rfu Sustainability Rating of Commodities

Methodology Description

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Contents

I. Starting Points

Commodities have long been a blind spot in sustainability investment, but precisely this asset class contains many ESG potentials and risks.

There are many social and environmental challenges associated with commodities, but they are also part of a sustainable future.

The extraction of commodities is usually associated with significant social and environmental risks: e.g. destruction of ecological and social structures through large scale mining projects, clearing for arable land and pastures, precarious working conditions in developing and emerging countries and much more. At the same time, commodities are the basis of social prosperity, without which the provision of important goods, a reliable energy supply or food security would not be possible.

Sustainable (physical) raw materials exist. However, they are not (yet) investable via commodity exchanges.

If a company wants to responsibly procure raw materials in physical form, standards and differentiated offers already exist, for example in the form of organic and regional food, metals based on recycling or energy from renewable sources. For financial investments in commodities, however, only standardised world market products are available via the capital markets, which at first glance severely limits the possibilities for responsible investing. Ultimately, sustainability investment strategies are about avoiding or improving less sustainable options and selecting or promoting better alternatives. Furthermore, for a long time there was a lack of methodological foundations in the form of sound ESG analysis and rating procedures that were practicable for the financial industry.

✶ ESG Opportunities

- changing production technologies (recycling, organic)
- extended life cycles, green applications, …
- critical customers (fair trade, green & social procurement)
- potential source of wealth for developing countries

ESG Risks of Commodities

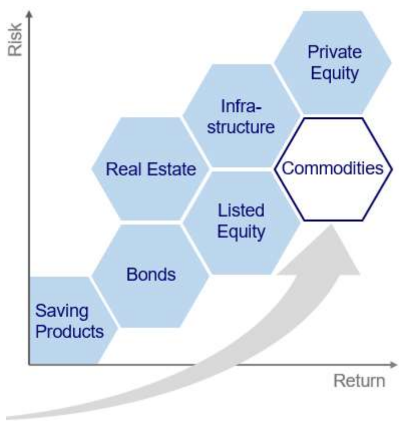
- climate change, extensive land use, loss of biodiversity, destruction of ecosystems and pollution, ...
- low human rights and employment standards, community conflicts, corruption, …
- increasing wealth gap between "North" and "South"

The rfu Commodity Rating fills an important ESG gap in the spectrum of asset classes.

Since the critical discourse on the topic of "food versus fuel" in the wake of the food price crisis in 2008/2009, a number of ex-food commodity strategies have been implemented, but in our view they take too superficial an approach to the multi-layered impacts of commodity production and use. In order to close this methodological gap, rfu research, as an experienced provider of ESG research, decided to expand its coverage to include commodities and thus to fill one of the last ESG gaps in the spectrum of asset classes. The methodology of the rfu Commodity Rating was developed in 2018.

rfu Commodity Rating

Availability of ESG Investments by Asset Classes



II. Basic Structure of the Model

The rfu Commodity Rating comprises the social and the environmental impact over the entire life cycle from production to utilisation.

How can a commodity be analysed from an ESG perspective?

At the beginning, there was the question of how to approach the asset class of commodities methodically, since they follow a different delimitation logic to that of companies or states. Any attempt at a bottom-up assessment by deriving the ESG characteristics of a commodity - e.g. copper or wheat - by aggregating the ESG ratings of all (or at least the largest) companies in the copper industry or wheat farmers and processors is doomed to failure for several reasons: (i) no sufficient ESG coverage in the OTC markets and especially in the small scale sector, (ii) mining and food companies are mostly diversified into several products etc.

In the rfu Commodity Rating, hypothetical "world commodity corporations" are assumed

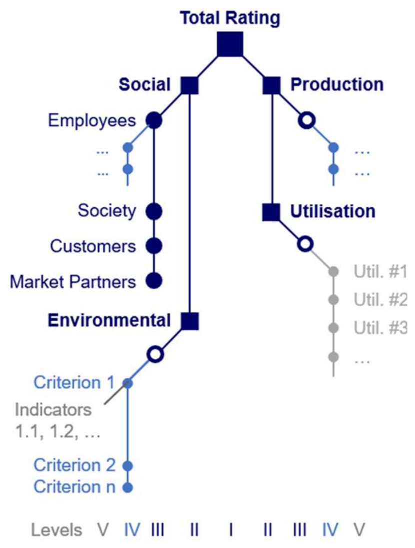
Nevertheless, commodities are produced in corporate structures, and we have therefore developed the conceptual model of a global sole and exclusive manufacturer - in the above examples a hypothetical "World Copper Group" or "Global Wheat Corporation". For this we use the basic structure, the criteria and the weightings of the rfu Corporate Rating, which has been tried and tested on thousands of companies for over two decades.

