Aleksandra KAMIŃSKA-WITKOWSKA • Alina MATUSZAK-FLEJSZMAN

POSSIBILITY OF USING EMAS ENVIRONMENTAL REPORTING REQUIREMENTS FOR ESG REPORTING IN SELECTED AUTOMOTIVE CORPORATIONS

Aleksandra **Kamińska-Witkowska** (ORCID: 0000-0002-3136-6027)
Alina **Matuszak-Flejszman** (ORCID: 0000-0001-5588-9343)
– *Institute of Management, Department of Quality Management, Poznan University of Economics and Business*

Correspondence address:
Niepodległości Avenue 10, 61-875 Poznan, Poland
e-mail: alina.matuszak-flejszman@ue.poznan.pl

ABSTRACT: The lack of uniform guidelines on how ESG measures are calculated leads to a lack of transparency and problems while comparing them over time and between different entities. It can be noted that EMAS, may help in the implementation of ESG reporting. The aim of the article is to analyse the possibility of using environmental reporting required under Regulation in the field of ESG reporting and to indicate the possibilities of using existing solutions to ensure comparability of results between individual areas regarding environmental impact and organisations. This article presents the latest guidelines in the field of sustainability reporting, assesses the possibility of using the existing reporting under EMAS to report environmental indicators, and presents the current approach of selected automotive concerns to ESG reporting. The article contributes to the utilisation of existing reporting systems in order not to impose an excessive administrative burden on enterprises and to maximise synergies.

KEYWORDS: ESG, CSR, EMAS, environmental effects, sustainable reporting

Introduction

The article aims to indicate the possibility of using requirements contained in the EMAS Regulation in the field of environmental reporting as a part of ESG reporting based on selected information obtained from the automotive industry. To achieve the main objective, the following specific objectives have been indicated in the article:

- presentation of the latest framework for guidelines on reporting non-financial indicators published by the European Parliament and the Council of the European Union,
- assessment of the possibility of using existing reporting for reporting environmental indicators under EMAS,
- illustrating the currently functioning approach to reporting indicators on sustainable development by selected automotive companies: Volkswagen Group, Ford Motor Company, and MAN Truck & Bus SE.

The article tries to find answers to the following research problems:

- To what extent can EMAS environmental reporting be used in ESG reporting?
- How prepared is the automotive industry to report on sustainability?
- How useful can EMAS requirements be for ESG reporting?
- To what extent would EMAS requirements help the automotive industry meet environmental reporting requirements?

To carry out this study, the case study method was used for selected automotive industry companies by analysing non-financial reports made public at a specific time. From the point of view of a research process, the research is qualitative in nature.

A case study is an empirical study that examines a specific phenomenon in the context of real life (Lima et al., 2023). The case study method is derived from grounded theory, the aim of which is to construct new theoretical concepts capable of explaining emerging phenomena. In the field of qualitative research, grounded theory is gaining prominence as an approach to developing theory from data (Monteiro et al., 2023). A common trend in all types of case studies is to try to explain why a particular decision or several decisions were made, how those decisions were implemented, and what is the effect of implementing these decisions (Lima et al., 2023).

In this study, several steps were taken: defining the research topic, reviewing the literature, the development of non-financial reporting, and requirements and guidelines for reporting the effects of environmental activities. Then, key companies in the automotive industry were selected, data was collected, an analysis was carried out, and a table was formulated, which

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was divided according to individual elements related to the environmental impact resulting from the organisation's activities.

The development of this research should deepen the knowledge of environmental activities undertaken in automotive industry companies and indicate the possibilities of requirements contained in environmental management tools to standardise reported information on the effects of environmental activities of these organisations.

An overview of the literature

The rising importance of business information on sustainable development induces companies to become increasingly interested in developing and publishing non-financial effects of their activities in the form of ESG (Environment, Social responsibility, corporate Governance) indicators. ESG factors are a set of non-financial performance indicators intended to ensure the responsibility of the organisation and may be subject to assessment by investors and other stakeholders (Kaźmierczak, 2022). ESG refers to the way in which corporations and investors integrate environmental, social and governance issues in their business, which means that ESG explicitly covers issues related to the governance of an organisation (Gilan et al., 2021). Environmental factors refer to how an organisation uses renewable and non-renewable resources. Social factors allow for measuring how the company and its business activity affect the social environment, i.e., employees, customers, suppliers, and the local community. Corporate governance means the company's internal governance system. It consists of procedures, standards, and control mechanisms implemented to ensure effective management, improve decision-making processes, comply with the law and consider the needs of external stakeholders, especially the investors (GPW, 2021).

