THESES OF THE DOCTORAL (PhD) DISSERTATION

WILL THE ESG TURN THE TIDE?
VOLUNTARY ESG PREPARATION IN THE SME SECTOR - CHALLENGES AND OPPORTUNITIES FOR MEASURING INDIRECT IMPACTS

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1. INTRODUCTION OF THE TOPICS AND OBJECTIVE

ESG is a framework of three pillars that monitor the environmental (E - Environment), social (S - Social) and governance (G - Governance) activities and performance of a company. It is undeniable that over the last decade, the role of ESG as a framework has been significantly enhanced in the shift towards sustainability and the green transition (GYURA, 2020). The increasing importance of the ESG framework has been greatly facilitated by the rapidly and continuously changing regulatory environment, with a number of new laws, requirements and recommendations for the collection and disclosure of ESG data. In addition, demographic changes, changing consumer preferences and, most importantly, worsening ecological problems have contributed to the increasing role of sustainability considerations in everyday decision-making.

It is important to stress that the ESG framework is not just a marketing tool but has a real sustainability relevance. ESG reporting and regulation is designed to influence the financing of companies directly and indirectly while taking sustainability into account. As the capital market plays a key role in the sustainable transition, interventions in this area can be much more effective than the less effective consumption measures of recent decades.

The corporate sector is under increasing pressure to comply with ESG requirements. On the one hand, ever-changing legislative and sectoral requirements are placing new demands on companies, and on the other hand, consumers are increasingly favouring companies and products that operate in a sustainable way. In addition, ESG compliance is raising expectations from investors and suppliers. These include the increasingly stringent ESG certification requirements of large Western European companies, which extend to the entire corporate supply chain.

As the ESG framework has gained ground, more and more academic researchers have turned their attention in this direction. A gradual increase is seen in the number of studies that investigate the relationship between ESG readiness and corporate performance alongside different variables and analyse the innovation opportunities offered by ESG, green investments or even incorporate ESG considerations into human resource management (AUST et al., 2020; FRIEDE et al., 2015; HUANG et al., 2023). One of the main streams of research directions is related to corporate ESG disclosures. It can be argued that higher

quality ESG disclosures significantly increase the transparency of companies' operations, which increases the trust of company stakeholders in the company and has an overall positive impact on the value of the company (LI et al., 2018; BRUNA et al., 2022; KAO, 2023). However, it is important to note that this can only be achieved with standardized reporting, as disclosures with different content and quality greatly increase the risk of uninformed and sometimes erroneous investment decisions (ILHAN et al., 2023).

Based on the above, my research investigates how well the companies are prepared to meet their ESG reporting obligations and how SMEs with far fewer resources can be supported so that they could embark on the path of ESG preparation voluntarily and effectively.

In accordance with the aim of the research, I have formulated 9 research questions which are as follows:

- Q1: What trends can be identified in the regulatory environment of the ESG framework?
- Q2: How does sustainability regulation affect corporate sustainability and business performance?
- Q3: How does the implementation of the ESG framework affect company performance?
- Q4: To what extent are the questions of the Hungarian ESG questionnaires in line with the international standards?
- Q5: What challenges do SMEs face in implementing the ESG framework and reporting?
- Q6: What conclusions can be drawn about the current ESG reporting preparedness of companies expected to be covered by the ESG Act?
- Q7: Do the current widely used methods for quantifying climate risks measure the actual risks adequately?
- Q8: What are the problems with the current methods used to quantify indirect impacts at the enterprise level?
- Q9: Can an easy-to-implement tool be put together for SMEs to promote ESG preparation and reporting in a cost- and time-effective way?

Based on the research questions, I have formulated the following main research objectives:

- O1: Examining the link between sustainability regulations and company performance.
- O2: Examining the link between the implementation of the ESG framework and corporate performance.
- O3: Examining the ESG readiness of domestic, relevant companies.
- O4: Exploring the possibility to measure indirect impacts at the sectoral level and compare the resulting indirect impacts with direct emissions.
- O5: Compilation of a partner network self-assessment model that is easy, cost and time efficient for SMEs to use.

On the basis of the above, I have formulated the following hypotheses.