The model differentiates between the environmental and social dimensions as well as between production and use

The model is structured in such a way that it differentiates between (1) the social and the environmental dimension (corresponds to the left main branch in the adjacent figure) and at the same time (2) differentiates according to the life cycle phases of production and utilisation (in the figure the right main branch). These two branches below the total rating (Level I) represent Level II of the model.

The social dimension itself is in turn broken down into stakeholder groups (Level III): employees, society, customers and market partners (the latter include in particular suppliers and cooperation partners). The concrete criteria (Level IV) and indicators (Level V) are then assigned to these. On the right main branch, the evaluation of the utilisation dimension is derived from the different types of use (#1, #2 etc. in the figure) (Level IV).

Structure & Levels of the rfu Commodity Rating



III. Criteria & Weighting & Rating

The rfu Commodity Rating consists of Sub-Ratings for production and utilisation phase as well as for the social and ecological dimension.

The criteria and weightings of the rfu Commodity Rating

Since the rfu Commodity Rating thinks of commodities as hypothetical companies, essential parts of the model structure, the criteria and the weighting logic are set up parallel to those in the rfu Corporate Rating model. From its broad set of criteria, those relating to performance or products are primarily used in the rfu Commodity Rating. On the other hand, all programmatic and thus company-specific criteria such as ESG strategy and the stakeholder investor are not included.

The weighting factors with which the individual criteria and dimensions are included in the overall rating are also similar to those in the rfu Corporate Model. Metallic raw materials are treated like the "Metals & Mining" industry, for agricultural products the weightings of the "Food & Beverage" industry are underlaid, and for energy sources those of "Primary Energy".

Assessment of a commodity´s production phase via geographic basic impact and commodity-specific bonus and malus points

Significant environmental and social effects of commodities can be found in the production phase: from the exploration and development of raw material sources, through extraction to further processing and refinement. This applies to metals as well as to energy sources or agricultural and forestry products. The precise analysis and assessment of the associated technologies (e.g. mining, use of secondary raw materials, metallurgical processes) and conditions (e.g. with regard to work, human rights, governance) is therefore an important component in the rfu Commodity Model.

The global mix often has a focus on high-risk countries in terms of human rights, working conditions etc.

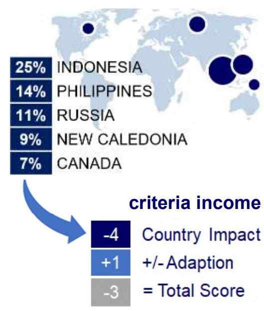
There are close links between the geographical origin of a product on the one hand and social and ecological risks on the other. Commodities are often extracted in regions where labour and human rights standards are low, corruption is widespread and environmental laws are not very demanding. For these criteria, basic impacts are taken from the results of the continuously updated rfu Sovereigns Rating, which covers more than 160 countries and thus practically the entire world.

Commodity-specific information on the respective indicators, which suggest a positive or negative deviation from the initial value, is added to this basic impact. This data comes, for example, from media and NGO reports, statistics from industry associations and international organisations or scientific (meta) studies.

Criteria of the rfu Commodity Rating

The figure shows the criteria of the rfu Commodity Rating along the social and environmental dimensions. Each criterion also receives a secondary assignation to production (light blue in the figure) or to utilisation (light grey).

Example nickel: Countries of origin



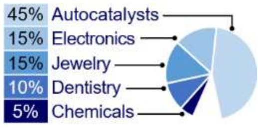
- The basic country impact is significantly negative at -4 due to mining primarily in countries with high poverty ratios and low income.

+ But traditionally strong trade unions in the Ni-industry and lack of major controversies improve the score by +1 to -3.