Unfortunately, the lack of uniform guidelines on how to calculate these metrics leads to a lack of transparency and problems with comparing them over time and between different organisations. Despite the emergence of non-financial reporting guidelines (GPW, 2021), there are no clear requirements for the specific data that information should be reported with principles related to ensuring transparency, relevance, truthfulness and non-misleading and ensuring factuality, accuracy and reliability.

With the provisions of the EU Directive on the reporting of non-financial data, the importance of business information on sustainability, such as ESG data, has increased in all EU Member States. In the literature on the subject, there are also more and more studies on various aspects of ESG disclosures. For example, Ellili (2020), Sharma et al. (2020) and Suttipun (2021) examined the extent of ESG disclosures and confirmed that, although still at a low

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level, the scope of information has increased in subsequent years. In addition, corporate governance information accounts for the largest part of ESG disclosures, followed by social and environmental information. Hence, issues related to the environment and ongoing climate change are the area that requires the most urgent action, which means that organisations with EMAS implemented will have easier reporting opportunities in this area. In addition, a number of recent studies (Manita et al., 2018; Arayssi et al., 2020; De Masi et al., 2021) examined the impact of different corporate governance mechanisms on ESG disclosure. This only confirms that ESG is gaining more and more recognition.

To identify business risks and increase investor and consumer confidence, disclosure of non-financial information is key to managing the shift towards a sustainable global economy through a combination of social justice and environmental protection. In this context, the disclosure of non-financial information helps to measure, monitor and manage business performance and, thus, in sustainability accounting (Vukić et al., 2017). Currently, those responsible for ESG reporting of organisations rely on various methods, approaches and tools that are still developed in national and international institutions and have an impact on statutory requirements but also on the content of the reports (Kocmanova et al., 2012). Although the term ESG was introduced as early as 2004 by the United Nations, there is still a lack of consistency in the features, attributes and standards defining individual ESG components (Billio et al., 2021). Thus, reports published by various organisations often face criticism because they do not fully illustrate how financial and non-financial elements are managed to create enterprise value (Hoang, 2018). In addition, given the diversity in ESG reporting, the comparability of strategic ESG results is problematic (Lokuwaduge & Heenetigala, 2016), while research by Singhania and Saini (2022) indicates significant variation in the degree of implementation of ESG frameworks in different countries.

The implementation of the ESG reporting system can be supported by environmental management systems functioning in organisations, including EMAS, which increases the awareness of management and stakeholders in the need to care for the environment and the essence of the idea of sustainable development, which is confirmed by research conducted in 22 Polish companies that have implemented EMAS (Myszczyszyn, 2017). Research conducted in 211 manufacturing companies in Pakistan also confirms that the environmental management system is a tool that really supports the long-term, sustainable development of enterprises (Ikram et al., 2019), as did Ronalter et al. (2022), who concluded in their research that both the quality management system and the environmental management system are powerful business tools for improving ESG results. Finally, Kocmanov and Simberov (2014) drew on international sources of performance indicators,

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including EMAS, when defining ESG performance indicators for companies in the processing industry.

The identified gap in the literature is largely due to the fact that contrary to the practice used in disseminating financial information, organisations enjoy a great deal of freedom and discretion in reporting non-financial information on sustainability through ESG indicators and the lack of indication of best practices used in the EMAS.

Sustainability reporting through ESG indicators

At the end of 2019, the European Commission published the Green Deal – a package of policy initiatives aimed at achieving climate neutrality by 2050. These include actions on climate, environment, energy, transport, industry, agriculture, and sustainable finance (Rada Europejska, 2022). One of the commitments of the Green Deal was the revision of the currently functioning NFRD (Non-Financial Reporting Directive), i.e. the Directive on disclosure of non-financial information (Dyrektywa, 2014) due to the lack of uniform reporting standards, and thus the impossibility of comparing data published by different entities.

The new rules were to be reflected in the CSRD (Corporate Sustainability Reporting Directive) (Dyrektywa, 2022) in the form of ESG (Environment, Social responsibility, corporate Governance) indicators. In addition, the new regulation assumes the imposition of more reporting obligations and the extension of the list of entities and areas to which it will apply (Hamada, 2022). The CSRD Directive was published on 16 December 2022 in the Official Journal of the EU, which means that ESG reporting is mandatory for all large entities from 2026 (for the trading year 2025). This provision must be implemented into Polish law within 18 months (Ministerstwo Finansów, 2022). This is, therefore, the beginning of intensive preparations for the relevant subjects.

