

Contemporary trends on corporate sustainability assessment

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Abstract. The development of corporate sustainability reporting is distinguished by regulation, standardization, harmonization, and rising research interest in assessment opportunities. This study aims to examine contemporary trends in corporate sustainability assessment. A source-clustering method was applied. In conclusion, assessment through external ratings leads to significant differences in measurement methodology and results. Assessment through internal non-rating measurements provides opportunities to achieve different organizational goals. The sustainability disclosures have highlight positive effect on corporate financial performance. Empirical studies on Bulgarian public companies are limited. The issues related to development of sustainability frameworks and standards, the different theories behind sustainability reporting, and the sustainability impact on value creation for different stakeholders were not addressed.

Key words: sustainability, assessment, trends, measurement types, financial indicators.

Received: 15.06.2025

Revised: 21.12.2025

Accepted: 26.12.2025

Published: 31.12.2025

1. Introduction

In recent years, sustainability reporting in business organizations has grown exponentially and has even been noted as a science in its own right (Yang *et al.*, 2021). Contemporary development trends are distinguished by various organizations efforts in the development of frameworks of rules, business consulting on sustainability, various rating assessments, and methods of measuring and evaluating financial effects by sustainability. Since 2016 the Global Reporting Initiative (GRI) introduced sustainability reporting standards. In August 2022, the IFRS Foundation completed consolidation of its International Sustainability Standards Board (ISSB), Value Reporting Foundation (VRF), and Climate Disclosure Standards Board (CDSB). In 2021, the foundation of the VRF merged with the Sustainability Accounting Standards Board (SASB), whose focus is sustainability reporting in the USA, and the International Integrated Reporting Council (IIRC)). European rules are also being updated by updating the Corporate Sustainability Reporting Directive (CSRD) and introducing European Sustainability Reporting Standards (ESRS), developed by the European Financial Reporting Advisory Group (EFRAG). Alongside efforts towards regulation, standardization, and harmonization, there is a growing research interest in sustainability in the scientific literature. An important research area is sustainability measurement and the development of a range of approaches and methods to make assessments as realistic and useful to stakeholders.

This article aims to highlight the main trends (directions) in corporate sustainability assessment based on different scientific methods. To achieve the formulated object, a source clustering method is applied, through which this study subsequently examines 1) the features of determining external sustainability ratings, 2) the features of sustainability assessment in internal corporate ratings, and 3) the impact of sustainability on corporate financial performance.

Due to the limited scope of this article, some aspects of corporate sustainability assessment were not explored. However, the issues related to the development of sustainability frameworks and standards (Atanasov, 2022, 2023), the different theories behind sustainability reporting (Mahajan *et al.*, 2023) and the sustainability impact on the value creation for the different stakeholders have not been addressed.

2. External sustainability ratings

Alongside the development of the sustainability concept, sustainability-related regulatory frameworks and sustainability reporting, sustainability ratings are beginning to be offered by several rating agencies. For some of

them, the methodology initially resembles that applied to the assessment of creditworthiness (credit rating), while agencies specializing in providing sustainability ratings are developed. The group of rating agencies providing sustainability ratings, without claiming to be exhaustive, includes:

- **Bloomberg ESG Rating** – in determining the rating score in the range from 0 to 100 are covered 120 indicators, information from various sources is processed; the rating score is compared with that of other rating agencies. Bloomberg ESG Rating focuses on mid to large market capitalization companies – over \$2 billion (Bloomberg, no date). In determining some of the sustainability indices, Bloomberg collaborated with Morgan Stanley Corporate International (MSCI) ESG Research and Goldman Sachs.
- **EcoVadis** – in determining the rating score, which can be a badge or a medal, 21 indicators are assessed in four groups, and according to the methodology adopted, businesses in certain industries (e.g., tobacco production, arms and ammunition production and trade, coal mining, or coal-fired power generation) cannot be rated. Depending on the score achieved in the assessment (number of points), businesses are awarded a badge or medal, which can be bronze, silver, gold, or platinum. (EcoVadis, no date) according to the points received.
- **Carbon Disclosure Project (CDP)** – the assessment system consists of four levels at which points are awarded, which are converted to a percentage. The organization stated that the CDP is based on the ISSB's international climate standard – IFRS S2, and in March 2025 published a compliance map between CDP and ESRS E1, in collaboration with EFRAG (CDP, no date).
- **S&P Global ESG score** – the rating agency maintains a wide range of sustainability indices, differentiated by markets, organizations, geographic regions, and individual countries. The S&P Global ESG score is constructed through an annual S&P Global Corporate Sustainability Assessment (CSA), in which all surveyed organizations are invited to participate. The scores focus on quantitative indicators, ranging from 0 to 100, and are updated monthly. Scores are awarded at the question level, assessing up to 1 000 key data points against a predefined framework for assessing key sustainability themes (Standard&Poor's, no date a). The Global Industry Classification Standards® (GICS®), developed by S&P Dow Jones Indices and MSCI in 1999, are applied, which classification covers 11 sectors, 25 industry groups, 74 industries, and 163 sub-industries (Standard&Poor's, no date b). S&P Global ESG score calculated according to the S&P Global CSA is the basis on the dynamically adjusted market capitalization-weighted **Dow Jones Sustainability Index (DJSI)** group of indices. The DJSI includes sub-indices across geographies that exclude certain unsustainable activities (Standard&Poor's, no date c).
- **MSCI (Morgan Stanley Corporate International) ESG Research** – the rating agency maintains a significant number of sustainability indices differentiated by market, region, market capitalization and other criteria, applying the GICS® industry classification. A comprehensive sustainability assessment based on a AAA-CCC scale is provided and weekly updated. Monitors 37 key ESG questions across the three main pillars, and 10 themes. Data is collected from a variety of sources, and companies assessed are also invited to participate. The assessments are available via subscription access. MSCI is currently discussing the need to reflect ESG factors in the MSCI GIMI (Global Investable Market Indices) (MSCI, no date).
- **Moody's ESG Solutions (ex Vigeo-Eiris)** – the rating agency measures the extent to which ESG factors impact on the value of the business by applying double materiality. Recent improvements to the applied methodology affect the increasing integration between ESG factors and financial analysis. Valuations covers companies with large market capitalization (Moody's, no date).
- **Sustainalytics ESG Risk Ratings** – companies in 42 industries are assessed, with a rating out of 100 formed from at least 70 indicators for each industry and the individual questions assessed having different relative weighting in the final score. Quantitative and qualitative information is processed, and the set of questions and indicators analysed varies across industries. ESG ratings are categorised as negligible, low, medium, high and severe (Sustainalytics, no date).
- **Thomson Reuters ESG Score** – the determination of a rating score is based on over 400 individual ESG indicators, from which 178 comparable scores are selected and grouped into 10 categories, weighted proportionally to the number of indicators in each category. Information from different sources is processed. The rating is categorised in the range from A+ to D- (Thomson, 2018).
- This cluster of ratings may also include and **LSEG (before Refinitiv) ESG Scores, RepRisk ESG Rating** (the sustainability rating is in the range AAA-D), **FTSE Russell**, **ISS (Institutional Shareholder Services) ESG**, etc. The group can be completed by media rankings of the most sustainable companies: **Corporate Knights Global 100** and **World's most sustainable companies** (on Time Magazine & Statista).

A distinctive feature of sustainability ratings is the participation of the rated organization which is voluntary, by choice (initiative) by rated organization or by invitation from the rating agency. In the predominant majority of cases public sources of information are supplemented by questionnaires related to detailed study of the

indicators analyzed, and often the application of evidence by the rated organization is also required. Significant differences emerge in a number of aspects in the determination of sustainability ratings (indices), making them both complex and difficult to compare. These differences can be highlighted in terms of the following:

