



D2.3

Stakeholder consultation on key-data

1.1

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Abstract:	This report presents the results from an extensive stakeholder consultation led by CIRPASS to gather opinions on the perceived relevance of specific information points related product information in the textiles, electronics and battery sectors, both from the data provider and data user points of view. These opinions are measured against the perceived barriers to providing this data. The result are recommendations for key data to enable circularity and for related open European and global vocabulary standards.
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22	SyncForce BV	SyncForce	NL
23	ASOCIACION DE EMPRESAS TECNOLOGICAS ES INNOVALIA	INNOVALIA	ES
24	Textile Exchange	TextileExchange	US
25	Responsible Business Alliance	RBA	US
26	WORLDLINE FRANCE	WORLDLINE	FR
27	RISE RESEARCH INSTITUTES OF SWEDEN AB	RISE	SE
28	IPOINT-SYSTEMS GMBH	iPoint	DE
29	Global Electronics Council	GEC	US & NL
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Preparing the ground for the gradual piloting and deployment of the DPPs, focusing on developing a roadmap for prototypes in three value chains: electronics, batteries and textiles.

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List of Abbreviations and Acronyms	
Battery Directive	Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators
Battery Regulation Proposal	Proposal 2020/0353 (COD) for a Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020
CLP Regulation	Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures
Ecodesign Directive	Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products
ELV Directive	Directive 2000/53/EC on end-of life vehicles
Energy Labelling Regulation	Regulation (EU) 2017/1369 setting a framework for energy labelling
ESPR Proposal	Proposal 2022/0095 (COD) on ecodesign requirements for sustainable products
PPW Directive	Directive 94/62/EC on packaging and packaging waste
REACH Regulation	Regulation (EC) No 1907/2006 on the Registration, Evaluation, Authorisation and Restriction of Chemicals
RoHS Directive	Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment
SVHC	Substances of very high concern
Textile Regulation	Regulation (EU) No 1007/2011 on textile fibre names and related labelling and marking of the fibre composition of textile products
WEEE Directive	Directive 2012/19/EU on waste electrical and electronic equipment
WFD	Directive 2008/98/EC on waste (Waste Framework Directive)

About CIRPASS

The European Commission has strong interest and ambition in relation to emerging technologies to support the 'twin', green and digital, transitions and specifically in the development of a **Digital Product Passport (DPP)**. The DPP is defined by the European Commission as a structured collection of product related data with pre-defined scope and agreed data management and access rights conveyed through a unique identifier, and that is accessible via electronic means through a data carrier. The intended scope of the DPP is information related to sustainability, circularity, value retention for re-use, remanufacturing and recycling.

The aim of CIRPASS is to prepare the ground for a gradual deployment of DPPs, with an initial focus on the electronics, batteries and textile sectors. Spurred by the need to accelerate the transition to a more circular and sustainable economy, combined with new opportunities offered by a burgeoning data market, a large number of European and international initiatives have emerged recently. CIRPASS's methodology consists in uniting representatives from a large number of these early DPP pilots in order to build a balanced, open and transparent community dedicated to the design and roll-out of the upcoming European DPP.

To ensure a neutral and technology agnostic stance, CIRPASS relies heavily on the involvement of leading European Research and Technology organisations, supported by three standardization organisations, an experienced pool of circular economy and sustainability consultancies, several large European industrial associations, digital technologies and web experts and se digital solution providers. The CIRPASS consortium is made up of 31 partners in total.

By bringing together this community of expertise, the project will build consensus and momentum around the DPP concept and contribute to the development of common principles, prototypes and roadmaps to secure the interoperability of DPPs across value chains, sectors and market participants. Enhanced stakeholder dialogue will be achieved through extensive consultations addressing key DPP aspects such as ontologies, technical requirements and standardization needs.

1 Introduction

This purpose of this report is to map stakeholders' perspectives on the information that may be contained in future DPPs in the batteries, electronics, and textiles value chains. Several stakeholder consultations form the basis for extracting general opinions on potential relevance of specific information points, both from a data provider and data user point of view. Simultaneously, opinions on barriers towards the gathering of this information are captured. Based on these collected opinions, a mapping of key data for circularity and related open European and global vocabulary standards is derived for the electronics and textiles sectors. Concerning the batteries sector, because mandatory information requirements are already well defined in the Battery Regulation and because major workshops, discussions and surveys have already been conducted by the Battery Pass project¹, it was concluded that further engagement of battery sector stakeholders was not necessary.

The workflow for this study was designed to ensure that the data collection and evaluation process considers legal requirements, stakeholder needs, and the practicality of data usage, leading to a well-informed decision-making process regarding potential future information requirements. To this end, an initial list of information requirements was proposed by mapping information that is mandatory by legislation or that is used in current DPP-related initiatives. This initial list of potentially relevant information can be found in CIRPASS report *"Mapping of legal and voluntary requirements and screening of emerging DPP-related pilots (D2.1)"*². Furthermore, expert interviews and workshops were conducted to generate knowledge on required information from a use case perspective. The results of this study can be found in the CIRPASS report *"Exploring possible Digital Product Passport (DPP) use cases in battery, electronics and textile value chains"*³.

These initial results provided a basis for further evaluation both through workshops held with CIRPASS consortium partners and through an ambitious survey conducted with stakeholders external to the consortium, thanks to an elaborate mapping of and communication towards the project's wide community of interest. After evaluation and consolidation of these results, a list of recommended key information points was elaborated. These last steps are described in this present report.

This report is structured as follows:

- **Chapter 2** presents the survey design and methodology, including the list of evaluated information
- **Chapter 3** presents the survey results for the electronics sector, including the characterisation of respondents
- **Chapter 4** presents the survey results for the textiles sector, including the characterisation of respondents
- To enable comparison across sectors, **Chapter 5** reproduces the extensive list of mandatory information requirements compiled by the Battery Pass project in addition to data attributes that were deemed useful by the Battery Pass consortium.
- **Chapter 6** provides an aggregated overview of the information that is seen to be most useful and beneficial by stakeholders.

¹ <https://thebatteryypass.eu/>

² Wagner, E., Rukanova, B., Bernier, C., Wautelet, T., Ayed, A.-C., Böll, M., Gayko, J., Schneider, A., Bendzuck, K., & von Dalwigk, I. (2023). D2.1 Mapping of legal and voluntary requirements and screening of emerging DPP-related pilots (2.0). CIRPASS Consortium. <https://doi.org/10.5281/zenodo.10925636>

³ Wautelet, T., & Ayed, A.-C. (2024). Exploring possible Digital Product Passport (DPP) use cases in battery, electronics and textile value chains (2.0). CIRPASS Consortium. <https://doi.org/10.5281/zenodo.10974901>

- **Chapter 7** provides a list of recommendations
- **Chapter 8** presents next steps and future activity
- Finally, the report **annexes** provide the extensive list of survey questions and detailed answers, as well as considerations on existing information categorisation approaches.

2 Survey design and methodology

The present workstream uses an extensive stakeholder consultation approach which requires the definition of the following three main pillars:

- Which **stakeholder groups** should be consulted for the evaluation?
- What **information** is relevant for the evaluation?
- Which **categories (or questions)** should be evaluated?

The consultation outcome is a list of key-data that is seen to be most useful and beneficial by stakeholders. While there are sector specific information requirements and challenges, to gain comparable results between sectors, a uniform consultation approach was defined for the survey as well as for the workshops and interviews.

2.1 A staged approach to stakeholder consultation

The four-step approach for evaluating information and identifying key data is a systematic and inclusive process that has involved both the CIRPASS consortia and public stakeholders.

1. Identification of an initial set of potentially relevant information: This foundational step consolidated data from two sources: legal information requirements and information already in use in various initiatives. This stage was pivotal as it established the baseline of information to be scrutinized and assessed in the subsequent steps.
2. Internal evaluation of the initial set of information, workshop with the information workstream partners: Upon gathering the initial data set, the second step involved a thorough evaluation by the information workstream partners. These partners are typically CIRPASS consortia members who possess subject matter expertise. They reviewed the initial information set against project objectives and relevance to DPP goals.
3. Internal evaluation of the initial set of information, workshop with all CIRPASS project partners: The third step expanded the evaluation process to a broader range of project partners. This broader group included CIRPASS partners who analysed the information from multiple perspectives. This collective internal consultation aimed to refine the data set to ensure it is robust and comprehensive before presenting it to external expert stakeholders.
4. External evaluation of information identified as relevant, survey with public expert stakeholders: The final step in the process involved the evaluation of the refined set of information by public expert stakeholders. These are external stakeholders who offered an independent evaluation of the information. The evaluation categories used in the survey are **relevance** (how big is the economic benefit?) and **effort** (how big is the data gathering effort?) for each information point. This input was critical as it provided an external validation of the information point's significance, leading to the identification of key data.

This staged approach ensured that the survey was not too time consuming for stakeholders to fill out. Some aspects could not be evaluated in a quantitative manner through a survey questionnaire. For example, assessing the benefits of consumer-provided data requires discussions on data quality, privacy and governance. For these topics, additional workshops entitled "Frequently Asked Questions" (FAQs) were held. The scope of the survey and workshops was willingly set to be large, providing a comprehensive overview for a given sector. By now, most questions are tackled within the ESPR, explained in presentation by the European Commission or will be answered in the delegated acts. Thus, the FAQs are not presented in this report.

2.2 Survey objectives and evaluation categories

The survey's objective is to identify key data, that is, information that is considered as highly relevant to stakeholders. By simultaneously consideration the effort required to gather this information, the aim is to propose a categorization of the information points as:

- **Key-data:** highly relevant information
- **Conditional key-data:** highly relevant information but subject to structural, technical barriers or generally high data gathering effort
- **Optional data:** less relevant information

The survey is structured to enable the evaluation of information relevance and related benefits versus the corresponding gathering effort. Ideally, key-data should be seen as useful (of high economic relevance) for the target stakeholder, which we refer to as the "data user". The data user needs the information to achieve specific goals, e.g. a repairer needs disassembly information to conduct repairs, which prolongs the product's lifetime. Of course, not all data that might be useful to data users can be made a legal information requirement as some may face barriers from data providers (high gathering effort, IP protection needs, etc.). To evaluate these different perspectives, two surveys, one for the data user and one of the data provider, were set up to evaluate the exact same data set.

Beyond the identification of key-data, the survey allows us to answer the following questions:

- Which information is of high relevance but technically difficult to gather (manual data gathering)?
- Which information is of high relevance but structurally difficult to gather (data provided by external stakeholders in the value chain e.g. supplier)?
- Which information is of high relevance but requires overall high effort for data gathering?
- Which information which is likely to be legally mandatory requires high effort for data gathering?
- Is information defined in the dataset proposed in the Joint Research Council (JRC) Priority Product Study already available?
- For which information is the relevance not clear?

Finally, the survey was built upon the reasoning that information which is highly relevant (for the data user) should be made available (by the data provider). If the data is not available to the data user, the survey digs deeper into the question as to why the data is not available. The reason is assumed to be on the data provider side – it could be unavailable due to either technical reasons (data has to be gathered manually, is unstructured), or due to structural reasons (data has to be gathered from other stakeholders, such as suppliers).

Evaluation categories for each perspective include:

- Data user
 - Economic benefit for data user [Low; Medium; High]
 - Availability to data user [Yes; No]
- Data provider
 - Availability to data provider [Yes; No]
 - Internal or external data generation/gathering [Internal; External]
 - Automated/machine readable (e.g. EDIFACT) or manual (e.g. excel tables, e-mails) generation/gathering [Automated; Manual]
 - Overall estimated data gathering effort
 - Perceived economic benefits for the target stakeholder

Because companies can have highly differing levels of digitalisation, the following examples are provided for manual data generation/gathering (e.g. excel tables, e-mails) versus automated/machine readable data generation/gathering (e.g. EDIFACT).

It would have been possible to include more evaluation categories, but each further aspect would have significantly increased the time required to finish the survey, potentially resulting in a reduced number of responses. The approach presented is, therefore, the result of long discussions to find a balance between survey restrictions and achieving the goals of this study.

The tree diagram Figure 1 shows the relevant path to identify which information is of high relevance to the target data user and if the information is available to the data user. The branch on the right-hand side (red font) shows the “critical path” which means, that highly relevant information is not available, neither for the data user, nor for the data provider, and is subject to structural and technical barriers.

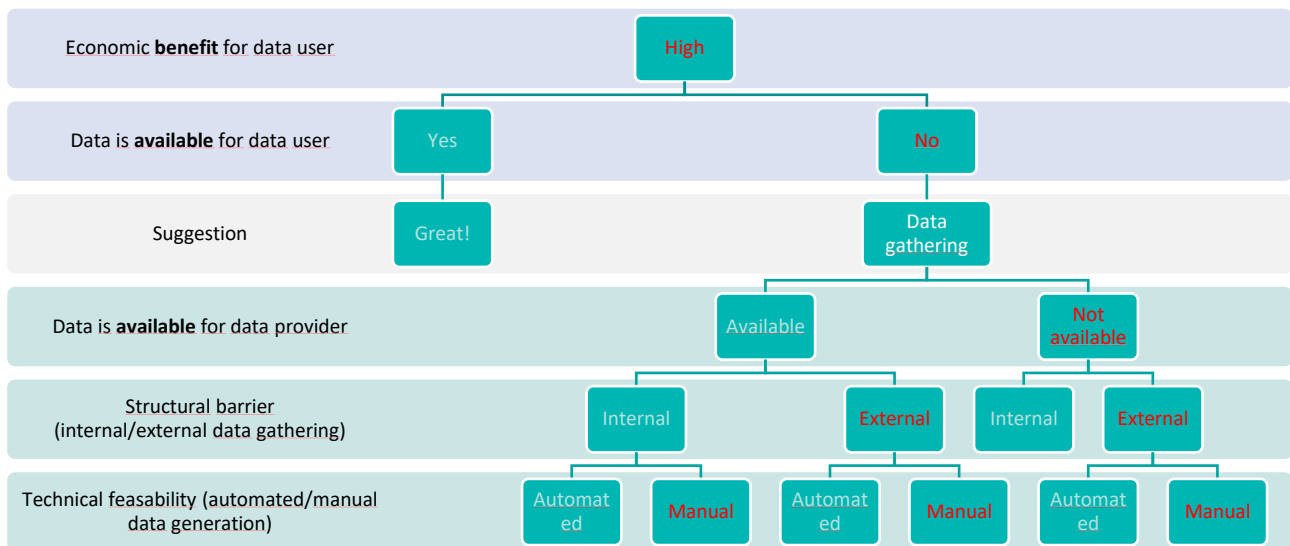


Figure 1 Tree diagram shows critical path in red: starting with data user (first two rows, light blue) data is highly relevant and not available; next, data provider needs to gather data (last three rows, light blue)

Finally, a question was asked on the “general effort” with answer possibilities [low, medium, high], as other influencing factors might exist.

Additionally, to get an overview of Intellectual Property (IP) critical information, this survey did not ask about the information which they see critical and do not want to share with. The question formulated vice-versy to see if data providers see a benefit for specific stakeholders (answer possibilities: retail, consumer, repair/reuse, EoL actors) and implicitly if they share the specific information.

The scope of this study comprised many types of information, regardless of whether this information may or may not be made mandatory in upcoming European legislative acts such as ESPR Delegated Acts. The surveyed information included:

- Information required by the horizontal Ecodesign for Sustainable Products Regulation (ESPR)
- Information in the JRC Priority Product Study (sustainable sourcing, durability, recycled content, lightweight design, recyclability)
- Other currently required information (Ecodesign legislation, Waste Electrical and Electronic Equipment (WEEE), Textile Regulation)
- Other information which was identified as relevant as reported in CIRPASS report D2.1⁴

⁴ Wagner, E., Rukanova, B., Bernier, C., Wautelet, T., Ayed, A.-C., Böll, M., Gayko, J., Schneider, A., Bendzuck, K., & von Dalwigk, I. (2023). D2.1 Mapping of legal and voluntary requirements and screening of emerging DPP-related pilots (2.0). CIRPASS Consortium. <https://doi.org/10.5281/zenodo.10925636>

2.3 Evaluation categories (questionnaire design)

The following tables present the evaluation categories/questions asked to each stakeholder survey respondent, along with the corresponding possible answers.

Evaluation category / question	Possible answer
Please specify your (main) role in the value chain. If you are an association, please allocate yourself to the stakeholder group you (mainly) represent	[Material producer and supplier; Product manufacturer; Retail; Brand / vertical retailer; Repair; Distribution; Online Market place for materials and finished products; Reuse; Remanufacturing; Refurbishment; Collection; Sorting / Disassembly; Recycling; Second raw material distributor and retailer; Market surveillance authorities / customs; Auditors and certification bodies / conformity assessment bodies; Consumer protection associations; Environmental protection agencies/institutes; NGO]
Are you an association representing multiple stakeholder?	[Yes; No]
Are you an economic operator that will be obligated to issue a DPP?	[Yes; No; Don't know]

2.3.1 Evaluation categories specific for data provider

The following tables present the evaluation categories/questions along with the corresponding possible answers which were asked for each information point in the data provider survey.

Evaluation category / question	Possible answer
Is the information already available?	[Yes; No]
Do you generate/gather the information manually (e.g, excel tables, e-mails) or automated/machine readable (e.g, EDIFACT)?	[Automated; Manual]
Do you generate the information yourself or do you gather it from other stakeholders?	[Generate myself; gather from others]
How much effort (costs, time) does it take to generate/gather the information?	[1=low; 2=medium; 3=high]

Agree if you see a potential economic benefit to one of the stakeholder groups below of sharing this information?	<i>[Retail, brands; End-user, consumer; Repair, reuse, refurbishing, remanufacturing; Collection, sorting, recycling]</i>
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Note: the question “How much effort (costs, time) does it take to generate/gather the information?” addresses the general effort, which might include other reasons, beyond technical and structural barriers. In some cases, providers must invest considerable resources to compile or aggregate this data, due to its non-interoperable or specialised nature. For some information, such as for materials, this reflects the complex nature of some data types, necessitating detailed analysis, verification, and possibly manual intervention.

2.3.1 Evaluation categories specific for data user

The following tables present the evaluation categories/questions along with the corresponding possible answers which were asked for each information point in the data user survey.

Evaluation category / question	Possible answer
Is the information already available?	<i>[Yes; No]</i>
Do you see potential economic benefit for your organisation of having access to this information?	<i>[Yes; Potentially, No]</i>

2.4 Evaluated information

The following table provides an overview of the number of information points (potentially or currently mandatory information (ESPR, other legislation), information identified by the JRC, as well as other potentially relevant information), evaluated for each value chain. We then provide a list of the relevant information items for each value chain in sections 2.4.1 to 2.4.3.

	Electronic	Textile	Battery
Information required by ESPR & other legal acts (Ecodesign legislation, WEEE, Textile Regulation)	25	10	35
*Information identified in JRC priority product study / ESPR Article 7 (sustainable sourcing, durability, recycled content, lightweight design, recyclability)	21	21	-

Other potentially relevant information (as identified in CIRPASS report D2.1 ⁵)	37	29	3
Total	73	60	38

2.4.1 Information categorisation framework

An information categorisation framework was defined at the outset of the CIRPASS project to facilitate a structured analysis in an unambiguous way (see CIRPASS report D2.1). Since the data provider is assumed to be unique for each information point, it is particularly appropriate for structuring. Alternative perspectives for defining information categories might be used, e.g., data user or business case, but this might lead to ambiguities, e.g., disassembly information might be used by user, repairer and recycler. To avoid confusion, this study thus uses a **data provider perspective** for structuring information requirements. The following table uses the concept of data provider to define stakeholder groups and related information categories.

Table 1 DPP information categories

Value chain relation	Data provider	Information category
Value chain - Internal	Upstream data provider (cradle to gate): Material and product manufacturer, logistics, supplier, retail, distribution etc.	<ul style="list-style-type: none"> • Product identification, company identification • Functional and technical specifications • Material and composition information • Product design and service-related information
	Downstream data provider (gate to grave): consumer, repair and reconditioning operators, refurbishment, remanufacturing, waste operators including collectors, sorters, recyclers, etc.	<ul style="list-style-type: none"> • Usage history, • Repair history, • End-of-Life (EoL) information
Value chain - External	Compliance and circularity data providers using data from upstream (and potentially downstream) ⁶ and potentially aggregating this information into indicators and labels: conformity assessment bodies ⁷ , certification and standardisation bodies, etc.	<p>Compliance and circularity information:</p> <ul style="list-style-type: none"> • Mandatory compliance (certification, norms) • Non-mandatory compliance (standards & associated labels) • Indicators (e.g. circularity indicator, environmental impact)

⁵ Wagner, E., Rukanova, B., Bernier, C., Wautelet, T., Ayed, A.-C., Böll, M., Gayko, J., Schneider, A., Bendzuck, K., & von Dalwigk, I. (2023). D2.1 Mapping of legal and voluntary requirements and screening of emerging DPP-related pilots (2.0). CIRPASS Consortium. <https://doi.org/10.5281/zenodo.10925636>

⁶ For example, the calculation of the carbon footprint for batteries might include end-of -life stages.

⁷ In the Battery Regulation Proposal, a conformity assessment body is defined as a body that performs conformity assessment activities including calibration, testing, certification and inspection.

The information categories presented above could be transformed into other categorisation systems, e.g., structured with a data user or business case perspective. For example, market surveillance and customs authorities are an important data user. In the future, the above information categories may be further detailed and adapted to more granular stakeholder groups if and when commonly or formally accepted stakeholder group definitions are available, e.g., in the revisions of the ESPR, ISO TG323, etc.

For this survey, the information categories have been extended by the information categories from JRC's 2023 technical report "Ecodesign for Sustainable Products Regulation - Preliminary study on new product priorities".

The information categories evaluated in this survey are:

- Product identification
- Company identification
- Material information
- Functional and technical specifications
- Product design and service information
- Downstream information
- Certification and label
- *Durability
- *Recyclability
- *Recycled content
- *Lightweight design
- *Sustainable sourcing
- *Product energy and resource efficiency
- *Generation of waste

*information categories from JRC's 2023 technical report "Ecodesign for Sustainable Products Regulation - Preliminary study on new product priorities".

2.4.2 Evaluated information per category electronic sector

Information is shown according to the above defined information categorisation framework.

Information category	Information / attribute / data point
Product identification	<ul style="list-style-type: none"> • Unique product identifier at the level indicated in the applicable delegated act (e.g, serial number on item level) • Product code as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts • Product code as provided for in standard IEC 61406-2 and ISO/IEC 15418 or equivalent of products or their parts • Model number (according to own standards) • Serial number (according to own standards) • Relevant commodity codes, such as a TARIC code as defined in Council Regulation (EEC) No 2658/871 • Tracability of the logistical path of the product (date, location, operator) • Recommended sales price of product • Date of product manufacturing

	<ul style="list-style-type: none"> Country of product manufacturing Retail information (product name, category, type, brand) Product images
Company Identification	<ul style="list-style-type: none"> Information related to the manufacturer, such as its unique operator identifier The unique operator identifiers referred to in ESPR Annex III, points (g) and (h), compliant with the ISO/IEC standard 15459:2015" The unique facility identifiers referred to in Annex III, point (i), compliant with the ISO/IEC standard 15459:2015" Information related to the importer, name, registered trade name or registered trade mark and the postal address, EORI number; Name, contact details and unique operator identifier code of the economic operator established in the Union responsible for EU declaration of conformity (original text: , responsible for carrying out the tasks set out in Article 4 of Regulation (EU) 2019/1020, or Article 15 of Regulation (EU) on general product safety, or similar tasks pursuant to other EU legislation applicable to the product,) Individual company ID (Web domain name, individual ID, ISO 15459 compatible company code e.g, GS1 GLN, IEC 61406, SKU ID, OAR ID, UUID, DNV); Assembly line number (according to own standards)
Material information	<ul style="list-style-type: none"> Information according to RoHS Directive 2011/65/EU; (Declaration of conformity (CE-Marking)) Information requirements according to REACH, Article 31 on hazardous, persistent, bioaccumulative and toxic substances The name of the substances of concern present in the product (ESPR Article 7 Information requirements (5) enable the tracking of all substances of concern throughout the life cycle of products) The location of the substances of concern within the product (ESPR Article 7 (5)) The concentration, maximum concentration or concentration range of the substances of concern, at the level of the product, its main components, or spare parts (ESPR Article 7 (5)) Relevant instructions for the safe use of the product (ESPR Article 7 (5)) Information relevant for disassembly (ESPR Article 7 (5)) Requirement according to „WEEE ANNEX VII for selective treatment“: e.g, polychlorinated bi-phenyls (PCB), mercury containing components, batteries, printed circuit boards, toner cartridges, plastics with BFRs, etc, Materials that inhibit circularity (please specify in field "Reason") Type and location of composite materials Type and location of valuable materials (e.g, critical raw materials) Type and location of plastics (incl, additives, fillers, etc,)
Functional and technical specifications	<ul style="list-style-type: none"> Product information sheet (on energy consumption & performance according to Energy Labelling Regulation) Technical documentation (according to Energy Labelling Regulation) Individual specification of product functions (e.g, screen size, camera resolution)
Product design and service information	<ul style="list-style-type: none"> Digital compliance documentation and information required under the ESPR Regulation or other Union law applicable to the product, such as the declaration of conformity, technical documentation or conformity certificates; Information according to ESPR Article 7 2 (b) (ii) for consumers and other end-users on how to install, use, maintain and repair the product in order to minimise its

	<p>impact on the environment and to ensure optimum durability, as well as on how to return or dispose of the product at end-of-life;</p> <ul style="list-style-type: none"> • Information according to ESPR Article 7 2 (b) (iii) for treatment facilities on disassembly, recycling, or disposal at end-of-life; • Information according to ESPR Article 7 2 (b)(iv) other information that may influence the way the product is handled by parties other than the manufacturer in order to improve performance in relation to product parameters referred to in Annex I, • Extended repair information incl, disassembly instructions, component map, wiring diagrams etc, (according to Ecodesign Directive) • Minimum guarantee offered • Identification of WEEE collection group (according to WEEE Directive ANNEX III)
Downstream information	<ul style="list-style-type: none"> • Purchase date • Use cycles e,g, washing cycles (washing machines), hours of use (TV) • State of health of battery (for battery powered devices) • Repair date • Exchanged parts • Images of repair • Costs of repair • Date product becomes waste (waste collection date)
Certification and label	<ul style="list-style-type: none"> • Material certification • Product certification • Factory / facility certification • Supply chain / chain of custody certification
Durability	<ul style="list-style-type: none"> • Resistance to stress or aging mechanism (e,g, washing cycles, drops) • Repairability scoring index/label • Availability (duration) of repair information and maintenance instructions • Repair information (e,g, disassembly instructions, necessary tools) • Spare part availability • Spare part delivery time • Disassembly related to skill level • Number of materials and components used • Modularity, transformability, detachable/adjustable elements • Possible lifetime of the product • Compatibility across models
Recyclability	<ul style="list-style-type: none"> • Ability to separate the product into different materials • Choice of materials and restrictions on substances (e,g, flame retardants)) • Detailed chemical content • Condition for the access to product data relevant for the recycling, including dismantling information • Recyclability scoring label • Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)
Recycled content	<ul style="list-style-type: none"> • Recycled content in product • Recycled content in packaging • Minimum post-consumer recycled content material in product • Minimum post-consumer recycled content material in packaging

Sustainable sourcing	<ul style="list-style-type: none"> • Social attributes of materials and products • Social attributes related to facilities • Traceability of materials across the supply chain applicable to different intermediated product groups (limited to the intermediate products (incl, chemicals) and ceramic products),
Product energy and resource efficiency	<ul style="list-style-type: none"> • Material consumption associated to the production • Energy consumption associated to the production • GHG emissions associated to production • GHG emissions associated to the product
Generation of waste	<ul style="list-style-type: none"> • Generation of waste
Lightweight design	<ul style="list-style-type: none"> • Lightweight design

2.4.3 Evaluated information per category textile sector

Information category	Information / attribute / data point
Product identification	<ul style="list-style-type: none"> • Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level) • Product code as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts; • Product traceability (date, location, operators) • Relevant commodity codes, such as a TARIC code as defined in Council Regulation (EEC) No 2658/871 • Recommended sales price of product • Production year (Season or/and year of sale) • Retail information (product name, category, type, brand) • Product images
Company identification	<ul style="list-style-type: none"> • Information related to the manufacturer, such as its unique operator identifier with standardized and > 1 Product identifier aside outside of ISO/IEC 15459-6, e.g. Open supply Hub ID, D-U-N-S number, GTS ID, etc. • Unique operator identifiers other than that of the manufacturer • Unique facility identifiers with standardized and > 1 location identifier aside outside of ISO/IEC 15459-6, e.g. Open supply Hub ID, GTS ID, etc. • Information related to the importer, name, registered trade name or registered trade mark and the postal address, EORI number • Name, contact details and unique operator identifier code of the economic operator established in the Union responsible for EU declaration of conformity • Individual or proprietary company ID (e.g. GS1 GLN, IEC 61406, SKU ID, OAR ID, GTS-ID, UUID, DNV)
Material information	<ul style="list-style-type: none"> • Material composition (according to Textile Regulation; identification of materials above 15-5% content) • Fiber composition and characteristics (tensile strength, length, etc.)

	<ul style="list-style-type: none"> • Yarn type • Fabric type • Fabric construction type • Substance of concern name, location within the product, concentration at the level of the product, main components or spare parts (according to REACH Regulation) • Identification of substances (name, location, concentration) according to other lists e.g. AFIRM, ZDHC MRSL • Declaration of compliance e.g. with AFIRM, ZDHC MRSL • Identification of product design elements that inhibit circularity (e.g. prints harder to recycle)
Product design and services	<ul style="list-style-type: none"> • Sustainable design & services options (e.g. designed for repair, reuse, recycling ... R-Strategies) • Product care instructions • Recycling stream category (waste type)
Functional and technical specifications	<ul style="list-style-type: none"> • Size (in regional context e.g. in EU, FR, IT, US size) • Product weight (without packaging) • Color group, color description, color system information (Pantone, Coloro, etc.), numerical color value
Usage information	<ul style="list-style-type: none"> • Purchase date • Use /washing cycles • Date of repair / reuse • Exchanged parts • Condition / quality at the end of each use cycle (for recommerce)
Certification	<ul style="list-style-type: none"> • Material certification • Product certification • Factory / facility certification • Supply chain / chain of custody certification • Product seals/labels without certificates e.g. Sustainable Apparel Coalition member
Durability	<ul style="list-style-type: none"> • Resistance to stress or aging mechanism (e.g. washing cycles) • Min. durability of function (e.g. repellence, colour fastness) • Possible lifetime of the textile or footwear • Reparability scoring index/label • Availability of repair information and maintenance instructions (e.g. disassembly instructions, necessary tools) • Spare part availability • Spare part delivery time • Disassembly related to skill level • Number of materials and components used • Modularity, transformability, detachable/adjustable elements • How to manage the textile or footwear at the end of its lifetime
Recyclability	<ul style="list-style-type: none"> • Ability to separate the product into different materials • Choice of materials and restrictions on substances (eg. Combination of fibers, flame retardants)) • Detailed chemical content • Condition for the access to product data relevant for the recycling, including dismantling information

	<ul style="list-style-type: none"> Recyclability scoring label (in terms of recycled cotton, wool, polyester, rubber or viscose (depending on the product-specific composition)) Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)
Post consumer recycled content	<ul style="list-style-type: none"> Min content of PCR material in product Min content of PCR material in packaging
Lightweight design	<ul style="list-style-type: none"> Lightweight design
Sustainable sourcing	<ul style="list-style-type: none"> Social attributes of materials and products Social attributes related to facilities Traceability of materials across the supply chain applicable to different intermediated product groups (limited to the intermediate products (incl, chemicals) and ceramic products)
Energy and resource efficiency	<ul style="list-style-type: none"> Water consumption during production GHG emissions associated to production of a clothing item GHG emissions associated to the washing and drying operations of a clothing item Energy consumption associated to the production of a clothing item Energy consumption associated to the washing and drying operations of a clothing item
Generation of waste	<ul style="list-style-type: none"> Possible release of non-biodegradable microplastics

2.4.4 Evaluated information per category batteries sector

Information category	Information / attribute / data point
General information	<ul style="list-style-type: none"> Manufacturer's name, registered trade name or trade mark, Manufacturing facility Battery type Battery batch number Battery serial number of the battery or other element allowing its unequivocal identification, battery model identifier Date of manufacture/placing on the market Product traceability (date, location, operators)
Circularity information	<ul style="list-style-type: none"> Carbon footprint Due diligence on responsible sourcing Results of tests reports proving compliance with the requirements Reparability indicator Reuse indicator Recycling indicator
Repair history	<ul style="list-style-type: none"> Status of battery ('original', 'repurposed', 'reused', 'remanufactured', 'waste') Annex XII 4(b) Max, and min, temperature, avr, C-Rate, SoC difference, time stamp Capacity fade, internal resistance increase, energy efficiency and its fade

	<ul style="list-style-type: none"> • Charge throughput, temperature history, error memory, internal resistance, • Tracking of extreme event • Exchanged parts • Repaired parts
Usage history	<ul style="list-style-type: none"> • Max, and min, temperature, avr, C-Rate, SoC difference, time stamp • Capacity fade, internal resistance increase, energy efficiency and its fade • Charge throughput, temperature history, error memory, internal resistance, • Tracking of extreme event
Product design information	<ul style="list-style-type: none"> • Dismantling information, including at least exploded diagrams of the battery system/pack showing the location of battery cells, disassembly sequences, type and number of fastening techniques to be unlocked, tools required for disassembly, warnings if risk of damaging parts exist, amount of cells used and layout; • Safety measures for disassembly • Part numbers for components and contact details of sources for replacement
Material information	<ul style="list-style-type: none"> • Recycled content (CLLN) • Share of renewable content • Chemistry, detailed composition, including materials used in the cathode, anode and electrolyte • Hazardous substances in the battery other than mercury, cadmium or lead • Detailed composition, including materials used in the cathode, anode and electrolyte • Critical raw material contained in the battery (Annex X)
Functional and technical specifications	<ul style="list-style-type: none"> • Battery performance specifications (power, internal resistance, energy round trip efficiency, discharge and charge rate, ratio between power and energy, depth of discharge, power capability) • Rated capacity [Ah] • Expected lifetime • Minimum average duration • Capacity fade, intern, resistance increase, energy efficiency and its fade

2.4.5 Online survey questionnaire

An online survey questionnaire was chosen as the most comprehensive and open consultation approach, meeting the need for a user-friendly format for external parties that wished to contribute. This approach is more flexible than a workshop approach, which is bound to specific times and dates. Online surveys are also an efficient tool for gathering and exploiting quantitative data from a large number of stakeholders from multiple stakeholder groups. A snapshot of the survey is presented below.