The elements of the sustainability reporting system published so far in the area of "environment", which will be clarified by the European Commission by 30 June 2023 in the scope of "information that should be disclosed by entities in relation to all areas of reporting and sustainability issues, and information that financial market participants must disclose in accordance with the disclosure obligations set out in Regulation (EU) 2019/2088" is:

- Climate change – mitigation and adaptation,
- Water and marine resources,
- Resource use and circular economy,
- Pollution,
- Biodiversity and ecosystems.

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The indicated factors are at a high level of generality, which means that in many organisations, the approach to presenting results in this area will be very diverse. There are no specific requirements for reporting environmental effects resulting from the organisation's activities. In addition, these requirements do not indicate whether effects are to be reported at the product or process level and which benchmarks and scale should be used. It is also not indicated to what extent reporting organisations can compare their own environmental performance with that of other organisations.

By 30 June 2024 at the latest, 'the Commission should adopt a second set of sustainability reporting standards by means of delegated acts, specifying the supplementary information that undertakings should disclose where necessary in relation to sustainability issues and reporting areas, and information specific to the sector in which the entity operates' (Dyrektywa, 2022).

EMAS environmental reporting requirements

One of the tools that can help organisations prepare for reporting ESG indicators in the area of environment is Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation in a Community eco-management and audit scheme (EMAS), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC. According to the requirements of this Regulation, EMAS-registered organisations 'should produce and make publicly available periodic environmental statements providing the public and other interested parties with information on their compliance with applicable legal requirements relating to the environment and their environmental performance. In order to ensure the relevance and comparability of the information, reporting on the organisations' environmental performance should be on the basis of generic and sector-specific performance indicators focusing on key environmental areas at the process and product level using appropriate benchmarks and scales. This should help organisations compare their environmental performance both over different reporting periods and with the environmental performance of other organisations.' (Regulation, 2009). Inaddition, in the reporting of environmental effects, the organisation can support reference documents, including best environmental management practices and environmental performance indicators for specific sectors, which should be developed through information exchange and collaboration between Member States. Those documents should help organisations better focus on the most important environmental aspects in a given sector. Annex IV to Regulation (EC) No 1221/2009 sets out the requirements for environmental reporting. EMAS-registered organisations are required to communic-

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ate information on key environmental performance indicators. One of the important documents produced in the organisation, which contains information on the environmental performance of the organisation, is the environmental statement (Regulation, 2009). In addition to information on the organisation itself and its eco-management and audit scheme, the environmental statement must include information on environmental aspects and impacts, environmental objectives and plans for their achievement, and the environmental performance and results of the assessment of compliance with applicable legal requirements relating to the environment. In addition, the environmental statement should include confirmation from the accredited verifier that the information contained in the environmental statement meets the requirements of the EMAS Regulation. This means that only information verified by an environmental verifier can be included in the environmental statement and made public.

Given that it is not always possible to measure the environmental performance of an organisation on the basis of data, soft indicators can also be presented, including changes in behaviour, process improvements, and other measures to improve environmental performance. Again, when reporting on these other factors, the organisation's management should take into account relevant sectoral reference documents. It should therefore indicate in its environmental statement how relevant best environmental management practices and available criteria of excellence have been applied in the definition of measures and actions and possibly in setting priorities to further improve the environmental performance of the organisation (Matuszak-Flejszman, 2019).

A sectoral reference document was created, i.a., for the car manufacturing sector – Commission Decision (EU) 2019/62 of 19 December 2018 on the sectoral reference document on best environmental management practices, sector environmental performance indicators and benchmarks of excellence for the car manufacturing sector under Regulation (EC) No 1221/2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS). The sectoral reference document (SRD) is primarily addressed to organisations that are already registered with EMAS, secondly to organisations that are considering registering with EMAS in the future, and thirdly to all organisations that wish to learn more about best environmental management practices in order to improve their environmental performance. Consequently, the objective of this document is to support all organisations in the car manufacturing sector to focus on relevant environmental aspects, both direct and indirect, and to find information on best environmental management practices, as well as appropriate sector-specific environmental performance indicators to measure their environmental performance, and benchmarks of excellence (Commission Decision,

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2019). This Commission Decision contains best environmental management practices, separately for the automotive manufacturing sector and for the end-of-life vehicle treatment sector. Best practices for the car manufacturing sector cover the issues presented in Table 1.