The application mix determines the sustainability impact of the utilisation phase

However, commodities are not produced as a means to an end in themselves but are ultimately used in the context of products. The analysis and evaluation of the usage phase is therefore at least as important as that of the production phase. The spectrum of utilisation is wide and ranges, e.g. for metals, from general industrial applications, their use in vehicles, medical products or renewable energy production, to luxury goods or applications in the weapons industry. There is also a link to the rfu Corporate Rating for this. This recognises around 90 different subsectors with valuation ranges for the product benefits from a sustainability perspective.

Example palladium: Utilisation Mix



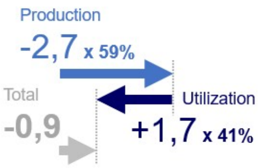
The very diverse utilisation portfolio of palladium comprises socially valuable application (medical), overall neutral ones (e.g. consumer electronics) but also products of lower social usefulness (e.g. jewellery). The result is a weighted total utilisation score of +0.7 (scale +10 to -10).

Production phase ratings are on the negative side of the scale for most commodities. This is not surprising given the invasive processes involved in extracting ores and fossil fuels or in industrial agriculture. On the other hand, there are often applications with very positive social effects (e.g. for solar energy, medical technology, housing or human nutrition).

The production phase is included in the overall result with weightings between 51% and 59%, those of utilisation are in the range of 41% to 49%. On the other hand, the social dimension is weighted between 44% and 53% and the environmental with 47% to 56%. These values are also derived from the rfu Corporate Rating.

Example nickel: aggregation

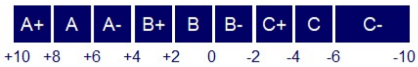
Production Score x Wght .+ /-
Utilisation Score x Wght .
= total score



Weighting and aggregation of the ratings leads to a score of -10 to +10 or a rating of C- to A+

This ultimately results in an overall score on the scale from -10 to +10, transformed into a rating on the nine-point scale from C- to A+. This scale is identical in its characteristics and logic to those in the other rfu Sustainability Rating Methodologies. This means findings can be transferred between all of them.

Scoring & Rating Scale



Additional trends & potentials assessment

Part of the analysis is also a qualitative assessment of the trends and potentials of the individual commodities, which is detached from the actual rating model. This is less to be interpreted in the sense of an outlook but provides a forward-looking statement on the expected or possible contributions of the individual commodity to a sustainable economy. Here, for example, it can be appreciated that some metals currently have a more conventional mix of uses but will play important roles in energy transition in the future.

Example Copper: trends & potentials

From a sustainability perspective, the increasing importance of renewable energy, e-mobility and sanitation makes copper a commodity with a promising future.

IV. Exclusions

The rfu Commodity Rating does not apply any ex-ante exclusions but individual exclusion preferences can be applied.

The assessments also cover commodities with deeply negative impacts

In contrast to the other rfu Sustainability Rating Methodologies, the rfu Commodity Rating Model does not use standardised exclusions. On request certain products such as e.g. agricultural commodities or fossil energy sources can be excluded from an investment universe.

V. Process, Sources & Documentation

Broad range of sources and coverage of >70 commodities from all categories. 2-year update frequency & ISO9001-certified QMS.

Comprehensive data basis from systematic sources

For die analysis several in-depth and comprehensive data is available, such as usage and production statistics, subject-specific studies and lifecycle analyses. Among the most useful sources are international organisations (e.g. UNO, OECD, World Bank) and their sub-organisations. (e.g. ILO, FAO, UNEP, International Energy Agency). Other useful sources: industry and professional associations of the various producers (e.g. World Steel Association, Nickel Institute), NGOs (e.g. World Resources Institute, Oxfam, WWF) and scientific institutions (in particular universities and research institutes), specialist media and general media as well as information by large producers and processing companies of the respective commodities.

Analyses are updated every 2 years

The dynamics of change in the ESG status of commodities is relatively low compared to individual companies and is more likely to be seen in the medium term. The analyses and ratings are therefore periodically updated every two years. Significant events - especially negative ones - are usually taken into account via the risk-oriented and global view, so that the ongoing news flow, for example on environmental accidents or industrial conflicts, is already anticipated. In exceptional cases, however, we reserve the option to update out of turn.

Quality management and ongoing optimisation of the methodology

The research processes at rfu research are subject to a quality management system certified according to ISO 9001. Corresponding process descriptions, quality indicators and continuous improvement processes (CIP) exist for commodity research. At the methodology level, this includes the ongoing collection of experiences and feedback and regular optimisation of the methodology. Here, however, the principle of continuity is paramount so that historical rating time series remain comparable.

qualityaustria SYSTEM CERTIFIED ISO 9001:2015

Coverage of over 70 metals, energy sources, forest and agricultural commodities etc.