Annex 1 provides an overview of the survey questionnaire and gathered data.

	Is the information already available?		Do you generate the information yourself or do you gather it from other stakeholder?		Do you generate/gather the information manually (e.g. excel tables, e-mails) or automated/machine readable (e.g. EDIFACT)?	
	Yes	No	Generate myself	Gather from others	Automated	Manual
Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product code as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product traceability (date, location, operators)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relevant commodity codes, such as a TARIC code as defined in Council Regulation (EEC) No 2658/871	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recommended sales price of product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production year (Season or/and year of sale)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Retail information (product name, category, type, brand)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product images	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.5 Target stakeholders

In the context of the CIRPASS project, the consistent and efficient engagement of stakeholders is a critical component. For the facilitation of this engagement process, a comprehensive contact list has been compiled and updated during the project. This list was used to pinpoint various stakeholder groups in the product value chain, categorising them as either data providers or data users. The identified groups encompass 19 stakeholder types/roles:

1. Material producer and supplier
2. Product manufacturer
3. Retail
4. Brand / vertical retailer
5. Repair
6. Distribution
7. Online Market place for materials and finished products
8. Reuse
9. Remanufacturing
10. Refurbishment
11. Collection
12. Sorting / Disassembly
13. Recycling
14. Second raw material distributor and retailer
15. Market surveillance authorities / customs
16. Auditors and certification bodies / conformity assessment bodies
17. Consumer protection associations
18. Environmental protection agencies/institutes
19. NGO

2.6 Data collection process

Key milestones and timescales relating to the carrying out of the survey have involved:

- The development and launch of the online questionnaire as a tool for data gathering.
- The initial distribution of survey invitations to our curated contact list commenced on August 1st, 2023. The survey was initially open for a period of six weeks, concluding on September 8th.
- To encourage completion, a reminder was disseminated to participants on August 28th, and the response deadline was consequently extended to September 22nd.

Despite the extended deadline, it was observed that some surveys remained incomplete as of September 22nd. In order to manage this situation, the survey was closed to new responses while allowing those with partial responses to complete their submissions. The survey collection process was ultimately concluded on September 30th.

2.7 Limitations and assumptions

The data collection efforts presented in the previous sections are subject to several limitations, as discussed below.

- Different understanding of information: the information was categorised and explained in the survey within a structure that was seen as most intuitive. However, it is possible that some information was not understood – this information is identified in the conclusion/next steps section.
- Incomplete surveys: this limitation was identified from the start. Nevertheless, there is still value in collecting even partial information and we recognize that for some responses we may have more details than others.
- Limitations of the characteristics of the evaluation framework: in the development of the characterisation framework, we focused on a limited set of characteristics to allow for structured data collection with a few evaluation categories and set of information points. Limiting the questionnaire to a reasonable length was also a criterion to increase the response rate of external parties. While the questionnaire went through several rounds of revision, to refine the evaluation categories and information, feedback received from respondents and our own experience have shown that it was not perfect (e.g., some missing definitions for terminology used). However, the decision was made not to change the questionnaire as the survey was launched, in order to maintain the coherence of past data collected with any data that might be collected in the future.

Despite these limitations, the screening exercise proved to be of very high value and usefulness.

2.8 Workshops for additional aspects

In addition to the survey, we undertook expert workshops with CIRPASS consortia partners to consider complex information that could not be adequately assessed through a quantitative survey. These workshops provided the necessary platform for in-depth discussion and qualitative evaluation of topics that required additional explanation and contextual understanding. **The evaluation categories that were considered in the additional workshops were as follows:**

1. **Granularity and Aggregation:** The workshops examined the level of detail at which data is captured and reported, ranging from materials to components, up to the final product. This included considerations of how data is aggregated, with a particular focus on maintaining data security and protecting sensitive information.
2. **Data Quality:** Various dimensions of data quality were discussed, such as accuracy, consistency, completeness, timeliness, validity, and accessibility. These quality attributes are essential to ensure that the data can be trusted and is useful for stakeholders.
3. **Governance, Access Rights, and Roles:** Governance structures were reviewed, especially those related to data ownership and administration. The workshops also covered the delineation of access rights and roles, ensuring that data handling is in line with the CIRPASS proposal for the DPP system architecture⁸.
4. **Data Reliability:** The reliability of data was categorized and assessed, ranging from 'very reliable' to 'not reliable.' The determination of data reliability is crucial for stakeholders to gauge the level of confidence they can place in the information provided.

These workshops complemented the survey by providing qualitative insights that are important for a comprehensive understanding of the information requirements.

⁸ Wenning, R., Papadakos, P., & Bernier, C. (2024). DPP System Architecture (V1.8). CIRPASS Consortium. <https://doi.org/10.5281/zenodo.10949842>

3 Key results: electronics sector

The survey conducted as part of this study aimed to gather comprehensive data on information requirements from various stakeholders. In this chapter, we present an overview of the key findings from the electronics sector, highlighting the participation of data providers and detailing results for identified information requirements dataset.

3.1 Stakeholder characterisation

Electronics sector:

- **97 data user** responses were received
- **139 data provider** responses were received

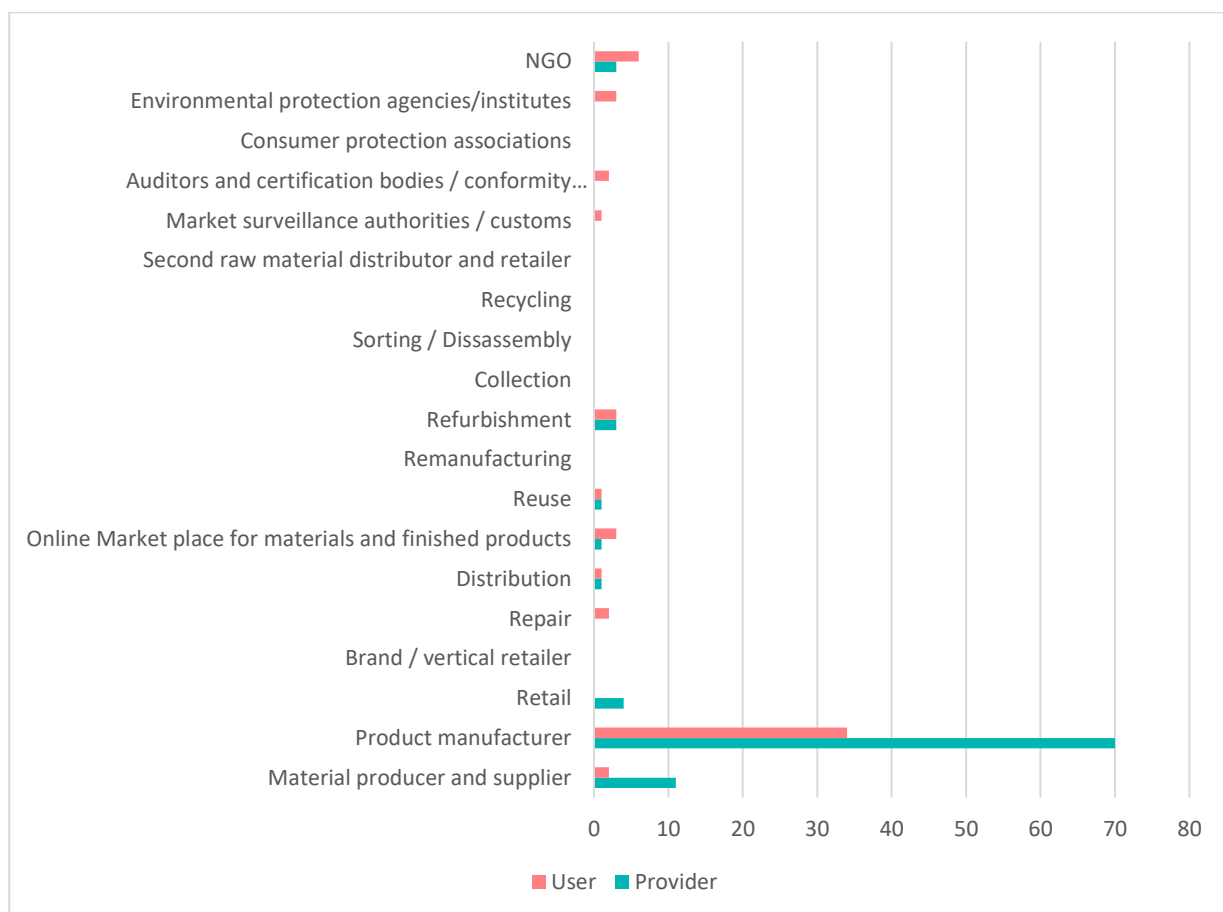


Figure 2 Distribution of stakeholder responses on the (main) role in the value chain

Respondents were asked to allocate themselves to the stakeholder group they (mainly) represent. The figure above shows that most responses are from the group of stakeholders who will likely be obligated to issue a DPP or provide information, such as material producers and suppliers, product manufacturers, and retailers. "Product manufacturers" have the highest representation as both data providers and data users, which suggests that manufacturers are the primary source of data for this survey. There is a gap on responses from the End-of-life stakeholder, including collection, sorters, recyclers, secondary raw material distributors which are rather data users. Therefore, the evaluation of economic benefit is of limited significance. However, the

economic benefit for the target stakeholder was also evaluated from data provider perspective. The data user perspective is used in the analyses. Chapter 3.4.1.5 dives in the evaluation (economic benefit and data availability) from data user perspective, which show major overlaps (see Figure 10).

Next, stakeholders were asked “Are you an association representing multiple stakeholders?”. The chart in Figure 3 suggests that the majority of respondents are individual entities or organisations. This could imply that most respondents are direct stakeholders with individual interests rather than collective ones. The 23% positive response indicates a smaller presence of associations or collective bodies which, however, have the role of aggregating the interests of multiple stakeholders, thus these responses might be given more weight.

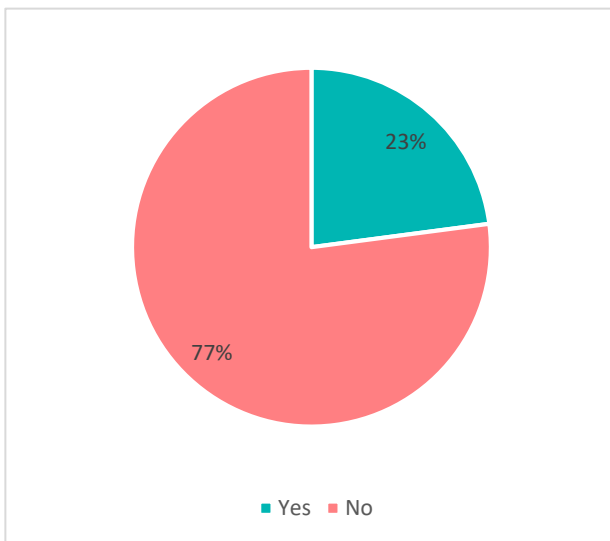


Figure 3: Amount of responses to the question “Are you an association representing multiple stakeholder?”

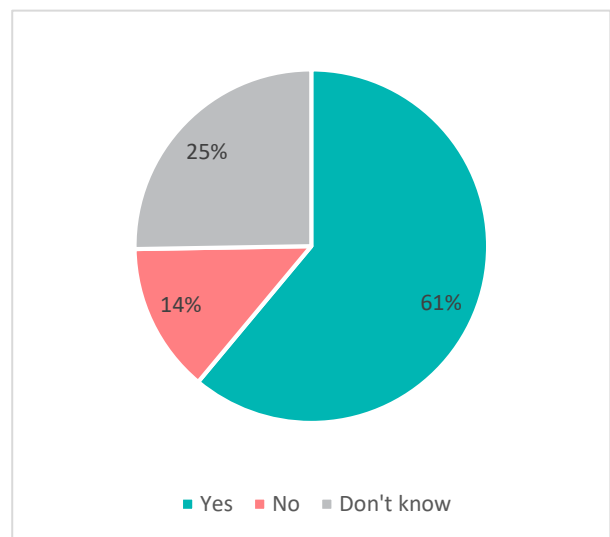


Figure 4 Amount of responses to the question “Are you an economic operator that will be obligated to issue a DPP?”

The data indicates that a majority of the respondents are aware of their obligation regarding the issuance of a DPP, suggesting a high level of awareness. To note, the questionnaire was distributed to the CIRPASS network and interested entities. Therefore, a general DPP-awareness amongst the survey participants can be assumed, which might not be the case for all stakeholder. The 25% of respondents who are uncertain about their obligation points to a need for further information dissemination or clarification about the scope of legal requirements. This uncertainty may represent an opportunity for regulatory bodies or industry associations to provide more (clear) information.

3.2 Overview: relevance and data gathering effort per information category

Figure 5 shows the evaluated information clustered into 9 segments with low to high relevance on the y-axis and low to high data generation effort on the x-axis.

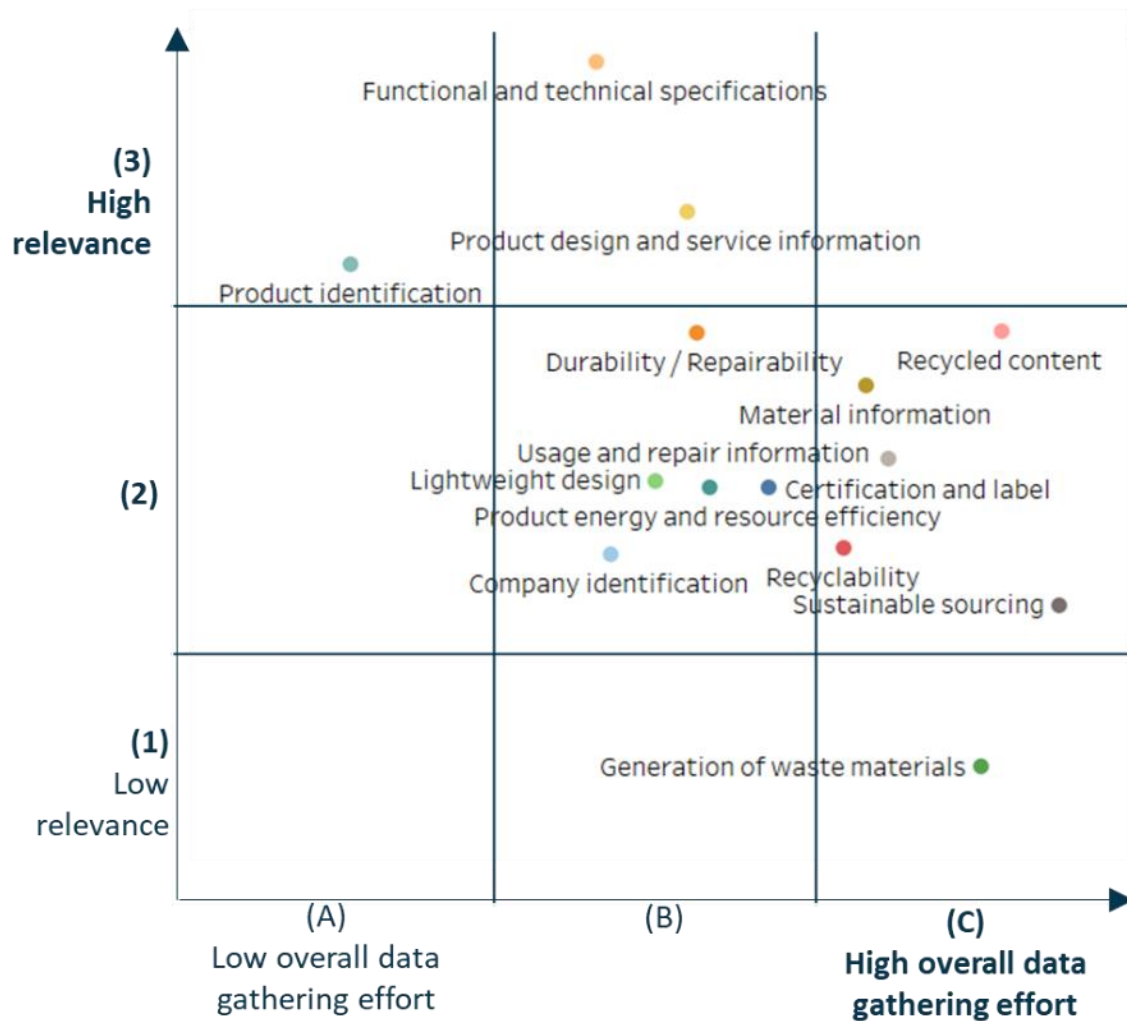


Figure 5 Information categories clustered into 9 segments with low to high relevance and low to high data generation effort

The overall average data generation effort is an average of data availability, automated data generation, internal data generation and general data generation effort (sum of these three, divided by 3). The figure above shows that the effort for data gathering is perceived medium to high across most categories, led by the JRC information categories (sustainable sourcing, recyclability, recycled content, generation of waste, product energy and resource efficiency) but also usage and repair information, certification and label and material Information appearing to require the most effort. The findings from the overview are described per segment:

- 3A / 3B – high relevance and low or medium overall data generation effort: Product identification, function and technical specifications, product design and service.
 - o This information is in majority already generated due to legal or market requirements.
 - o Conclusion: direct regulatory requirements for this information is possible and no major information gaps will occur.
- 2C – medium relevance and high data generation effort: recycled content, material information certification and label, recyclability, sustainable sourcing

- Information in these categories is mostly generated at the beginning of the value chain, therefore this information has to be gathered externally.
- Implementation time might be longer for this set of information points.
- Conclusion: Financial, technical or other forms of support for information with high data generation effort might be required for the obliged actors in order to be able to provide this information
- 1C – low relevance and high data generation effort: Generation of waste
 - Category might not be clearly understood. How is the generation of waste defined? “Generation of waste is defined” is stated as one ecodesign requirement in ESPR Article 5 1. (p). While there are standards such as reparability, carbon footprint, etc., the method or variables to calculate the generation of waste are not specified in the ESPR and there is no standard yet. The ESPR states “Preventing destruction will reduce the environmental impact of those products by reducing the generation of waste”. It seems to correlate to preventing destruction, which would align to the ban on destruction of unsold consumer goods. However, it is also not defined how this will be measured.
 - Usefulness or relevance of these information seems not to be seen. Conclusion / recommendation: demonstrate use cases and necessity for this information category in contrast to other circularity indicators.
- 2B – medium relevance and medium data generation effort
 - These information categories are in mid-range in both dimensions. To note, the information categories scores are calculated as an average of all information points contained in one category. Thus, there are information points of lower and higher relevance and/or data gathering effort. This is in particular the case for product energy and resource efficiency.

The following bar chart shows the top 25 most relevant information with their relevance indicated by the length of the bar and the overall data generation effort by the colour (green= rather simple to generate, red = rather difficult to generate).



The next section dives into more detail on the data gathering effort – whether it is increased by a manual data collection or external data sources (e.g. suppliers).

3.3 Data gathering effort

3.3.1 Information subject to technical barriers (manual data generation)

The survey evaluated which information points require manual data gathering/collection effort or which can be automatically collected. Automatic collection of data is mostly possible for company identification and product design and service information. Automatic generation capabilities are critical in reducing manual effort and ensuring efficiency. A higher response in some categories suggests that these areas have more mature systems or technologies in place. Recycled content, sustainable sourcing, recyclability, material information and durability require the most manual data generation (lowest five).

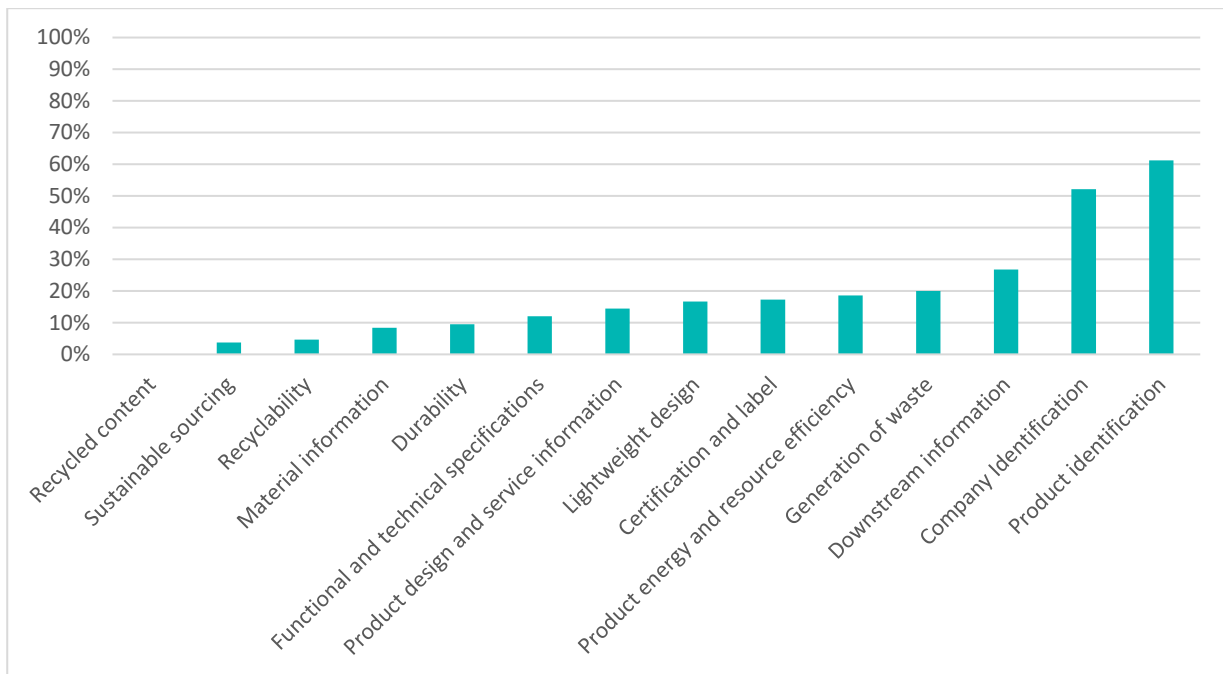


Figure 6 Electronic information categories ranked by their possibility to be collected rather manually (left) to rather automatically (right)

Looking into each single information of the information categories in Figure 6, the following list shows the 15 information that need to be manually gathered (starting with the highest data gathering effort in terms of manual data gathering):

1. Recyclability scoring label
2. Materials that inhibit circularity
3. Information in order to improve performance
4. Type and location of valuable materials
5. Min, post consumer recycled content material in product
6. Min, post consumer recycled content material in packaging
7. Social attributes of materials and products
8. Type and location of plastics
9. Disassembly related to skill level
10. Extended repair information
11. Repairability scoring index/label
12. Type and location of composite materials
13. Social attributes related to facilities
14. Ability to separate the product into different materials
15. Information for treatment facilities on disassembly, recycling, or disposal at end-of-life

The manual gathering of data is often more resource-intensive and prone to human error than automated methods. The listed information categories mostly require detailed, specialised knowledge or require

verification that cannot be easily automated, hence the need for manual collection. Some of this information is in nature subject to the variability and subjectivity involved in its assessment, and the current limitations of automated systems to handle such complexity. This can impact the efficiency, cost, and scalability of data provision in these areas, making it a technical challenge with potential for process improvement and technological innovation.

3.3.2 Information subject to structural barriers (external data generation)

The survey evaluated which information points can be internally collected and which are generated with external stakeholders (e.g. supplier). Most information can already be internally generated, though some information categories are naturally more dependent on external stakeholders such as sustainable sourcing, recycled content, downstream information.

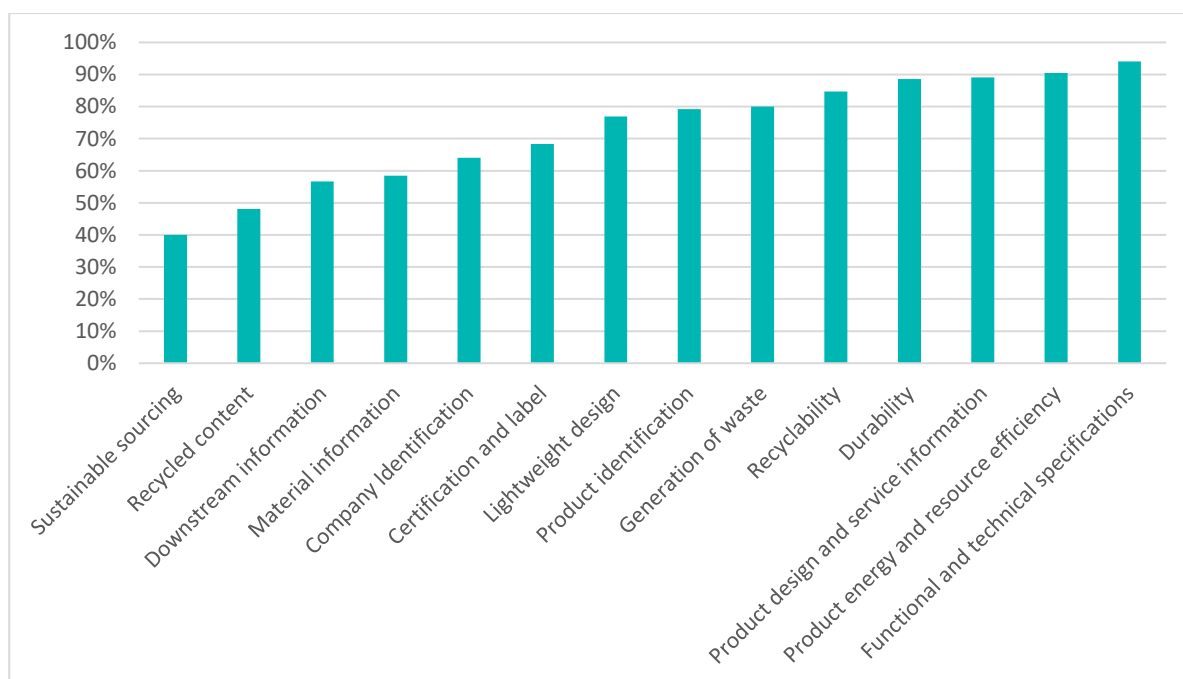


Figure 7 Electronic information categories ranked by their possibility to be gathered rather externally (left) to rather internally (right)

Looking into each single information of the information categories in Figure 7, the top 15 information that are externally collected are (starting with the highest data gathering effort in terms of external data):

1. Materials that inhibit circularity
2. Traceability of materials across the supply chain
3. The concentration of the substances of concern
4. Date product becomes waste
5. Social attributes of materials and products
6. Recycled content in packaging
7. Min, post consumer recycled content material in packaging
8. Images of repair
9. Unique operator identifiers
10. Type and location of valuable materials
11. Type and location of plastics

12. Type and location of composite materials
13. Material certification
14. Min, post consumer recycled content material in product
15. Social attributes related to facilities

This information is in nature more related to materials and components and thus generated at the beginning of the value chain by suppliers (e.g. type and location of valuable materials or plastics) or at the end of the value chain by collectors, recyclers (e.g. date product becomes waste, materials that inhibit circularity). Furthermore, data coming from external sources needs to be validated and meet certifications to ensure accuracy, compliance with standards and regulations.

3.3.3 Data availability and data gathering effort

In general, it can be concluded, that mostly information is available, which are already legally mandatory, such as country and date of product manufacturing, information according to RoHS or REACH (see Annex 9.3.1 Survey results – Electronics details). Information that is not mandatory, while identified as relevant in the JRC study, are least available. Other potentially relevant information is not available yet, such as product images or the purchase date.

The following comparison shows the information with the lowest availability as well as highest overall data collection effort. Information indicated in bold type occurs in both categories and should be seen as most critical.

Highest overall effort for data generation (starting with highest)	Lowest data availability (starting with lowest)
<ol style="list-style-type: none"> 1. *Materials that inhibit circularity 2. Traceability of materials across the supply chain 3. Supply chain / chain of custody certification 4. State of health of battery 5. Type and location of valuable materials 6. Type and location of composite materials 7. Detailed chemical content 8. Choice of materials and restrictions on substances 9. **Ability to separate the product into different materials 10. Social attributes of materials and products 11. **Recyclability scoring label 12. *The concentration of the substances of concern 13. Exchanged parts 14. Factory / facility certification 15. **Generation of waste 	<ol style="list-style-type: none"> 1. **Generation of waste 2. **Recyclability scoring label 3. *Materials that inhibit circularity 4. **Information in order to improve performance 5. Images of repair 6. State of health of battery 7. Date product becomes waste 8. Type and location of valuable materials 9. **Min. post consumer recycled content material in product 10. Supply chain / chain of custody certification 11. *Unique facility identifiers 12. *Unique operator identifiers 13. Purchase date 14. **Min. post-consumer recycled content material in packaging 15. Product code

*Legally mandatory information (in ESPR - to be defined per product group in delegated acts)

**JRC suggested information points

3.4 Relevance of information per stakeholder group

The bar chart in Figure 8 compares the perceived economic benefits of different information categories for four stakeholder groups in the product lifecycle. The four groups are represented by different colors:

Collection, sorting, recycling (in light blue); Repair, reuse, refurbishment, remanufacturing (in grey); End-user, consumer (in red); Retail, brands (in blue).

The chart indicates that while there is some commonality in the information seen beneficial, there are priorities seen for each stakeholder group.