Table 1 Research hypotheses and methods chosen

Nº	Formulation	Test method
H1	Strong sustainability regulation has a positive impact on corporate sustainability and business performance.	Literature review
H2	In addition to the compliance regulatory obligations, the voluntary implementation of the ESG framework has a positive impact on companies' performance.	Literature review
H3	From 2025 onwards, large listed companies subject to the ESG Act will be well prepared, while there are significant differences in the reporting preparedness of those joining later.	Content analysis and literature review
H4	Methodologies for measuring climate risk, widely used in supervisory practice , typically only consider direct emissions, whereas indirect impacts along the entire value chain carry significant risks, which	Literature review, IOT models and the Leontief transformation

	can significantly change the sectoral rankings.	
H5	The aggregated values at the sectoral level, based on indirect effects quantified at the firm level, are subject to a number of uncertainties that can be significantly reduced by using input-output models with environmental extensions and the Leontief transformation	Literature review, IOT models and the Leontief transformation
H6	The ESG-PSAM model is also an easy and effective tool for SMEs to use to support them in the process of voluntary ESG preparation and reporting.	PSAM model and testing

Source: own editing

The research questions, objectives and hypotheses are summarised below (*Figure 1*).

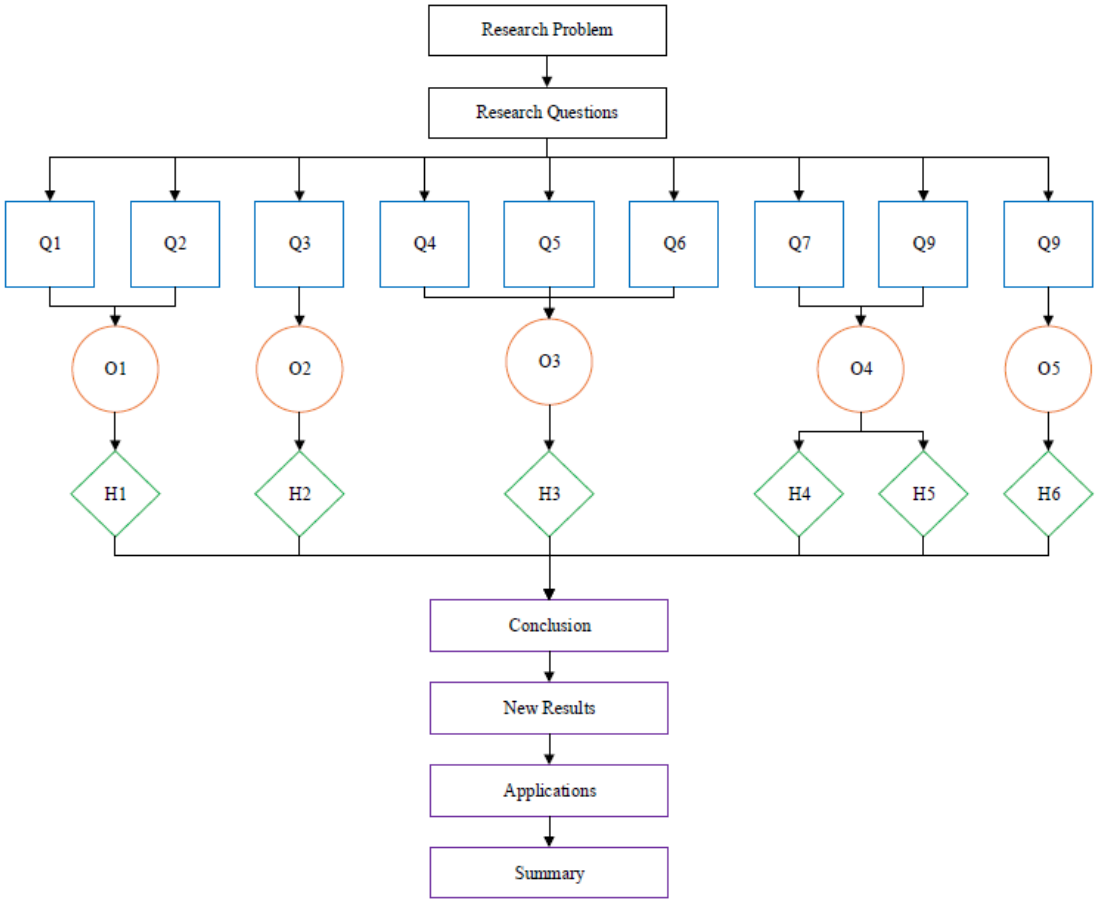

Figure 1 Presentation of the research

Source: own editing

2. MATERIAL AND METHODS

ESG preparedness of companies subject to the ESG Act

As a first step, I identified the scope of companies covered by the ESG Act in order to assess the preparedness of companies subject to the Hungarian ESG Act. To do this, I used EMIS, a database containing company information, financial market data, macroeconomic analysis, stock and bond market prices, legal databases, economic forecasts, and statistics, with the ESG Act criteria of turnover, balance sheet total and number of employees as screening criteria. While compiling my database, I made the simplifying assumption that I considered those companies to be of public interest that were identified by EMIS as 'listed' companies, and I excluded company grouping. In accordance with the provisions of the law, I filtered out micro-enterprises and financial enterprises in the sample construction (SZENDREY et al, 2024a).

I then put together a set of criteria for analysing corporate disclosures, which includes the following elements: type of report, reference year, application of GRI (GRI - Global Reporting Initiative) framework, application of GRI 201-2, performance of materiality analysis, presentation of materiality matrix, appearance of double materiality, reference to ESRS, reference to Taxonomy Regulation, reference to SASB (SASB - Sustainability Accounting Standards Board), reference to TCFD (TCFD - Task Force on Climate-related Financial Disclosures), reference to CDP (CDP - Carbon Disclosure Project).

The publications of the companies were then analysed using content analysis. I included companies joining in 2025, 3 sectors for those joining in 2026 and SMEs joining from 2027.

Comparison of ESG reporting frameworks