The coverage included 15 important metals and energy products in the first analysis run in 2018/2019. In 2020, coverage was expanded to over 30 products including agricultural commodities and to 55 in 2022 including lumber, pulp and emission allowances. The current universe comprises about 70 commodities and a tool for the evaluation of specific futures on electricity.

rfu research aims to continuously expand the coverage to include important commodities. In the future, a growing supply of commodity contracts with explicit ESG properties can be expected.

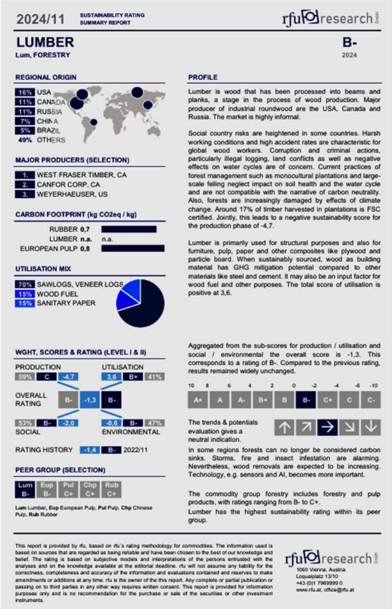
Coverage

+++ GOLD + GOLD LBMA + SILVER + SILVER LBMA + PLATINUM + ALUMINUM + COPPER + LEAD + NICKEL + TIN + IRON ORE + STEEL + STEEL SCRAP + PALLADIUM + ZINC + TUNGSTEN + MOLYBDENUM + LITHIUM + COBALT + NEODYMIUM + REC + EEX + ETHANOL + BIODIESEL + RENEWABLE DIESEL + HYDROGEN + COAL + CRUDE OIL + CRUDE OIL BRENT + CRUDE OIL WTI + NATURAL GAS + US NATURAL GAS + HEATING OIL + UNLEADED PETROL + GAS OIL + UK NBP GAS + DUTCH TTF NATURAL GAS + LNG + MILK + LEAN HOGS + FEEDER CATTLE + LIVE CATTLE + CHICKEN + OATS + RICE + CORN + SOY + SOYBEAN MEAL + SOYBEAN OIL + PALMOIL + WHEAT + KANSAS WHEAT + RAPESEED + SUNFLOWER SEEDS + CANOLA + ORANGE JUICE + COTTON + COFFEE + COCOA + SUGAR + RUBBER + LUMBER + PULP + EUROPEAN PULP + CHINESE PULP + EUA + CCA + RGGI +++

Documentation of data and ratings as well as Rating Summaries and Reports

The documentation includes the complete data sets for levels I to IV, consisting of ratings, scores and weightings. Brief descriptions can be found in fact sheets. In-depth information and interpretation is included in comprehensive ratings reports.

Rating Summary



2024/11 SUSTAINABILITY RATING SUMMARY REPORT

rfu research

LUMBER

Lum, FORESTRY

B-

2024

REGIONAL ORIGIN

16% USA
11% CANADA
11% RUSSIA
7% CHINA
5% BRAZIL
49% OTHERS

MAJOR PRODUCERS (SELECTION)

1. WEST FRASER TIMBER, CA
2. CANFOR CORP, CA
3. WEYERHAEUSER, US

CARBON FOOTPRINT (kg CO2eq / kg)

RUBBER **0,7**
LUMBER **n.a.** n.a.
EUROPEAN PULP **0,8**

UTILISATION MIX

70% SAWLOGS, VENEER LOGS
15% WOOD FUEL
15% SANITARY PAPER

WGHT, SCORES & RATING (LEVEL I & II)

PRODUCTION 59% C -4,7
UTILISATION 3,6 B+ 41%
OVERALL RATING B- -1,3 B-
53% B- -2,0 SOCIAL
-0,6 B- 47% ENVIRONMENTAL

RATING HISTORY -1,4 B- 2022/11

PEER GROUP (SELECTION)

Lum B- | Eup B- | Pul C+ | Chp C+ | Rub C+

Lum Lumber, **Eup** European Pulp, **Pul** Pulp, **Chp** Chinese Pulp, **Rub** Rubber

PROFILE

Lumber is wood that has been processed into beams and planks, a stage in the process of wood production. Major producer of industrial roundwood are the USA, Canada and Russia. The market is highly informal.