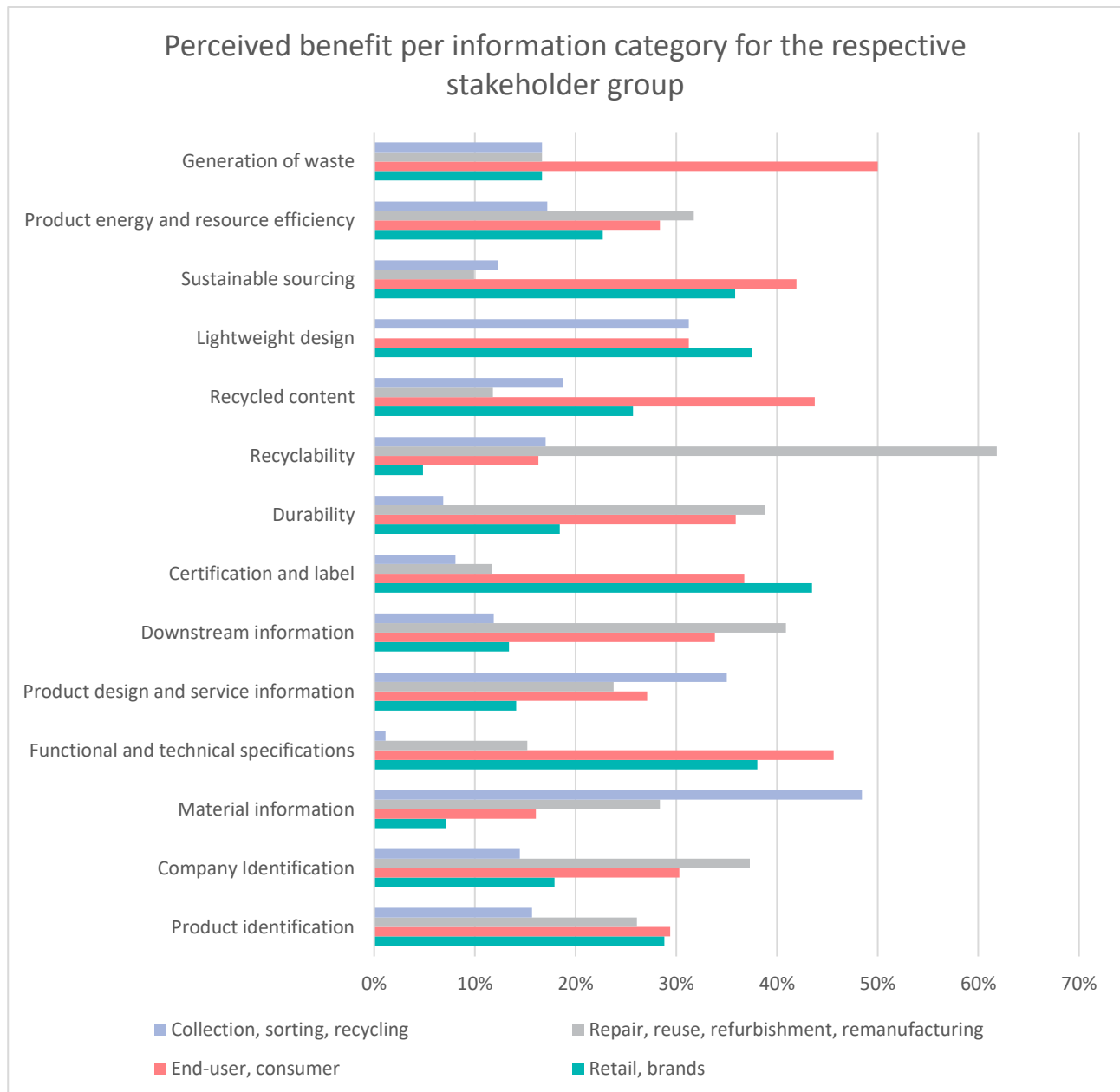


Figure 8 Perceived benefit per information category for the respective stakeholder group

- **Generation of waste as well as recycled content and sustainable sourcing** are perceived as the most beneficial information points for the end-user/consumer group, likely due to growing consumer awareness of environmental impacts. Functional and technical specification are also seen relevant for consumers.
- **Product energy and resource efficiency** is equally valued for all groups, indicating a broad concern.
- **Recyclability and durability and downstream information** is seen to be particularly important to the repair, reuse, refurbishment, and remanufacturing group. Downstream information is important

information for this group, such as repair date and repair information. The importance of durability and recyclability could be rated as important as the disclosure of this information might incentivise towards better product disassembly, which would be beneficial also for this group.

- **Material information** which is directly involved in the recycling process and utilization of recycled materials, shows a high perceived benefit among the collection, sorting, and recycling group.
- **Product identification** is valued most evenly across all groups, suggesting that all stakeholders are interested in the possibility to clearly identify the product along the entire product's lifecycle.

In the following four sections, the top 10 information points and information categories identified as most useful for specific stakeholder types are provided, starting at the top with the most useful in each table.

3.4.1.1 EoL- Stakeholder (collection, sorting, recycling)

Information category	Information
Product design and service information	Extended repair information incl. disassembly instructions, component map, etc. (according to Ecodesign Directive)
Material information	Information requirements according to REACH, Article 31 on hazardous, persistent, bioaccumulative and toxic substances
Material information	Information according to RoHS Directive 2011/65/EU; (Declaration of conformity (CE-Marking))
Product design and service information	Information according to ESPR Article 7 2 (b) (iii) for treatment facilities on disassembly, recycling, or disposal at end-of-life;
Product design and service information	Identification of WEEE collection group (according to WEEE Directive ANNEX III)
Material information	Information relevant for disassembly (ESPR Article 7 (5))
Material information	Requirement according to „WEEE ANNEX VII for selective treatment“: e.g. polychlorinated bi-phenyls (PCB), mercury containing components, batteries, printed circuit boards, toner cartridges, plastics with BFRs, etc.
Material information	Type and location of composite materials
Material information	Type and location of valuable materials (e.g. critical raw materials)
Material information	Type and location of plastics (incl. additives, fillers, etc.)

3.4.1.2 Repair, reuse, refurbishment, remanufacturing stakeholder

Information category	Information
Usage and repair information	Repair date
Product identification	Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)
Product identification	Product images
Product identification	Model number (according to own standards)
Durability / Repairability	Repair information (e.g. disassembly instructions, necessary tools)
Material information	Information relevant for disassembly (ESPR Article 7 (5))
Recyclability	Condition for the access to product data relevant for the recycling, including dismantling information

Recyclability	Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)
Product design and service information	Information according to ESPR Article 7 2 (b) (ii) for consumers and other end-users on how to install, use, maintain and repair the product in order to minimise its impact on the environment and to ensure optimum durability, as well as on how to return or dispose of the product at end-of-life;
Usage and repair information	Exchanged parts
Durability / Repairability	Spare part availability
Durability / Repairability	Availability (duration) of repair information and maintenance instructions
Durability / Repairability	Spare part delivery time
Durability / Repairability	Modularity, transformability, detachable/adjustable elements

3.4.1.3 Consumer, end-user

Information category	Information
Functional and technical specifications	Product information sheet (on energy consumption & performance according to Energy Labelling Regulation)
Functional and technical specifications	Individual specification of product functions (e.g. screen size, camera resolution)
Product design and service information	Minimum guarantee offered
Functional and technical specifications	Technical documentation (according to Energy Labelling Regulation)
Usage and repair information	Repair date
Recycled content	Recycled content in product
Product design and service information	Information according to ESPR Article 7 2 (b) (ii) for consumers and other end-users on how to install, use, maintain and repair the product in order to minimise its impact on the environment and to ensure optimum durability, as well as on how to return or dispose of the product at end-of-life;
Product identificatio	Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)
Durability / Repairability	Spare part availability
Durability / Repairability	Possible lifetime of the product
Product identification	Product images
Product identification	Retail information (product name, category, type, brand)
Product identification	Model number (according to own standards)
Recycled content	Min. post consumer recycled content material in product
Recycled content	Recycled content in packaging

3.4.1.4 Retail, brands

Information category	Information
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Functional and technical specifications	Product information sheet (on energy consumption & performance according to Energy Labelling Regulation)
Functional and technical specifications	Technical documentation (according to Energy Labelling Regulation)
Product identification	Product images
Functional and technical specifications	Individual specification of product functions (e.g. screen size, camera resolution)
Product identification	Retail information (product name, category, type, brand)
Product identification	Model number (according to own standards)
Product identification	Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)
Certification and label	Product certification
Product identification	Serial number (according to own standards)
Product identification	Recommended sales price of product
Certification and label	Factory / facility certification
Product design and service information	Minimum guarantee offered
Recycled content	Recycled content in product
Product identificatio	Date of product manufacturing
Durability / Repairability	Possible lifetime of the product

3.4.1.5 Data user perspective

Data users have been asked to evaluate the benefit and availability of information. The chart presents two sets of data for various information categories related to products: one set indicates the perceived benefit (in dark blue) and the other shows the availability of the information (in light blue) from the perspective of data users. It should be noted that the response rate is between 3-13 responses per information point. Thus, the shown ranking does not claim representativeness and does not allow to look into detail which information is relevant for which stakeholder group.

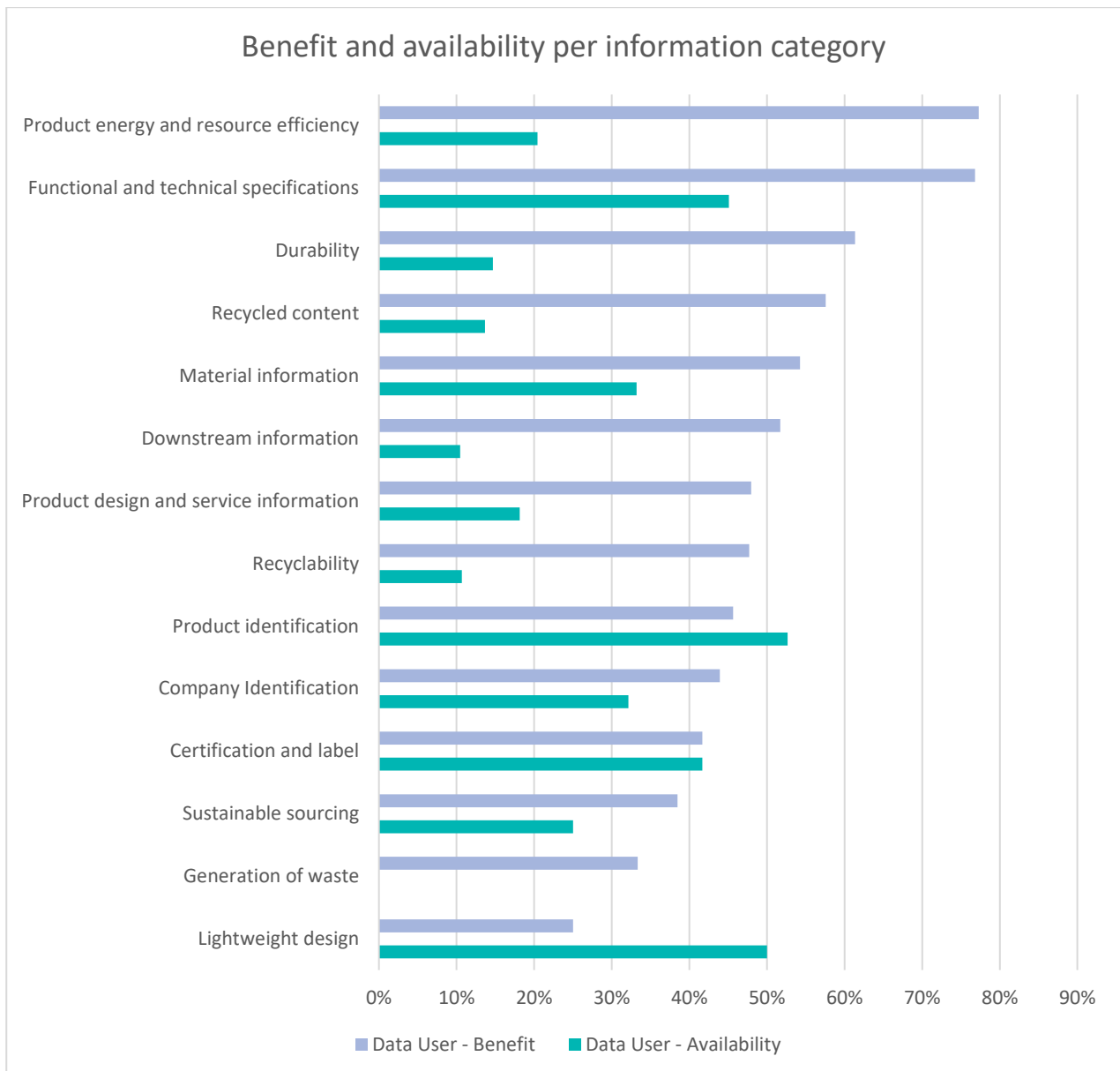


Figure 9 Benefit and availability of information categories from electronic data user perspective

- **Product energy and resource efficiency, durability and recycled content** is perceived to have high benefits but with rather low availability, which may indicate gaps in data provision. **Downstream information and recyclability** show a slightly less perceived benefit but is amongst the lowest availability. Generation of waste is seen useful by around one third, but not available at all. Generally, all of these information categories seen as beneficial require improvement in availability.
- **Functional and technical specifications** also have a high perceived benefit and are quite available, suggesting these are essential for data users and are commonly provided.
- **Company identification, product identification and certification and label** information seem to have a moderate perceived benefit with rather good availability.
- **Sustainable sourcing** has a lower perceived benefit and availability, which may reflect a lesser focus on this area within certain industries or challenges in obtaining this information.

- **Lightweight design and generation of waste** is at the lower end of perceived benefits, suggesting it may not be as prioritised or of unclear use.

In summary, the chart suggests that while some information categories are both highly beneficial and readily available, others may have discrepancies between their potential benefits to data users and availability. This could point to opportunities for better demonstrations of benefits (e.g. through use cases) and for improving availability e.g. on the data provider side in their data collection and sharing processes.

Looking into more detail, the top 15 information points that are seen economically beneficial from the data user perspective (starting with most beneficial data at the top):

- Retail information (product name, category, type, brand)
- Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)
- Date of product manufacturing
- Country of product manufacturing
- Product information sheet (on energy consumption & performance according to Energy Labelling Regulation)
- Technical documentation (according to Energy Labelling Regulation)
- Individual specification of product functions (e.g. screen size, camera resolution)
- Information related to the importer, name, registered trade name or registered trade mark and the postal address, EORI number;
- Extended repair information incl. disassembly instructions, component map, wiring diagrams etc. (according to Ecodesign Directive)
- Purchase date
- GHG emissions associated to the product
- Individual company ID (Web domain name, individual ID, ISO 15459 compatible company code e.g. GS1 GLN, IEC 61406, SKU ID, OAR ID, UUID, DNV);
- Use cycles e.g. washing cycles (washing machines), hours of use (TV)
- State of health of battery (for battery powered devices)
- Resistance to stress or aging mechanism (e.g. washing cycles)

Finally. the following bar chart compares the relevance seen by data providers (green) and data users (red). Due to the different number of responses, the bars should not be compared in absolute height but be used to illustrate general tendencies.



Figure 10 Comparison of relevance seen by electronic data users vs. data providers

It can be seen that the relevance for data providers generally follows the one from data users. An exception is the generation of waste and product energy and resource efficiency. For these categories, data providers see relatively less economic benefit. Vice versa, data providers see lightweight design and product identification to have a relatively high economic benefit.

4 Key results: textile sector

In this chapter, we present an overview of the key findings from the textiles sector following the survey conducted to gather comprehensive data on information requirements from various stakeholders.

4.1 Stakeholder characterisation

Textile sector:

- The textile sector saw participation from **180 data users** and **153 data providers**, demonstrating the highest engagement of all the sectors.

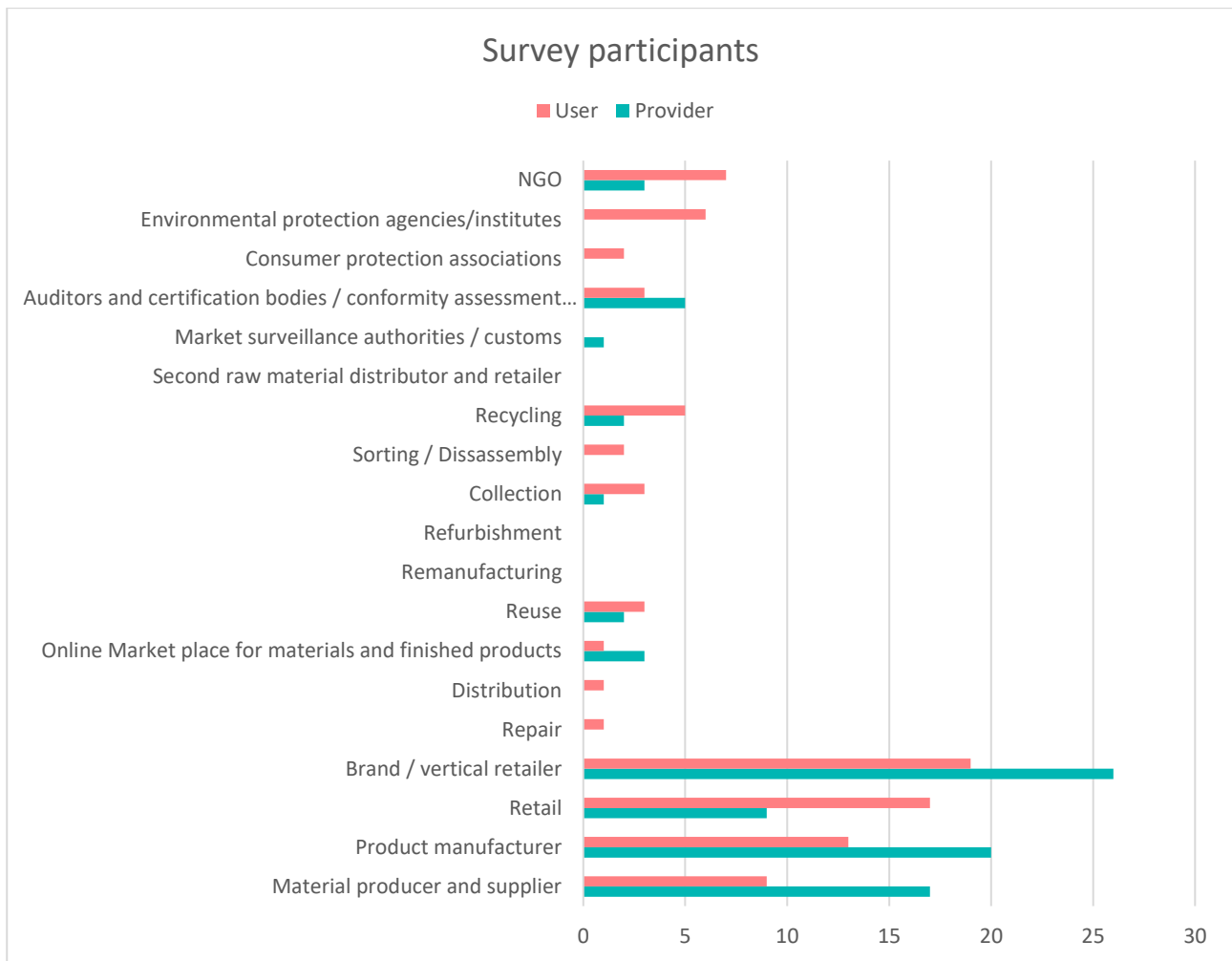


Figure 11 Distribution of stakeholder responses on the (main) role in the value chain

Respondents were asked to allocate themselves to the stakeholder group they (mainly) represent. Most responses were received from the group of stakeholders that are most likely to be obligated to issue a DPP or provide information, such as material producers and suppliers, product manufacturers, retailers. "Brand /vertical retailers" have the highest representation as data providers and data users. It should be noted that not all survey participants answered all questions. There is a gap in responses from refurbishment and remanufacturing organisations, as this group is usually not well represented in textiles and can be neglected. To preserve comparability of results to the electronics sector, the data provider perspective for the evaluation of economic benefits is used. Chapter 4.4.5 dives into the evaluation (economic benefit and data availability) from the data user perspective, which shows major overlaps (see Figure 21).

As part of the survey, stakeholders were asked "Are you an association representing multiple stakeholders?". The chart in Figure 12 suggests that the majority of respondents are individual entities or organisations. The 29% positive response indicates a smaller presence of associations or collective bodies which, however, have the role of aggregating the interests of multiple stakeholders.

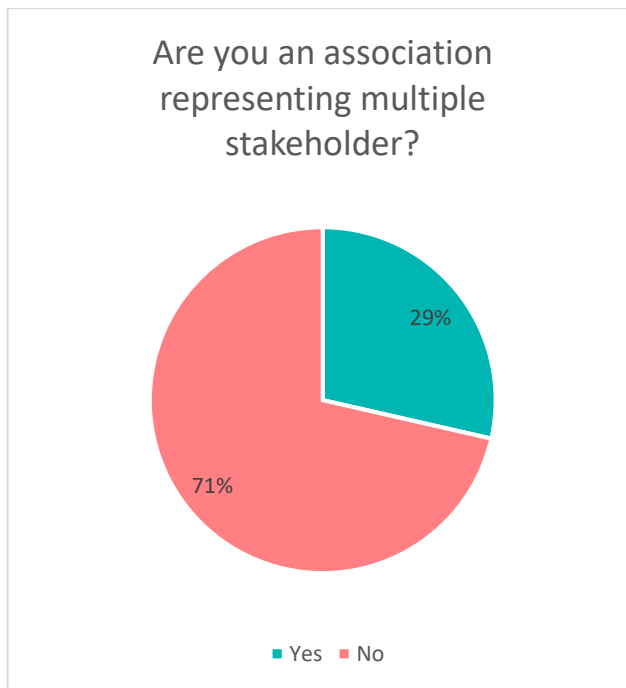


Figure 12 Responses to the question "Are you an association representing multiple stakeholder?"

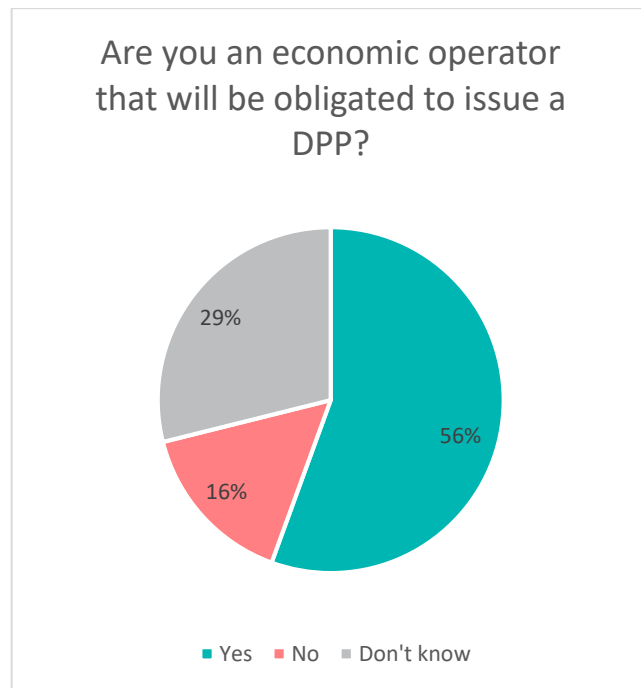


Figure 13 Responses to the question "Are you an economic operator that will be obligated to issue a DPP?"

The distribution in Figure 13 indicates that a majority of the respondents are aware of their obligation regarding the issuance of a DPP. However, 29% of respondents are uncertain about their obligation, which points to the need for further clarification about the scope of legal requirements for each stakeholder (e.g. product, component, material level). The next overview enables a closer look at this area of uncertainty.

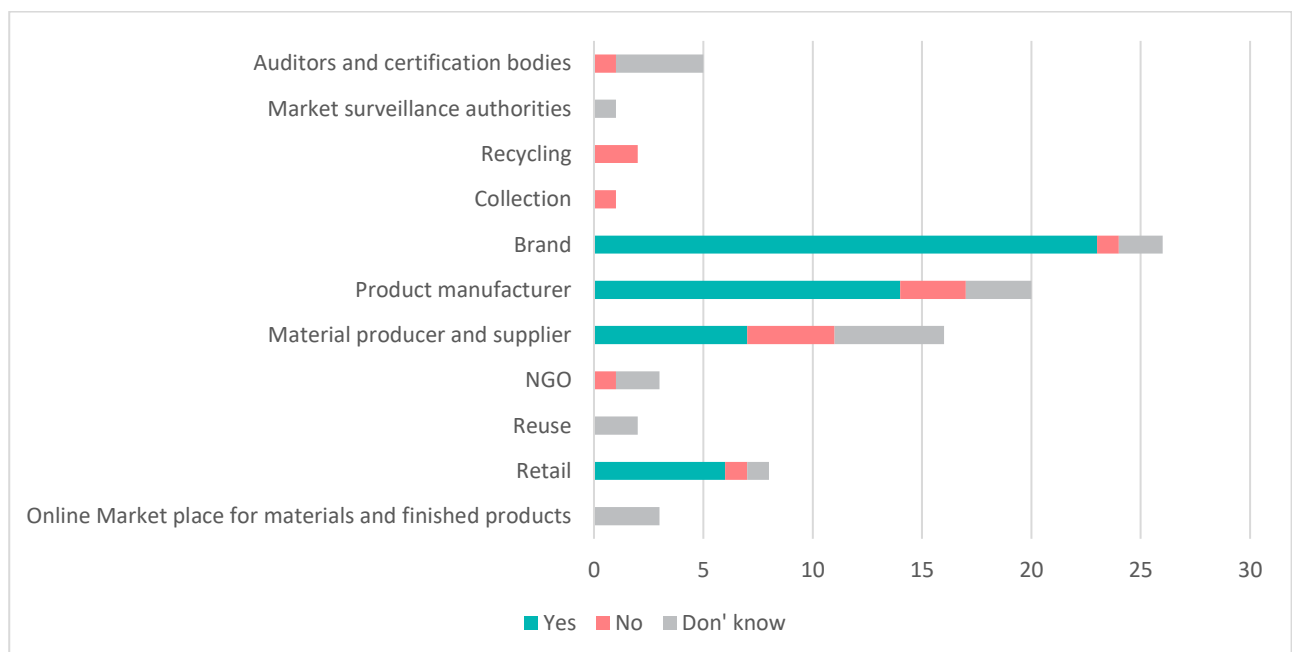


Figure 14 Responses per stakeholder group to the question "Are you an economic operator that will be obligated to issue a DPP?"

4.2 Overview: relevance and data gathering effort per information category

Figure 15 shows the evaluated information clustered into 9 segments with low to high relevance on the y-axis and low to high data generation effort on the x-axis.

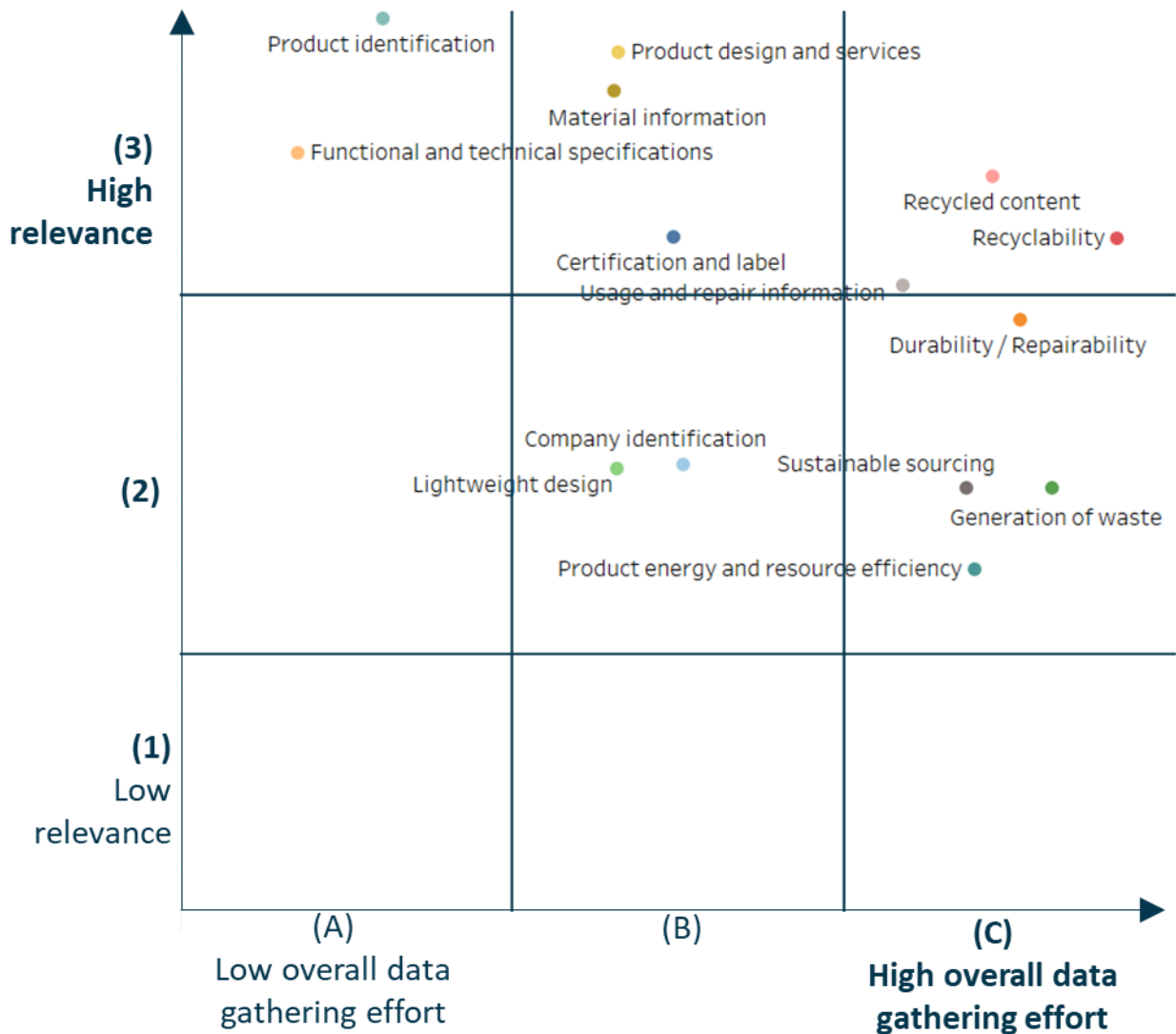


Figure 15 Information categories clustered into 9 sections with low to high relevance and low to high data generation effort

The overall average data generation effort shown represents an average of data availability, automated data generation, internal data generation and general data generation effort (sum of the three, divided by three). The effort for data gathering is medium to high across the JRC information categories (recyclability, recycled content, durability / repairability, sustainable sourcing, product energy and resource efficiency) but also usage and repair information appear to require high data gathering effort. The findings from the overview are described per segment:

- 3A – high relevance and low overall data generation effort: product identification, functional and technical specification:

- This information category is seen as highly relevant but does not require extensive effort for data collection, indicating it is already essential and that data can be easily gathered.
- 3B – high relevance and medium overall data generation effort: product design and services, material information, certification and label:
 - While information on materials, certification and label, are highly relevant, it is potentially challenging to gather or track back to the source, which could explain the medium data gathering effort. The long and complex supply chains in the textiles sector make transparency at the early stages (materials) usually more effort-intensive.
 - In general, this information is of medium data gathering effort because some information is already generated due to legal or market requirements (see Figure 16), including product design and services (such as product care instructions).
- 3C – high relevance and medium overall data generation effort: recycled content, recyclability, usage and repair information:
 - The respondents place a higher emphasis on recycled content and recyclability. These attributes are seen to be highly relevant and more important than e.g. durability or reparability, potentially due to the current recycling challenge, fast fashion trends and the typically, rather short use-cycle of textile products. The high data gathering effort might result from verifying the recycled content and recyclability calculations.
 - Usage and repair information remains difficult to gather as this includes dynamic information. The high relevance becomes clearer, when we consider that information such as the purchase date, use /washing cycles and the condition / quality at the end of each use cycle are reflected in this information category.
- 2C – medium relevance and high data generation effort: sustainable sourcing, durability/repairability, product energy and resource efficiency, generation of waste:
 - Sustainable sourcing and product energy and resource efficiency information tends to be generated at the beginning of the value chain and, therefore, this information has to be gathered from other organisations in the supply chain.
 - Generation of waste, durability and repairability are considered to require high data generation efforts, possibly due to the necessary tests and calculations.
- 2B – medium relevance and medium data generation effort: lightweight design, company identification:
 - These information categories are in the mid-range / average in both dimensions. To note, these information categories are calculated as an average of all information contained in one category. As a result, there is information of lower and higher relevance and/or data gathering effort. This is in particular the case for product energy and resource efficiency.

Figure 15 provides a more granular look into the top 25 single information types of highest benefit, per information category.