Table 1. Best environmental management practices for the automotive manufacturing sector

ENVIRONMENTAL MANAGEMENT
- implementation of an advanced environmental management system
ENERGY MANAGEMENT
- implementation of detailed energy monitoring and energy management systems - increasing the efficiency of energy-intensive processes - use of energy from renewable and alternative sources - optimization of lighting in automotive plants - rational and efficient use of compressed air - optimization of the use of electric motors
WASTE MANAGEMENT
- waste prevention and management
WATER MANAGEMENT
- water use strategy and water use management - water-saving opportunities in automotive plants - water recycling and rainwater collection - green roofs for rainwater management
BIODIVERSITY MANAGEMENT
- review and strategy for the management of ecosystems and biodiversity along the entire value chain - biodiversity management at the level of the place of production
VALUE CHAIN DESIGN AND MANAGEMENT
- promoting environmental improvements throughout the supply chain - working with suppliers and customers to reduce packaging - sustainable design using life cycle assessment
ENVIRONMENTAL MANAGEMENT REGENERATION
- general best practices for remanufactured components

Source: authors' work based on Commission Decision (2019).

In addition to the best environmental management practices in the Commission Decision (EU) 2019/62, you can also find indicators of the organisation's environmental performance, which can be reported as an effect achieved by organisations in the area of environmental impact (Table 2).

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Table 2. Selected environmental performance indicators for the car manufacturing sector

BEMPs for environmental management
Sites with an advanced environmental management system Number of environmental performance indicators that are in general use throughout the whole organisation and/or which are reported on in environmental statements Use of internal or external benchmarks to drive environmental performance
BEMPs for energy management
Number of facilities with detailed energy monitoring systems, with an energy management system certified ISO 50001 or integrated in EMAS Implementation of regular reviews of systems, automation, repair, maintenance and upgrades Overall energy use per functional unit Share of site energy use met by renewable sources Energy consumption from fossil fuels per functional unit Implementation of improved positioning, energy-efficient lighting
BEMPs for waste management
Waste generation per functional unit Hazardous waste generation per functional unit Waste sent to specific streams, including recycling, energy recovery and landfill Establishment and implementation of an overarching waste strategy with monitoring and targets for improvements Number of sites with advanced waste management plans in place Number of sites achieving zero waste to landfill
BEMPs for water management
Water use per functional unit Sites that have conducted a water strategy review Sites that have monitoring for water use Sites that have separate water monitoring for production processes and sanitary use Water use per functional unit Share of new sites designed with water-saving devices and processes Water use per functional unit Installation of a wastewater/ rainwater recycling system
BEMPs for biodiversity management
Application of methodologies to assess ecosystem services to the value chain Coverage of relevant scope, as determined by prioritisation Number of collaboration projects with stakeholders to address biodiversity issues Inventory of land or other areas, owned, leased or managed by the company in or adjacent to protected areas or areas of high biodiversity value Plan for biodiversity friendly gardening in place for premises or other areas, owned, leased or managed by the company
BEMPs for value chain management and design
Self-assessment questionnaires sent to direct high risk suppliers Direct supplier development and training undertaken Waste generation per functional unit Packaging waste generation per functional unit Packaging waste generation per site or maintenance group Conducting LCA of the main product lines to support design and development decisions
BEMPs for remanufacturing
Level of remanufacturing Overall remanufacturing levels

Source: authors' work based on Commission Decision (2019).

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These environmental performance indicators allow the management of an organisation to report its environmental performance in specific areas, which means that organisations representing a given industry can compare with each other. This possibility can also be used by stakeholders who would like to invest or buy products of a given organisation, taking into account one of the non-financial indicators, which is the environmental impact.

It should also be stressed that, as part of the requirements of the EMAS Regulation, organisations additionally provide information related to the impact of their activities on society and environmental activities for society in their environmental statements. This is linked to the requirement to have an open dialogue with the public. This information could also be taken into account in the framework of ESG reporting in the area of 'society'.