Literature and international regulatory trends show that the ESG reporting framework is subject to a number of criticisms because the data required by regulators or the standards supporting reporting are based on significantly different sets of criteria, which makes it difficult to apply them together. In 2024, EFRAG (EFRAG-European Financial Reporting Advisory Group) invited comments on the material for the mapping between the ESRS standards and GRI standards to facilitate overlaps and reporting. The table accompanying the material includes, for each aspect of the ESRS standard, a reference to a GRI standard with overlapping or identical content (EFRAG, 2023; EFRAG, 2024). In order to support

domestic reporting and to search for synergies between the available tools, I compared the different reporting options with domestic expectations, based on the EFRAG materials, the ESRS and GRI standard topic descriptions, and the ESG questionnaires published by the Regulatory Activities Supervisory Authority (RSA), using the content analysis method.

Quantification of indirect emissions

To identify the differences between direct and indirect impacts, I ranked the sectors based on both emissions, first ranking them according to their direct (Scope 1) greenhouse gas (GHG) emissions. To produce the ranking, I used the Eurostat database, which is widely used in regulatory practice. Eurostat categorises sectors uniformly according to the NACE Rev. 2 classification system (EUROSTAT, 2008), which includes 21 sector groups with different letter codes. The GHG emissions of each sector are quantified using Eurostat data, published annually since 2008. Eurostat's methodology for measuring GHG emissions only takes into account the sectors where emissions are actually released into the atmosphere; thus, I was able to use these data to determine direct emissions.

For the analysis of indirect effects, I used the EORA26 database. I used the R software and the Leontief transformation for the calculation.

In the Leontief transformation, let x denote gross emissions, E the unit matrix, A the matrix describing the direct link between sectors, y_i the type of final use, L_{GHG} the Leontief inverse matrix and M the total emission matrix of sectors. Mathematically, the Leontief model can then be written as follows:

$$x = (E - A)^{-1} \cdot y$$

$$M = L_{GHG} \cdot y_i$$

By multiplying the Leontief inverse of the coefficients of environmental indicators per monetary output by final consumption, the aggregate environmental impact of different final consumption categories in the sectoral structure can be determined (STEEN-OLSEN et al. 2016; SCHAFFARTZIK et al. 2014). Indirect flows are also referred to as "footprint" or "consumption-based accounts" in the literature.

When the final consumption and intermediate flows are taken into account without the Leontief transformation, it is possible to determine the monetary value of the products used

by a given sector to produce output for final consumption. For example, it is possible to trace the value of energy inputs transferred from the "mining and metallurgy" sector to the "energy production" sector. However, this method cannot quantify the energy carriers sold to the manufacturing, services, or household sectors. However, these links and flows can be made visible with the use of the Leontief transformation.