Table 1

Differentiation of sustainability ratings

Criteria	Arguments
The industry classification applied	In this aspect, the S&P Global ESG score, Dow Jones Sustainability Index, MSCI ESG Research, and part of Bloomberg ESG Rating apply GICS® (standardized classification), while the others apply individual industry grouping to the organizations assessed.
Scope of the assessment (the number of groups and the number of indicators in each group)	According to this criterion, assessments vary in breadth and depth. Some ESG-ratings providers cover a larger number of groups, and/or a larger number of indicators in each group, while others cover a more limited number on indicators and groups.
The type of information analysed	ESG-ratings that focus on quantitative information are distinguished from those that cover both quantitative and a significant volume of qualitative (non-financial) information.
The relative weight of the indicators assessed	Some ESG-rating providers focus on carbon footprint and/or energy efficiency, while others emphasize labor practices and human rights. This aspect of the methodology applied, together with the type and number of indicators covered in the rating, most significantly influence the final rating score (Berg, Kölbel and Rigobon, 2022).
The research approach applied	Some agencies take a quantitative approach, analysing data from financial statements, sustainability reports, etc., while others take a qualitative approach, conducting interviews and site visits. Almost all disclose the application of artificial intelligence in the processing of client questionnaires.
Scale of rating presentation	Interval (quantitative) or ordinal (categorical rating - AAA-CCC, badge or medal, A+/D-, etc.).
Specialisation of the rating	Some rating assessments are targeted at a certain range of companies (e.g. according to the level of market capitalization, sector or industry affiliation, geographical region, etc.), others are not specialised and are provided to different corporate clients who wish to obtain an ESG rating, which is provided by the respective service provider.
Period of rating update	The different rating assessment are updated at different interval of time – annually, monthly, weekly.

Source: Autor

The differences in the applied methodology are dominant, resulting in different rating scores even when analysing similar indicators from the same sources. As a result, a given public company may receive a different ESG sustainability rating from different providers, which notwithstanding the authority of some rating agencies among institutional investors, makes these rating incomparable for the purpose of ensuring supply chain sustainability. Berg, Kölbel and Rigobon (2022) in their study of some sustainability ratings, find that the difference are due to a fundamental mismatch in the underlying data, which affects how the rating are measured. The authors identify the categories that are most significant in determining the rating and highlight the need for greater transparency in sustainability ratings.

3. Internal unrated assessments

In parallel with the development of the concept of sustainability, a number of methods for its measurement and more active implementation are being developed (introduction of environment friendly production processes, waste reduction, use of recycled materials, implementation of social projects, etc.). The relevance of any method used to quantify (assess) sustainability depends on its ability to provide clear results that are useful for promoting

sustainability in all aspects (environmental, social and governance). In this sense, Nautiyala and Goelb (2021) distinguish between methodological frameworks for measuring sustainability (Table 2) and methods for measuring sustainability, each of which has its own characteristics, limitations and complexity. According to them, each sustainability measurement method should cover: 1) scope and 2) assessment objectives, 3) appropriate sustainability indicators, 4) measurement techniques, 5) interpretation and 6) application of the assessment.

Table 2

Methodological frameworks	
Framework	Concept
Steady-state economy	It is introduced with an objective of effective consumption of resources along with proper allocation of worth produced by growing these resources. It pertains to a balance between growth and environment protection. The important characteristics of steady-state economy are balanced population, per capita consumption and gross domestic product.
Circular economy	It represents an economic system structured with the objectives of reduction in waste and consumption, and formed a closed-loop cycle by focusing on recycling and reusing of resources and tends to lessen the input resources. It introduces a closed economic model in which production of goods and services is done in a sustainable manner.
Ecological footprint	They are the measures of impact of an individual or community on the environment. It is introduced in 1990 and measure the rate at which resources are consumed and waste are generated, and also associated with biologically productive area or biocapacity.

Source: Based on Nautiyala and Goelb, 2021, pp. 30–32.

