics in packaging	2020. 103 pages. Price EUR 500 (plus VAT) Short version: free of charge (German language only)
Plastic Parts from ELVs	2020. 117 pages. Price EUR 450 (plus VAT) Short version: free of charge
Global Plastics Flow 2018	2019. 103 pages. No charge Short version: free of charge
Thermal Processes for Feedstock Recycling of Plastics Waste	2019. 170 pages. Price EUR 500 (plus VAT) Short version: free of charge
Titanium Dioxide in Plastics in Germany	2019. 61 pages. Price EUR 400 (plus VAT) Short version: free of charge (German language only)
Generation and management of EPS and XPS Waste in 2016 in Germany in the packaging and building industries	2017. 42 pages. Price EUR 300 (plus VAT)

For more information on the studies go to: www.bkv-gmbh.de/studies.html

STUDIES ON PLASTICS IN THE ENVIRONMENT:

STUDY	COSTS
Potential for increasing mechanical recycling of plastic packaging – recycling-friendly design, sorting technology	2016. Result report (38 pages) and Management Summary (24 pages). Price EUR 350 (plus VAT) Infoflyer: free of charge (German language only)
Methods and tools for the eco-design of plastic packagings	2016. Technical documentation. 85 pages. Free of charge (German language only)
Development of the efficiency of plastic packaging – 1991 to 2013	2015. 102 pages. Price EUR 350 (plus VAT) Infoflyer: free of charge (German language only)
Demand and Utilization of Carrier Bags and Vest Carrier Bags for Service Counter Goods in Germany	2014. 78 pages. Price EUR 350 (plus VAT) Short version: free of charge
Scenarios for the collection, treatment and recovery of plastics-containing waste streams – dry bin concept (Witzenhausen-Study II)	2011. 40 pages. Price EUR 330 (plus VAT) (German language only)
Treatment and recovery of plastics-rich waste streams in Germany (Witzenhausen Study I)	2009. 99 pages. Price EUR 250 (plus VAT) (German language only)
Evaluation of thermal/catalytic processes for the decomposition of plastics (TU Clausthal)	2009. 41 pages. Price EUR 250 (plus VAT) Short version: free of charge (German language only)

For more information on the studies go to: www.bkv-gmbh.de/studies.html

STUDY	COSTS
Plastics in the Environment: Special Report "Pellet Losses"	2022. 75 pages. Can be ordered free of charge
Report: Plastics in the Environment in Germany	2021. 96 pages. Can be ordered free of charge
Marine Litter: From Land to Sea – Model for the documentation of land sourced plastic litter	2020. 4th revised version. 98 pages. Can be ordered free of charge
Marine Litter: Discussion paper "Tyre abrasion"	2020. 2nd version. 18 pages. Can be ordered free of charge (German language only)
Marine Litter: Special Report "Littering"	2020. 2nd version. 27 pages. Can be ordered free of charge (German language only)
MicBin joint project, work package 4.1 Report: Study of Hydropower Plants	2020. 18 pages. Can be downloaded free of charge (German language only)
MicBin joint project, work package 3.3 Report: Analysis of Direct Discharges	2021. 29 pages. Can be downloaded free of charge (German language only)
MicBin joint project, work package 3.5 Report: Littering and Line Loading of Waterways	2021. 26 pages. Can be downloaded free of charge (German language only)
MicBin joint project, work packages 5.5 & 5.6 Report: Model expansion and modelling	2021. 26 pages. Can be downloaded free of charge (German language only)

For more information on the studies go to: www.bkv-gmbh.de/studies.html

NETWORK

DIALOGUE

The BKV is in regular contact with expert groups, especially on topics concerned with the circular economy and environment. These experts work in the plastics and recycling sector and also in customer industries, hold responsible positions in political execution at the Federal and the Bundesländer level or are employed in scientific institutes, associations and NGOs.
The key tools for BKV communication are, in addition to a lively website, regular newsletters, specialist events, expert publications and the LinkedIn channel, see de.linkedin.com/company/bkv-gmbh.

NEWSLETTER

The BKV newsletter, which is published on a weekly basis, summarises media reports and news, and thus provides topical information on current news connected with the circular economy, plastics recovery and recycling. Further information and registration at www.bkv-gmbh.de/bkv-nl-register.html.
Around three times a year, the Marine Litter newsletter is published with reports on the latest developments in research, politics and industry on the topic of plastics in the environment. In addition, these newsletters contain interesting interviews with prominent experts. Further information and registration at www.bkv-gmbh.de/ml-nl-register.html.

SPECIALIST EVENTS

As part of its information activities, BKV organises specialist events. This includes above all the BKV Symposium, which, in the past year, was held in the Permanent Representation of the Bundesland of Hessia in Berlin. The top-class and very successful event, at which BKV's main study results relating to current topics were presented by experts from renowned institutes and then discussed at panel sessions, was opened with welcoming speeches from State Secretary Michael Ruhl from the Hessian Ministry for Agriculture and Environment, Viticulture, Forestry, Hunting and Homeland, as well as Matthias Stechhan, LyondellBasell and Chairman of the Advisory Board of BKV GmbH. Additionally, BKV has conducted, as part of the bvse International Conference on Recycling of Plastics, its own workshop on the suitability of plastic waste for high-quality recycling and for the supply of recyclates. Finally, the BKV contributes to specialist events, for example with presentations at the „Environmental Days" in Mainz, the joint PVC workshop of Plastics Europe and VinylPlus, and the National Advisory Committee for Chemical Recycling.

ORGANISATION

ADVISORY BOARD OF THE BKV

The advisory board is the statutory controlling body of the company and supervises the management.

TECHNICAL COMMITTEE (TA)

The TA consists of experts from the shareholder companies and organisations. It assesses project proposals, including the required budget, and monitors the results. It reports to the Advisory Board. The spokesman of the Technical Committee is Dr. Frank Buckel (Covestro Deutschland AG).

EXCHANGE WITH STAKEHOLDERS

Another BKV committee is made up of representatives of key stakeholders, especially from industry, science and administration. The committee advises the company in fundamental issues of the business purpose, and thus gives the plastics industry the opportunity to discuss relevant issues based on facts and oriented to practice.

MEMBERS OF THE ADVISORY BOARD

Chairman:


Matthias Stechhan
(LyondellBasell)

Vice chairman:


Bernhard Borgardt
(Ostedruck)


Marc van den Biggelaar
(DOW)


Inga Böhlke
(Bischof + Klein)


Dr. Martin Engelmann
(IK Industrievereinigung Kunststoffverpackungen)


Michael Freutsmiedl
(Borealis)


Dr. Helen Fürst
(Fürst Group)


Dr. Andreas S. Gasse
(allvac Folien)


Dr. Christian Haessler
(Covestro)


Dr. Klaus Wittstock
(BASF)

Permanent guests:


Dr. Christine Bunte
(Plastics Europe Deutschland)


Thorsten Kühmann
(Fachverband Kunststoff und Gummimaschinen im VDMA)

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- BASF Lampertheim GmbH
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- Dürrmann GmbH & Co. KG
- Eastman Chemical B.V.
- ETIMEX Primary Packaging GmbH
- Evonik Operations GmbH
- Gesamtverband kunststoffverarbeitende Industrie e.V. (GKV)
- Greif Packaging Germany GmbH
- Heuchemer Verpackung GmbH & Co. KG
- IK Industrievereinigung Kunststoffverpackungen e.V.
- Industrieverband Kunststoffbahnen Europe e.V. (IVK)
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- INOVYN Deutschland GmbH
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- Liveo Research GmbH
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