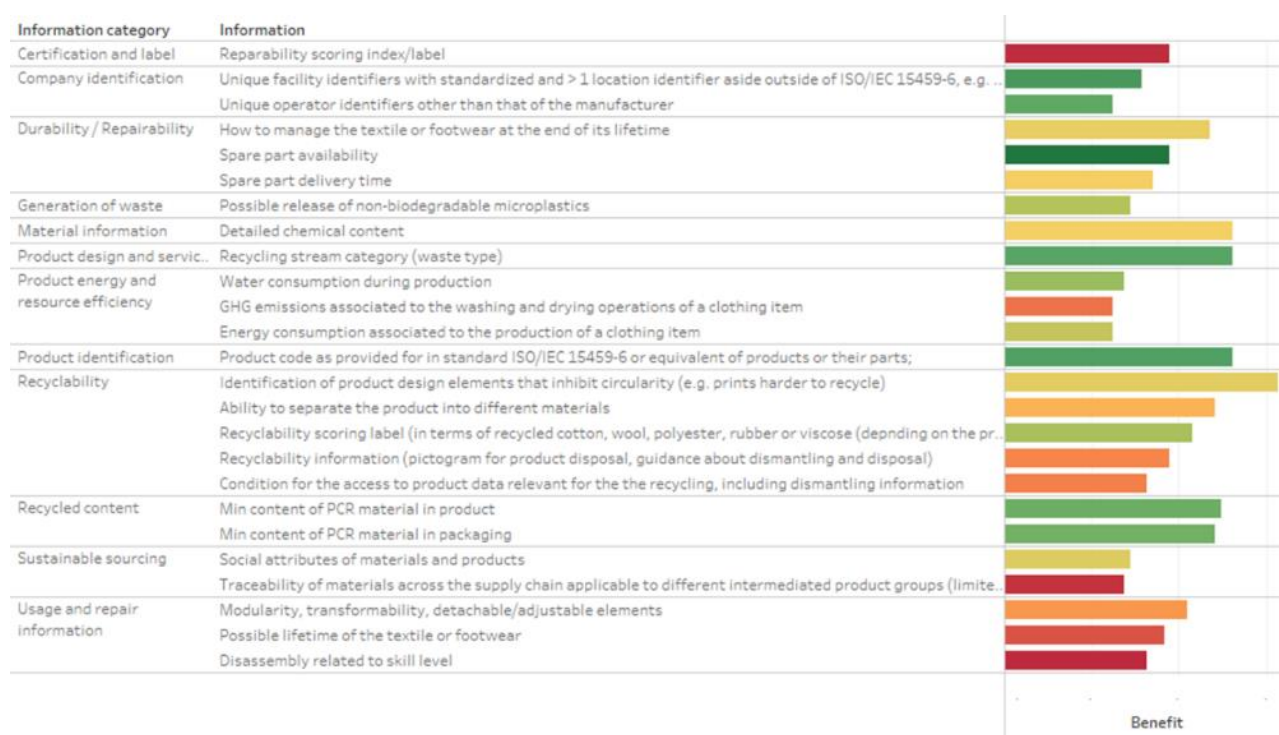


Figure 16 Information per information category. The relevance (benefit) is indicated by the length of the bar. The color indicates the data gathering effort (red=high effort, green=low effort)

Logically, the overview shows that some already mandatory information, such as material composition, requires lower data gathering effort, while other material information requires high effort (detailed chemical content). Furthermore, the overview underlines the high data gathering effort for information where the calculation basis, testing procedures and scoring criteria remain unclear, or where disassembly related to skills levels need to be clarified.

4.3 Data gathering effort

4.3.1 Information subject to technical barriers (manual data generation)

The survey evaluated which information points require manual data gathering/collection and which can be automatically collected. Figure 17 shows the data gathering effort per information category, that is, averaged over all information points included in a category. In the textile sector, automatic collection of data is (with over 50%) mostly possible for company identification, followed by product identification, functional and technical specification, material information and usage information. It is typically the case that material information that is already required by law or market (e.g. label) is automatically generated while other data (e.g. detailed chemical content or fiber composition and characteristics) tends to be manually gathered.

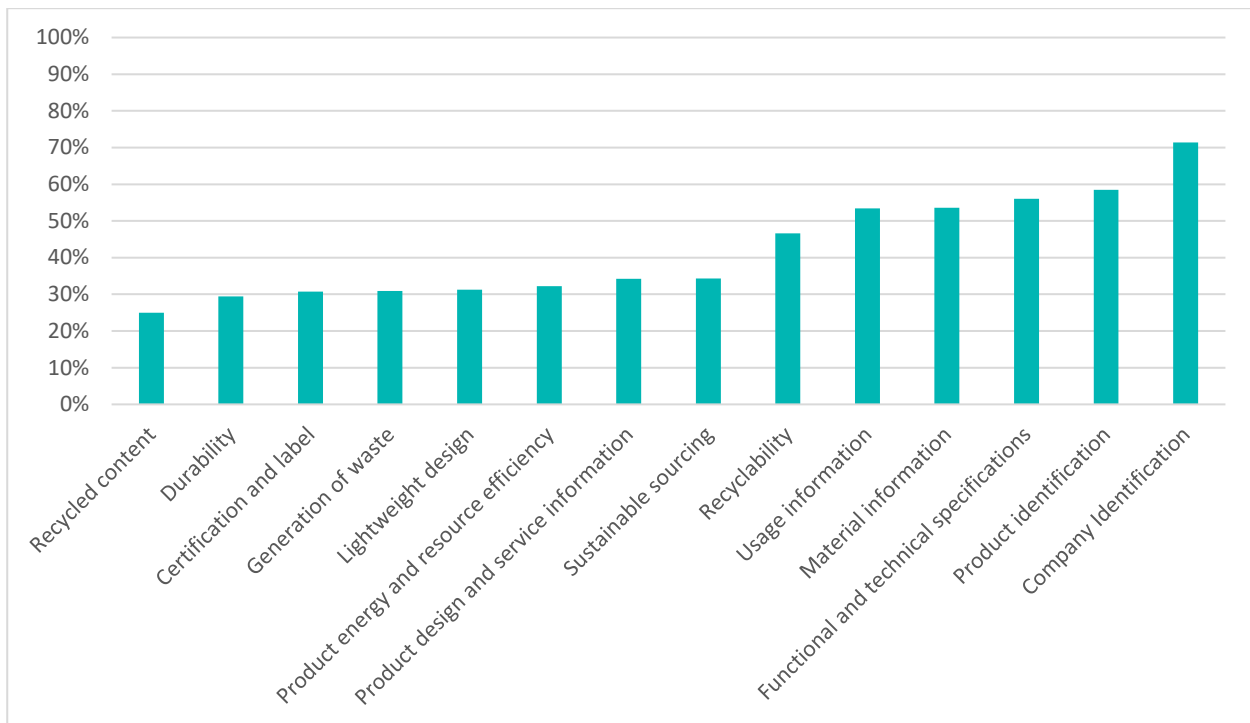


Figure 17 Textile information categories ranked by their possibility to be collected rather manually (left) to rather automatically (right)

Automatic Generation capabilities e.g. via an Application Program Interface (API), are critical in reducing manual effort and ensuring efficiency. A higher response in some information categories suggests that these areas have more mature systems or technologies in place.

Looking into each single information of the information categories in Figure 17, the top 15 information which require manual data gathering comprise (highest data gathering effort first):

1. Reparability scoring index/label
2. Traceability of materials across the supply chain applicable to different intermediated product groups (limited to the intermediate products incl. chemicals and ceramic products)
3. Disassembly related to skill level
4. Possible lifetime of the textile or footwear
5. Minimum content of PCR material in product
6. Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)
7. Minimum content of PCR material in packaging
8. Energy consumption associated to the production of a clothing item
9. Individual or proprietary company ID (e.g. GS1 GLN, IEC 61406, SKU ID, OAR ID, GTS-ID, UUID, DNV)
10. GHG emissions associated to the washing and drying operations of a clothing item
11. Modularity, transformability, detachable/adjustable elements
12. Identification of product design elements that inhibit circularity (e.g. prints harder to recycle)
13. Spare part delivery time
14. Product code as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts;
15. Detailed chemical content

4.3.2 Information subject to structural barriers (external data generation)

The survey evaluated which information can be collected internally by an organisation and which are generated by external stakeholders (e.g. suppliers). As a general finding, it can be seen that external data gathering is required for information categories which are naturally more dependent on external stakeholders such as certification and label, recycled content, product energy and resource efficiency or sustainable sourcing. The generation of waste reflects the possible release of non-biodegradable microplastics, which can be understood during production or use and thus requires data from producers or users.

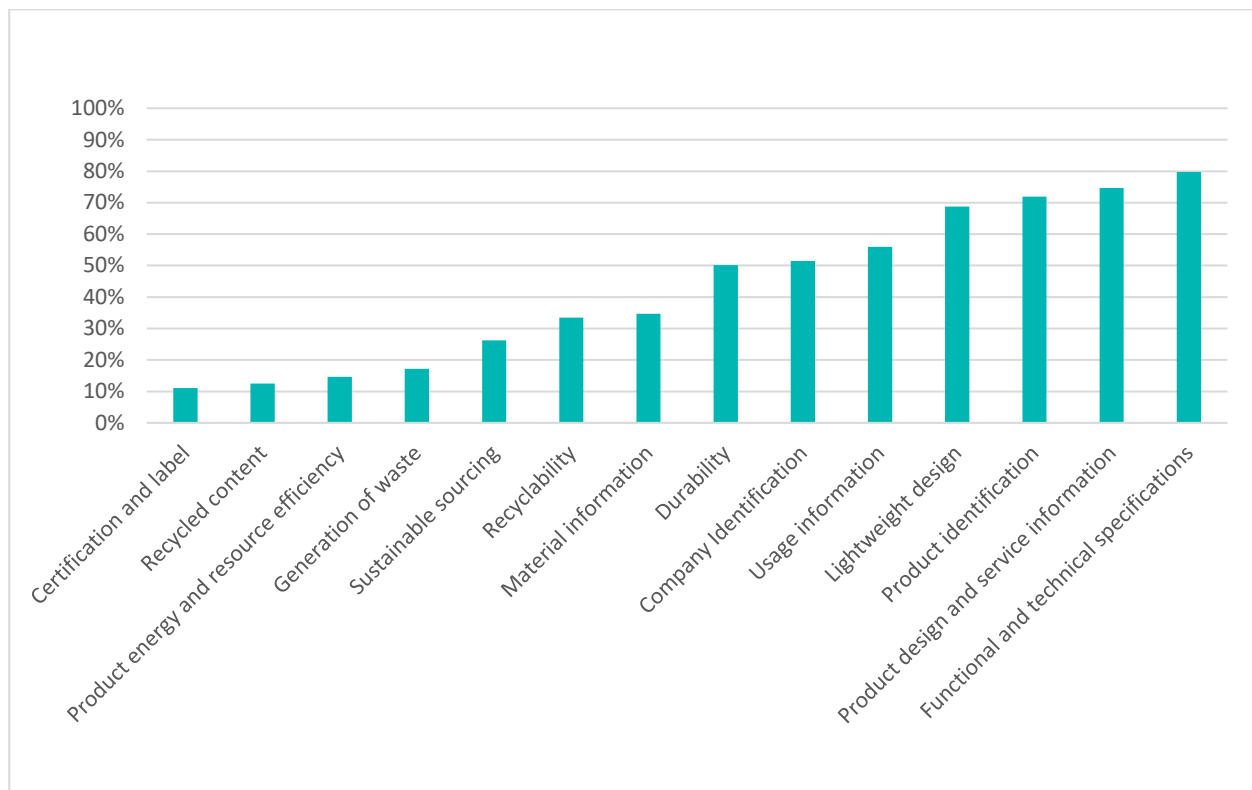


Figure 18 Textile information categories ranked by their possibility to be gathered rather externally (left) to rather internally (right)

Looking at the ranking in more detail, the top 15 information that are externally collected are:

1. Disassembly related to skill level
2. Reparability scoring index/label
3. Traceability of materials across the supply chain applicable to different intermediated product groups (limited to the intermediate products (incl. chemicals) and ceramic products),
4. GHG emissions associated to the washing and drying operations of a clothing item
5. Energy consumption associated to the washing and drying operations of a clothing item
6. Condition for the access to product data relevant for the recycling, including dismantling information
7. Possible lifetime of the textile or footwear
8. Ability to separate the product into different materials
9. Social attributes of materials and products
10. Possible release of non-biodegradable microplastics
11. Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)

12. Modularity, transformability, detachable/adjustable elements
13. Recyclability scoring label (in terms of recycled cotton, wool, polyester, rubber or viscose (depending on the product-specific composition))
14. Detailed chemical content
15. How to manage the textile or footwear at the end of its lifetime

4.4 Relevance of information per stakeholder group

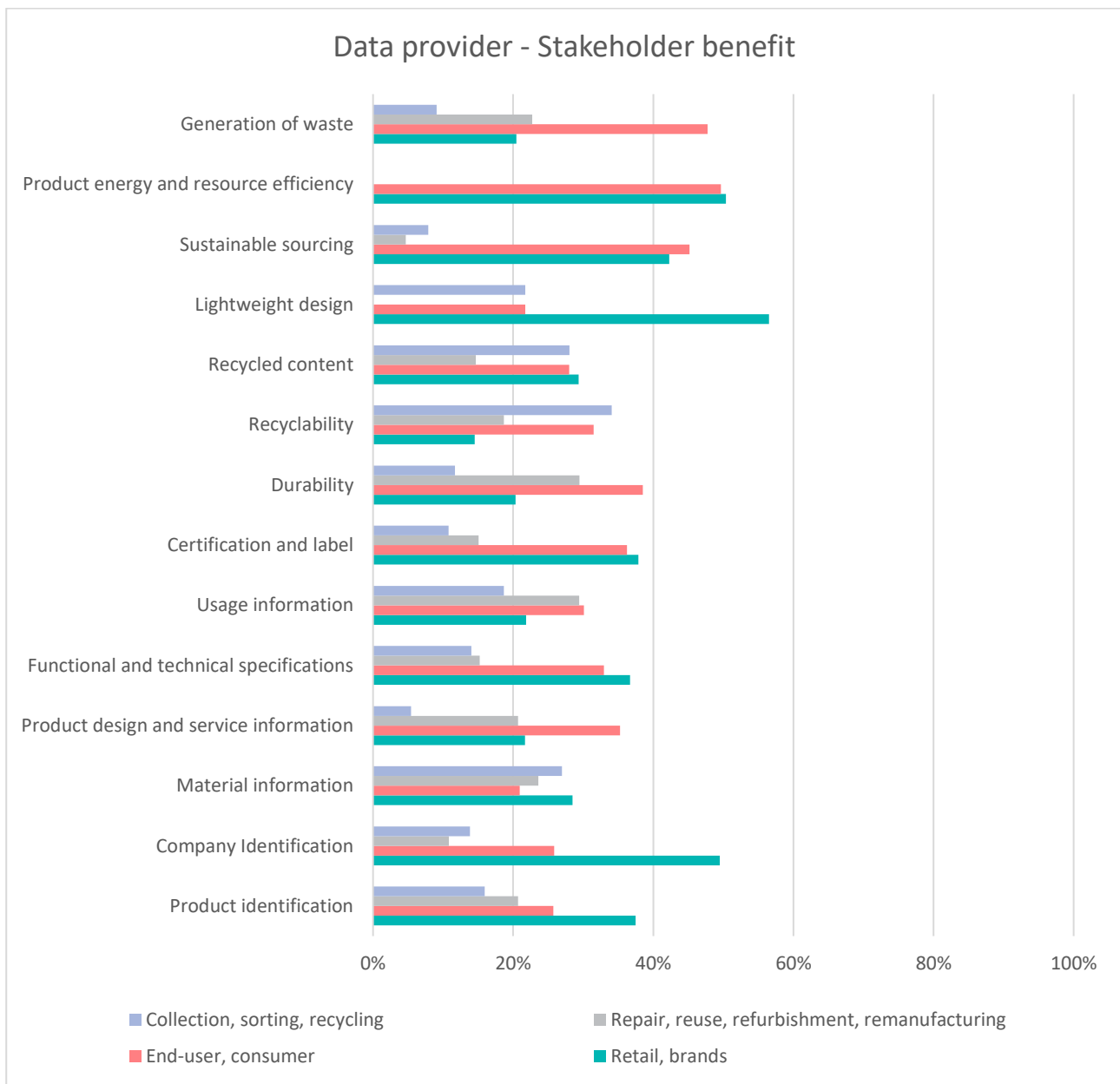


Figure 19 Perceived benefit from textile data user per information category for the respective stakeholder group

In general, the overview shows that end-users and consumers, as well as retail and brands, are seen to benefit the most.

- **End-users and consumers** benefit from information that helps them understand the sustainability and circularity of the products they purchase.

- For **retailers and brands**, information for better identification of products is seen to be beneficial. This data helps them in tracking, managing inventory, and enhancing the traceability of their products. It supports them in marketing and selling their products effectively by highlighting attributes like sustainable sourcing and recyclability that are increasingly demanded by conscientious consumers. Lightweight design is also seen as relevant, potentially due to logistics and storage questions (return).
- **Collection, sorting, and recycling** is seen to be less beneficial overall than other information categories. However, the highest benefits are seen in material and usage information, as these categories facilitate the efficient sorting and recycling of textiles.
- **Repair, reuse, refurbishment and remanufacturing** stakeholders are seen to profit most from durability and usage and repair information, as this might help them determine the product's potential for reuse and the feasibility of repair or refurbishment.
- Product energy and resource efficiency, sustainable sourcing, certification and label, functional and technical specification are seen to be highly beneficial for end-users and consumers, as well as retail and brands, while less beneficial for the other groups.
- Material information is a category which is seen to benefit all stakeholders quite evenly, with the perceived benefit for each group ranging from approximately 40% to around 60%.

In the following four sections, the top 10 information points and information categories identified as most useful for specific stakeholder types are provided, starting at the top with the most useful in each table.

4.4.1 EoL- Stakeholder (collection, sorting, recycling)

Information category	Information
Product identification	Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)
Material information	Choice of materials and restrictions on substances (eg. Combination of fibers, flame retardants))
Material information	Material composition (according to Textile Regulation; identification of materials above 15-5% content)
Recyclability	Identification of product design elements that inhibit circularity (e.g. prints harder to recycle)
Recyclability	Ability to separate the product into different materials
Material information	Substance of concern name, location within the product, concentration at the level of the product, main components or spare parts (according to REACH Regulation)
Material information	Detailed chemical content
Material information	Fiber composition and characteristics (tensile strenght, length, etc.)
Product identification	Product traceability (date, location, operators)
Recyclability	Recyclability scoring label (in terms of recycled cotton, wool, polyester, rubber or viscose (depnding on the product-specific composition)
Material information	Identification of substances (name, location, concentration) according to other lists e.g. AFIRM, ZDHC MRS�
Recycled content	Min content of PCR material in packaging

Durability / Repairability	How to manage the textile or footwear at the end of its lifetime
Recycled content	Min content of PCR material in product
Material information	Declaration of compliance e.g. with AFIRM, ZDHC MRSL

4.4.2 Repair, reuse, refurbishment, remanufacturing stakeholder

Information category	Information
Product identification	Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)
Material information	Material composition (according to Textile Regulation; identification of materials above 15-5% content)
Product design and services	Sustainable design & services options (e.g. designed for repair, reuse, recycling ... R-Strategies)
Product identification	Production year (Season or/and year of sale)
Product identification	Retail information (product name, category, type, brand)
Recyclability	Identification of product design elements that inhibit circularity (e.g. prints harder to recycle)
Usage and repair information	Availability of repair information and maintenance instructions (e.g. disassembly instructions, necessary tools)
Usage and repair information	Purchase date
Usage and repair information	Exchanged parts
Material information	Fabric type
Product design and services	Recycling stream category (waste type)
Product identification	Product traceability (date, location, operators)
Usage and repair information	Min. durability of function (e.g. repellence, colour fastness)
Usage and repair information	Resistance to stress or aging mechanism (e.g. washing cycles)
Usage and repair information	Date of repair / reuse

4.4.3 Retail, brands

Information category	Information
Product identification	Product images
Product identification	Retail information (product name, category, type, brand)
Product identification	Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)

Product identification	Product traceability (date, location, operators)
Product identification	Production year (Season or/and year of sale)
Functional and technical specifications	Color group, color description, color system information (Pantone, Coloro, etc.), numerical color value
Material information	Declaration of compliance e.g. with AFIRM, ZDHC MRSL
Company identification	Information related to the manufacturer, such as its unique operator identifier with standardized and > 1 Product identifier aside outside of ISO/IEC 15459-6, e.g. Open supply Hub ID, D-U-N-S number, GTS ID, etc.
Certification and label	Product certification
Functional and technical specifications	Product weight (without packaging)
Product identification	Recommended sales price of product
Certification and label	Material certification
Material information	Material composition (according to Textile Regulation; identification of materials above 15-5% content)
Product identification	Product code as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts;
Material information	Substance of concern name, location within the product, concentration at the level of the product, main components or spare parts (according to REACH Regulation)

4.4.4 Consumer, end-user

Information category	Information
Product design and services	Product care instructions
Product identification	Product images
Functional and technical specifications	Size (in regional context e.g. in EU, FR, IT, US size)
Material information	Material composition (according to Textile Regulation; identification of materials above 15-5% content)
Product design and services	Sustainable design & services options (e.g. designed for repair, reuse, recycling ... R-Strategies)
Product identification	Retail information (product name, category, type, brand)
Product design and services	Recycling stream category (waste type)
Product identification	Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)
Certification and label	Product certification
Usage and repair information	Availability of repair information and maintenance instructions (e.g. disassembly instructions, necessary tools)

Product identification	Recommended sales price of product
Product identification	Product traceability (date, location, operators)
Usage and repair information	Min. durability of function (e.g. repellence, colour fastness)
Usage and repair information	Resistance to stress or aging mechanism (e.g. washing cycles)
Certification and label	Material certification

4.4.5 Data user perspective

Data users were asked to evaluate the potential benefits from and availability of information. The chart shows the calculated average per information category.

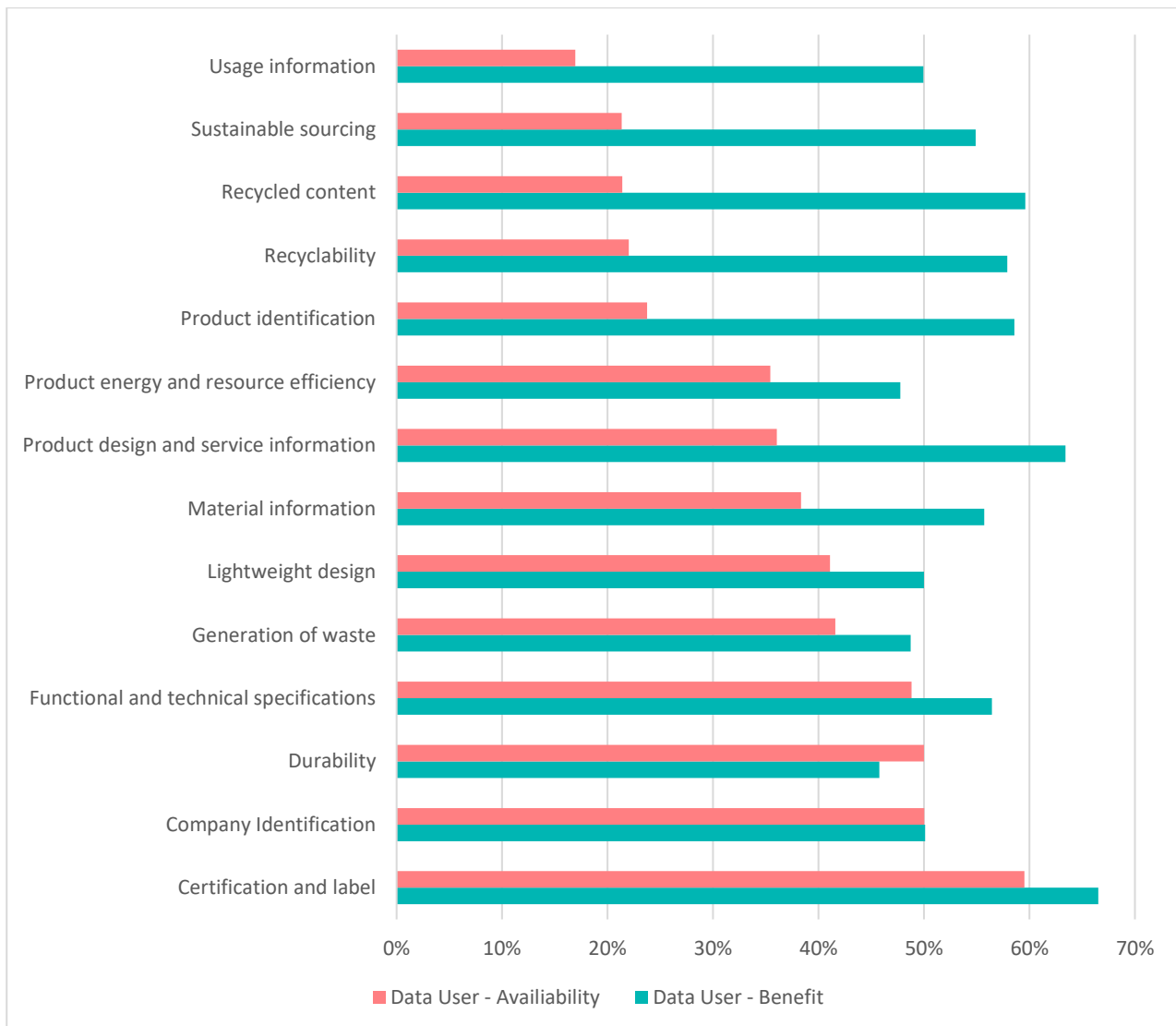


Figure 20 Benefit and availability of information categories from textile data user perspective

The bar chart shows the survey responses from the textile sector data users perspective regarding the availability of data and its relevance/benefit. In general, there are some major discrepancies between the benefits and the availability. **Durability, usage and product design and service information** are seen to be highly beneficial, but with significantly lower availability, implying an important information gap. The same applies to **product energy and resource efficiency and generation of waste**, revealing a significant gap with higher benefits than availability, suggesting stakeholders would appreciate more information in this area than is currently provided.

Looking at the ranking in more detail, the top 15 information that are seen to be economically beneficial from the data user perspective are (starting with most beneficial at the top):

1. Material composition (according to Textile Regulation; identification of materials above 15-5% content)
2. Size (in regional context e.g, in EU, FR, IT, US size)
3. Retail information (product name, category, type, brand)
4. Product images
5. Product certification

6. Material certification
7. Product weight (without packaging)
8. Factory / facility certification
9. Product care instructions
10. Fabric type
11. Recommended sales price of product
12. Lightweight design
13. Purchase date
14. Information related to the importer, name, registered trade name or registered trade mark and the postal address, EORI number
15. Declaration of compliance e.g, with AFIRM, ZDHC MRSL

The following bar chart compares the relevance seen by data providers (green) and data users (red). Due to the different numbers of responses received, the bars should not be compared in terms of their absolute height, but rather in their general tendencies.

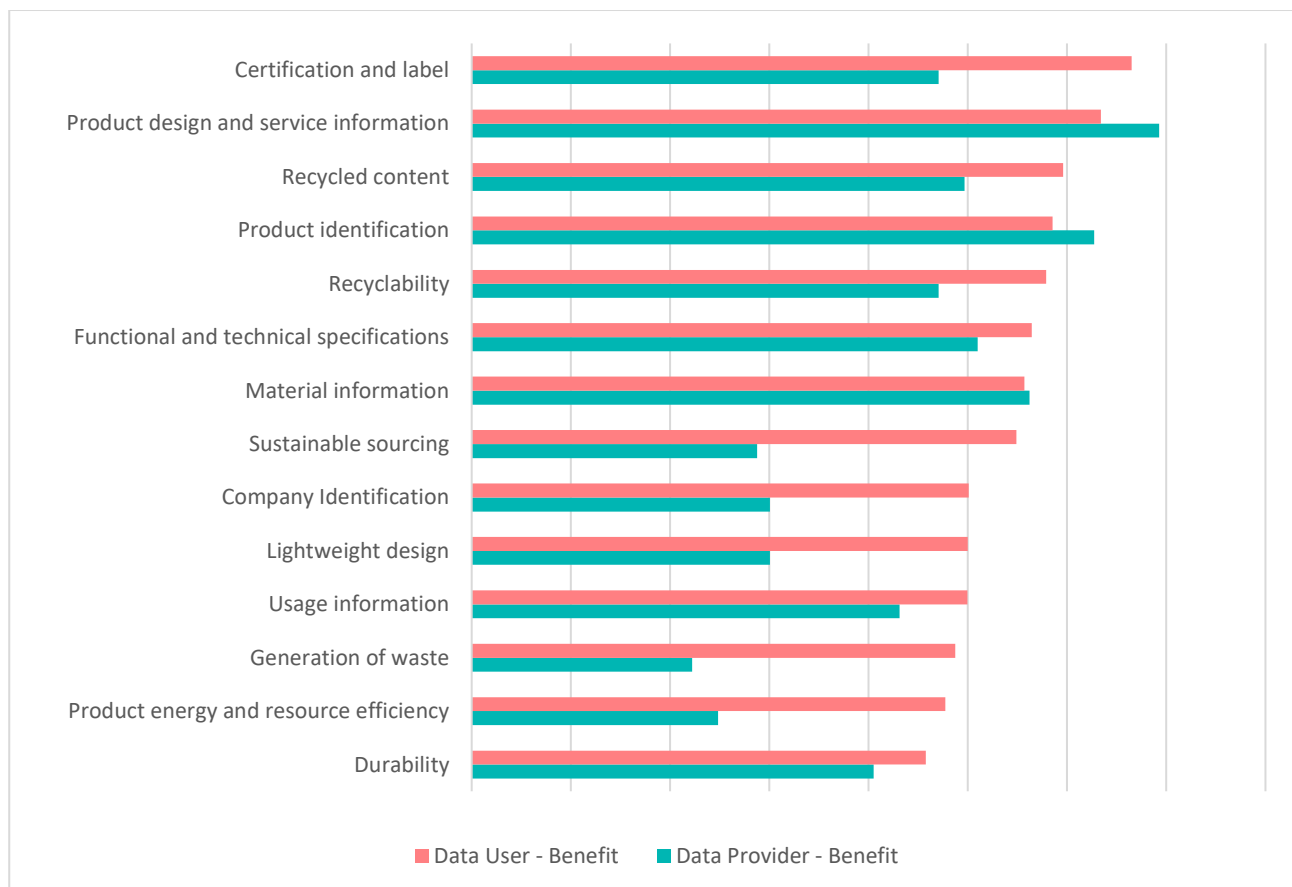


Figure 21 Comparison of relevance seen by textile data users vs. data providers

The chart in Figure 21 shows some discrepancies in the relevance seen by data providers and data users. In particular the information categories of sustainable sourcing, company identification, lightweight design, generation of waste and product and resource efficiency were seen to have lower benefits by data providers. A better demonstration of the use-cases for these information categories might support understanding of

their necessity. In contrast, data providers see relatively high economic benefits in relation to the product design and service, product identification and material information categories.

5 Key results: battery sector

The survey for the battery sector was set up and started, in order to follow a comprehensive and comparable research approach across the sectors. However, seeing that major workshops, discussions and surveys had already been conducted previously, such as by the Battery Pass project and that the mandatory information / attributes are already well defined in the Battery Regulation, it was concluded that the engagement of the battery sector to fill out another survey was not necessary. The approach from the Battery Pass aligns with the approach taken in this work package in CIRPASS. Both input and answers are generated by a wide range of experts. The disclaimer in the list with “Battery Passport Attributes” states, that the findings are based on multiple sources may not necessarily represent the views of all individuals or the organisations they represent. The Battery Pass consortium has not separately verified the information provided from outside sources and “Battery Pass consortium has made efforts to accurately capture stakeholder positions set out by organisations (including supporting partners and further experts), although the results may not necessarily represent the views of all individuals or the organisations they represent”. The same issue applies to the findings from surveys and expert workshops conducted within this study for the textiles and electronics sectors. Achieving equal representation of all stakeholder groups is challenging, as responses are predominantly from manufacturers or those with compliance responsibilities.