Previous activities of selected automotive companies in the field of ESG reporting

Despite the lack of a general obligation to report non-financial data (so far, this compulsion has been "imposed only on those large undertakings which are public-interest entities and on those public-interest entities which are parent undertakings of a large group, in both cases with an average number of employees higher than 500, on a consolidated basis in the case of a group" (Dyrektywa, 2014)), as well as the lack of unified indicators with regard to the reporting of activities in the field of sustainable development, many organisations, in anticipation of the CSRD Directive, have already tried to define their own indicators in the presented projects. The Table 3 presents the reporting structure of ESG indicators in reports on sustainability activities voluntarily published by selected automotive concerns: Volkswagen Group, Ford Motor Company and MAN Truck and BUS SE.

ESG Indicators 2020 & 2021 in the Volkswagen Group

The Volkswagen Group is one of the largest automotive concerns in the world and the largest car manufacturer in Europe, which includes 10 brands offering various vehicles – from motorcycles, through passenger cars, sports cars, to vans and trucks: Volkswagen Passenger Cars, Volkswagen Vans, ŠKODA, SEAT, CUPRA, Audi, Lamborghini, Bentley, Porsche and Ducati (Volkswagen Group Polska, 2022). The company has been publishing a Sustainability Report since 2011, while ESG indicators have also been part of the report since 2020.

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The report on ESG indicators for 2020 and 2021 presented by the Volkswagen Group includes 5 groups of indicators: Decarbonization, Circular economy, People in transition, Diversity, Integrity, Responsibility for supply chains and economy. Table 2 summarises and compares the measures included in the report for the three environmental areas (Volkswagen AG, 2022).

Table 3. Overview of the "ESG indicators" published in the ESG-Kennzahlen Volkswagen AG 2022 report with a focus on environmental indicators

Decarbonisation	Circular Economy	Responsibility for supply chains and the economy
Decarbonisation KPIs: – decarbonisation index, – average emissions of passenger cars broken down by US and EU, – number of cars produced in alternative drive technologies (gas, hybrid, electric), – carbon footprint of the product, – greenhouse gas emissions. Environmental management KPIs (for all brands and separately for the production of passenger cars and commercial vehicles): – specific emission reduction, – emissions of volatile organic compounds. Direct NO_x- and SO_2 emissions (for all brands and separately for the production of passenger cars and commercial vehicles)	KPIs circular economy: – avoided CO_2 emissions due to aluminium closed loop project, – demand for fresh water in locations in at-risk areas. Environmental management KPIs: – number of locations certified according to ISO 14001 or EMAS in the Volkswagen Group/VW AG, – number of production sites certified according to ISO 50001 in the Volkswagen Group. Energy consumption (overall and per car) – electricity, heat, fuel gases for production processes: – water, – sewage, – waste (non-hazardous, hazardous and metallic) for recycling , – waste for disposal (non-hazardous and hazardous), – chemical oxygen demand, – water intake, – sewage disposal, – number of remedial measures implemented.	– suppliers with a certified environmental management system according to ISO 14001 and/or EMAS, – buyers who have taken part in sustainability qualification activities, – suppliers who have received sustainability training, – average sustainability breaches by region, – suppliers who have completed the sustainability e-learning module.

Source: authors' work based on Volkswagen AG (2022a).

Analysing the ESG indicators presented by the Volkswagen Group, it can be seen that each of them closely correlates with the elements of the sustainability reporting system included in the latest CSRD Directive.

In the area of the environment (E), the Volkswagen Group pays particular attention to reducing CO_2 emissions into the atmosphere not only at the stage of vehicle production but throughout the entire life cycle of the products offered, which is a manifestation of the commitment to mitigate climate change, which is included in the list of environmental activities in the CSRD Directive. Also, the use of water and other resources and the circular eco-

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nomy listed in the Directive have been reflected in indicators concerning the consumption of utilities and the reduction of the amount of waste generated. The Volkswagen Group's monitoring of the number of locations with functioning and certified environmental management systems goes beyond the scope of the indicators set out in the CSRD Directive. On the other hand, the Volkswagen Group's current report lacks indicators relating to biodiversity and ecosystems, but they are part of the CSDR Directive, and in this respect, the Volkswagen Group will have to develop and report appropriate measures.

Looking at the summary of environmental ESG indicators, they lack indicators on the mass flow of key materials used in car production and indicators related to land use in relation to biodiversity. It should also be noted that the Volkswagen Group takes into account environmental management issues as a key performance indicator (KPI), including locations certified according to ISO 14001 or EMAS within the Group and production sites certified according to ISO 50001 at the Volkswagen Group. This means that the environmental performance indicators resulting from the requirements of EMAS and the sectoral reference document for the car manufacturing sector must be used.