Social country risks are heightened in some countries. Harsh working conditions and high accident rates are characteristic for global wood workers. Corruption and criminal actions, particularly illegal logging, land conflicts as well as negative effects on water cycles are of concern. Current practices of forest management such as monocultural plantations and large-scale felling neglect impact on soil health and the water cycle and are not compatible with the narrative of carbon neutrality. Also, forests are increasingly damaged by effects of climate change. Around 17% of timber harvested in plantations is FSC certified. Jointly, this leads to a negative sustainability score for the production phase of -4,7.

Lumber is primarily used for structural purposes and also for furniture, pulp, paper and other composites like plywood and particle board. When sustainably sourced, wood as building material has GHG mitigation potential compared to other materials like steel and cement. It may also be an input factor for wood fuel and other purposes. The total score of utilisation is positive at 3,6.

Aggregated from the sub-scores for production / utilisation and social / environmental the overall score is -1,3. This corresponds to a rating of B-. Compared to the previous rating, results remained widely unchanged.

10 8 6 4 2 0 -2 -4 -6 -10
A+ A A- B+ B B- C+ C C-

The trends & potentials evaluation gives a neutral indication.

In some regions forests can no longer be considered carbon sinks. Storms, fire and insect infestation are alarming. Nevertheless, wood removals are expected to be increasing. Technology, e.g. sensors and AI, becomes more important.

The commodity group forestry includes forestry and pulp products, with ratings ranging from B- to C+.
Lumber has the highest sustainability rating within its peer group.

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VI. Regulatory Disclosure

As a small ESG Rating Provider rfu research falls under EU Regulation 2024/3005 article 5, supervised by ESMA.

General information

As a small ESG Rating Provider rfu research falls under EU Regulation 2024/3005 article 5, supervised by European Securities and Markets Authority (ESMA).

rfu research developed the Sustainability Rating Methodologies for the following asset classes: (i) Corporates, (ii) Sovereigns & Sub-Sovereigns and (iii) Commodities. In addition, rfu is applying customer-specific external rating methodologies to third-party portfolios. rfu research offers this service as “rfu Sustainability Portfolio Controlling”.

The rfu Sustainability Rating Methodologies are based on the “three pillar model” of sustainability, consisting of ecological, social and economic dimensions. As for “governance”, it is an overarching theme within the rfu Sustainability Methodologies, not to be separated from the other pillars.

Reviews of methodologies

While some of these methodologies are undergoing a revision at a regular two-year interval, some are reviewed and updated when necessary. There are regular reviews in place with feedback from analysts as well as outside stakeholders and based on regulatory and other external inputs. If a review shows that changes are necessary, a new version of the methodology is drawn up and published online on www.rfu.at.

The name and number of the latest version can be found in the appendix of each rating methodology document.

The rfu Sustainability Rating Methodologies have been tried and some of them have been tested for over two decades. They have been applied a few thousand times. Where applicable, they are based on scientific models from the fields of social, economic and ecological sciences, ethics, etc.

For the specific scientific basis for this methodology see Chapter II.

The mathematical structure behind the rfu Sustainability Rating Methodologies is based on rfu research’s proprietary design. It has been reviewed and optimised over the last years. Any identified or potential shortcomings are addressed by various lines of defence such as four-eye controls, regular feedback sessions as well as a certified quality management.

Quality Management

The robust quality management system for the rfu Sustainability Ratings has been certified under ISO 9001. The processes have been certified under this label since 2019 and are audited externally on an annual basis by Quality Austria.

Basic assumptions

The holistic rating approach applied by rfu research is focused on impacts that the respective entity or item is causing. In addition, some criteria can have also the characteristics of economic risk indicators. In this regard rfu research's robust and holistic approach follows a double materiality perspective and differs from pure ESG risk ratings.

The industry classification used by rfu research is derived from established sector structures and further adapted by rfu research. Sovereign issuers are classified according to their economic development status.

For details on the rfu Sector Structure see Chapter III of the rfu Corporate Rating Methodology.

The rfu Sustainability Methodologies are covering a multitude of external standards. Current regulatory developments are observed and taken into consideration.

Ratings

The ratings issued by rfu research are focused on an entity's or item's current status. If relevant the short-term past and future prospects are included in the analysis.