The measurement methods Nautiyala and Goelb (2021) cover:

- **Life-Cycle assessment** - this approach is among the most popular due to its coverage by the International Organization for Standardization in the ISO 14040-14044 standards. The methodology of the approach focuses on measuring the potential environmental impact of products or processes through their life cycle. It is covered by a number of studies (Camana *et al.*, 2021; Kumar *et al.* 2021; Toniolo, Borsoi and Camana, 2021; Ramírez-Rodríguez, Ormazabal and Jaca, 2024; Subal, Braunschweig and Hellweg, 2024; Taelman *et al.*, 2024).
- **Socioeconomic impact assessment** – used to assess the economic and social impacts of products or processes on a community or society as a whole. It compares socio-economic costs and socio-economic benefits.
- **Strategic environmental assessment** - this strategic environmental assessment method measures the environmental impact of a programme, plan or policy. It is useful in assessing the overall impact along with the social and economic aspects at the decision-making stage. The approach provides opportunities to pre-assess the potential environmental impacts of an activity and ensures effective management at a strategic level.
- **Cost-benefit analysis** - the method is applied at the initial stage of a project to compare it with competing projects. One of its most important features is the possibility for decision makers, through its application, to obtain the best return on investment, measured in monetary units. The analysis is applied in two varieties - economic and social.
- **Travel cost analysis** – often used to value environmental products or services that are difficult to capture in market prices (e.g. national parks, beaches, ecosystems). It is related to the valuation of recreation costs and varies according to the sites visited on individual trips.
- **Social impact assessment** - measures the social effects of projects, plans, policies. Promotes flexible management, especially in unforeseen circumstances (natural disasters, demographic crises, etc.).
- **Contingent valuation method** - this method is related to the valuation of various ecosystems and services that do not have a market value.
- **Hedonic pricing method** - used to quantify different ecosystems and environmental services directly affecting price. It is based on identifying and analysing the characteristics and price of a good/service.
- **Multicriteria analysis** – this is a structured approach to analysing all possible alternatives and preferences simultaneously according to different criteria. The main objectives are specified, the characteristics and indicators are predefined. Among the important features of the method is that the evaluation of indicators depends on a quantitative analysis of different categories of qualitative impacts. Different approaches are used to classify, compare and select the most relevant alternatives in compliance

with the formulated criteria. This group of methods is applied in cases where a single criterion is not relevant or important social and economic impacts cannot be expressed in a monetary measure. This analysis is applied in a number of varieties (Multiattribute Value Theory (MAVT), Weighted Sum Method (WSM), Analytic Hierarchy Process (AHP), Weighted Product Method (WPM), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), Preference Ranking Organization METHod for Enrichment of Evaluations (PROMETHEE), ELimination Et Coix Traduisant la REalite (ELECTRE), VlseKriterijumska Optimizacija i Kompromisno Resenje (VIKOR), COMplex PROportional ASsessment (COPRAS), etc. (Angelo, 2021; Dias, 2021; Khan, 2021)). In the approaches above, a dominant application of optimization mathematical models stands out, where the direction of action of the analyzed variables is often divergent (in some it is advisable to maximize the value and in others to minimize it). This makes them particularly attractive in improving organizational sustainability and measuring the sustainability of current or potential business partners and ensuring supply chain sustainability.

- Others (Material intensity per service unit, Environmental and sustainability rating systems).

Some of these methods can be applied to measure sustainability in a comprehensive way, while others can be applied to measure only individual aspects (e.g. social and/or environmental) in a partial (fragmented) way, according to which scope they will differ from each other and according to the number of indicators measured. Among this group of assessments, the life cycle assessment method and multi-criteria analysis stand out as having the widest applicability. These are also the approaches with a different number of variations applied in practice and, in the author's judgment, relatively well studied in the literature. The former finds application in the decision-making process and in the assessment of potential impacts of the introduction of a product/service, process or project and in the optimization of existing ones (sustainability improvement).

The second group of methods, which encompasses the varieties of multi-criteria analysis, can be widely applied in the process of selecting business partners in order to ensure supply chain sustainability. The arguments in favour of this claim are based on the possibilities to adapt these approaches according to the needs of the applying organisation, by individualising or standardising the variables analysed, prioritising or not individual quantitative or qualitative aspects, etc. These methods can be combined with the life cycle method or other sustainability measurement methods, used for comparisons or in combination with mathematical modelling methods to achieve the objectives set. They are characterised by the widespread application of mathematical optimisation models, which make it possible to cover variables acting in different directions and to determine the optimal combination of values of the indicators analysed to ensure sustainable performance. The main limitations in the application of these methods are: their complex nature, which requires the integration of the efforts of a number of specialists whose expertise and skills to ensure the coverage of the necessary indicators; and the inability to use non-public information to study counterparties.

