

Methodology for developing the system participation requirement catalogue

The Stiftung Zentrale Stelle Verpackungsregister (Foundation Central Agency Packaging Register – **ZSVR**) instructed the GVM Gesellschaft für Verpackungsmarktforschung mbH (GVM) to conduct an analysis of the packaging market that could be used to classify the system participation requirement of retail packaging based on its typical source of waste generation. The initial steps to do so included, in particular:

- defining products and aggregating them into product groups;
 - o assessing the character and functionality of the packaged goods, amongst other things;
 - o assessing functional aspects relating to the quantity, material or design of the packaging, or where it accumulates;
 - o assessing additional product attributes;
- conducting an analysis to reflect the so-called 'volume criterion' and to delineate comparable sources of waste generation pursuant to section 3 (11) VerpackG (Packaging Act).

Using this as a basis, the catalogue structure was developed by aggregating products into product groups and classifying them.

The methodology used by the GVM in the market analysis can be summarised as follows:

1 Data underlying the packaging market analysis

GVM operates four databases that compile the findings of a variety of studies conducted on the German packaging market since 1988.

- The '**packaging market volume**' database is structured by product and product group. It contains information on nominal quantities, material groups, packaging materials, form, packaging level, distinction between single-use and reusable packaging, measures, sources of waste generation under the Verpackungsverordnung (Packaging Ordinance) and market volumes.
- The '**packaging design**' database contains packaging data on packaging components.
- The '**content consumption tool**' database contains data on the production, import, export and consumption of products.
- The '**empty packaging material market supply tool**' database assembles data on empty packaging materials (in particular, empty packaging's production and market supply).

2 Implementation of the volume criterion

The reference to the accumulated packaging volume in section 3 (11) VerpackG for agricultural holdings and craft enterprises is called the '**volume criterion**'. For the market research-related implementation of the volume criterion, the sources of waste generation with a volume criterion were not structured according to the Handwerksordnung (Trade and Crafts Code) category. Instead, they were assembled into five groups based on the products or packaging that typically accumulates with them (craft food production, building trade, motor crafts, other craft enterprises and agriculture). The data collection methods in this respect include reliance on existing statistical framework data (e.g., revenue classes, production concentrations, sectors), recourse to data from the waste management sector (e.g. weighing data, removal data) and direct empirical data collections at sources of waste generation. The specific implementation of the volume criterion by the GVM was based on all three methods, depending on data availability.

2.1. Reliance on existing statistical framework data

Relying on existing statistics and data is a very practical method of obtaining data to implement the volume criterion. This involves researching and selecting appropriate statistical framework data that can be used to draw clear conclusions on the packaging tonnage emptied at a source of waste generation.

This includes, in particular, data that structures sources of waste generation with a volume criterion (e.g. agriculture, building craft) by:

- revenue class;
- workforce size class;
- production concentration;
- enterprise type;
- sector;
- operating materials and supplies ;
- materials consumption;
- land use;
- etc.

The following sources were also accessed:

- data from statistical offices, authorities and ministries:
 - o data from Destatis, the German Federal Statistical Office;
 - o data from Eurostat, the European statistical office;
 - o Federal Office of Agriculture and Food (BLE);
- sector sources:
 - o trade associations and chambers;
 - o studies from market research and consultancy companies (GfK, Nielsen, IRI, etc.);
 - o economic research institutes (Ifo, DIW, etc.);
- company information:
 - o operational statistics;
 - o business and financial reports, balance sheets;
 - o research in economic and business databases;
- general media sources:
 - o trade publications; and
 - o trade books.

The GVM checked and critically investigated the validity of data prior to using them, in particular data from associations and other non-governmental organisations.

The implementation of the volume criterion for agricultural holdings as sources of waste generation relies, amongst other things, on available statistics from the test network of the Federal Ministry of Food and Agriculture. The implementation of the volume criterion in building trade uses, amongst other things, available statistics from the Federal Statistical Office's series 4, 5.1.

Using these statistics as a basis, assumptions have to be made about how the statistical framework data correlate with the volume of packaging that typically accumulates per material group. Ideally, the expert opinion is based on data from the waste management sector or direct empirical data collection from sources of waste generation.

Reliance on available statistics has the clear advantage of relatively good data availability. More information can be considered in the assessment than with other methods. The disadvantage, however, is that it always requires an evaluation (and possibly additional information to do so) of the extent to which the selected data correlates with the packaging that actually accumulates at a source of waste generation.