The “Battery Pass” project has compiled an extensive list of data required by regulation, which we reproduce in the following sub-sections⁹. Additionally, data attributes that were deemed useful by the Battery Pass consortium have been added (marked with “Added by consortium”). To enable comparison across sectors, the respective attributes have been divided into the information categories used throughout this report. It should be noted that the added attributes are data points that go beyond the regulation only in areas already mentioned in the regulation, e.g. the granularity for the internal resistance from pack to cell level or adding the amount of overcharge events to the downstream data.

It is noteworthy that, even though recycling is part of the Batteries Regulation, the attributes do not touch upon design-for-recycling. The generation of waste is also only sparsely populated, as opposed to performance and downstream information.

Product identification

- Battery passport identification: A unique identifier is defined as "a unique string of characters for the identification of batteries that also enables a web link to the battery passport" (Art. 3(66)), to be attributed by the economic operator placing the battery on the market (Art. 77(3)). The unique identifier shall comply with the standard ('ISO/IEC') 15459:2015 or equivalent (Art. 77(3)). A QR code shall provide access to the battery passport and be linked to the unique identifier (Art. 77(3)). Batteries shall “bear a model identification and batch or serial number, or product number or another element allowing their identification” (Art. 38(6)). [Art. 77(3); Art. 3(66); Art. 38(6)]

⁹ Available <https://thebatterypass.eu/resources/> (accessed May 5, 2024)

- Battery identification: Unambiguous identification of an individual battery. Batteries shall “bear a model identification and batch or serial number, or product number or another element allowing their identification” (Art. 38(6)). [Annex XIII (1a) → Annex VI Part A → Art. 38(6)]
- Battery category: Categories relevant for the battery passport: ‘LMT battery’, ‘electric vehicle battery’ or ‘industrial battery’. The latter includes the subcategory ‘stationary battery energy storage system’ complemented by “other industrial batteries” (Art. 2). [Annex XIII (1a) → Annex VI Part A (2)]
- Battery weight: Weight of the battery [Annex XIII (1a) → Annex VI Part A (5)]
- Battery status: Information on the status of the battery, defined as ‘original’, ‘repurposed’, ‘reused’, ‘remanufactured’, or ‘waste’. [Annex XIII (4c)]

Company Identification

- Responsible economic operator identification: Identifier of the responsible economic operator [Added by consortium]
- Manufacturer’s identification: Manufacturer's identification by stating the name; registered trade name or registered trademark; the postal address, indicating a single contact point; a web address, where one exists; an e-mail address, where one exists (Art. 38(7)). Manufacturer as “any natural or legal person who manufactures a battery or has a battery designed or manufactured, and markets that battery under its own name or trademark or puts it into service for its own purposes” (Art. 3(33)). [Annex XIII (1a) → Annex VI Part A (1); Art. 3(33); Art. 38(7); ESPR Art. 2(32)]
- Manufacturing date: Manufacturing date (month and year) [Annex XIII (1a) → Annex VI Part A (4); Annex VII Part B (1)]
- Manufacturing place: "Geographical location of a battery manufacturing facility" [Annex XIII (1a) → Annex VI Part A (3); ESPR Art. 2(33)]

Material information

- Critical raw materials: "Critical raw materials contained in the battery above a concentration of 0.1 % weight by weight". Reference to COM(2020)474: “Those raw materials that are most important economically and have a high supply risk”. The list of critical raw materials in the compromise text regarding the Critical Raw Material Act lists 34 raw materials as critical November 2023. [Annex XIII (1b) → Annex VI Part A (10)]
- Battery chemistry: "Battery chemistry" (not defined in the Battery Regulation). [Annex XIII (1b) → Annex VI Part A (7)]
- Name of the cathode, anode, electrolyte materials: “Detailed composition, including materials used in the cathode, anode, and electrolyte”. [Annex XIII (2a)]
- Related identifiers of the cathode, anode, electrolyte materials: “Detailed composition, including materials used in the cathode, anode, and electrolyte”. [Annex XIII (2a)]
- Composition of the cathode, anode, electrolyte materials: “Detailed composition, including materials used in the cathode, anode, and electrolyte”. [Annex XIII (2a)]

Functional and technical specifications

- Certified usable battery energy (UBEcertified): basis for calculating SOCE. [Added by consortium]
- State of certified energy (SOCE): State of certified energy (SOCE). [Annex XIII (4b) → Art. 14/Annex VII Part A (EV)]
- Initial self-discharging rate: "Evolution of self-discharging rates." [Annex XIII (4b) → Art. 14/Annex VII Part A (4) (Evolution of self-discharging rates)]
- Rated capacity: "'Rated capacity' means the total number of ampere-hours (Ah) that can be withdrawn from a fully charged battery under reference conditions; 'Capacity fade' means the decrease over time and upon usage in the amount of charge that a battery can deliver at the rated voltage, with respect to the original measured capacity." [Annex XIII (1g);
- Annex XIII (4a) → Art. 10/Annex IV Part A (1) (incl. definition)]"
- Nominal voltage: "Minimal, nominal and maximum voltage, with temperature ranges when relevant." [Annex XIII (1h)]
- Minimum voltage: "Minimal, nominal and maximum voltage, with temperature ranges when relevant." [Annex XIII (1h)]
- Maximum voltage: "Minimal, nominal and maximum voltage, with temperature ranges when relevant." [Annex XIII (1h)]
- Original power capability: "Original power capability (in Watts) and limits, with temperature range when relevant"
 "The amount of energy that a battery is capable to provide over a given period under reference conditions."
 "Power capability at 80% and 20% state of charge." [Annex XIII (1i);
 Annex XIII (4a) → Art. 10/Annex IV Part A (2) + Part B (4) → measurement at 80 % SoC and 20% SoC]"
- Maximum permitted battery power: "original power capability (in Watts) and limits, with temperature range when relevant" [Annex XIII (1i) (power limits)]
- Ratio between nominal allowed battery power (W) and battery energy (Wh): "Ratio between nominal allowed battery power (W) and battery energy (Wh)." [Annex XIII (4a) → Art. 10/Annex IV Part B (2)]
- Initial round trip energy efficiency: 'Energy round trip efficiency' means the ratio of the net energy delivered by a battery during a discharge test to the total energy required to restore the initial State of Charge by a standard charge. [Annex XIII (1n); Annex XIII (4a) → Art. 10/Annex IV Part A (4)+ Annex IV (6) (definition);]
- Initial internal resistance on battery cell level: "Internal battery cell and pack resistance"/
 ""Internal resistance (in Ω)."
 Internal resistance' means the opposition to the flow of current within a cell or a battery, that is, the sum of electronic resistance and ionic resistance to the contribution to total effective resistance including inductive/capacitive properties. [Annex XIII (1o); Annex XIII (4a) → Art. 10/Annex IV Part A (3) (+definition of internal resistance)]"
- Initial internal resistance on battery pack level: Internal resistance (in Ω). Internal resistance' means the opposition to the flow of current within a cell or a battery, that is, the sum of electronic resistance and ionic resistance to the contribution to total effective resistance including inductive/capacitive

properties. [Annex XIII (1o); Annex XIII (4a) → Art. 10/Annex IV Part A (3) (+definition of internal resistance); Annex XIII (4b) → Art. 14/Annex VII Part A (5): where possible, ohmic resistance)]"

- Initial internal resistance on battery module level: definition of internal resistance equal to battery pack data attribute. [Added by consortium]
- Expected lifetime: Number of charge-discharge cycles: "Expected battery lifetime expressed in cycles, and reference test used"
"Their expected life-time under the reference conditions for which they have been designed in terms of cycles, except for non-cycle applications, and calendar years." [Annex XIII (1j); Annex XIII (4a) → Art. 10/Annex IV Part A (5)]"
- Cycle-life reference test: "Expected battery lifetime expressed in cycles, and reference test used" [Annex XIII (1j)]"
- C-rate of relevant cycle-life test: "C-rate of relevant cycle-life test." [Annex XIII (1p)]
- Capacity threshold for exhaustion: Capacity threshold for exhaustion (only for electric vehicle batteries) [Annex XIII (1k)]
- SOCE threshold for exhaustion [Addition by Consortium]
- Warranty period of the battery: "Period for which the commercial warranty for the calendar life applies."
"the expected life-time under the reference conditions for which they have been designed [...] in calendar years." [Annex XIII (1m)]"
- Date of putting the battery into service: The dates of manufacturing of the battery or, if applicable, the date of putting into service. [Annex XIII (4b) → Art. 14/Annex VII Part B (1)]
- Temperature range idle state (lower boundary): Temperature range the battery can withstand when not in use (reference test) [Annex XIII (1l)]
- Temperature range idle state (upper boundary): Temperature range the battery can withstand when not in use (reference test) [Annex XIII (1l)]

Product design and service information

- Role of end-users in contributing to waste prevention: Producer or producer responsibility organisations shall make information available to distributors and end-users on: the role of end-users in contributing to waste prevention, including information on good practices and recommendations concerning the use of batteries aiming at extending their use phase and the possibilities of re-use, preparing for re-use, preparing for repurpose, repurposing and remanufacturing. [Annex XIII (1s) → Art. 74(1a)]
- Role of end- users in contributing to the separate collection of waste batteries: Producer or producer responsibility organisations shall make information available to distributors and end-users on: the role of end-users in contributing to the separate collection of waste batteries in accordance with their obligations under Article 51 so as to allow their treatment. [Annex XIII (1s) → Art. 74(1b)]
- Information on separate collection, take back, collection points and preparing for re-use, preparing for repurposing and recycling operations: Producer or producer responsibility organisations shall make information available to distributors and end-users on: the separate collection, take-back and

collection points, preparing for re-use, preparing for repurposing, and recycling operations available for waste batteries. [Annex XIII (1s) → Art. 74(1c)]

Downstream information (Usage and repair history, dynamic information)

- Remaining usable battery energy (UBE_{measured}): basis for calculating SOCE. [Added by consortium]
- Current self-discharging rate: "Evolution of self-discharging rates." [Annex XIII (4b) → Art. 14/Annex VII Part A (4)]
- Evolution of self-discharging rates: "Evolution of self-discharging rates." [Annex XIII (4b) → Art. 14/Annex VII Part A (4)]
- Remaining capacity: "'Rated capacity' means the total number of ampere-hours (Ah) that can be withdrawn from a fully charged battery under reference conditions." [Annex XIII (4b) → Art. 14/Annex VII Part A (1)]
- Capacity fade: "Decrease over time and upon usage in the amount of charge that a battery can deliver at the rated voltage, with respect to the original rated capacity declared by the manufacturer." [Annex XIII (4a) → Art. 10/Annex IV Part A (2)]
- State of Charge (SoC): "The available capacity in a battery expressed as a percentage of rated capacity." [Annex XIII (4d); Article 3, 1(27)]
- Remaining power capability: "Where possible, remaining power capability"
"The amount of energy that a battery is capable to provide over a given period of time under reference conditions."
"Power capability at 80% and 20% state of charge." [Annex XIII (4b) → Art. 14/Annex VII Part A (2); Annex XIII (4a) → Art. 10/Annex IV (3) (only definition of power); Annex IV Part B (4) → measurement at 80 % SoC and 20% SoC]
- Power capability fade: "Power (in W) and power fade (in %)"
"Power capability at 80% and 20% state of charge." [Annex XIII (4a) → Annex IV P(4) ("power fade" definition); Annex IV Part A (4); Annex IV Part B (4) → measurement at 80 % SoC]
- Round trip energy efficiency at 50% of cycle life: Energy round trip efficiency' means the ratio of the net energy delivered by a battery during a discharge test to the total energy required to restore the initial State of Charge by a standard charge. [Annex XIII 1(n); Annex IV (6) (only definition)]
- Remaining round trip energy efficiency: Energy round trip efficiency' means the ratio of the net energy delivered by a battery during a discharge test to the total energy required to restore the initial State of Charge by a standard charge. [Annex XIII (4b) → Art. 14/Annex VII Part A (3) Annex XIII (4a) → Art. 10/Annex IV Part A (4) (only definition)]
- Round trip energy efficiency fade: "Where applicable, energy round trip efficiency and its fade (in %)." [Annex XIII (4a) → Art. 10/Annex IV Part A (4)]
- Current internal resistance on battery cell level: needed for internal resistance increase; [Added by consortium]
- Internal resistance increase on battery cell level: "Internal resistance (in Ω) and internal resistance increase (in %)." No further definition provided. [Added by consortium]

- Current internal resistance on battery pack level: Internal resistance (in Ω). 'Internal resistance' means the opposition to the flow of current within a cell or a battery, that is, the sum of electronic resistance and ionic resistance to the contribution to total effective resistance including inductive/capacitive properties. [Annex XIII (1o); Annex XIII (4a) → Art. 10/Annex IV Part A (3) (+definition of internal resistance); Annex XIII (4b) → Art. 14/Annex VII Part A (5): where possible, ohmic resistance)]
- Internal resistance increase on battery pack level: Internal resistance increase (in %). [Annex XIII (1o); Annex XIII (4a) → Art. 10/Annex IV Part A (3) (+definition of internal resistance); Annex XIII (4b) → Art. 14/Annex VII Part A (5): where possible, ohmic resistance)]
- Current internal resistance on battery module level: definition of Internal resistance equal to battery pack data attribute. [Added by consortium]
- Internal resistance increase on battery module level: definition of Internal resistance increase equal to battery pack data attribute. [Added by consortium]
- "Number of (full) charge-discharge cycles: ""Information and data as a result of its use, including the number of charging and discharging cycles."
"the number of full equivalent charge-discharge cycles." [Annex XIII (4d); Annex XIII (4b) → Art. 14/Annex VII Part B (5)]
- Energy throughput: Energy throughput. [Annex XIII (4b) → Art. 14/Annex VII Part B (2)]
- Capacity throughput: Capacity throughput. [Annex XIII (4b) → Art. 14/Annex VII Part B (3)]
- Time spent in extreme temperatures above boundary: Tracking of harmful events, such as [...] time spent in extreme temperatures. [Annex XIII (4b) → Art. 14/Annex VII Part B (4)]
- Time spent in extreme temperatures below boundary: Tracking of harmful events, such as [...] time spent in extreme temperatures. [Annex XIII (4b) → Art. 14/Annex VII Part B (4)]
- Time spent charging during extreme temperatures above boundary: Tracking of harmful events, such as [...] time spent charging in extreme temperatures. [Annex XIII (4b) → Art. 14/Annex VII Part B (4)]
- Time spent charging during extreme temperatures below boundary: Tracking of harmful events, such as [...] time spent charging in extreme temperatures. [Annex XIII (4b) → Art. 14/Annex VII Part B (4)]
- Information on accidents: "Negative events, such as accidents." No further definition provided. [Annex XIII (4d)]
- Number of deep discharge events: Tracking of harmful events, such as the number of deep discharge events. No further definition provided. [Annex XIII (4b) → Art. 14/Annex VII Part B (4)]
- Number of overcharge events [Added by consortium]

Certification and label

- EU declaration of conformity: The EU declaration of conformity shall state that the fulfilment of the requirements set out in Articles 6 to 10 and 12 to 14 [of the Battery Regulation] has been demonstrated, Annex IX gives details about necessary content for the declaration of conformity. [Annex XIII (1r) → Art. 18; Annex IX]

- ID of EU declaration of conformity: The Battery Carbon Footprint Declaration shall refer to the identification number of the EU declaration of conformity. Annex IX lists requirements for EU declaration of conformity. [Annex XIII (1r) → Art. 7(1f); Art. 18; Annex IX]
- Results of tests reports: Results of test reports proving compliance with the requirements set out in this Regulation or any implementing or delegated act adopted on its basis. [Annex XIII (3) → Annex VIII Part A 2(h)]
- Separate collection symbol: All batteries shall be marked with the symbol indicating 'separate collection' in accordance with the requirements laid down in Part B of Annex VI. [Annex XIII (1q) → Art. 13(4); Annex VI Part B]
- Meaning of labels and symbols: "Meaning of the labels and symbols marked on batteries [...] or printed on their packaging or in the document accompanying batteries", for each battery made available on the market, "as a minimum at the point of sale". To be communicated "in a visible manner and through online marketplaces". [Annex XIII (1s) → Art. 74 1(e)]
- Cadmium and lead symbols: Battery containing more than 0.002% cadmium or 0.004% lead to be marked with the symbol(s) for the metal concerned: Cd or Pb (Art. 13(4)). [Annex XIII (1q) → Art. 13(5); [see exec. Summary for a more detailed explanation]]

***Durability**

***Recyclability**

- Even though recyclers are required to achieve recycling efficiency targets in accordance to Art. 71 -> Annex XII Part B and C, design-for-disassembly and design-for-recycling are not included in any regulatory text.

***Recycled content**

- Pre-consumer recycled nickel share: Share of nickel recovered from battery manufacturing waste present in active materials for each battery model per year and per manufacturing plant [Annex XIII (1e) → Art. 8(1)]
- Pre-consumer recycled cobalt share: Share of cobalt recovered from battery manufacturing waste present in active materials for each battery model per year and per manufacturing plant. [Annex XIII (1e) → Art. 8(1)]
- Pre-consumer recycled lithium share: Share of lithium recovered from battery manufacturing waste present in active materials for each battery model per year and per manufacturing plant. [Annex XIII (1e) → Art. 8(1)]
- Pre-consumer recycled lead share: Share of lead recovered from (battery manufacturing) waste present in the battery, for each battery model per year and per manufacturing plant. [Annex XIII (1e) → Art. 8(1)]
- Post-consumer recycled nickel share: Share of nickel recovered from post-consumer waste present in active materials for each battery model per year and per manufacturing plant. [Annex XIII (1e) → Art. 8(1)]

- Post-consumer recycled cobalt share: Share of cobalt recovered from post-consumer waste present in active materials for each battery model per year and per manufacturing plant. [Annex XIII (1e) → Art. 8(1)]
- Post-consumer recycled lithium share: Share of lithium recovered from post-consumer waste present in active materials for each battery model per year and per manufacturing plant. [Annex XIII (1e) → Art. 8(1)]
- Post-consumer recycled lead share: Share of lead recovered from (post-consumer) waste present in the battery, for each battery model per year and per manufacturing plant. [Annex XIII (1e) → Art. 8(1)]

***Lightweight design**

- The “weight” of the battery is mandatory to be accessible by the public via the battery passport [from Annex XIII (1a) to Annex VI, Part A(5)]

***Sustainable sourcing**

- Information on responsible sourcing as indicated in the report on due diligence policies (due diligence report) [from Annex XIII 1(d) to Article 52(3)].

***Product energy and resource efficiency**

- Initial round trip energy efficiency: ‘Energy round trip efficiency’ means the ratio of the net energy delivered by a battery during a discharge test to the total energy required to restore the initial State of Charge by a standard charge. [Annex XIII (1n); Annex XIII (4a) → Art. 10/Annex IV Part A (4)+ Annex IV (6) (definition);]"
- Round trip energy efficiency at 50% of cycle life: ‘Energy round trip efficiency’ means the ratio of the net energy delivered by a battery during a discharge test to the total energy required to restore the initial State of Charge by a standard charge. [Annex XIII 1(n); Annex IV (6) (only definition)]
- Remaining round trip energy efficiency: ‘Energy round trip efficiency’ means the ratio of the net energy delivered by a battery during a discharge test to the total energy required to restore the initial State of Charge by a standard charge. [Annex XIII (4b) → Art. 14/Annex VII Part A (3) Annex XIII (4a) → Art. 10/Annex IV Part A (4) (only definition);]
- Round trip energy efficiency fade: "Where applicable, energy round trip efficiency and its fade (in %)." [Annex XIII (4a) → Art. 10/Annex IV Part A (4)]

***Generation of waste**

- Targets for recycling efficiency and recovery of materials: Each permitted facility shall ensure that all waste batteries made available to that facility are accepted and undergo preparation for re-use, preparation for repurposing or recycling.
Recyclers shall ensure that recycling achieves the targets for recycling efficiency and the targets for recovery of materials set out in Parts B and C of Annex XII respectively.
The rates for recycling efficiency and recovery of materials shall be calculated in accordance with the rules laid down in a delegated act adopted pursuant to paragraph 4 of this Article. [Art. 71/ Annex XII Part B and C)]

6 Conclusion: key data per sector and stakeholder





Following the methodology presented above, this section provides an aggregated overview of the information categories that are seen to be most useful and beneficial by stakeholders. It should be noted that, while the evaluation was undertaken on a sectoral basis, it is not product group specific. This report therefore aims to provide guidance on the information categories considered to be of greatest relevance at a sectoral level, as well as potential barriers to implementation (such as data gathering), providing the foundation for further, more product-type specific stakeholder consultations during the development of the delegated acts.

The findings presented below will not replace the results of future consultations for the delegated acts, nor will they necessarily be used to design these. Furthermore, these lists should be seen as non-exhaustive considering that they are based on literature and survey findings.

6.1 Overview: key-data per sector and stakeholder

The table below shows the 5 most relevant information points identified by stakeholders for the electronics and textiles sectors. Also identified in red are those requiring a high data gathering effort.

Top 5 relevant information per stakeholder group

	 Distribution/ Retail	 Consumer	 Repair, reuse	 Collection, sorting
	High effort (top 30%) ***Not currently mandatory			
Electronics	<ul style="list-style-type: none"> • Technical documentation • Product information • ***Product images • ***Individual specification of product functions • ***Retail information 	<ul style="list-style-type: none"> • Product information sheet • ***Individual specification of product functions • ***Minimum guarantee offered • Technical documentation • ***Repair date 	<ul style="list-style-type: none"> • ***Repair date • Unique product identifier at the level indicated in the applicable delegated act • ***Product images • ***Model number • ***Extended repair information 	<ul style="list-style-type: none"> • ***Extended repair information • Information requirements according to REACH (Art. 31) • Information according to RoHS • Information for treatment facilities on <u>EoL</u> • Identification of WEEE collection group
Textile	<ul style="list-style-type: none"> • ***Product images • ***Retail information • Unique product identifier at the level indicated in the applicable delegated act • ***Product traceability • ***Production year 	<ul style="list-style-type: none"> • ***Product care instructions • ***Product images • ***Product size • ***Retail information • Material composition 	<ul style="list-style-type: none"> • Unique product identifier at the level indicated in the applicable delegated act • Material composition • ***Production year • Sustainable design & services options • ***Retail information 	<ul style="list-style-type: none"> • Unique product identifier at the level indicated in the applicable delegated act • ***Choice of materials and restrictions on substances • Material composition • Identification of product design elements that inhibit circularity • Ability to separate the product into different materials

While data availability is essential, the high variability of answers with respect to data generation efforts provided by organizations reflects the diverse technological and operational landscapes of organizations across information categories. Sectors with lower automatic data generation capabilities may benefit from investing in technologies that can streamline data collection and processing. The high overall data generation effort indicates a need for continued development of more efficient data gathering and processing methodologies, particularly in areas critical to sustainability and circular economy practices.

6.2 Key-data for the electronics sector

6.2.1 Key data (highly relevant)

The following table shows the top 20 most relevant information categories for the electronics sector based on feedback from the survey. On the right-hand side, the table presents the findings on the structural and technical barriers, data availability and general data generation effort associated with each information. The four evaluation categories are represented in a way, that higher rates represent a higher effort / barrier (colour coded, with green = positive and red = negative). For example, a rate of 60% on availability for extended repair information means, that this information is not available to 60% of survey participants.

Information	Benefit	Structural barrier	Technical barrier	Availability (not available)	General effort
*Extended repair information incl. disassembly instructions, component map, wiring diagrams etc	37%	22%	100%	60%	60%
Product images	29%	6%	71%	11%	23%
*Unique product identifier at the level indicated in the applicable delegated act (e.g, serial number on item level)	27%	28%	18%	24%	13%
*Information requirements according to REACH, Article 31 on hazardous, persistent, bioaccumulative and toxic substances	26%	44%	69%	10%	56%
*Information according to RoHS Directive 2011/65/EU; (Declaration of conformity (CE-Marking))	25%	39%	71%	5%	63%
*Product information sheet (on energy consumption & performance according to Energy Labelling Regulation)	23%	11%	76%	26%	69%
Model number (according to own standards)	23%	13%	23%	11%	0%
Retail information (product name, category, type, brand)	23%	7%	50%	18%	10%
*Technical documentation (according to Energy Labelling Regulation)	22%	7%	93%	29%	60%
Individual specification of product functions (e.g, screen size, camera resolution)	22%	0%	94%	14%	56%
Repair date	21%	43%	85%	38%	62%
**Modularity, transformability, detachable/adjustable elements	19%	8%	100%	35%	50%
Serial number (according to own standards)	19%	13%	15%	11%	0%
Date of product manufacturing	19%	18%	15%	0%	0%
**Recycled content in product	19%	42%	100%	44%	58%

*Relevant instructions for the safe use of the product (ESPR Article 7 (5))	18%	6%	93%	10%	38%
*Information according to ESPR Article 7 2 (b) (ii) for consumers and other end-users on how to install, use, maintain and repair the product in order to minimise its impact on the environment and to ensure optimum durability, as well as on how to return or dispose of the product at end-of-life;	18%	15%	100%	40%	69%
Minimum guarantee offered	18%	0%	71%	15%	7%
**Spare part availability	17%	21%	85%	24%	17%
**Possible lifetime of the product	17%	0%	83%	13%	18%
Product certification	17%	8%	77%	13%	75%
*Information related to the manufacturer, such as its unique operator identifier	17%	33%	33%	32%	17%
**Spare part delivery time	17%	31%	83%	35%	45%
**Disassembly related to skill level	17%	10%	100%	63%	56%
*Identification of WEEE collection group (according to WEEE Directive ANNEX III)	17%	0%	58%	38%	21%
**Compatibilty across models	16%	9%	91%	31%	22%
*Information relevant for disassembly (ESPR Article 7 (5))	16%	14%	100%	45%	62%
*Digital compliance documentation and information required under ESPR Regulation or other Union law applicable to the product, such as the declaration of conformity, technical documentation or conformity certificates;	15%	23%	69%	18%	58%

6.2.2 Conditional key data (highly relevant but subject to barriers)

Conditional data is viewed as highly relevant by stakeholders, but the gathering of this information faces technical or structural barriers. As a result, it can be assumed that some conditions to reduce the barriers have to be fulfilled before this data can be gathered efficiently and utilised in an effective way.

6.2.2.1 Information subject to technical barriers

The following data points are subject to **technical barriers**. Technical barriers are subject to major effort for manual data gathering. For some information it can be recommended to enable automated data generation, for example, material data coming from upstream stakeholders in the supply chain. Other information is in nature subject to high effort, such as recyclability scoring label. A deeper analysis on the nature of the data generation effort and appropriate support is recommended. The information with the highest manual data gathering is (starting with highest):

1. Recyclability scoring label

2. Materials that inhibit circularity
3. Information in order to improve performance
4. Type and location of valuable materials
5. Minimum post-consumer recycled content material in product
6. Minimum post-consumer recycled content material in packaging
7. Social attributes of materials and products
8. Type and location of plastics
9. Disassembly related to skill level
10. Extended repair information
11. Repairability scoring index/label
12. Type and location of composite materials
13. Social attributes related to facilities
14. Ability to separate the product into different materials
15. Information for treatment facilities on disassembly, recycling, or disposal at end-of-life

6.2.2.2 Information subject to structural barriers

Structural barriers result from dependencies on external data sources in the value chain (e.g. suppliers.). Due to this, it is recommended that sufficient transition time is allowed for organisations to establish efficient communication paths between stakeholders for the following information:

1. Materials that inhibit circularity
2. Traceability of materials across the supply chain
3. The concentration of the substances of concern
4. Date product becomes waste
5. Social attributes of materials and products
6. Recycled content in packaging
7. Minimum post-consumer recycled content material in packaging
8. Images of repair
9. Unique operator identifiers
10. Type and location of valuable materials
11. Type and location of plastics
12. Type and location of composite materials
13. Material certification
14. Minimum post-consumer recycled content material in product
15. Social attributes related to facilities

6.3 Key-data for the textile sector

6.3.1 Key data (highly relevant)

The following table shows the top 20 most relevant information categories for the textile sector, based on feedback from the survey. On the right-hand side, the table presents the findings on the structural and technical barriers, data availability and general data generation effort associated with each information. The four evaluation categories are represented in a way, that higher rates represent a higher effort / barrier

(colour coded, with green = positive and red = negative). For example, a rate of 60% on availability for extended repair information means, that this information is not available to 60% of survey participants.

Information	Benefit	Availability (not available)	Technical barrier	Structural barrier	General effort
Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)	46,41%	20,00%	44,44%	38,46%	19,05%
Material composition (according to Textile Regulation; identification of materials above 15-5% content)	38,56%	4,00%	23,53%	19,05%	6,25%
Retail information (product name, category, type, brand)	37,91%	6,90%	30,00%	20,69%	9,09%
Product traceability (date, location, operators)	35,29%	28,57%	46,15%	46,67%	23,81%
Product images	34,64%	3,57%	23,33%	18,18%	4,55%
Production year (Season or/and year of sale)	33,33%	14,81%	38,89%	31%	15,00%
Substance of concern name, location within the product, concentration at the level of the product, main components or spare parts (according to REACH Regulation)	32,03%	26,09%	45,45%	43,48%	21,43%
Identification of product design elements that inhibit circularity (e.g. prints harder to recycle)	31,37%	69,57%	69,23%	78,57%	50,00%
Sustainable design & services options (e.g. designed for repair, reuse, recycling ... R-Strategies)	31,37%	37,50%	50,00%	50,00%	30,00%
Choice of materials and restrictions on substances (eg. Combination of fibers, flame retardants))	30,07%	38,10%	50,00%	50,00%	30,77%
Product certification	29,41%	15,79%	41,18%	35,71%	16,67%
Declaration of compliance e.g. with AFIRM, ZDHC MRSL	28,10%	38,10%	50,00%	50,00%	30,77%
Identification of substances (name, location, concentration) according to other lists e.g. AFIRM, ZDHC MRSL	28,10%	40,91%	52,38%	50,00%	31,25%
Material certification	28,10%	10,00%	34,62%	22,73%	11,76%
Product care instructions	28,10%	4,17%	27,27%	19,05%	8,33%
Color group, color description, color system information (Pantone, Coloro, etc.), numerical color value	26,14%	8,33%	31,82%	22,22%	11,11%
Detailed chemical content	26,14%	71,43%	71,43%	80,00%	50,00%
Fabric type	26,14%	12,50%	36,36%	23,53%	12,50%
Product code as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts;	26,14%	56,00%	66,67%	66,67%	45,45%
Purchase date	26,14%	42,86%	52,94%	52,94%	33,33%

6.3.1 Conditional key data (highly relevant but subject to barriers)

6.3.1.1 Information subject to technical barriers

The following data points are subject to **technical barriers**. For some information it can be recommended to enable automated data generation, for example, material data coming from upstream stakeholders in the

supply chain. Other information is in nature subject to high effort, such as recyclability scoring label. A deeper analysis on the nature of the data generation effort and appropriate support is recommended. The information with the highest manual data gathering is (starting with highest):

1. Reparability scoring index/label
2. Traceability of materials across the supply chain applicable to different intermediated product groups (limited to the intermediate products incl. chemicals and ceramic products)
3. Disassembly related to skill level
4. Possible lifetime of the textile or footwear
5. Minimum content of PCR material in product
6. Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)
7. Minimum content of PCR material in packaging
8. Energy consumption associated to the production of a clothing item
9. Individual or proprietary company ID (e.g. GS1 GLN, IEC 61406, SKU ID, OAR ID, GTS-ID, UUID, DNV)
10. GHG emissions associated to the washing and drying operations of a clothing item
11. Modularity, transformability, detachable/adjustable elements
12. Identification of product design elements that inhibit circularity (e.g. prints harder to recycle)
13. Spare part delivery time
14. Product code as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts;
15. Detailed chemical content

6.3.1.2 Information subject to structural barriers

Structural barriers result from dependencies on external data sources in the value chain (e.g. suppliers.). Due to this, it is recommended that sufficient transition time is allowed for organisations to establish efficient communication paths between stakeholders for the following information:

1. Disassembly related to skill level
2. Reparability scoring index/label
3. Traceability of materials across the supply chain applicable to different intermediated product groups (limited to the intermediate products (incl. chemicals) and ceramic products),
4. GHG emissions associated to the washing and drying operations of a clothing item
5. Energy consumption associated to the washing and drying operations of a clothing item
6. Condition for the access to product data relevant for the the recycling, including dismantling information
7. Possible lifetime of the textile or footwear
8. Ability to separate the product into different materials
9. Social attributes of materials and products
10. Possible release of non-biodegradable microplastics
11. Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)
12. Modularity, transformability, detachable/adjustable elements
13. Recyclability scoring label (in terms of recycled cotton, wool, polyester, rubber or viscose (depending on the product-specific composition))
14. Detailed chemical content
15. How to manage the textile or footwear at the end of its lifetime

6.4 Key-data for the battery sector

The relevant key-data for the battery sector is provided in chapter 5.