Given that EORA26 and Eurostat use different sector classifications, I have used my own expert-calculated spreadsheet based on the ISIC Rev.3 and NACE Rev codes for sector harmonisation.

The ESG-PSAM model

My goal in creating the ESG-PSAM Model was to build an easy and efficient tool with which SMEs can perform the ESG assessments of their partners based on publicly and freely available data. The model can be seen as an internal self-assessment process and partner register.

My aim in creating the ESG-PSAM model was to assess corporate partners along all three pillars of the ESG framework. To do this, I first collected a set of issues for each pillar, which were identified as determinants of the ESG aspects and for which data are relatively easily available. While defining the issues, I also sought to incorporate the standards and frameworks that could support ESG reporting, as well as the ESG Act criteria. Given that the quantification of impacts, in particular for the environmental pillar, is challenging even for large companies, and that the verification, interpretation and comparison of calculations are very difficult and sometimes based on uncertain data, I used an industry approach based on public data or my own calculations rather than calculations at the customer-supplier level. Indirect effects were quantified using the method described for input-output models, using a program code based on cyclic matrix operations written in the R software package. To quantify indirect effects, I used the EORA 26 database.

Based on all of these, as a first step, I identified 9 aspects in the general category, 76 in the environmental pillar, 71 in the social pillar and 55 in the corporate governance pillar, a total of 211 aspects.

I then filtered the criteria according to the principles of data availability and uncertainty of response, and finally narrowed down the criteria to a total of 84 questions including 9

general, 19 environmental, 23 social, and 33 corporate governance questions, and collected and provided relevant data sources for each criterion.

3. MAIN FINDINGS OF THE DISSERTATION

ESG preparedness of companies covered by the ESG Act

Regarding the ESG preparedness of the companies covered by the ESG Act, the 15 companies that joined in the first round are considered to be well prepared, while the second round shows a heterogeneous picture. The composition of report items is greatly influenced by whether a company is part of a group or has a parent company. Regarding the use of the frameworks, the dominance of GRI is observed; however, the representation of other aspects varies significantly from one industry to another. There is a large gap for SMEs, for a number of reasons. These include the lack of financial and human resources, lack of appropriate expertise or lack of available data. Based on the results of my study, it is clear that further support is needed to promote reporting and ESG compliance for both the second and third rounds of joining companies.

ESG reporting is facing a number of criticisms because different standards and frameworks require disclosures in different structures and for different principles. In the domestic context, the uptake of the GRI standards is visible, but the ESRS standard system supporting the CSRD and the questionnaires related to the ESG Act should not be forgotten. In order to explore the interoperability between the GRI, ESRS and CSRD questionnaires, I have also made a comparison to the Hungarian perspective, based on the EFRAG ESRS-GRI comparison (see EFRAG, 2023; EFRAG, 2024).

I considered it of paramount importance to identify and address the relevant issues in the comparison. The Hungarian ESG Act, similar to the GRI standards, for example, requires companies to make disclosures on topics they consider important and relevant to their operations. However, the questionnaire published in the SZTFH Regulation is more specific than this, as it sets out the principle of dual materiality that requires companies to assess both the external sustainability risks and opportunities of their business and the impacts of their business on the society and the environment. Taking this into account, I have included question 9 on double materiality in the SZTFH questionnaires for all standard items dealing with material (financial) impacts or risks in the comparison. The comparison shows that many aspects of the Hungarian questionnaires clearly correspond to the ESRS and GRI standards, while the latter sets out broader disclosure requirements. It can also be identified

that for certain issues (e.g., blood donation) the SZTFH Regulation sets out more specific expectations than the standards do.

Given that large companies operating in Hungary may be subject to the CSRD and the ESG Act at the same time, the comparison can provide them with a basis for exploiting synergies between reporting requirements.

Sectoral differences along emission levels

In order to establish the sectoral rankings based on direct and indirect impacts, I first quantified the climate risks of each industry based on Eurostat greenhouse gas emissions data. The risk associated with each sector was measured by its contribution to the total emissions of the sector within the category (SZENDREY & DOMBI, 2023). The ranking based on direct emissions is illustrated *in Figure 2* below.

