Recycling Rate: Key Indicator for the Circular Economy and Sustainable Procurement

The recycling rate describes the proportion of a material, product or waste stream that is returned to the value creation cycle. For buyers and supply chain managers, it is a key indicator for measurably meeting sustainability requirements, statutory provisions and customer demands. In practice, it influences material selection, supplier selection and product costing alike.

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Key facts at a glance

01 The recycling rate relates recovered quantities to the total material quantities generated.

02 In practice, a distinction is made between input recycling rate (secondary material in procurement) and output recycling rate (recovery at end of product life).

03 European regulations typically set target rates between 50% and 85% depending on the waste stream and product category.

04 The indicator is an important component of ESG reporting and supplier evaluation.

05 Higher recycling rates can improve price stability, as they reduce dependence on primary raw materials and thus on raw material surcharges.

Definition: Recycling Rate

The recycling rate is the key indicator for the proportion of recycled or reused quantities relative to the total quantity of a material, product or waste stream. It is usually expressed as a percentage and forms the basis for sustainability targets in production and procurement.

Calculation Logic

In its simplest form, the following applies: recycling rate = recovered quantity / total throughput quantity

× 100%. Crucial is the clean delimitation of which material streams are included and whether energy recovery (e.g. incineration with energy recovery) is taken into account. Many companies record material recycling and energy recovery separately, as customers and auditors often only recognise the material rate as genuine recycling performance.

Input and Output Perspectives

The input recycling rate describes what proportion of the purchased materials consists of secondary raw materials, e.g. recyclate content in plastics or scrap additions in steel. The output recycling rate, in contrast, measures how much of the waste and product residues generated on site is actually recovered. Both perspectives complement each other and should be reported separately in supplier evaluation.

Legal and Regulatory Framework

Recycling rates in Europe are no longer a voluntary KPI topic but are increasingly regulated. Buyers should know the relevant requirements for their product category in order to identify compliance risks in the supply chain at an early stage.

European Requirements

Various EU directives and regulations establish minimum recovery and recycling rates, for example for packaging, batteries, waste electrical equipment and vehicles. The specific target values differ depending on the material stream; in practice, they frequently lie between 50% and 85%. What matters most for buyers is that such requirements are cascaded along the supply chain.

Reporting Obligations and Customer Requirements

In addition to statutory sources, OEM customers increasingly require evidence of recyclate contents and recovery rates as part of supplier audits and ESG reports. The documented inspection instruction for incoming materials may also include recyclate content as an inspection characteristic. Without reliable material flows and documentation, a statement to customers is hardly defensible.

Relevance for Tenders

In tenders, recycling targets can be embedded as a technical requirement or evaluation criterion, for example in combination with a Request for Quote (RFQ) in which secondary material shares are explicitly requested. This makes qualitative differences between providers comparable. Precise wording is important so that the rate is not embellished with dubious calculations.

Methods for Recording and Improving the Recycling Rate

A reliable recycling rate requires systematic data management. Buyers and sustainability managers should define collection routes jointly with plant and quality management.

Data Sources and Material Flows

Typical data sources include waste documentation, weighing protocols, delivery notes from recyclers, material master data and supplier declarations on recyclate content. In practice, it has proven effective to first classify material streams broadly and to capture the largest fractions by volume precisely first. Complete material flow management is usually a multi-year project.

Design for Recycling

The rate can be most effectively influenced through product design: mono-material selection, reduced material composites, marking of plastics and avoiding problematic composite materials increase recoverability. Here, supplier innovation contributes directly to the indicator when suppliers bring in recyclable alternatives or secondary materials.

Circular Procurement Models

Alongside the input of secondary material, take-back systems are gaining importance, in which end-of-life products, chips or production residues flow back into the supply chain as recyclable materials. In contract manufacturing and contract processing, residual material agreements can be contractually fixed, e.g. quantity, quality and price provisions for the recycling of process waste.

Important KPIs Related to the Recycling Rate

The recycling rate rarely stands alone. It only unfolds its steering effect in interplay with other indicators that buyers should discuss regularly with suppliers – for example in the context of a Quarterly Business Review (QBR).

Key Indicators at a Glance

In addition to the rate itself, the recyclate content per material, the mono-material collection rate, the scrap and residual material quantity per production unit, and the CO savings from secondary material are relevant. The availability and price differential of primary and secondary material also belong on the dashboard, as they directly influence product costing.

Integration into Supplier Evaluation

Recycling rates can be anchored as a criterion in the supplier portfolio and classified into risk categories: suppliers without transparency on material flows carry a higher compliance and reputational risk. As part of the QBR, target achievement, data quality and improvement measures should be tracked in a structured manner.

Risks and Controls

Anyone who takes recycling rates seriously as a KPI must also manage the risks of distortion and implementation. Typical weak points lie in data quality, grey market practices and volume or

price-related side effects.

Data Quality and Greenwashing

Without independent evidence – for example from the certified recycler or via mass balance systems – the rate remains vulnerable. A stop shipment in the event of missing or contradictory recyclate documentation is a permissible escalation measure in critical categories. Sample audits and material analyses increase robustness.