As explained above, the battery sector's key data was not prioritized for additional survey ranking due to the established comprehensive research and discussions already conducted by the Battery Pass project with results documented in the content guide as well as Battery_Passport_Data_Attributes Excel file. This work, along with the detailed specifications in the Battery Regulation, has provided a clear framework of the specific information requirements for different battery types. Unlike the ESPR, which is in the process of defining product group-specific information through delegated acts, the Battery Regulation already prescribes the data necessary for compliance. Therefore, it was deemed redundant for the battery sector to engage in another survey. The Battery Pass has catalogued all the regulatory data requirements and further attributes identified by the consortium as beneficial have been incorporated and marked accordingly. These data attributes are organized into the same information categories used throughout this report to maintain consistency and enable cross-sector comparisons.

7 Recommendations

In this section, we provide recommendations based on the **quantitative** results of the surveys and evaluations presented above.

7.1 Recommendations

The interpretation of the survey and evaluation results presented in this report led to the following recommendations (**RX**) in relation to several questions set out below by the CIRPASS consortium. Table 2 at the end of this section provides an overview with the recommendations to be addressed by specific actors. It should be noted, that this study used the ESPR information requirements, which do not necessarily apply for all product groups. Furthermore, the delegated acts will specify and provide information as well as correlating the standards. However, these results should give an indication, where the pain points might be and in which form they can be addressed.

For which information categories is the relevance not seen?

The information **“generation of waste” is seen as least relevant** in both the electronics and the textile sector. This information requirement might not be clearly understood, for example, how the generation of waste is defined or will be calculated? This is product group specific and subject to the delegated acts, as the other ecodesign requirements. However, for several ecodesign requirements in article 5 there are known standards (e.g. EN4555X series), but not for generation of waste. Therefore, there might be more uncertainty with the generation of waste. Furthermore, the relevance might be seen as low, due to the generic title and lack of connection with other circularity metrics. The recommendation here is to demonstrate use cases and the necessity for this information category / circularity indicator in contrast to other circularity indicators.

➔ **R1: Demonstrate use-cases and benefit for information that are seen less relevant (will be presented in the upcoming preparatory studies)**

What else seems unclear?

Both sectors: Uncertainty about DPP-issue obligation - 15% of respondents for electronics and 29% for textiles are uncertain about their obligation, which points to a need for further clarification about the supply-chain scope for legal requirements (e.g. finished good, component, material level).

➔ **R2: Provide clear information on the requirements and obligations to stakeholders**

Textiles: In textiles, some circularity indicators seem unclear with respect to their meaning or the underlying calculation method – e.g. reparability scoring or disassembly related to skill. In some cases, these may potentially require extensive testing, evaluation and calculation, which increases the data generation effort.

➔ **R3: Provide clear descriptions of indicators and calculation methods**

Which information is already available?

- **Electronics:** In general, because of the existing extensive legal requirements, many information requirements are already available. Examples include the country and date of product manufacturing, and information according to RoHS or REACH. Information that is not mandatory, such as the ones identified as relevant by the JRC study, are least available. Other potentially relevant data is not available yet, such as product images or the purchase date.
 - **Textiles:** information categories such as product identification, materials, certification and label, is of medium data gathering effort because some information is already generated due to legal or market requirements. However, other material information which is not yet mandatory or only defined in upcoming legislation (ESRP) requires significantly higher effort, such as detailed chemical content.
- ➔ **R4 (cross-sector): Implement information which is already legally mandatory and therefore well available into the DPP (product group specific). This way the DPP could be used as a compliance tool for reporting on existing information requirements.**

Which information is of high relevance but would require overall high effort for data gathering?

- The general effort for data gathering is relatively high across most information categories, led by the JRC information categories (sustainable sourcing, recyclability, recycled content, lightweight design, generation of waste, product energy and resource efficiency) but also downstream information, certification and label and material Information appearing to require the most effort. The general effort might include other reasons (beyond technical and structural barriers) such as providers must invest considerable resources to compile this data, possibly due to its specialized or proprietary nature or some information such as material information reflects the complex nature of some data types, necessitating detailed analysis, verification, and possibly manual intervention.
- **Textiles:** Information with good availability tends to be either: provided by IT systems; or currently handled using well-organized manual processes, due to market pressures from the client (retailer) side e.g. certificates. However, the survey shows that some of the relevant information (categories) are not readily available. Considering the fact that > 85% of the stakeholders are micro- sized companies with less than 10 employees, the key question is What can be done to enable this „⅔“ majority of the stakeholders to close the gap?
 - ➔ **R5: Stimulate IT providers (PLM/ERP/PIM) from all value chain sectors to support data generation and sharing**
 - ➔ **R6: Support the micro companies, who often use solely MS Excel, on their way to implementing improved PLM-/ERP-/PIM solutions, which are more and more readily available as SaaS solutions for rent.**

Which information is of high relevance but structurally difficult to gather (data from external stakeholder providers - e.g. supplier)?

- **Textile:** Durability and repairability are of high data generation effort, possibly due to the necessary laboratory tests and calculations. The good news is that many “durability relevant” quality tests are already performed today to control the suppliers. Thus, the data is there, but only in paper/analog form, not as machine readable data.

- **Electronics:** Most information can already be internally generated, though some information categories are naturally more dependent on external stakeholders (e.g. suppliers) such as sustainable sourcing, recycled content, downstream information. This information is, in nature, more related to materials and components and thus generated at the beginning of the value chain by suppliers (e.g. type and location of valuable materials or plastics) or the end of the value chain by collectors, recyclers (e.g. date product becomes waste). Furthermore, data coming from external sources needs to be validated and meet quality and certification criteria, in order to ensure accuracy and compliance with standards and regulations.
- ➔ ***R7: Adapt the transition time of the delegated acts or provide financial support in relation to the prevailing structural barriers of information. To note, the ESPR states “financial support, including by providing fiscal advantages and investing in physical and digital infrastructure”.***

Which information is of high relevance but technically difficult to gather (manual data gathering)?

This survey indicates significant manual data gathering processes, which can be expected to increase due to the number of required information which are currently in different structure and formats arising from the DPP requirements. This will immediately increase the stress levels of responsible economic operators, if the structure of the data generation is not changed, before the ESPR delegated acts come into force.

- ➔ ***R8: Reduce technical barriers by changing the structure of the data generation (standardised cross-sector ontology, to be implemented in existing information systems)***

The manual gathering of data is often more resource-intensive and prone to human error than automated methods. The listed information categories mostly require detailed, specialised knowledge or require verification that cannot be easily automated, hence the need for manual collection. Some of this information is in nature subject to the variability and subjectivity involved in its assessment, and the current limitations of automated systems to handle such complexity. This can impact the efficiency, cost, and scalability of data provision in these areas, making it a technical challenge with potential for process improvement and technological innovation. The possibility for automated data generation in some information categories suggests that these have more mature systems or technologies in place.

- **Textile:** Durability and repairability tend to have high data generation efforts, possibly due to the necessary tests and calculations.
 - **Electronics:** Recycled content, sustainable sourcing, recyclability, material information and durability require the most manual data generation.
- ➔ ***R9 (similar to R6): Provide support for information which require extensive manual data gathering or difficult to understand, e.g. as stated in the ESPR “financial support, including by providing fiscal advantages and investing in physical and digital infrastructure”.***

Which other conclusions are important?

- **Relevance of recyclability and recycled content:** The textile data users emphasised the importance of recycled content and recyclability information. These attributes are seen as highly relevant and more important than e.g. durability or repairability, potentially due to the current recycling

- challenge, fast fashion trends and general rather short use-cycle of textile products. The high data gathering effort might result from verifying the recycled content and recyclability calculations.
- **Usage and repair information** are seen relevant by textile data users but are yet still difficult to gather as this is dynamic information. The high relevance becomes clearer for information such as the purchase date, use /washing cycles and the condition / quality at the end of each use cycle. The biggest challenge here is the lack for software to capture this data.
 - **Textile retailers** are positive towards the DPP, but as data providers, stakeholders from brands are more negative. Any discussion of “who is right” doesn’t help. What would help are supporting activities including financial & smart incentives targeting the IT provider side and support for an increase of IT use by all stakeholders, no matter how small they are.
 - In **textiles**, there are information types which are seen very beneficial, but which are not available. Unfortunately, to automate the provision of this data, the large numbers of micro-companies have limited lobby power with their IT providers who are most responsive to larger companies due to the revenues that can be achieved. This was not such a significant problem in the past, but the ESPR and introduction of the DPP will represent a dramatic system change for the sector, requiring rapid digitalisation, including by SMEs.
 - **Investment security:** To serve those needs in the textiles sector, the IT providers need to adapt significantly their current architectures. Their strategic investment decisions depend on the expected volume of new data. IT providers need to decide if they a) initiate cheap and rather small extensions of their software or b) deploy higher performance and more expensive ones, that are more “future proof”. As this report identifies over 50 relevant data points (depending on the sector) for the DPP, we recommend communicating clearly that the DPP will need future-proof extensions and flexibility of the existing data model and data exchange architecture. Expert interviews with many textile sector specialized IT providers see business chances in such new DPP modules and are willing to invest. But at the same time, they ask for clear and correct “data volume signals”, such as presented in this report, to gain the necessary investment security.

Table 2 Recommendations (R1-R9) summary

ID	Title	Expected outcomes	Target stakeholder(s)
R1	<i>Demonstrate use-cases and benefit</i>	Link (economic) benefits clearly to information	CIRPASS, EC
R2	<i>Provide clear information on the requirements and obligations to stakeholders</i>	Description of stakeholder and product group effected by the DPP (to be defined in delegated acts)	EC (delegated acts, preparatory studies)
R3	<i>Provide clear descriptions and calculation methods</i>	Clear description on particular information, such as “generation of waste”	EC, standardization bodies, preparatory studies
R4	<i>Implement information which is already legally mandatory and therefore well available into the DPP (product group specific)</i>	Support market surveillance and customs and simply compliance towards information requirement	Market surveillance, value chain stakeholders
R5	<i>Stimulate IT providers (PLM/ERP/PIM) from all value</i>	IT providers are able to pull information which are existing in	IT providers, value chain stakeholders

	<i>chain sectors to support data generation and sharing</i>	companies or can support data generation	
R6	<i>Support in particular the micro companies, who often use solely MS Excel, on their way to implement the improved PLM-/ERP-/PIM solutions, which are more and more available as SaaS solutions for rent.</i>	The ESPR states “financial support, including by providing fiscal advantages and investing in physical and digital infrastructure”.	EC
R7	<i>Allow transition time or financial support for information categories/types which are subject to structural barriers</i>	A smart financial incentive system, providing support for the DPP implementation, e.g. during the transition period till the delegated acts comes into force	EC
R8	<i>Reduce technical barriers or provide technical support for information which require extensive manual data gathering e.g. through standardised cross-sector ontology</i>	Due to the majority of SMEs, an increase in data availability and competitiveness is expected	EC, software provider for PDM-, ERP, PIM-Systems
R9	<i>Provide support for information which require extensive manual data gathering</i>	See R6	See R6

8 Next steps and future activity

The primary goal of this work stream is to provide a comprehensive list of key-data which reflects stakeholder perspectives towards the usefulness (data benefits) as well as the burdens (data gathering effort) of particular information potentially contained in the DPP. This report provides a set of key data for the electronic and textiles sector, with additional key-data for the battery sector coming from the Battery Pass project.

The key data was identified in an objective and staged approach, which started by extracting requirements from existing and upcoming legislative texts, as well as those used in a large number of currently proposed DPP-related initiatives. Next, the initial set of data was evaluated and extended towards other potentially useful information on the basis of desk research and project internal workshops. Next, this condensed list of data was evaluated by external stakeholders for each sector.

The results allow us to derive implementation strategies for information that are seen difficult to be gathered. It can also provide horizontal insights on sector level, which can be used as a basis for the development of product group specific legislation (delegated acts) in upcoming preparatory studies. Finally, this document provides stakeholders with an overview of the anticipated potential information requirements, and related e.g. structural or technical challenges to gathering such data for the Digital Product Passport (DPP) in the batteries, electronics, and textiles value chains.

Some aspects could not be evaluated in a quantitative manner though a survey questionnaire. For this reason, additional workshops titled "Frequently Asked Questions" were held which provided a number of pro and con arguments for a number of frequently mentioned topics. **Erreur ! Source du renvoi introuvable.** These should be considered as open questions for upcoming, product group specific discussions.

9 Annexes

9.1 Survey Questionnaire

Due to the large number of pages of the questionnaire (3 sectors x 2 questionnaires for data user & provider), it can be found in a separate file on the CIRPASS website or on request.

9.2 Consideration of existing information categorisation approaches

"Enhancing Traceability and Transparency of Sustainable Value Chains in the Garment and Footwear Sector", Recommendation No. 46 which includes Table 2 on Traceability information¹⁰. The table is divided into five main sections:

1. Product-related information:

- Origin: Country and/or region and/or other origin criteria
- Composition: Materials components, Product components
- Technical specifications: Materials specifications, Product specifications
- Product identification (IDs): Individual product/material, Product/material batch, Product/material trade unit
- Quality: Characteristics, Inspections, Certificates/audit reports (product/materials)
- Other management information: Cost(s), Sales data, Surplus or damaged materials/product
- Sustainability: See table below on sustainability data

2. Process-related information:

- Process inputs and outputs: Input volumes/weights, Output volumes/weights
- Process events occurrence: Data, Time
- Process identification (IDs): Process (product) inputs, Process (product) outputs, Type of process, Equipment (machine), Machine operator

3. Facility-related information:

- Economic-operator details: Supplier, Manufacturer, Subcontractor
- Facility's value chain activity (spinning, tanning, etc.)
- Location: Main production unit(s), Subordinate production unit(s), Address, Physical coordinates
- Facility & economic-operator identification (IDs): Economic Operator Main facility, Subordinate facility

¹⁰ <https://unece.org/sites/default/files/2022-01/ECE-TRADE-463E.pdf>

- Sustainability: See table below on sustainability data

4. **Transport-related information:**

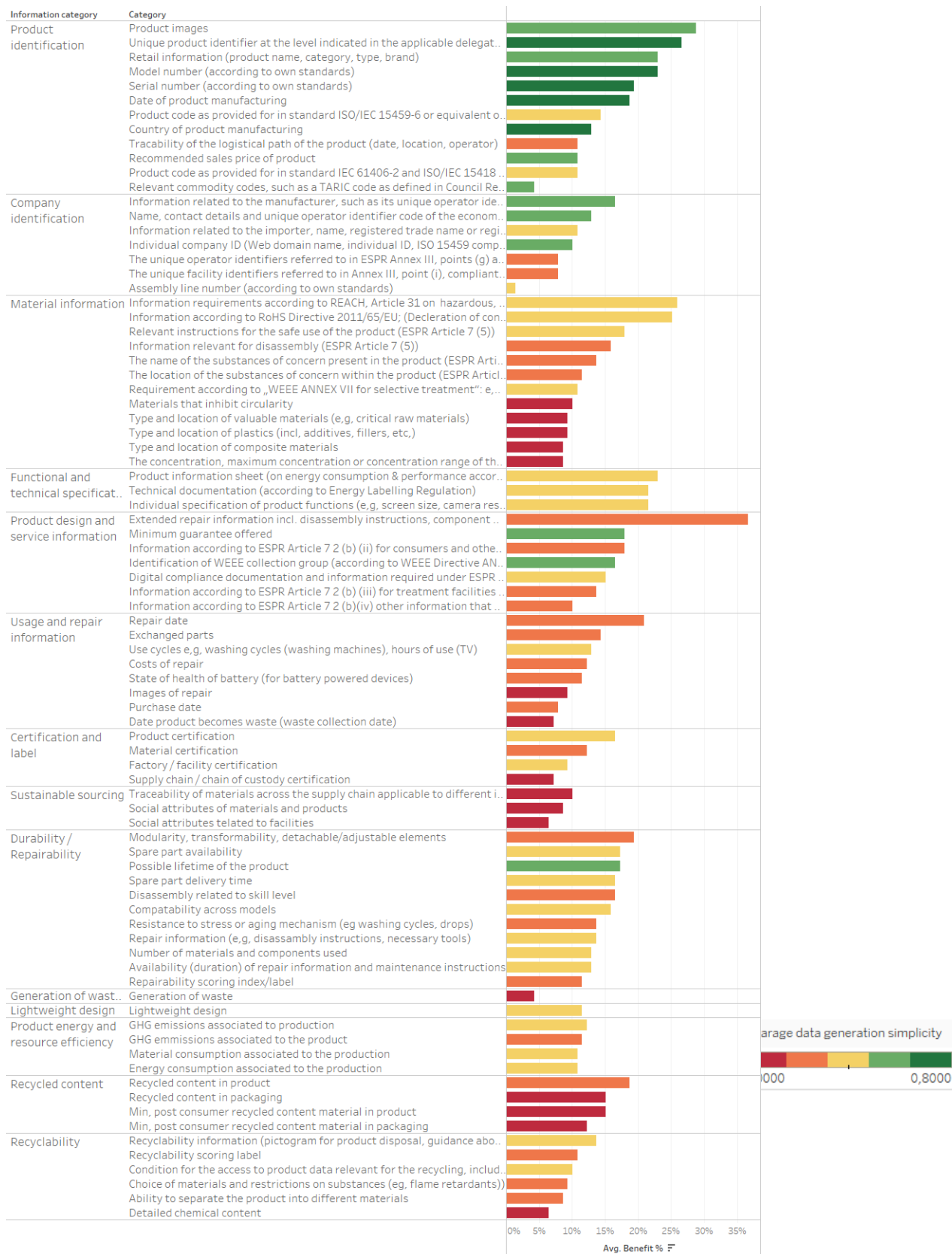
- Economic-operator details: Transport or freight forwarding company, Owner/operator of the means of transport
- Location: For picking up logistics units, For delivering logistics units
- Transportation (IDs): Logistics units, Conveyance means (truck, railcar, ship, container if applicable)
- Sustainability: See table below on sustainability data

5. **Sustainability-related information:**

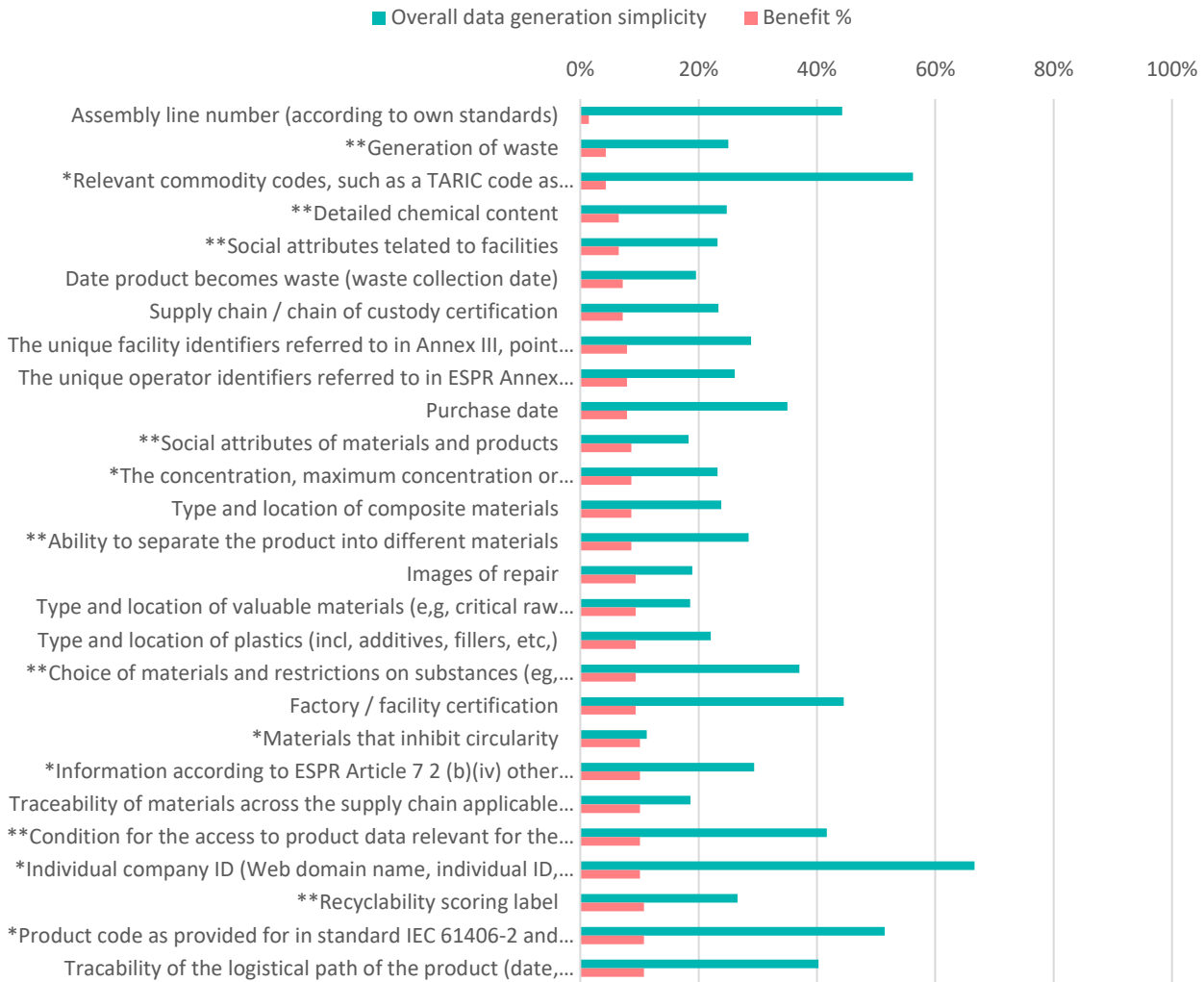
- Environment-related information
- Human rights and labor-related information
- Health and safety-related information

9.3 Detailed survey results

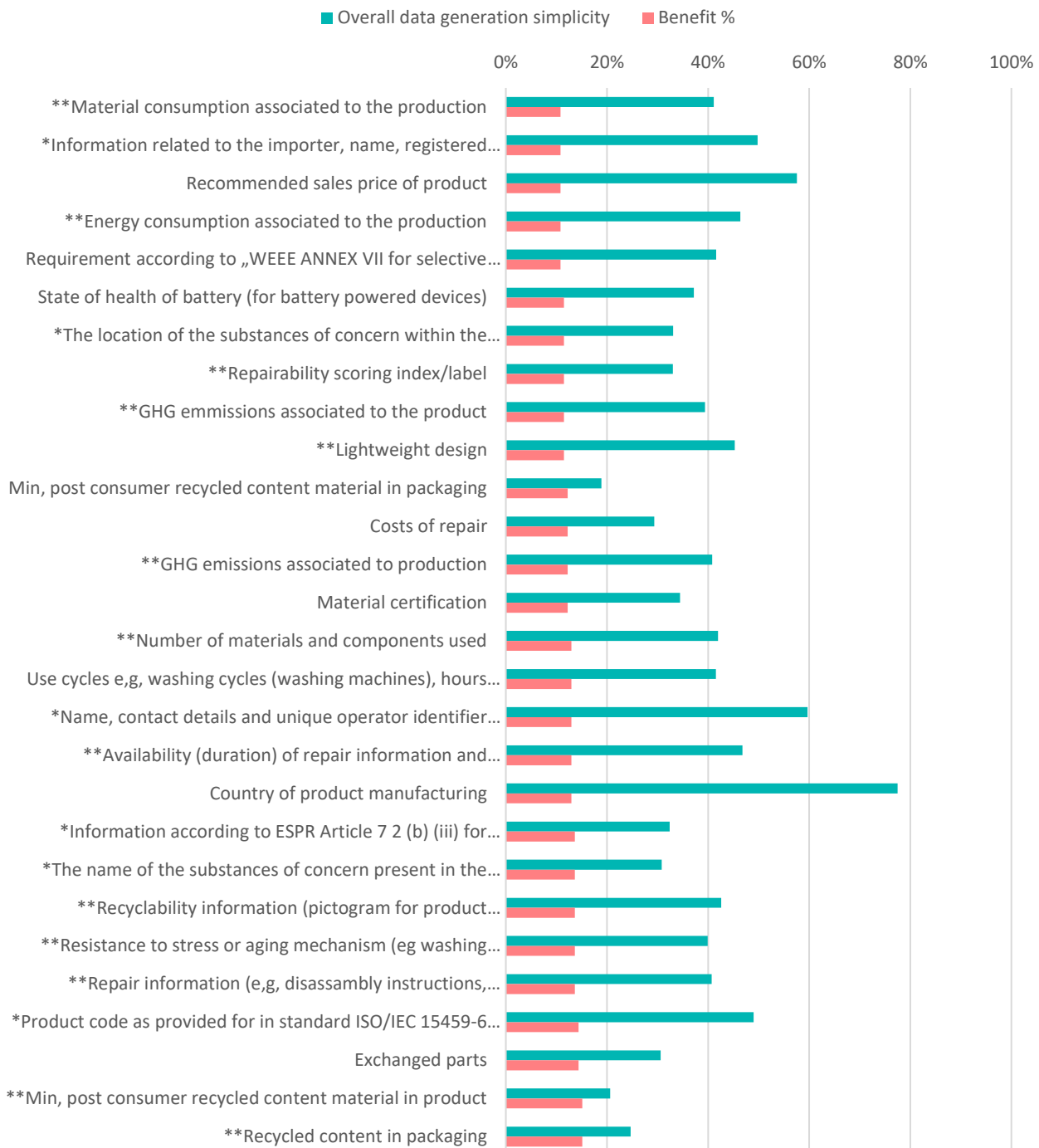
9.3.1 Survey results – Electronics details



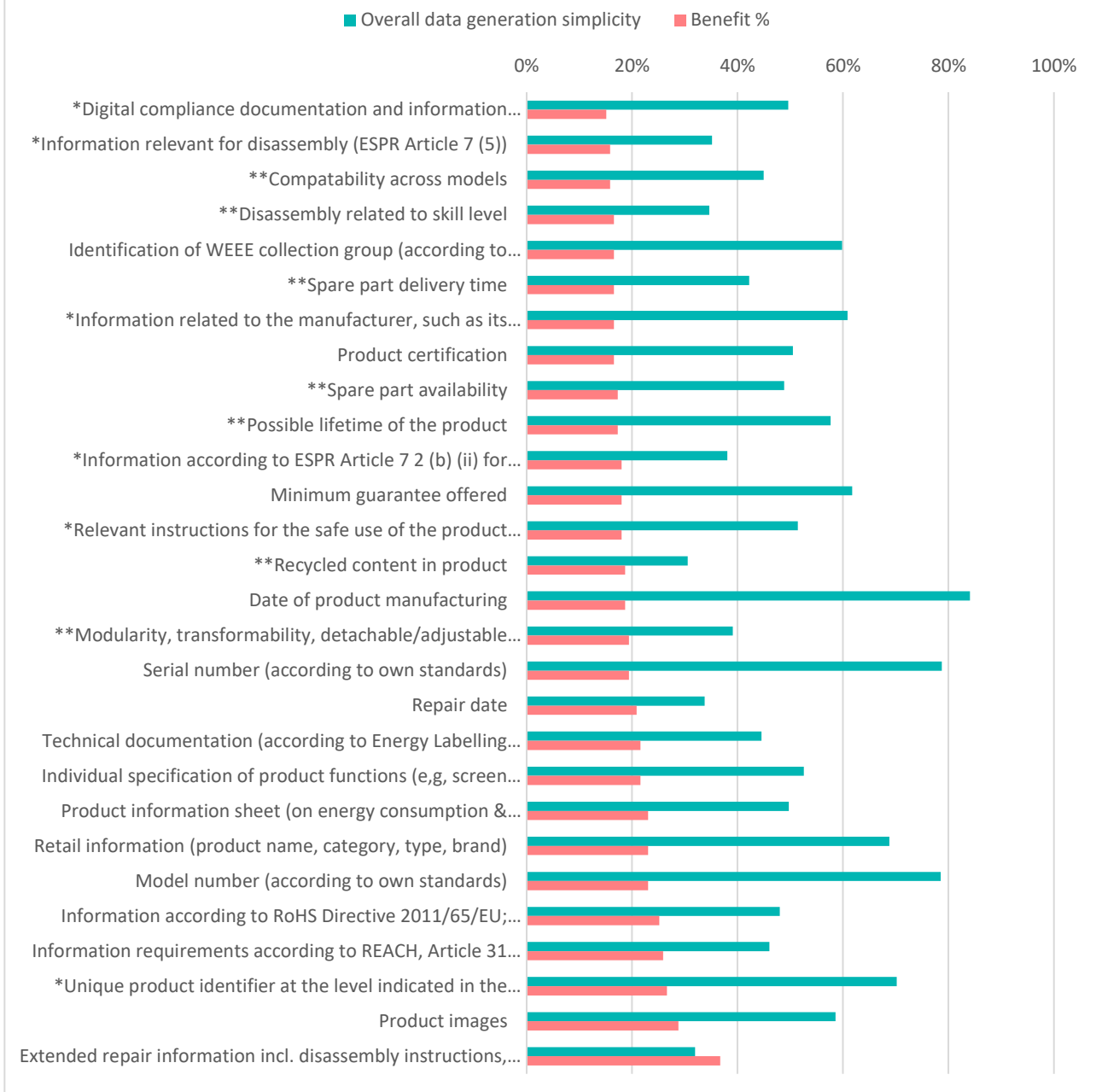
Electronics stakeholder - Benefit vs effort



Electronics stakeholder - Benefit vs effort



Electronics stakeholder - Benefit vs effort



9.3.1.1 Mandatory and voluntary information: relevance vs. overall data generation simplicity

The next sub-chapters show the bar charts for the relevance and data generation simplicity (reverse data effort) for three areas:

- **9.3.1.1.3** Legally required information
- **9.3.1.1.2** Information which will be potentially legally required: information which is identified relevant by the JRC study on priority products
- **9.3.1.1.3** other potentially relevant information: information which is identified as potentially relevant (see CIRPASS report D2.1)

9.3.1.1.1 Mandatory information

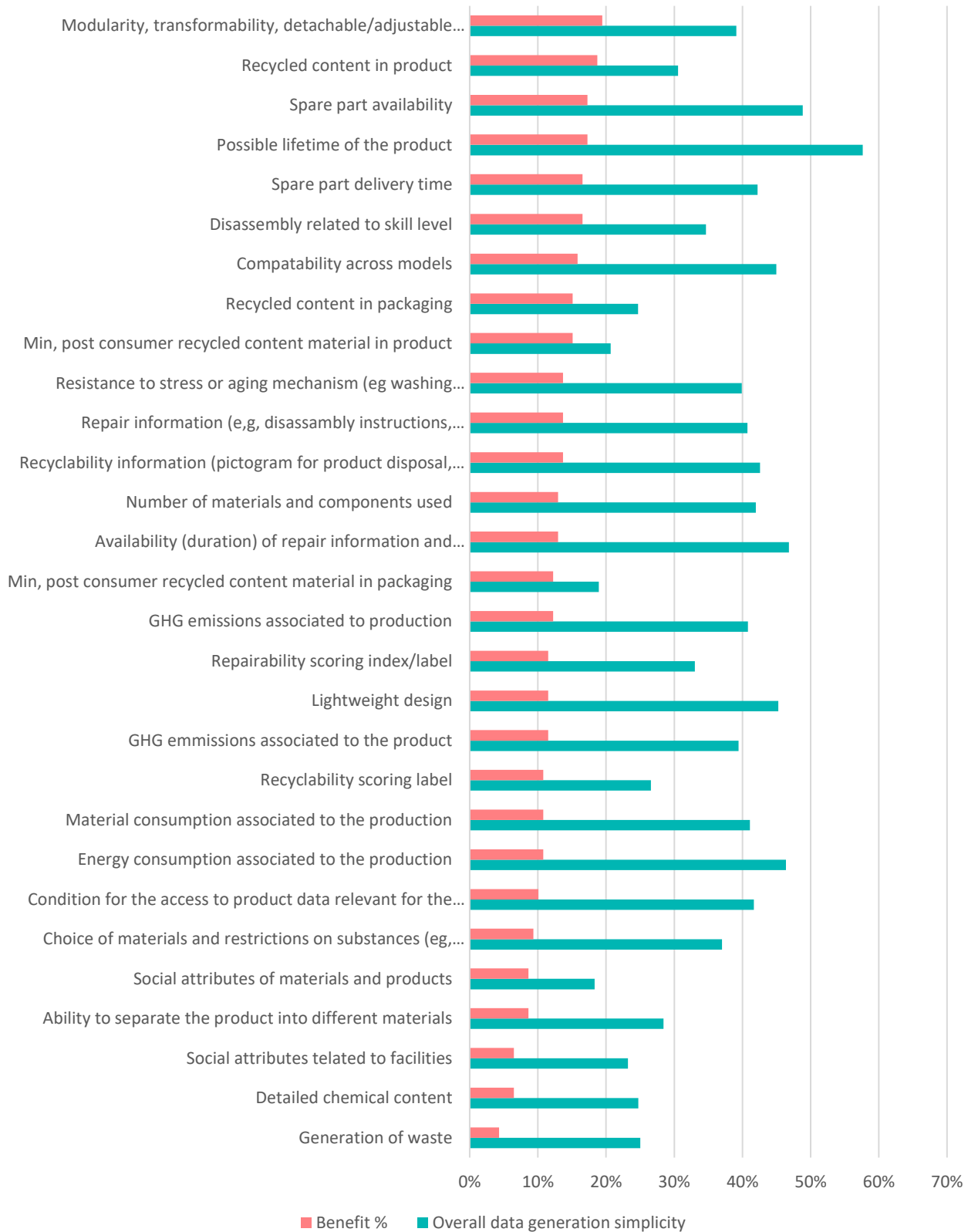
Legally mandatory information (electronics sector) -