The fact that the topic of ESG is treated as a priority in the Volkswagen Group is evidenced by the fact that, along with decarbonisation and integrity, it is one of the 12 initiatives of the Volkswagen Group's "New Auto" Strategy (Volkswagen AG, 2022b). During the work on the "New Auto" Strategy, the choice of issues on which the Group focuses was also considered in the context of the requirements of the financial and capital market. As a result, in 2020, 4 thematic areas were defined: Decarbonization, Circular economy, Responsibility for supply chains and business, and People and transformation, and in 2021 two more were supplemented: Diversity and Integrity. Each of the thematic areas has clearly defined objectives and milestones, possible KPIs and action packages. ESG-related measures such as the decarbonisation rate and the diversity index are already reflected in the remuneration of board members (Volkswagen AG, 2021a). All defined thematic areas are aligned into the 17 sustainable development goals (SDGs) defined by the United Nations for 2030[1], to which the Volkswagen Group is committed to supporting, and the independent Board of Sustainability (Volkswagen AG, 2021b) has been advising the Board of Directors of Volkswagen AG since 2016.

1 United Nations (2015).

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Ford Motor Company – ESG Data Book

Ford Motor Company is currently one of the largest automotive concerns in the world with more than a hundred years of history, which has developed to the current level from a family business. Currently, Ford Motor Company produces cars, sports cars, vans and trucks under the Ford and Lincoln brands. The Ford Motor Company has been reporting sustainability indicators for more than 20 years, but it is only in recent years that the company has highlighted ESG in its annual Environmental, Social and Governance Review (Ford Motor Company, 2022a).

Table 4. A compilation of the "ESG indicators" published in the Ford Motor Company 2022 ESG Overview report with a special focus on environmental factors

Supply chain management	results of supplier audits – number of non-conformities in initial audits in 2021, broken down into categories: management systems, employees, health and safety, environment and ethics and detailed subcategories
Fuel consumption of vehicles and CO_2 emissions (Scope 1, Scope 2)	average fuel consumption of Ford Corporation in the USA CO_2 emissions of Ford vehicles in the USA, Europe, Switzerland and China per 1 vehicle average fuel consumption of Ford Corporation in China CO_2 emissions of Ford vehicles in China per 1 vehicle
Car emissions other than CO_2	Ford's average NOx and NMOG1 emissions in the USA
Operational energy consumption and CO_2 emissions	energy consumption in facilities worldwide global greenhouse gas emissions from plants greenhouse gas emissions from operations around the world
CO_2 emissions of purchased goods and services	indirect emissions
Emissions (VOCs and others)	volatile organic compounds released by production plants emissions reported to Toxics Release Inventory in the USA emissions reported to the National Pollutant Release Inventory in Canada
Waste	regional waste sent to landfill by region and per 1 vehicle regional hazardous waste by region and per 1 vehicle hazardous waste according to the method of disposal non-hazardous waste according to the method total amount of waste according to the method of disposal scrap metals total amount of waste and percentage recycled
Water	global water consumption per vehicle produced global water consumption by source water consumption by region reuse from the local wastewater treatment plant discharge of process sewage

Source: authors' work based on Ford Motor Company (2022b).

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In October 2022, the Ford Motor Company published an integrated report on finances and sustainability. It refers to the company's vision for carbon footprint by 2050, which specifically defines targets for air emissions, energy consumption, waste, water consumption, materials, safety, human rights, diversity, equity and inclusion, and mobility and accessibility for all (Ford Motor Company, 2022a). The data published in the report covers the years 2019, 2020 and 2021, and specific indicators are visualised in the Table 4 (Ford Motor Company, 2022b).

As in the case of the Volkswagen Group, the Ford Motor Company also refers to ESG as defined in the CSRD through the published data. In the area of environmental factors, data such as vehicle fuel consumption and CO_2 emissions, car emissions other than CO_2, operational energy consumption and CO_2 emissions, CO_2 emissions of purchased goods and services, emissions (VOC and others), waste and water were included. In this example, each area identifies specific environmental performance indicators (EPI) against which an organisation's environmental performance can be assessed. As in the case of VW, the indicator related to the annual flow of key materials used for production and land use with regard to biodiversity is not included here. Also, with regard to the requirements of the CSDR Directive, there are, therefore, no indicators relating to resource use and biodiversity and ecosystems.