In most cases, the ratings are considered valid for a two-year period, if no significant changes occur in the interval.

In all rfu Sustainability Models, the individual criteria are assessed on a scale between -10 to +10. Their specific weighting is then included in an overall score. The features of the criteria will, over several levels, be aggregated to one overall rating on a nine-part scale from A+ ("proactive") to C- ("negative"). In case of a restricted amount of data a so-called indicative rating from a to c will be given. The rfu Rating Scale is absolute and not aligned with the best-in-class approach. This means the entirety of the rfu Corporate and Sovereigns ratings is distributed according to a profile similar to a bell curve.

For details see Chapter III.

All ratings issued by rfu research are reflecting the opinion of rfu research.

The rating is based on subjective models and interpretations of the analyst entrusted with the rating. The rating is no recommendation for the purchase or sale of the securities of the rated items or entities.

Under the current regulation, rfu research is required to request that rated entities and users publish a link to the rfu research Rating Methodologies alongside rfu Sustainability Ratings they are making publicly available

Data

For the application of the rfu Sustainability Rating Methodologies the following publicly available data is used: published by the analysed entity (especially in sustainability and annual reports), other publicly available data published e.g. by the media, academics, international organisations, NGOs, industry associations etc. In some cases, rfu research additionally gathers information directly from the analysed entities, e.g. via questionnaires or interviews.

Industry and regional averages are sometimes applied as a basic value which is then adjusted to mirror the individual specifics of a rated entity or item.

For more specifics see Chapter V.

In the course of each rating, the most current data for each entity or item is used. If necessary historical data used is being revised.

The majority of the data is collected from reliable sources (see above). Certain and qualitative information in particular is subject to a plausibility check by the analysts during each rating. Unreliable information or data proven to be wrong is not used in the analysis. In the case of insufficient data the entity or item receives a "No Rating".

Data quality as well as assessments of entities or items are subject to a four-eye principle. The second person involved in the rating process is subject to the same confidentiality requirements as the rating analyst.

As part of rfu research's regular inter-rating-cycle exclusion checks it is determined whether rated entities are in breach of any exclusion criteria. An irregular rating update would occur, if there is new information with potentially significant positive or negative impact on the rating.

Artificial Intelligence

The use of artificial intelligence (AI) at rfu research will always be strictly confined and limited to data extraction. All rfu Sustainability Rating Methodologies will remain based on the principle of an analyst's assessment.

To ensure the data extraction is limited to reliable sources, rfu research has developed its own proprietary AI data extraction tool. It does not generate new information but strictly identifies and extracts data contained within the source materials, thereby eliminating the risk of hallucination.

The rfu AI system has been custom-developed for this purpose and operates autonomously on user-uploaded documents only. To further mitigate residual risks and ensure data reliability, a secondary quality control mechanism is implemented in the form of a confidence level indicator. If the confidence level falls below a predefined threshold, the extracted data must be reviewed, validated and if necessary corrected manually by the analyst. The rfu AI system does not influence analytical judgments or rating outcomes.

Current limitations and risks associated with the use of AI include potential misinterpretation of complex or ambiguous disclosures and variability in document formatting. These risks are mitigated through the described confidence threshold mechanism and mandatory human verification.

Conflicts of Interest

rfu research is carefully considering and monitoring conflicts of interest among its analysts. On an annual basis, each analyst has to sign a statement confirming that any potential conflicts of interest have been disclosed.

rfu research has registered as a small ESG Rating Provider under EU Regulation 2024/3005 Article 5 and supervised by the European Securities and Markets Authority (ESMA).

VII. About rfu research

Austria's specialist for sustainability investment with a focus on niche asset classes and market segments.

rfu research specialises in the assessment of niche asset classes

rfu research, based in Vienna and founded in 1997, is Austria's specialist for sustainability investment. With an experienced team of 13 employees, we support institutional clients in the development and implementation of sustainability-oriented investment strategies.

A particular focus of our work is the coverage of asset classes and market segments for which there has previously been no or only insufficient coverage with sustainability research.

Imprint

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Appendix
Version history

Version 1.3	July 2026 (Regular update and inclusion of regulatory disclosure chapter)
Version 1.2	April 2025 (Extension of coverage)
Version 1.1	November 2024 (Regular update check)
Version 1.0	November 2022