Price and Contract Aspects

Secondary materials are subject to partly volatile markets; here, price escalation clauses or price indexation to relevant raw material indices can stabilise costing. For residual material sales (e.g. scrap disposal), experienced buyers actively negotiate index linkage and offsetting – classic price negotiation techniques also work in the circular context. The tax and accounting treatment of residual materials should be examined on a case-by-case basis.

Process and Procurement Discipline

Maverick buying undermines recyclate requirements when internal customers purchase outside the approved process. Clear approval paths, binding material lists and a structured supplier longlist with qualified recyclate suppliers help close grey areas. For critical suppliers, a step-in right can contractually secure the takeover of knowledge, tools or manufacturing processes in the event of serious documentation deficiencies.

Current Developments: The Circular Economy as a Procurement Topic

Recycling rates are evolving from an environmental reporting topic into a strategic procurement lever. Drivers are regulation, raw material price volatility and the expectations of end customers and capital providers.

Secondary Raw Materials as a Procurement Category

More and more companies are establishing secondary raw materials as a standalone procurement category with their own suppliers, qualification criteria and pricing mechanisms. Recyclates are subject to their own specifications; quality characteristics such as contamination limits are sometimes treated as special characteristics in the PPAP process where they are safety-relevant.

Digitalisation and Traceability

Digital material flow tracking, supplier databases and automated reporting interfaces facilitate the traceable recording of rates along the supply chain. This also supports product lifecycle management, because recycling data from use and take-back flows back into the development of future generations.

Relevance for Buyers

For buyers, the trend means: recycling expertise is becoming part of procurement qualification. Those who understand secondary material markets, certifications and regulatory target rates can translate requirements from law and sales into concrete supplier requirements – and turn sustainability from a box-ticking exercise into a cost advantage.

Distinction from Related Terms

The recycling rate is frequently confused with adjacent indicators. A clear distinction avoids missteering in target systems and reports.

Recovery and Reuse Rates

The recovery rate also includes energy recovery and is therefore typically higher than the recycling rate. The reuse rate captures solely the repeated use of unaltered products or components, e.g. via remanufacturing or parts marketing.

Recyclate Content

The recyclate content refers to a single material or product and describes how much of it consists of recycled materials. The recycling rate, by contrast, is a process or system indicator. Both figures should be reported separately, as they address different steering levers.

Typical metrics

Metric	Typical value
Recycling rate (material)	> 70% *typical target corridor for production waste in practice*
Recyclate content (input)	10–100% per material *highly dependent on material availability and quality requirements*
Mono-material collection rate	> 95% *measure of data quality in material flow management*
Total recovery rate	> 90% *includes energy recovery, therefore higher than the recycling rate*

Practical Example

A mid-sized machinery manufacturer needed to provide documented recyclate content in the plastic components of its assemblies for an automotive customer. The supplier had no reliable data to date. Within one year, the company established a material flow management system and linked the indicator

to supplier evaluation.

- Recording all plastic and steel streams via weighing protocols and waste documentation with monthly evaluation.
- Incorporating minimum recyclate contents into the RFQ for injection-moulded and steel components, including documentation obligations.
- Agreeing a price escalation clause based on recyclate reference prices to protect product costing against market volatility.
- Anchoring the recycling rate as a standing item in the Quarterly Business Review (QBR) with key suppliers.

Conclusion

The recycling rate is more than an environmental indicator: it combines regulation, raw material risks and supplier management into a measurable steering lever. Buyers should separate the input and output perspectives, define data sources cleanly, and anchor the rate contractually and in evaluations. Those who build up secondary material systematically reduce raw material risks and strengthen their position with customers and auditors. What matters is the robustness of the evidence – impressive rates without documentation tend to cause reputational damage rather than competitive advantage.

Frequently asked questions

? How is the recycling rate calculated?

The basic formula is: recovered quantity divided by total throughput quantity, multiplied by 100. Crucial are the delimitation of the material streams and the question of whether energy recovery is included. In practice, it is advisable to report material recycling and energy recovery separately.

? What is a good value for the recycling rate?

This depends heavily on the material, industry and legal context. For packaging, Europe has target values that frequently range between 50% and 85%, while for production waste, rates above 90% are often targeted in practice. Comparisons with industry benchmarks and the company's own prior-year figures are useful.

? What recycling rate is required by law?

European directives set minimum rates for material streams such as packaging, batteries, electrical equipment and vehicles; the specific values differ depending on the regulatory framework. In addition, national implementing provisions apply. Since requirements change and exceptions are possible, the legal situation should be checked for the specific case.

? What is the difference between recycling rate and recyclate content?

The recyclate content describes the share of secondary material in a specific product or material. The recycling rate, by contrast, is a process metric for a company, a site or a material stream. Both

indicators complement each other and should be reported separately.

? Why is the recycling rate important for buyers?

It fulfils customer and regulatory requirements, reduces the risk from raw material price fluctuations, and feeds into supplier evaluations and ESG reporting. It also opens access to suppliers with circular economy expertise who can deliver technical advantages through supplier innovation approaches.

? How can a company improve its recycling rate?

The most effective levers are mono-material design, separate collection of material streams, partnerships with certified recyclers, and the procurement of secondary material with verifiable documentation. Residual material agreements with suppliers in contract manufacturing and contract processing also measurably increase the rate.

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