Environmental indicators of MAN Truck & BUS

MAN Truck & BUS is an international company producing commercial vehicles, trucks and cars. It has production plants in 3 European countries: Germany, Austria and Poland, as well as in Russia, South Africa and Turkey. MAN (Krakow plant) is the only company in the automotive sector to be registered under the EU's voluntary Eco-Management and Audit Scheme (EMAS), which entails a reporting obligation on key emission factors. The Munich, Nuremberg and Salzgitter plants are also registered in the EMAS register. The ESG indicators presented cover the entire MAN Truck & BUS Group and cover seven strategic areas (MAN, 2022). These are presented in Table 5.

MAN Trucks Sp. z o.o. (Krakow plant) is an EMAS-registered organisation. In its Environmental Statement, this organisation publishes indicators for six mandatory areas, in accordance with the European Commission Regulation 2018/2026 – energy, emissions, material, water, waste and land use in relation to biodiversity in 2019-2021. These indicators are presented in Table 6.

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Table 5. ESG MAN Truck & BUS indicators published in the Sustainability Report 2021 with a focus on environmental indicators

ENVIRONMENT		
Decarbonization	**Circular Economy**	**Responsible Transport and Mobility Solutions**
– greenhouse gas emissions along the entire value chain and other indirect emissions – energy consumption in production processes – direct energy consumption (combustion fuels and gases) and indirect energy consumption, including electricity and heat – direct primary energy consumption (heating oil, natural gas, diesel, other) – Energy consumption per vehicle – Absolute indirect and indirect CO_2 emissions – CO_2 emissions per vehicle – Atmospheric impurities (sulphur dioxide, nitrogen oxides, solid particles, volatile organic compounds) – Logistic-related CO_2 emissions per vehicle produced	– production waste (broken down into hazardous and non-hazardous and broken down into recycled and recovered) – metal waste – recycling rate – water consumption – surface water consumption – reused water – used rainwater – wastewater	– number of connected vehicles – number of electric cars (orders and sales broken down into trucks, commercial vehicles and cars)

Source: authors' work based on MAN (2022).

Table 6. Environmental performance indicators MAN Trucks Sp. z o.o. (Krakow plant)

ENERGY: – Electricity and natural gas consumption, – Share in renewable energy sources, – Fuel consumption, including: on-site diesel, petrol, other fuels.	WATER: – Water consumption per vehicle, – Amount of wastewater per vehicle, – Consumption of drinking water from external sources.
EMISSION: – Emissions of volatile organic compounds and nitrogen oxides per vehicle, – CO_2 emissions per vehicle, – SO_x, NO_x, dusts, – CO_2 equivalent.	WASTE: – Consumption of waste per vehicle: hazardous for disposal, hazardous for recovery, non-hazardous for disposal, non-hazardous for recovery [kg/vehicle], – Absolute amounts of waste generated: • Other organic solvents, washing solutions and mother liquors, • Paint and varnish removal sludges containing organic solvents or other hazardous substances, • Paper and cardboard packaging, • Other wastes not listed, • Packages containing residues of dangerous substances or contaminated with them.
MATERIAL: – surface treatment material: • varnishes containing solvents, • water-based varnishes, • diluents, • hardeners, • coagulants. – number of vehicles produced	LAND USE IN RELATION TO BIODIVERSITY: – Total area of the plant, including fenced, roofed, built-up and green area, including meadows, arable fields and uncultivated land.

Source: authors' work based on GDOŚ (2023).

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In these areas, the Krakow plant MAN Trucks Sp. z o.o. has indicated additional criteria for the assessment of environmental aspects that are important in reporting environmental effects. For example, in the area of energy consumption, the share of 'green electricity', the technical and economic possibilities of achieving significant savings (electricity, gas, etc.) and the condition of buildings, the supply network (insulation, emissions) are indicated. However, in the case of emissions from incineration/ painting processes, the technical and economic feasibility of achieving significant savings, the type and quantity of emissions and the location of the site are taken into account (GDOŚ, 2023).

As can be seen, the indicators presented in Table 6 and the information contained in the Environmental Declaration on the achieved by the Plant in Krakow MAN Trucks Sp. z o.o. inform stakeholders and the actual impact of the plant on the environment in an appropriate and clear way. In addition, this information is factual, accurate and reliable, as evidenced by the signature made by the accredited verifier on the statement in the environmental statement.