2.2. Waste management sector data

A second way of implementing the volume criterion is recourse to waste management sector data. This includes, in particular, data from dual systems, sector-specific solutions and waste management operators.

Waste management sector data appropriate for working out the volume criterion includes, in particular, weighing data and removal data.

Weighing data includes concrete data about the mass of the filled containers and/or the transport vehicle for particular sources of waste generation. After deducting the tare weight (of the container and/or transport vehicle) and applying assumptions or waste analyses about the packaging share and the bulk density of the containers, a conclusion can be made with a relatively high degree of accuracy about the packaging volume that accumulates at a source of waste generation per material group.

Removal data provides information about the size and number of containers available at each source of waste generation, and the number of collections and collection schedule.

By correcting these data by the share of non-packaging and the filling level – as determined based either on assumptions or by sorting analysis calculations – a valid data framework can be determined for setting out the volume criterion.

This type of data is often confidential and unavailable for market research purposes. The GVM only has limited access to this sort of confidential information. In addition, an individual company within the waste management sector normally covers only a small portion of the sources of waste generation within a larger group (e.g. bakeries, building trade, etc.) and systematic distortions of the data are not unlikely. Data of this kind are normally based on sampling and reflect the overall situation only in excerpts.

2.3. Direct empirical data collection at sources of waste generation

The third method of collecting data is direct sampling-based empirical data collection at sources of waste generation. The two most important instruments of these empirical data collections are surveys (written, in-person or by phone) and observation.

To survey a source of waste generation, a trained market researcher conducts structured interviews with employees and operators of sources of waste generation or other experts. In doing so, the goal is to collect data as described in parts 3.4.1 and 3.4.2.

Survey results are based on subjective assessments. There is a range of empirical social research trade literature dedicated to the issues of answer trends and systematic distortions (response biases) in surveys. In our experience, these effects are limited in the context of surveys of sources of waste generation because the parties surveyed have only a very vague idea of the context of the survey and the impact of their answers. In any case, surveys are a long-standing and recognised empirical research tool when they are conducted by experienced and technically competent interviewers.

In the interest of completeness, direct observation also needs to be listed as a potential method of collecting data, even if GVM places less emphasis on it. In the context of empirical data collection for sources of waste generation, observation usually means sight checks by market researchers, i.e. observing and documenting the container volume and filling level at a source of waste generation. Usually only the containers located outside can be observed directly. In addition, the number of collections and/or the collection schedule needs to be researched at the responsible waste management operators or assumed based on expert opinion. In market research practice, the line between observation and surveys is often fluid: observational market researchers are sometimes engaged in conversation by operational employees or they proactively initiate conversations themselves (= surveys), particularly when a source of waste generation's containers are not directly visible. Experience indicates that observing sources of waste generation is not very feasible.

Survey and observational findings from sampling-like data collection are projected onto the market as a whole. The GVM's sampling selection is usually a multi-stage process and can be described as layered clustering or systematic clustering. In multiple selected clusters, cases that are considered typical are systematically sampled. The results are scaled up onto the market as a whole based on assumptions of the likely distribution of these typical cases overall. In regional clustering, GVM primarily collects empirical data in the states of Rhineland-Palatinate, Hesse, Bavaria, North Rhine-Westphalia and Saxony-Anhalt.

3 Analysis findings: product-based catalogue structure

The catalogue is divided into 36 product groups, which are further divided into 428 product sheets for individual products (last updated: 17 December 2018). The '**packaging market volume**' database, which was conceived in 1988 to accurately reflect accumulated household-related packaging, was used as a starting point. The product nomenclature is updated to reflect changes in the range of goods on an ongoing basis. It is based primarily on retail product categories.