Information relevance and simplicity for information generation



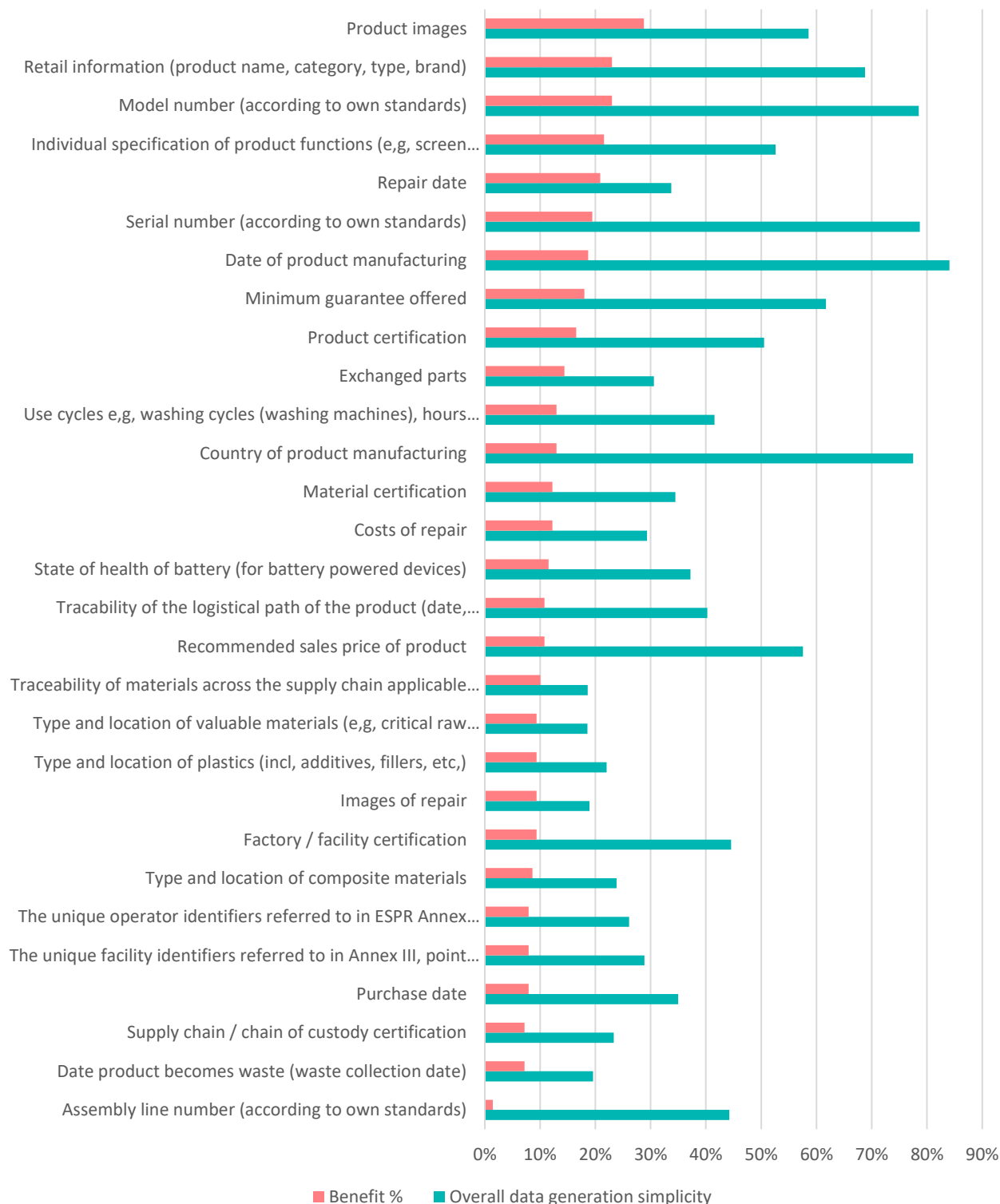
9.3.1.1.2 JRC Information

Potentially mandatory information (electronics sector) Most relevant and easy to generate information



9.3.1.1.3 Other potentially relevant information (non-mandatory)

Non-mandatory information (electronics sector) - Most relevant and easy to generate information



9.3.2 Survey results – Electronics raw data

Data user		
Information category	Availability	Benefit

Certification and label	41,67%	41,67%
Company Identification	32,13%	43,93%
Downstream information	10,48%	51,71%
Durability	14,67%	61,36%
Functional and technical specifications	45,08%	76,82%
Generation of waste	0,00%	33,33%
Lightweight design	50,00%	25,00%
Material information	33,20%	54,28%
Product design and service information	18,14%	47,96%
Product energy and resource efficiency	20,45%	77,28%
Product identification	52,68%	45,63%
Recyclability	10,67%	47,73%
Recycled content	13,67%	57,59%
Sustainable sourcing	25,00%	38,46%

<u>Data provider</u>								
<u>Information category</u>	<u>Availability</u>	<u>Generation</u>	<u>Autonomy</u>	<u>Effort</u>	<u>Retail, brands</u>	<u>End-user, consumer</u>	<u>Repair, reuse, refurbishment, remanufacturing</u>	<u>Collection, sorting, recycling</u>
Certification and label	65,00%	17,26%	68,33%	2,27%	43,48%	36,75%	11,71%	8,06%
Company Identification	52,92%	52,12%	64,01%	23,05%	17,91%	30,31%	37,32%	14,45%
Downstream information	36,72%	26,77%	56,69%	2,81%	13,39%	33,83%	40,90%	11,87%
Durability	63,33%	9,50%	88,59%	9,43%	18,42%	35,90%	38,83%	6,85%
Functional and technical specifications	77,02%	12,03%	94,07%	12,64%	38,06%	45,63%	15,21%	1,11%
Generation of waste	0,00%	20,00%	80,00%	0,00%	16,67%	50,00%	16,67%	16,67%
Lightweight design	87,50%	16,67%	76,92%	0,00%	37,50%	31,25%	0,00%	31,25%
Material information	54,47%	8,44%	58,44%	7,02%	7,14%	16,05%	28,37%	48,44%
Product design and service information	55,99%	14,43%	89,13%	13,58%	14,10%	27,11%	23,78%	35,01%
Product energy and resource efficiency	58,85%	18,62%	90,44%	0,00%	22,70%	28,37%	31,75%	17,18%
Product identification	74,80%	61,26%	79,18%	41,71%	28,83%	29,40%	26,10%	15,67%
Recyclability	41,60%	4,70%	84,65%	3,06%	4,85%	16,30%	61,83%	17,02%
Recycled content	42,29%	0,00%	48,10%	4,36%	25,71%	43,77%	11,78%	18,75%
Sustainable sourcing	36,15%	3,70%	40,00%	0,00%	35,85%	41,93%	9,92%	12,30%

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling
Country of product manufacturing	100,00%	0,00%	64,29%	35,71%	76,47%	23,53%	69,23%	30,77%	0,00%	70,00%	27,78%	33,33%	22,22%	16,67%
Date of product manufacturing	100,00%	0,00%	84,62%	15,38%	82,35%	17,65%	69,23%	30,77%	0,00%	78,73%	26,92%	23,08%	30,77%	19,23%
Information according to RoHS Directive 2011/65/EU; (Declaration of conformity (CE-Marking))	95,24%	4,76%	29,41%	70,59%	61,11%	38,89%	6,25%	31,25%	62,50%	32,26%	14,29%	25,71%	25,71%	34,29%
Information requirements according to REACH, Article 31 on hazardous, persistent, bioaccumulative and toxic substances	90,48%	9,52%	31,25%	68,75%	56,25%	43,75%	6,25%	37,50%	56,25%	31,25%	13,89%	25,00%	22,22%	38,89%
Relevant instructions for the safe use of the product (ESPR Article 7 (5))	90,00%	10,00%	6,67%	93,33%	93,75%	6,25%	15,38%	46,15%	38,46%	38,60%	20,00%	36,00%	28,00%	16,00%
Model number (according to own standards)	88,89%	11,11%	76,92%	23,08%	86,67%	13,33%	61,54%	38,46%	0,00%	75,04%	28,13%	28,13%	31,25%	12,50%
Product images	88,89%	11,11%	28,57%	71,43%	93,75%	6,25%	23,08%	53,85%	23,08%	48,47%	30,00%	25,00%	25,00%	20,00%
Serial number (according to own standards)	88,89%	11,11%	84,62%	15,38%	87,50%	12,50%	53,85%	46,15%	0,00%	75,32%	25,93%	33,33%	29,63%	11,11%
Lightweight design	87,50%	12,50%	16,67%	83,33%	76,92%	23,08%	0,00%	75,00%	25,00%	31,20%	37,50%	31,25%	0,00%	31,25%
Possible lifetime of the product	86,67%	13,33%	16,67%	83,33%	100,00%	0,00%	27,27%	54,55%	18,18%	47,98%	25,00%	41,67%	29,17%	4,17%
Product certification	86,67%	13,33%	23,08%	76,92%	92,31%	7,69%	0,00%	25,00%	75,00%	38,46%	34,78%	39,13%	17,39%	8,70%
Individual specification of product functions (e.g. screen size, camera resolution)	85,71%	14,29%	5,88%	94,12%	100,00%	0,00%	18,75%	25,00%	56,25%	41,54%	36,67%	46,67%	13,33%	3,33%
Minimum guarantee offered	85,00%	15,00%	28,57%	71,43%	100,00%	0,00%	33,33%	60,00%	6,67%	53,97%	28,00%	52,00%	16,00%	4,00%
Digital compliance documentation and information required under ESPR Regulation or other Union law applicable to the product, such as the declaration of conformity, technical documentation or conformity certificates;	82,35%	17,65%	30,77%	69,23%	76,92%	23,08%	8,33%	33,33%	58,33%	38,67%	23,81%	33,33%	23,81%	19,05%

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling
Retail information (product name, category, type, brand)	82,35%	17,65%	50,00%	50,00%	92,86%	7,14%	50,00%	40,00%	10,00%	64,29%	31,25%	31,25%	21,88%	15,63%
Factory / facility certification	80,00%	20,00%	18,18%	81,82%	80,00%	20,00%	0,00%	20,00%	80,00%	32,73%	53,85%	38,46%	7,69%	0,00%
Requirement according to „WEEE ANNEX VII for selective treatment“: e.g, polychlorinated bi-phenyls (PCB), mercury containing components, batteries, printed circuit boards, toner cartridges, plastics with BFRs, etc,	80,00%	20,00%	6,67%	93,33%	71,43%	28,57%	8,33%	33,33%	58,33%	28,81%	0,00%	13,33%	26,67%	60,00%
Spare part availability	76,47%	23,53%	15,38%	84,62%	78,57%	21,43%	25,00%	58,33%	16,67%	39,65%	20,83%	41,67%	37,50%	0,00%
Unique product identifier at the level indicated in the applicable delegated act (e.g, serial number on item level)	76,19%	23,81%	82,35%	17,65%	72,22%	27,78%	50,00%	37,50%	12,50%	68,19%	24,32%	27,03%	32,43%	16,22%
Energy consumption associated to the production	75,00%	25,00%	18,18%	81,82%	92,31%	7,69%	0,00%	54,55%	45,45%	36,83%	25,00%	25,00%	30,00%	20,00%
Relevant commodity codes, such as a TARIC code as defined in Council Regulation (EEC) No 2658/871	75,00%	25,00%	41,67%	58,33%	83,33%	16,67%	25,00%	50,00%	25,00%	50,00%	33,33%	33,33%	16,67%	16,67%
Product information sheet (on energy consumption & performance according to Energy Labelling Regulation)	73,91%	26,09%	23,53%	76,47%	88,89%	11,11%	12,50%	18,75%	68,75%	41,64%	37,50%	46,88%	15,63%	0,00%
Individual company ID (Web domain name, individual ID, ISO 15459 compatible company code e.g, GS1 GLN, IEC 61406, SKU ID, OAR ID, UUID, DNV);	72,22%	27,78%	69,23%	30,77%	83,33%	16,67%	41,67%	50,00%	8,33%	64,74%	28,57%	35,71%	21,43%	14,29%
Technical documentation (according to Energy Labelling Regulation)	71,43%	28,57%	6,67%	93,33%	93,33%	6,67%	6,67%	33,33%	60,00%	35,56%	40,00%	43,33%	16,67%	0,00%

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling
Availability (duration) of repair information and maintenance instructions	70,59%	29,41%	16,67%	83,33%	100,00%	0,00%	0,00%	70,00%	30,00%	38,89%	11,11%	38,89%	50,00%	0,00%
Information related to the importer, name, registered trade name or registered trade mark and the postal address, EORI number;	70,59%	29,41%	38,46%	61,54%	53,85%	46,15%	36,36%	36,36%	27,27%	42,89%	20,00%	40,00%	26,67%	13,33%
Name, contact details and unique operator identifier code of the economic operator established in the Union responsible for EU declaration of conformity (original text: „, responsible for carrying out the tasks set out in Article 4 of Regulation (EU) 2019/1020, or Article 15 of Regulation (EU) on general product safety, or similar tasks pursuant to other EU legislation applicable to the product,)	70,59%	29,41%	57,14%	42,86%	69,23%	30,77%	41,67%	33,33%	25,00%	56,01%	27,78%	33,33%	27,78%	11,11%
Recommended sales price of product	70,59%	29,41%	36,36%	63,64%	83,33%	16,67%	40,00%	50,00%	10,00%	53,23%	46,67%	46,67%	6,67%	0,00%
Repair information (e.g, disassembly instructions, necessary tools)	70,59%	29,41%	0,00%	100,00%	92,31%	7,69%	0,00%	66,67%	33,33%	30,77%	10,53%	31,58%	52,63%	5,26%
Compatability across models	68,75%	31,25%	9,09%	90,91%	90,91%	9,09%	11,11%	66,67%	22,22%	37,04%	27,27%	36,36%	36,36%	0,00%
Resistance to stress or aging mechanism (eg washing cycles, drops)	68,75%	31,25%	0,00%	100,00%	90,91%	9,09%	0,00%	22,22%	77,78%	30,30%	21,05%	42,11%	31,58%	5,26%
Information related to the manufacturer, such as its unique operator identifier	68,42%	31,58%	66,67%	33,33%	66,67%	33,33%	41,67%	41,67%	16,67%	58,34%	21,74%	30,43%	21,74%	26,09%
Material certification	66,67%	33,33%	16,67%	83,33%	45,45%	54,55%	9,09%	18,18%	72,73%	23,74%	35,29%	29,41%	11,76%	23,53%
Choice of materials and restrictions on substances (eg, flame retardants))	64,71%	35,29%	0,00%	100,00%	83,33%	16,67%	0,00%	8,33%	91,67%	27,78%	0,00%	23,08%	61,54%	15,38%

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling
Modularity, transformability, detachable/adjustable elements	64,71%	35,29%	0,00%	100,00%	91,67%	8,33%	0,00%	50,00%	50,00%	30,56%	22,22%	33,33%	33,33%	11,11%
Spare part delivery time	64,71%	35,29%	16,67%	83,33%	69,23%	30,77%	18,18%	36,36%	45,45%	34,69%	17,39%	39,13%	39,13%	4,35%
GHG emissions associated to production	62,50%	37,50%	9,09%	90,91%	91,67%	8,33%	0,00%	27,27%	72,73%	33,59%	13,33%	33,33%	33,33%	20,00%
Repair date	62,50%	37,50%	15,38%	84,62%	57,14%	42,86%	0,00%	38,46%	61,54%	24,17%	10,34%	41,38%	41,38%	6,90%
Identification of WEEE collection group (according to WEEE Directive ANNEX III)	61,90%	38,10%	41,67%	58,33%	100,00%	0,00%	35,71%	42,86%	21,43%	59,13%	17,39%	17,39%	13,04%	52,17%
Information according to ESPR Article 7 2 (b) (ii) for consumers and other end-users on how to install, use, maintain and repair the product in order to minimise its impact on the environment and to ensure optimum durability, as well as on how to return or dispose of the product at end-of-life;	60,00%	40,00%	0,00%	100,00%	84,62%	15,38%	7,69%	23,08%	69,23%	30,77%	8,00%	44,00%	36,00%	12,00%
Recycled content in packaging	58,82%	41,18%	0,00%	100,00%	40,00%	60,00%	0,00%	54,55%	45,45%	13,33%	28,57%	42,86%	9,52%	19,05%
Recycled content in product	55,56%	44,44%	0,00%	100,00%	58,33%	41,67%	8,33%	33,33%	58,33%	22,22%	26,92%	42,31%	11,54%	19,23%
Information relevant for disassembly (ESPR Article 7 (5))	55,00%	45,00%	0,00%	100,00%	85,71%	14,29%	0,00%	38,46%	61,54%	28,57%	0,00%	9,09%	45,45%	45,45%
Material consumption associated to the production	53,33%	46,67%	22,22%	77,78%	88,89%	11,11%	0,00%	55,56%	44,44%	37,04%	24,32%	27,03%	32,43%	16,22%
Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)	52,94%	47,06%	9,09%	90,91%	100,00%	0,00%	8,33%	33,33%	58,33%	39,14%	15,79%	10,53%	47,37%	26,32%
Costs of repair	50,00%	50,00%	9,09%	90,91%	58,33%	41,67%	0,00%	27,27%	72,73%	22,47%	5,88%	41,18%	47,06%	5,88%
The name of the substances of concern present in the product (ESPR Article 7	47,62%	52,38%	9,09%	90,91%	58,33%	41,67%	8,33%	16,67%	75,00%	25,25%	15,79%	26,32%	21,05%	36,84%

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling
Information requirements (5) enable the tracking of all substances of concern throughout the life cycle of products)														
Tracability of the logistical path of the product (date, location, operator)	47,37%	52,63%	45,45%	54,55%	50,00%	50,00%	18,18%	36,36%	45,45%	37,88%	33,33%	13,33%	33,33%	20,00%
Use cycles e.g, washing cycles (washing machines), hours of use (TV)	47,06%	52,94%	55,56%	44,44%	63,64%	36,36%	0,00%	33,33%	66,67%	39,73%	22,22%	33,33%	38,89%	5,56%
Condition for the access to product data relevant for the recycling, including dismantling information	46,67%	53,33%	10,00%	90,00%	100,00%	0,00%	10,00%	10,00%	80,00%	40,00%	0,00%	21,43%	64,29%	14,29%
Exchanged parts	46,67%	53,33%	9,09%	90,91%	66,67%	33,33%	0,00%	18,18%	81,82%	25,25%	5,00%	35,00%	45,00%	15,00%
Number of materials and components used	46,67%	53,33%	30,00%	70,00%	80,00%	20,00%	11,11%	44,44%	44,44%	40,37%	11,11%	22,22%	38,89%	27,78%
Product code as provided for in standard IEC 61406-2 and ISO/IEC 15418 or equivalent of products or their parts	46,15%	53,85%	62,50%	37,50%	75,00%	25,00%	22,22%	44,44%	33,33%	53,24%	13,33%	33,33%	33,33%	20,00%
Information according to ESPR Article 7 2 (b) (iii) for treatment facilities on disassembly, recycling, or disposal at end-of-life;	45,00%	55,00%	0,00%	100,00%	84,62%	15,38%	0,00%	23,08%	76,92%	28,21%	5,26%	10,53%	21,05%	63,16%
Ability to separate the product into different materials	43,75%	56,25%	0,00%	100,00%	70,00%	30,00%	0,00%	10,00%	90,00%	23,33%	0,00%	25,00%	66,67%	8,33%
GHG emmissions associated to the product	43,75%	56,25%	25,00%	75,00%	88,89%	11,11%	0,00%	25,00%	75,00%	37,96%	28,13%	28,13%	31,25%	12,50%
Social attributes telated to facilities	42,86%	57,14%	0,00%	100,00%	50,00%	50,00%	0,00%	25,00%	75,00%	16,67%	44,44%	55,56%	0,00%	0,00%
The concentration, maximum concentration or concentration range of	42,11%	57,89%	9,09%	90,91%	33,33%	66,67%	8,33%	8,33%	83,33%	16,92%	8,33%	25,00%	25,00%	41,67%

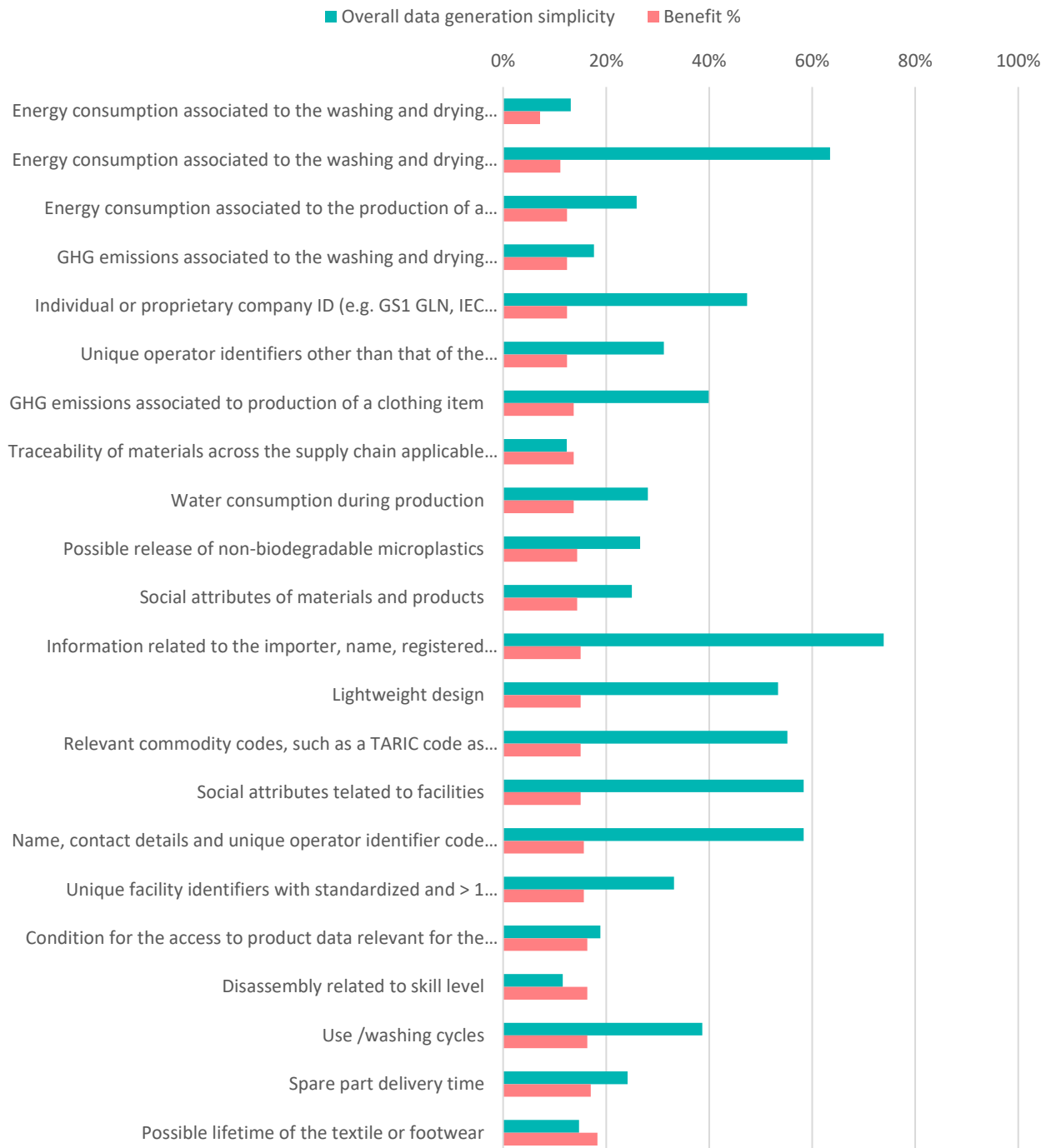
Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling
the substances of concern, at the level of the product, its main components, or spare parts (ESPR Article 7 (5))														
Type and location of composite materials	42,11%	57,89%	0,00%	100,00%	45,45%	54,55%	7,69%	0,00%	92,31%	17,71%	0,00%	0,00%	25,00%	75,00%
Repairability scoring index/label	41,18%	58,82%	0,00%	100,00%	90,91%	9,09%	0,00%	22,22%	77,78%	30,30%	18,75%	37,50%	43,75%	0,00%
Extended repair information incl, disassembly instructions, component map, wiring diagrams etc, (according to Ecodesign Directive)	40,00%	60,00%	0,00%	100,00%	77,78%	22,22%	10,00%	30,00%	60,00%	29,26%	1,96%	3,92%	13,73%	80,39%
The location of the substances of concern within the product (ESPR Article 7 (5))	40,00%	60,00%	9,09%	90,91%	75,00%	25,00%	8,33%	16,67%	75,00%	30,81%	6,25%	25,00%	31,25%	37,50%
Disassembly related to skill level	37,50%	62,50%	0,00%	100,00%	90,00%	10,00%	11,11%	33,33%	55,56%	33,70%	17,39%	30,43%	34,78%	17,39%
Assembly line number (according to own standards)	35,29%	64,71%	66,67%	33,33%	75,00%	25,00%	0,00%	77,78%	22,22%	47,22%	0,00%	0,00%	100,00%	0,00%
Detailed chemical content	35,29%	64,71%	9,09%	90,91%	54,55%	45,45%	0,00%	8,33%	91,67%	21,21%	0,00%	11,11%	77,78%	11,11%
Type and location of plastics (incl, additives, fillers, etc,)	35,00%	65,00%	0,00%	100,00%	45,45%	54,55%	7,69%	15,38%	76,92%	17,71%	0,00%	0,00%	30,77%	69,23%
Product code as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts	33,33%	66,67%	77,78%	22,22%	66,67%	33,33%	18,18%	45,45%	36,36%	54,21%	25,00%	25,00%	30,00%	20,00%
Social attributes of materials and products	33,33%	66,67%	0,00%	100,00%	40,00%	60,00%	0,00%	12,50%	87,50%	13,33%	41,67%	41,67%	8,33%	8,33%
Traceability of materials across the supply chain applicable to different intermediated product groups (limited to the intermediate products (incl, chemicals) and ceramic products),	33,33%	66,67%	11,11%	88,89%	30,00%	70,00%	0,00%	0,00%	100,00%	13,70%	21,43%	28,57%	21,43%	28,57%

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling
Min, post consumer recycled content material in packaging	31,25%	68,75%	0,00%	100,00%	44,44%	55,56%	0,00%	40,00%	60,00%	14,81%	23,53%	47,06%	11,76%	17,65%
Purchase date	30,00%	70,00%	50,00%	50,00%	50,00%	50,00%	10,00%	40,00%	50,00%	36,67%	27,27%	45,45%	27,27%	0,00%
Supply chain / chain of custody certification	26,67%	73,33%	11,11%	88,89%	55,56%	44,44%	0,00%	0,00%	100,00%	22,22%	50,00%	40,00%	10,00%	0,00%
The unique facility identifiers referred to in Annex III, point (i), compliant with the ISO/IEC standard 15459:2015"	26,67%	73,33%	33,33%	66,67%	55,56%	44,44%	0,00%	62,50%	37,50%	29,63%	18,18%	36,36%	27,27%	18,18%
The unique operator identifiers referred to in ESPR Annex III, points (g) and (h), compliant with the ISO/IEC standard 15459:2015"	26,67%	73,33%	33,33%	66,67%	44,44%	55,56%	0,00%	50,00%	50,00%	25,92%	9,09%	36,36%	36,36%	18,18%
Min, post consumer recycled content material in product	23,53%	76,47%	0,00%	100,00%	50,00%	50,00%	9,09%	18,18%	72,73%	19,70%	23,81%	42,86%	14,29%	19,05%
Type and location of valuable materials (e.g, critical raw materials)	21,05%	78,95%	0,00%	100,00%	45,45%	54,55%	7,69%	0,00%	92,31%	17,71%	0,00%	0,00%	30,77%	69,23%
Date product becomes waste (waste collection date)	20,00%	80,00%	12,50%	87,50%	33,33%	66,67%	12,50%	25,00%	62,50%	19,44%	10,00%	20,00%	30,00%	40,00%
Images of repair	18,75%	81,25%	12,50%	87,50%	44,44%	55,56%	0,00%	37,50%	62,50%	18,98%	7,69%	23,08%	53,85%	15,38%
State of health of battery (for battery powered devices)	18,75%	81,25%	50,00%	50,00%	80,00%	20,00%	0,00%	0,00%	100,00%	43,33%	18,75%	31,25%	43,75%	6,25%
Information according to ESPR Article 7 2 (b)(iv) other information that may influence the way the product is handled by parties other than the manufacturer in order to improve performance in relation to product parameters referred to in Annex I,	17,65%	82,35%	0,00%	100,00%	100,00%	0,00%	0,00%	42,86%	57,14%	33,33%	14,29%	28,57%	42,86%	14,29%
Materials that inhibit circularity (please specify in field "Reason")	15,00%	85,00%	0,00%	100,00%	30,00%	70,00%	0,00%	0,00%	100,00%	10,00%	7,14%	7,14%	28,57%	57,14%