Comparison of ESG indicators

Analysing the above lists of ESG indicators reported by selected automotive concerns, it is clear at first glance that their simple comparison is not possible at this stage, which is confirmed by literature data. For instance, Piłacik (2017) stated that the lack of unified principles for preparing social responsibility reports responsibility causes difficulties in properly assessing a company's impact on, for example, the environment. Currently, making comparisons between companies is not possible due to the form and scope of presented information in the area of CSR. Sipiczki (2022) additionally highlighted the dynamic development of ESG-related products and services in the market over the last decade. As a result, there are now more than 600 ESG ratings and rankings worldwide, and although these products have similar objectives, the methods and metrics are very inconsistent and present sustainability information in different ways.

Each of the analysed companies has defined and monitored indicators useful and relevant from the point of view of its own operations and the environment in which it operates, most often responding to legal requirements or those resulting from the implemented management systems. These indicators are measured in different units and analysed from different angles (e.g. location, business units or type of product). Moreover, not every indicator has been released since the same point in time, some of which did not appear in the reports until 2021. In addition, each of these corporations in

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the presented reports in a descriptive way presents a number of activities undertaken towards the implementation of social, environmental and management goals, which are even more difficult to compare.

When analysing indicators from the environmental area, it is difficult to determine and compare data presented by organisations of the same industry. Both VW, FORD and MAN presented indicators on emissions, energy, water and waste in their ESG reports. In the case of MAN, the revised Environmental Statement presents the environmental performance in six main areas and provides additional information related to the environmental benefits achieved and the environmental objectives set for the coming years. Targets include but are not limited to reducing CO_2 emissions by 50% by 2025 compared to 2015, implementing an ISO 50001 energy management system, reducing water consumption per vehicle by 3% by 2025 compared to 2019 and strengthening employee environmental awareness. Therefore, the application of the requirements of the EMAS Regulation and the consequent obligation to publish their environmental performance annually based on 6 key environmental indicators and additional specific indicators would allow stakeholders to compare the environmental performance of these organisations.

The subject of ESG is also reflected in the group's strategies, which proves the high level of priority posed to this issue, but despite the strong involvement of all three companies in ESG activities, it is not possible to compare the presented indicators, although all the companies operate in the same industry. It should be noted that it will be even more difficult to compare organisations from different industries. This example confirms the need for a uniform framework for the reporting of ESG indicators, which is what the European Parliament and the Council of the European Union are taking.

Conclusions

The latest framework of guidelines for reporting non-financial indicators in the area of "environment" presented in the article and the assessment of the possibility of using the existing reporting to report environmental indicators under EMAS allowed for the analysis of the possibility of using environmental management tools for non-financial reporting.

The analysis shows that the depicted approach to reporting sustainable development indicators by selected automotive concerns, referred to as "ESG indicators", often have their source in the already implemented management systems functioning in these enterprises (environmental management systems, energy management systems, compliance management systems, etc.). Such an approach is in line with the guideline of the newly introduced CSRD

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Directive, which clearly indicates that "sustainability reporting standards should be proportionate and should not impose an excessive administrative burden on companies that are obliged to comply with them" (Dyrektywa, 2022). However, each of the organisations, due to the high level of generality, arbitrarily presents these indicators, taking into account the basic division. In addition, when analysing the presented indicators related to the area of environmental impact, it should be stated that all three concerns did not take into account indicators related to the use of resources and biodiversity and ecosystems.

It must therefore be concluded that the automotive industry is partly prepared for sustainability reporting.

The inclusion in ESG environmental reporting of key performance indicators (KPIs) in the form of EPIs (environmental performance indicators) based on the key environmental performance indicators contained in Annex IV to the EMAS Regulation and the inclusion of a sectoral reference document for the car manufacturing sector would increase the transparency of the information made available to stakeholders. The more so that these indicators are validated each year by an accredited environmental verifier, which unfortunately cannot be ensured in the field of ESG reporting. The introduction of more precise requirements for ESG reporting and validation requirements for reported results would make it possible to ensure their credibility and comparability. The use of environmental performance indicators and best environmental management practices contained in reference documents and the ISO 14031 standard would definitely facilitate environmental reporting within ESG for organisations.

The contribution of the authors

Conception, A.K.-W. and A.M.-F.; literature review, A.K.-W. and A.M.-F.; acquisition of data, A.K.-W. and A.M.-F.; analysis and interpretation of data, A.K.-W. and A.M.-F.

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