To shape the preliminary structure of the catalogue sheets, product groups were first determined that could be used as a basis to develop catalogue data sheets.

| Code | Product group | Catalogue |
|--------|---|------------------|
| 01-000 | Beverages | yes |
| 02-000 | Dairy products | yes |
| 02-020 | Preserved food | yes |
| 02-030 | Frozen food | yes |
| 02-040 | Confectionery, snack foods | yes |
| 02-050 | Meat, sausage, fish | yes |
| 02-060 | Agricultural products | yes |
| 02-070 | Baking | under 02-080 |
| 02-080 | Baked goods, semi-finished products | yes |
| 02-090 | Coffee, tea, cocoa | yes |
| 02-110 | Dry goods | yes |
| 02-120 | Other foods | yes |
| 02-130 | Fats and oils | yes |
| 03-010 | Restaurant service packaging | cf. guideline |
| 03-020 | Service packaging | cf. guideline |
| 05-000 | Pets | yes |
| 06-000 | Crop protection and agricultural supplies | yes |
| 08-010 | Construction chemicals | yes |
| 08-020 | Construction materials & installations | yes |
| 08-030 | Flooring | yes |
| 08-040 | DIY & gardening | yes |
| 12-000 | Adhesives | yes |
| 13-010 | Lubricants & fuels | yes |
| 13-020 | Motor vehicles | yes |
| 14-000 | Toiletries | yes |
| 15-000 | Surface finishes | yes |
| 16-000 | Commercial chemicals | yes |
| 17-000 | Commercial, industrial and de-icing salt | yes |
| 18-000 | Health | yes |
| 19-000 | Furniture | yes |
| 21-000 | Textiles, shoes, leather goods | yes |
| 22-000 | Household | yes |
| 23-000 | Leisure & sporting goods | yes |
| 24-000 | Tobacco products | yes |
| 28-010 | White goods | yes |
| 28-020 | Small appliances | yes |
| 28-030 | IT, consumer electronics | yes |
| 31-000 | Office supplies | yes |
| 32-000 | Mail order business | by product group |
| 33-000 | Print media | yes |

4 Approach

After the product groups were defined, reference points were looked for that could be used to delineate product groups from one another. Because the quantity can be easily identified regardless of the kind of unit it is stated in (e.g. kilogramme, litre or piece), it was a preferred reference point. Where that was not an option (in particular for individually packaged piece goods), other criteria were used. As an initial step, this included an assessment of the 'packaging market volume' database, in particular with regard to the structure of the source of waste generation regarding the individual packaging types it contains. As part of a second step, where necessary an assessment of the overall market or a sub-market assessment



in multiple stages were conducted. In doing so, not only was the database referenced, but supplementary interviews with market participants and other market research tools were also applied.

| | | | |
|------------------------------------|--|---|--|
| B2B primary market research | | Surveys <ul style="list-style-type: none"> (Standardised) surveys, in writing or on the phone Face-to-face interviews Expert interviews Ad-hoc surveys Panels | Other data collection methods <ul style="list-style-type: none"> Field research (store checks) Mystery shopping Measureings (packaging size, weight, material, etc.) Workshops Trade show visits |
| Secondary market research | Exclusive GVM sources <ul style="list-style-type: none"> Market volume packaging database (Germany/Austria) Packaging samples database GVM studies, e.g. 'recycling balance' GVM packaging panel | External databases <ul style="list-style-type: none"> List brokers Research in economic and business databases (Bureau van Dijk, Hoppenstedt, GBI, Federal Gazette, etc.) | General media sources <ul style="list-style-type: none"> Trade publications Trade books Daily papers Business newspapers and magazines Internet portals |
| | Public sources <ul style="list-style-type: none"> Statistical offices <ul style="list-style-type: none"> Destatis/Eurostat Government authorities/ministries <ul style="list-style-type: none"> German Environment Agency (UBA) BMUB, LAGA, BMWi Other organisations (NGOs, etc.) | Company information <ul style="list-style-type: none"> Business and financial reports, balance sheets Websites Sales and other catalogues, price lists, brochures Product descriptions Operational statistics | Sector sources <ul style="list-style-type: none"> Trade associations and chambers Sector analyses by banks, etc. Evaluations/studies published by market research and consultancy companies (GfK, Nielsen, IRI, etc.) Economic research institutes (Ifo, DIW, etc.) |

In August/September 2018, market participants had the opportunity to make written submissions on the draft catalogue as part of a consultation process. The submissions received were collected by the ZSVR, reviewed thoroughly and prioritised. With the help of GVM, recommended action points were drafted and agreed. Using this as a basis, the catalogue was revised. Where necessary, the process steps described here were repeated. In addition, a great deal of additional research was conducted and, in some cases, submissions were discussed with their authors over the phone. Individual product groups are currently still being worked on (as of January 2019), findings are being updated gradually.