4. ESG impact on financial performance

The study of the relationship between sustainability and business financial performance also stands out as an aspect widely discussed in the specialist literature. The results of a literature review by Pathan and Mohanty (2024) find that a higher level of ESG performance reduces risk and increases financial success, with effects varying across countries. The reason for the latter is pointed to the insufficient number of studies from some geographic regions. In the same study, in terms of financial performance and sustainability, a strong positive correlation between overall ESG score and business value emerges. Total ESG valuation has a positive and strong impact on corporate profitability. Ershadi *et al.* (2024) find that companies that disclose sustainability information build trust and confidence from investors, lenders and shareholders, which increases business value, return on investment and improves corporate performance.

Malik and Kashiramka (2024) examine the impact of individual aspects of sustainability (ESG pillars) as well as the aggregate ESG score. They conclude that firms with more ESG disclosures perform better than those with more limited ESG disclosures, companies' profitability increases. They find a significant positive impact of both aspects (environmental, social and governance) and aggregate ESG score on return on assets (ROA). Simultaneously, in support of stakeholder theory, demonstrated transparency is positively evaluated by investors (as measured by the positive and significant impact of the aggregate ESG score on Tobin's q), leading to an increase in business value. A positive impact on the reduction of the cost of debt is also found. A positive effect of ESG disclosures on operating and financial performance and market capitalisation (ROA, ROE and Tobin's q) is also found in a study by Alareeni and Hamdan (2020), although the impact of some of the sustainability components is variously.

In a study by Pérez Estébanez and Sevillano Martín (2025) financial performance is examined based on both return on assets (ROA) and return on equity (ROE). The positive effect of sustainability disclosures on business value is confirmed in the results of other studies (Yavuz *et al.*, 2017; Melinda and Wardhani, 2020; Chang

and Lee, 2022; Tahmid *et al.*, 2022; Cai, Li and Tu, 2024), and the reduction in the cost of corporate debt financing is confirmed by the results in a study by He and Ismail (2024). In summary, there is a significant positive impact of ESG disclosures in a number of contemporary studies, which affects investor confidence, increasing business profitability, lowering the cost of external financing and increasing market capitalization.

At the same time, in some studies the impact of ESG disclosures is negative (Saygili, Arslan and Birkan, 2022; Candio, 2024) or vary with respect to individual aspects (Ablanedo-rosas *et al.*, 2010; Alareeni and Hamdan, 2020; Nirino, Miglietta and Salvi, 2020). The financial performance of companies is dominantly evaluated by ROA and ROE metrics, which are commonly used in the specialized literature evaluations to achieve this objective (Tudose, Rusu and Avasilcai, 2022), and market capitalization by Tobin's q . These are well-known analysts classic estimates for measuring and benchmarking the financial performance of organizations.

5. Conclusion

Corporate sustainability measurement capabilities can be conventionally grouped into three categories:

On the basis of an external rating assessment, which stands out for its multi-component and complex nature, mainly targeting large institutional investors. These ratings are provided at the initiative of the rated organisation or the rating agency, cover multiple aspects of the variables analysed, feature complex individual methodologies, as a result of which they may differ materially, and can therefore be defined as difficult to apply for other purposes.

On the basis of internal unrated evaluation, as in this increasingly popular group, essential methods stand out those of mathematical optimization. These provide the opportunity to realise various objectives of the organisation applying them, aimed at improving (optimising) its individual level of sustainable performance, as well as selecting business partners and securing supply chain sustainability.

The last aspect relates to the impact of corporate sustainability on financial performance. A dominantly positive effect of sustainability disclosures on profitability, market capitalisation and the cost of external financing emerges. Popular financial analysis ratios are widely applied, primarily to assess profitability.

No empirical studies of Bulgarian enterprises have been identified among the studies. In recent years, an increasing number of public companies have maintained and improved their sustainability ratings with various rating agencies. This aspect constitutes an appropriate basis for future research.

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