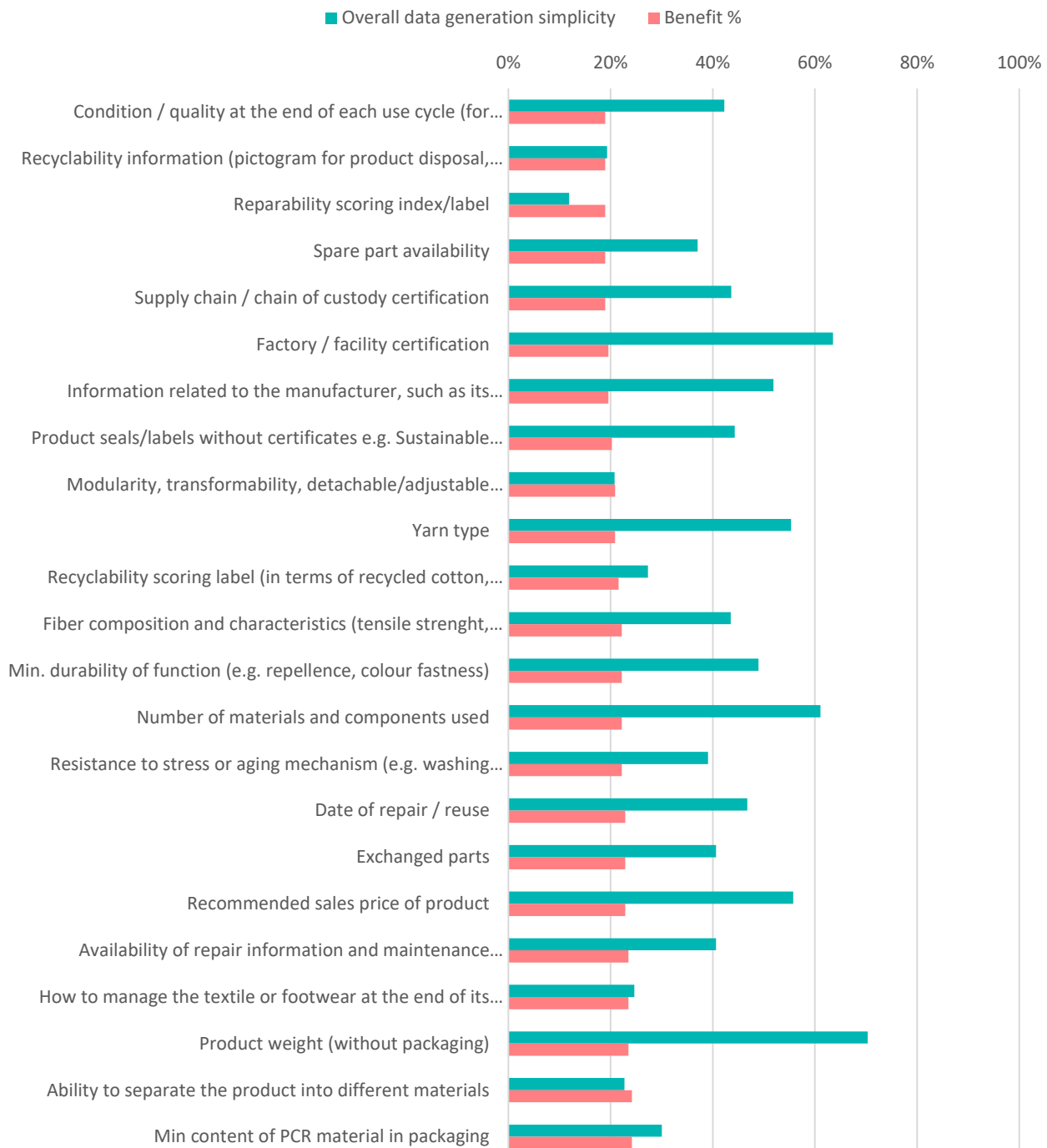
Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling
Recyclability scoring label	6,25%	93,75%	0,00%	100,00%	100,00%	0,00%	0,00%	12,50%	87,50%	33,33%	13,33%	6,67%	53,33%	26,67%
Generation of waste	0,00%	100,00%	20,00%	80,00%	80,00%	20,00%	0,00%	20,00%	80,00%	33,33%	16,67%	50,00%	16,67%	16,67%

9.3.3 Survey results – Textile details

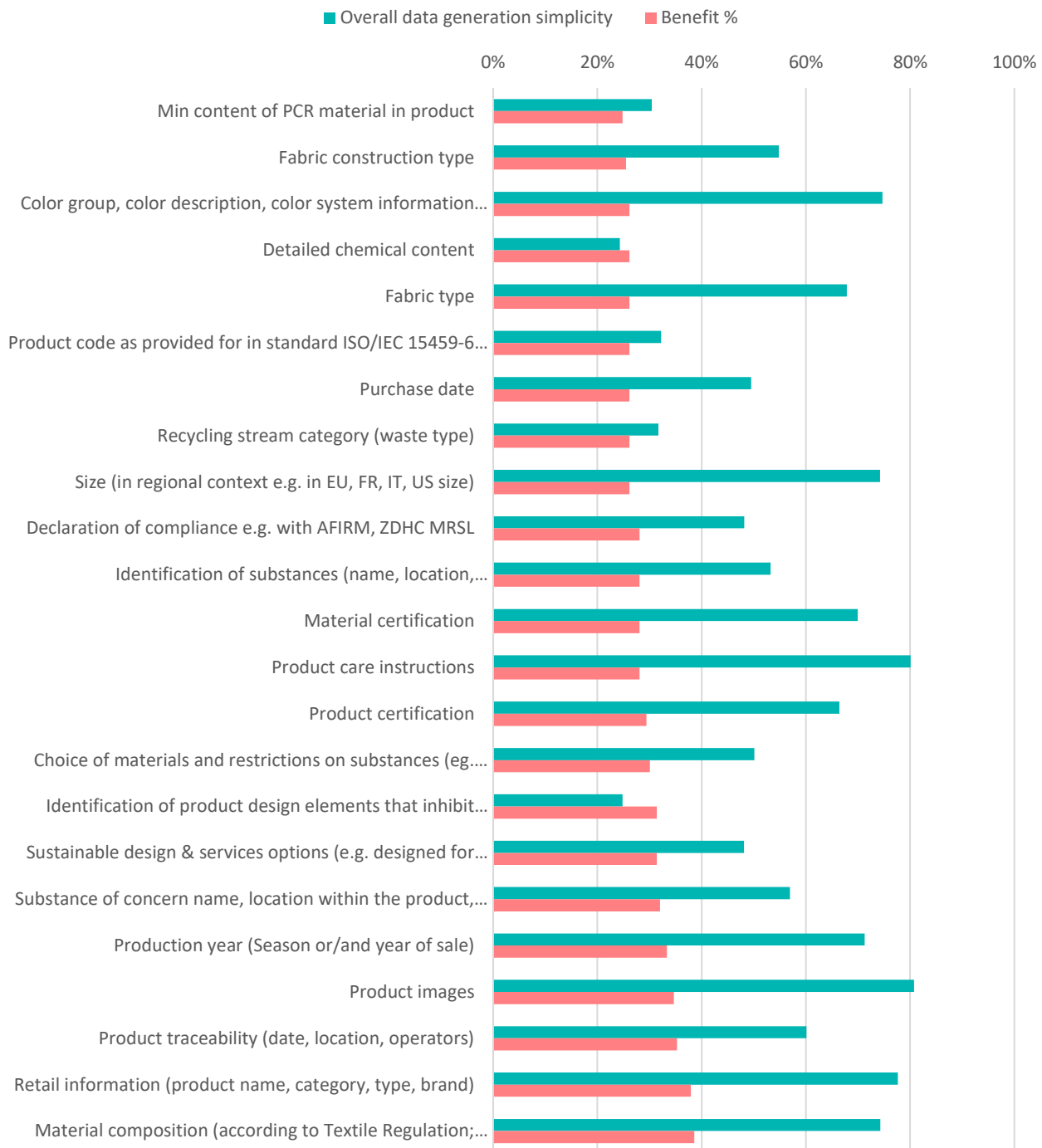
Textile stakeholder - Benefit vs effort



Textile stakeholder - Benefit vs effort



Textile stakeholder - Benefit vs effort



9.3.4 Survey results – Textile raw data

Data user		
Information category	Benefit	Availability
Certification and label	66,52%	50,03%
Company Identification	50,10%	36,04%
Durability	45,77%	21,33%
Functional and technical specifications	56,44%	59,52%
Generation of waste	48,75%	22,00%
Lightweight design	50,00%	50,00%
Material information	55,72%	41,58%

Product design and service information	63,43%	41,10%
Product energy and resource efficiency	47,75%	16,93%
Product identification	58,56%	48,81%
Recyclability	57,90%	23,76%
Recycled content	59,62%	35,42%
Sustainable sourcing	54,90%	38,33%
Usage information	49,95%	21,40%

Data provider								
Information category	Availability	Generation	Autonomy	Effort	Retail, brands	End-user, consumer	Repair, reuse, refurbishment & remanufacturing	Collection, sorting, recycling
Certification and label	73,39%	30,73%	11,12%	24,89%	37,86%	36,26%	15,08%	10,79%
Company Identification	63,45%	71,37%	51,45%	53,06%	49,49%	25,87%	10,81%	13,84%
Durability	37,34%	29,44%	50,18%	30,58%	20,35%	38,52%	29,45%	11,68%
Functional and technical specifications	90,28%	56,06%	79,72%	66,69%	36,69%	32,97%	15,21%	14,05%
Generation of waste	18,43%	30,95%	17,15%	18,26%	20,46%	47,73%	22,73%	9,09%
Lightweight design	73,68%	31,25%	68,75%	40,00%	56,52%	21,74%	0,00%	21,74%
Material information	67,99%	53,57%	34,71%	42,79%	28,47%	20,95%	23,60%	26,98%
Product design and service information	65,28%	34,26%	74,61%	40,81%	21,69%	35,25%	20,71%	5,44%
Product energy and resource efficiency	30,78%	32,26%	14,62%	6,42%	50,36%	49,64%	0,00%	0,00%
Product identification	77,16%	58,45%	71,93%	53,11%	37,46%	25,72%	20,70%	15,95%
Recyclability	31,31%	46,63%	33,48%	15,40%	14,52%	31,49%	18,66%	34,08%
Recycled content	44,44%	25,00%	12,50%	16,67%	29,34%	27,99%	14,65%	28,03%
Sustainable sourcing	36,67%	34,35%	26,21%	20,76%	42,28%	45,17%	4,69%	7,87%
Usage information	51,43%	53,46%	55,94%	44,90%	21,83%	30,09%	29,42%	18,66%

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling	Subquestion
Energy consumption associated to the washing and drying operations of a clothing item	10,53%	89,47%	80,00%	20,00%	83,33%	16,67%	80,00%	20,00%	0,00%	81,11%	27,08%	43,75%	18,75%	0,00%	Q30#1 - Is the information already available?
Disassembly related to skill level	14,29%	85,71%	20,00%	80,00%	5,26%	94,74%	6,67%	6,67%	86,67%	10,64%	8,00%	32,00%	20,00%	40,00%	Q26#1 - Is the information already available?
Reparability scoring index/label	14,29%	85,71%	21,43%	78,57%	5,56%	94,44%	6,25%	12,50%	81,25%	11,08%	26,47%	11,76%	23,53%	38,24%	Q29#1 - Is the information already available?
Traceability of materials across the supply chain applicable to different intermediated product groups (limited to the intermediate products (incl, chemicals) and ceramic products),	15,00%	85,00%	21,43%	78,57%	6,67%	93,33%	6,25%	12,50%	81,25%	11,45%	17,50%	20,00%	20,00%	35,00%	Q26#1 - Is the information already available?
Energy consumption associated to the washing and drying operations of a clothing item	15,79%	84,21%	22,22%	77,78%	8,33%	91,67%	6,25%	12,50%	81,25%	12,27%	15,15%	36,36%	15,15%	33,33%	Q27#1 - Is the information already available?
Possible lifetime of the textile or footwear	19,05%	80,95%	25,00%	75,00%	8,33%	91,67%	6,67%	13,33%	80,00%	13,33%	19,57%	28,26%	19,57%	32,61%	Q26#1 - Is the information already available?
Condition for the access to product data relevant for the the recycling, including dismantling information	20,00%	80,00%	25,00%	75,00%	8,33%	91,67%	22,22%	11,11%	66,67%	18,52%	20,00%	27,50%	20,00%	32,50%	Q28#1 - Is the information already available?
Ability to separate the product into different materials	23,81%	76,19%	26,67%	73,33%	9,09%	90,91%	31,25%	6,25%	62,50%	22,34%	24,14%	17,24%	27,59%	31,03%	Q32#1 - Is the information already available?
GHG emissions associated to the washing and drying operations of a clothing item	23,81%	76,19%	25,00%	75,00%	8,33%	91,67%	13,33%	20,00%	66,67%	15,55%	6,90%	44,83%	17,24%	31,03%	Q28#1 - Is the information already available?
Modularity, transformability, detachable/adjustable elements	25,00%	75,00%	27,27%	72,73%	16,67%	83,33%	14,29%	28,57%	57,14%	19,41%	31,25%	15,63%	25,00%	28,13%	Q26#1 - Is the information already available?
Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)	25,00%	75,00%	27,27%	72,73%	16,67%	83,33%	8,33%	33,33%	58,33%	17,42%	22,92%	20,83%	27,08%	29,17%	Q29#1 - Is the information already available?
Social attributes of materials and products	25,00%	75,00%	27,27%	72,73%	14,29%	85,71%	33,33%	8,33%	58,33%	24,96%	29,73%	27,03%	13,51%	29,73%	Q28#1 - Is the information already available?

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling	Subquestion
Possible release of non-biodegradable microplastics	26,32%	73,68%	27,78%	72,22%	16,67%	83,33%	35,71%	14,29%	50,00%	26,72%	16,67%	36,11%	19,44%	27,78%	Q32#1 - Is the information already available?
Detailed chemical content	28,57%	71,43%	28,57%	71,43%	20,00%	80,00%	20,00%	30,00%	50,00%	22,86%	28,95%	28,95%	15,79%	26,32%	Q26#1 - Is the information already available?
How to manage the textile or footwear at the end of its lifetime	28,57%	71,43%	28,57%	71,43%	21,43%	78,57%	20,00%	30,00%	50,00%	23,33%	28,21%	20,51%	25,64%	25,64%	Q22#1 - Is the information already available?
Recyclability scoring label (in terms of recycled cotton, wool, polyester, rubber or viscose (depnding on the product-specific composition))	28,57%	71,43%	28,57%	71,43%	18,75%	81,25%	33,33%	16,67%	50,00%	26,88%	28,57%	24,49%	20,41%	26,53%	Q32#1 - Is the information already available?
Spare part delivery time	28,57%	71,43%	30,00%	70,00%	21,43%	78,57%	16,67%	33,33%	50,00%	22,70%	30,23%	23,26%	20,93%	25,58%	Q29#1 - Is the information already available?
Identification of product design elements that inhibit circularity (e.g. prints harder to recycle)	30,43%	69,57%	30,77%	69,23%	21,43%	78,57%	16,67%	33,33%	50,00%	22,96%	35,00%	15,00%	25,00%	25,00%	Q26#1 - Is the information already available?
Energy consumption associated to the production of a clothing item	33,33%	66,67%	31,25%	68,75%	26,67%	73,33%	12,50%	37,50%	50,00%	23,47%	23,73%	28,81%	23,73%	23,73%	Q29#1 - Is the information already available?
Water consumption during production	33,33%	66,67%	31%	69%	26,67%	73,33%	21,05%	31,58%	47,37%	26,32%	26,39%	22,22%	26,39%	23,61%	Q29#1 - Is the information already available?
Unique operator identifiers other than that of the manufacturer	34,78%	65,22%	33,33%	66,67%	27,27%	72,73%	29,41%	23,53%	47,06%	30,00%	34,88%	23,26%	18,60%	23,26%	Q25#1 - Is the information already available?
Recycling stream category (waste type)	37,50%	62,50%	33,33%	66,67%	29,41%	70,59%	26,67%	26,67%	46,67%	29,80%	30,00%	20,00%	27,50%	22,50%	Q26#1 - Is the information already available?
Unique facility identifiers with standardized and > 1 location identifier aside outside of ISO/IEC 15459-6, e.g. Open supply Hub ID, GTS ID, etc.	40,91%	59,09%	33,33%	66,67%	31,25%	68,75%	27,27%	27,27%	45,45%	30,62%	41,67%	25,00%	11,11%	22,22%	Q27#1 - Is the information already available?
Product code as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts;	44,00%	56,00%	33,33%	66,67%	33,33%	66,67%	18,18%	36,36%	45,45%	28,28%	33,33%	25,93%	18,52%	22,22%	Q27#1 - Is the information already available?
Min content of PCR material in packaging	44,44%	55,56%	33,33%	66,67%	33,33%	66,67%	9,09%	45,45%	45,45%	25,25%	57%	22%	0%	22%	Q26#1 - Is the information already available?

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling	Subquestion
Min content of PCR material in product	44,44%	55,56%	35,71%	64,29%	33,33%	66,67%	8,33%	50,00%	41,67%	25,79%	42,11%	21,05%	15,79%	21,05%	Q27_1#1 - Is the information already available?
Condition / quality at the end of each use cycle (for recommerce)	47,62%	52,38%	36,36%	63,64%	38,89%	61,11%	46,15%	15,38%	38,46%	40,47%	38,10%	33,33%	9,52%	19,05%	Q29#1 - Is the information already available?
GHG emissions associated to production of a clothing item	47,62%	52,38%	36,36%	63,64%	35,71%	64,29%	40%	20%	40%	37,36%	20,59%	29,41%	29,41%	20,59%	Q27#1 - Is the information already available?
Resistance to stress or aging mechanism (e.g. washing cycles)	47,62%	52,38%	36,36%	63,64%	37,50%	62,50%	34,78%	26,09%	39,13%	36,21%	25,00%	27,50%	27,50%	20,00%	Q23#1 - Is the information already available?
Spare part availability	47,62%	52,38%	36,36%	63,64%	37,50%	62,50%	26,67%	33,33%	40,00%	33,51%	20,00%	28,57%	31,43%	20,00%	Q26#1 - Is the information already available?
Use /washing cycles	47,62%	52,38%	36,84%	63,16%	42,86%	57,14%	27,27%	36,36%	36,36%	35,66%	21,88%	34,38%	25,00%	18,75%	Q29#1 - Is the information already available?
Availability of repair information and maintenance instructions (e.g. disassembly instructions, necessary tools)	52,38%	47,62%	37,50%	62,50%	45,45%	54,55%	27,27%	36,36%	36,36%	36,74%	33,33%	21,57%	27,45%	17,65%	Q32#1 - Is the information already available?
Date of repair / reuse	52,38%	47,62%	38,46%	61,54%	46,15%	53,85%	50,00%	14,29%	35,71%	44,87%	50,00%	20,00%	13,33%	16,67%	Downstream info#1 - Is the information already available?
Exchanged parts	52,38%	47,62%	37,50%	62,50%	45,45%	54,55%	27,27%	36,36%	36,36%	36,74%	37,50%	30,00%	15,00%	17,50%	Q22#1 - Is the information already available?
Supply chain / chain of custody certification	52,63%	47,37%	40,00%	60,00%	46,15%	53,85%	35,71%	28,57%	35,71%	40,62%	20,00%	32,00%	32,00%	16,00%	Q29#1 - Is the information already available?
Fiber composition and characteristics (tensile strenght, length, etc.)	54,17%	45,83%	43,75%	56,25%	46,67%	53,33%	29,41%	35,29%	35,29%	39,94%	52,63%	21,05%	10,53%	15,79%	Q32#1 - Is the information already available?
Min. durability of function (e.g. repellence, colour fastness)	57,14%	42,86%	45,45%	54,55%	46,67%	53,33%	46,67%	20,00%	33,33%	46,26%	20,00%	37,14%	28,57%	14,29%	Q22#1 - Is the information already available?
Purchase date	57,14%	42,86%	47,06%	52,94%	47,06%	52,94%	46,67%	20,00%	33,33%	46,93%	32,56%	32,56%	20,93%	13,95%	Downstream info#1 - Is the information already available?
Product seals/labels without certificates e.g. Sustainable Apparel Coalition member	57,89%	42,11%	47,06%	52,94%	50,00%	50,00%	22,22%	44,44%	33,33%	39,76%	34,48%	29,31%	22,41%	13,79%	Downstream info#1 - Is the information already available?

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling	Subquestion
Identification of substances (name, location, concentration) according to other lists e.g. AFIRM, ZDHC MRSL	59,09%	40,91%	47,62%	52,38%	50,00%	50,00%	56,25%	12,50%	31,25%	51,29%	33,33%	35,56%	17,78%	13,33%	Q29_1#1 - Is the information already available?
Choice of materials and restrictions on substances (eg. Combination of fibers, flame retardants))	61,90%	38,10%	50,00%	50,00%	50,00%	50,00%	38,46%	30,77%	30,77%	46,15%	56,52%	13,04%	17,39%	13,04%	Q22#1 - Is the information already available?
Declaration of compliance e.g. with AFIRM, ZDHC MRSL	61,90%	38,10%	50,00%	50,00%	50,00%	50,00%	30,77%	38,46%	30,77%	43,59%	50,00%	25,00%	12,50%	12,50%	Q22#1 - Is the information already available?
Sustainable design & services options (e.g. designed for repair, reuse, recycling ... R-Strategies)	62,50%	37,50%	50,00%	50,00%	50,00%	50,00%	30,00%	40,00%	30,00%	43,33%	16,67%	41,67%	30,56%	11,11%	Downstream info#1 - Is the information already available?
Information related to the manufacturer, such as its unique operator identifier with standardized and > 1 Product identifier aside outside of ISO/IEC 15459-6, e.g. Open supply Hub ID, D-U-N-S number, GTS ID, etc.	65,38%	34,62%	50,00%	50,00%	52,17%	47,83%	40,00%	33,33%	26,67%	47,39%	21,43%	39,29%	28,57%	10,71%	Downstream info#1 - Is the information already available?
Social attributes related to facilities	70,00%	30,00%	52,00%	48,00%	52,94%	47,06%	58,33%	16,67%	25,00%	54,42%	17,24%	37,93%	34,48%	10,34%	Q24#1 - Is the information already available?
Individual or proprietary company ID (e.g. GS1 GLN, IEC 61406, SKU ID, OAR ID, GTS-ID, UUID, DNV)	71,43%	28,57%	52,63%	47,37%	52,94%	47,06%	12,50%	62,50%	25,00%	39,36%	41,38%	34,48%	13,79%	10,34%	Q24#1 - Is the information already available?
Product traceability (date, location, operators)	71,43%	28,57%	53,85%	46,15%	53,33%	46,67%	61,90%	14,29%	23,81%	56,36%	38,71%	38,71%	12,90%	9,68%	Q26#1 - Is the information already available?
Name, contact details and unique operator identifier code of the economic operator established in the Union responsible for EU declaration of conformity	72,73%	27,27%	53,85%	46,15%	53,85%	46,15%	52,94%	23,53%	23,53%	53,55%	37,74%	35,85%	16,98%	9,43%	Q27#1 - Is the information already available?
Relevant commodity codes, such as a TARIC code as defined in Council Regulation (EEC) No 2658/871	73,08%	26,92%	54,55%	45,45%	54,55%	45,45%	38,46%	38,46%	23,08%	49,19%	18,18%	54,55%	18,18%	9,09%	Q26#1 - Is the information already available?

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling	Subquestion
Lightweight design	74%	26%	54,55%	45,45%	54,55%	45,45%	30,77%	46,15%	23,08%	46,62%	22,73%	40,91%	27,28%	9,09%	Q27#1 - Is the information already available?
Substance of concern name, location within the product, concentration at the level of the product, main components or spare parts (according to REACH Regulation)	73,91%	26,09%	54,55%	45,45%	56,52%	43,48%	42,86%	35,71%	21,43%	51,31%	52,17%	34,78%	4,35%	8,70%	Q29_1#1 - Is the information already available?
Yarn type	73,91%	26,09%	54,55%	45,45%	57,14%	42,86%	35,71%	42,86%	21,43%	49,13%	20,69%	29,31%	24,14%	8,62%	Q29_1#1 - Is the information already available?
Recommended sales price of product	74,07%	25,93%	55,00%	45,00%	58,33%	41,67%	35,71%	42,86%	21,43%	49,68%	50,00%	33,33%	8,33%	8,33%	Q29#1 - Is the information already available?
Fabric construction type	75,00%	25,00%	55,56%	44,44%	60,00%	40,00%	28,57%	50,00%	21,43%	48,04%	20,00%	40,00%	32,00%	8,00%	Q23#1 - Is the information already available?
Number of materials and components used	76,19%	23,81%	55,56%	44,44%	60,00%	40,00%	52,63%	26,32%	21,05%	56,06%	17,31%	32,69%	19,23%	7,69%	Q23#1 - Is the information already available?
Unique product identifier at the level indicated in the applicable delegated act (e.g. serial number on item level)	80,00%	20,00%	55,56%	44,44%	61,54%	38,46%	52,38%	28,57%	19,05%	56,49%	43,33%	40,00%	10,00%	6,67%	Q22#1 - Is the information already available?
Factory / facility certification	84,21%	15,79%	58,33%	41,67%	61,54%	38,46%	50,00%	31,25%	18,75%	56,62%	40,91%	50,00%	4,55%	4,55%	Q22#1 - Is the information already available?
Product certification	84,21%	15,79%	58,82%	41,18%	64,29%	35,71%	58,33%	25,00%	16,67%	60,48%	19,23%	42,31%	34,62%	3,85%	Q30#1 - Is the information already available?
Production year (Season or/and year of sale)	85,19%	14,81%	61,11%	38,89%	69%	31%	70,00%	15,00%	15,00%	66,62%	17,24%	48,28%	31,03%	3,45%	Q27_1#1 - Is the information already available?
Fabric type	87,50%	12,50%	63,64%	36,36%	76,47%	23,53%	43,75%	43,75%	12,50%	61,29%	26,47%	41,18%	29,41%	2,94%	Q22#1 - Is the information already available?
Product weight (without packaging)	87,50%	12,50%	62,50%	37,50%	72,73%	27,27%	58,62%	27,59%	13,79%	64,62%	26,47%	41,18%	29,41%	2,94%	Q23#1 - Is the information already available?
Material certification	90,00%	10,00%	65,38%	34,62%	77,27%	22,73%	47,06%	41,18%	11,76%	63,24%	42,86%	42,86%	11,43%	2,86%	Q29_1#1 - Is the information already available?
Color group, color description, color system information (Pantone, Coloro, etc.), numerical color value	91,67%	8,33%	68,18%	31,82%	77,78%	22,22%	61,11%	27,78%	11,11%	69,02%	31,71%	43,90%	19,51%	2,44%	Q23#1 - Is the information already available?

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling	Subquestion
Size (in regional context e.g. in EU, FR, IT, US size)	91,67%	8,33%	69,23%	30,77%	78,95%	21,05%	57,14%	33,33%	9,52%	68,44%	47,06%	52,94%	0,00%	0,00%	Q23#1 - Is the information already available?
Retail information (product name, category, type, brand)	93,10%	6,90%	70,00%	30,00%	79,31%	20,69%	68,18%	22,73%	9,09%	72,50%	47,37%	52,63%	0,00%	0,00%	Q22#1 - Is the information already available?
Information related to the importer, name, registered trade name or registered trade mark and the postal address, EORI number	95,45%	4,55%	71,43%	28,57%	80,77%	19,23%	47,83%	43,48%	8,70%	66,68%	52,63%	47,37%	0,00%	0,00%	Q29_1#1 - Is the information already available?
Product care instructions	95,83%	4,17%	72,73%	27,27%	80,95%	19,05%	70,83%	20,83%	8,33%	74,84%	52,38%	47,62%	0,00%	0,00%	Q27_1#1 - Is the information already available?
Material composition (according to Textile Regulation; identification of materials above 15-5% content)	96,00%	4,00%	76,47%	23,53%	80,95%	19,05%	43,75%	50,00%	6,25%	67,06%	52,38%	47,62%	0,00%	0,00%	Q22#1 - Is the information already available?
Product images	96,43%	3,57%	76,67%	23,33%	81,82%	18,18%	68,18%	27,27%	4,55%	75,56%	47,83%	52,17%	0,00%	0,00%	Q22#1 - Is the information already available?
Energy consumption associated to the washing and drying operations of a clothing item	10,53%	89,47%	80,00%	20,00%	83,33%	16,67%	80,00%	20,00%	0,00%	81,11%	27,08%	43,75%	18,75%	0,00%	Q30#1 - Is the information already available?
Disassembly related to skill level	14,29%	85,71%	20,00%	80,00%	5,26%	94,74%	6,67%	6,67%	86,67%	10,64%	8,00%	32,00%	20,00%	40,00%	Q26#1 - Is the information already available?
Reparability scoring index/label	14,29%	85,71%	21,43%	78,57%	5,56%	94,44%	6,25%	12,50%	81,25%	11,08%	26,47%	11,76%	23,53%	38,24%	Q29#1 - Is the information already available?
Traceability of materials across the supply chain applicable to different intermediated product groups (limited to the intermediate products (incl. chemicals) and ceramic products),	15,00%	85,00%	21,43%	78,57%	6,67%	93,33%	6,25%	12,50%	81,25%	11,45%	17,50%	20,00%	20,00%	35,00%	Q26#1 - Is the information already available?
Energy consumption associated to the washing and drying operations of a clothing item	15,79%	84,21%	22,22%	77,78%	8,33%	91,67%	6,25%	12,50%	81,25%	12,27%	15,15%	36,36%	15,15%	33,33%	Q27#1 - Is the information already available?
Possible lifetime of the textile or footwear	19,05%	80,95%	25,00%	75,00%	8,33%	91,67%	6,67%	13,33%	80,00%	13,33%	19,57%	28,26%	19,57%	32,61%	Q26#1 - Is the information already available?

Category	Availability	Q1 - No	Q2 - Automated	Q2 - Manual	Q3 - Generate Myself	Q3 - Gather from others	Q4 - 1	Q4 - 2	Q4 - 3	Overall generation simplicity	Q5 - Retail, brands	Q5 - End-user, consumer	Q5 - Repair, reuse, refurbishing, remanufacturing	Q5 - Collection, sorting, recycling	Subquestion
Condition for the access to product data relevant for the the recycling, including dismantling information	20,00%	80,00%	25,00%	75,00%	8,33%	91,67%	22,22%	11,11%	66,67%	18,52%	20,00%	27,50%	20,00%	32,50%	Q28#1 - Is the information already available?
Ability to separate the product into different materials	23,81%	76,19%	26,67%	73,33%	9,09%	90,91%	31,25%	6,25%	62,50%	22,34%	24,14%	17,24%	27,59%	31,03%	Q32#1 - Is the information already available?
GHG emissions associated to the washing and drying operations of a clothing item	23,81%	76,19%	25,00%	75,00%	8,33%	91,67%	13,33%	20,00%	66,67%	15,55%	6,90%	44,83%	17,24%	31,03%	Q28#1 - Is the information already available?
Modularity, transformability, detachable/adjustable elements	25,00%	75,00%	27,27%	72,73%	16,67%	83,33%	14,29%	28,57%	57,14%	19,41%	31,25%	15,63%	25,00%	28,13%	Q26#1 - Is the information already available?
Recyclability information (pictogram for product disposal, guidance about dismantling and disposal)	25,00%	75,00%	27,27%	72,73%	16,67%	83,33%	8,33%	33,33%	58,33%	17,42%	22,92%	20,83%	27,08%	29,17%	Q29#1 - Is the information already available?
Social attributes of materials and products	25,00%	75,00%	27,27%	72,73%	14,29%	85,71%	33,33%	8,33%	58,33%	24,96%	29,73%	27,03%	13,51%	29,73%	Q28#1 - Is the information already available?
Possible release of non-biodegradable microplastics	26,32%	73,68%	27,78%	72,22%	16,67%	83,33%	35,71%	14,29%	50,00%	26,72%	16,67%	36,11%	19,44%	27,78%	Q32#1 - Is the information already available?
Detailed chemical content	28,57%	71,43%	28,57%	71,43%	20,00%	80,00%	20,00%	30,00%	50,00%	22,86%	28,95%	28,95%	15,79%	26,32%	Q26#1 - Is the information already available?

9.3.5 Survey results - Battery

<u>Data user</u>		
<u>Information category</u>	<u>Availability</u>	<u>Benefit</u>
Circularity information	0,00%	100,00%
Functional and technical specifications	0,00%	100,00%
General information	42,86%	100,00%
Material information	0,00%	100,00%
Product design	0,00%	100,00%
Repair history	0,00%	100,00%
Usage history	0,00%	14,29%

<u>Information category</u>	<u>Availability</u>	<u>Generation</u>	<u>Autonomy</u>	<u>Effort</u>	<u>Retail, brand s</u>	<u>End-user, consumer</u>	<u>Repair, reuse, refurbishment, remanufacturing</u>	<u>Collection, sorting, recycling</u>
Circularity information	66,67%	36,11%	63,89%	61,11%	19,33%	5,36%	23,97%	51,35%
Functional and technical specifications	60,00%	70,00%	50,00%	30,00%	16,67%	16,67%	8,33%	58,33%
General information	57,14%	80,95%	23,81%	85,71%	25,86%	25,86%	22,42%	25,86%
Information coming from usage, repair, recycling	42,86%	78,57%	7,14%	50,00%	0,00%	11,90%	25,00%	63,10%
Material information	55,56%	41,67%	8,33%	50,00%	0,00%	2,56%	35,90%	61,54%
Product design	66,67%	83,33%	16,67%	83,33%	0,00%	0,00%	47,83%	52,17%