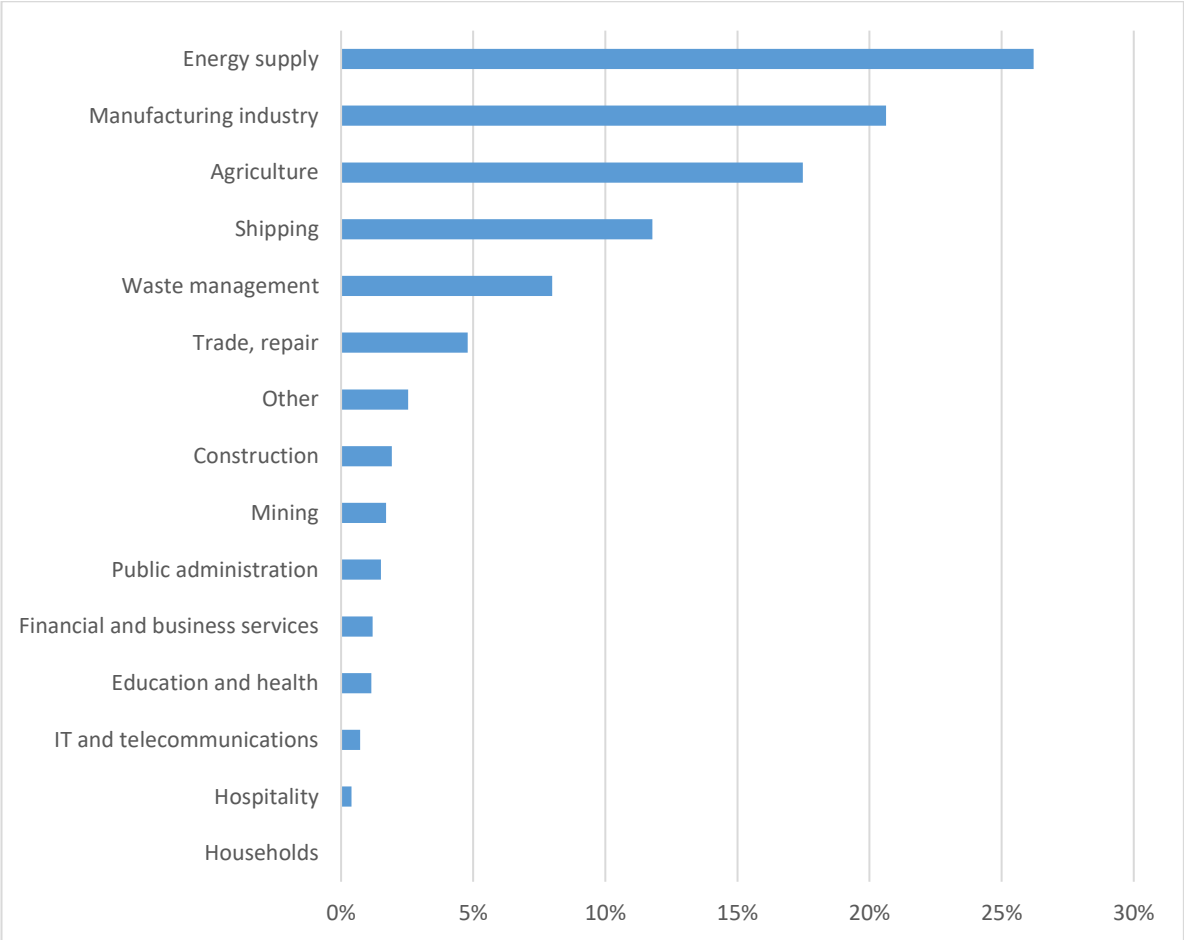

Figure 2: Share of each sector in direct GHG emissions based on 2023 data

Source: own editing based on Eurostat data

The results show that if only direct (Scope 1) emissions are considered, the energy supply sector is the largest contributor to total GHG emissions, with 13.7 Mt (26%), followed by

the manufacturing sector that accounts for 10.8 Mt (21%). Together, the three largest emitters are responsible for 64% of total direct emissions.

Following the quantification of direct impacts, I used the EE-MRIOT (Environmentally extended multi-regional input-output tables) database EORA26 to quantify the GHG emissions of each sector in the whole value chain and then quantified the contribution of each sector to total emissions. The sectoral ranking based on my calculations is illustrated *in Figure 3* below.

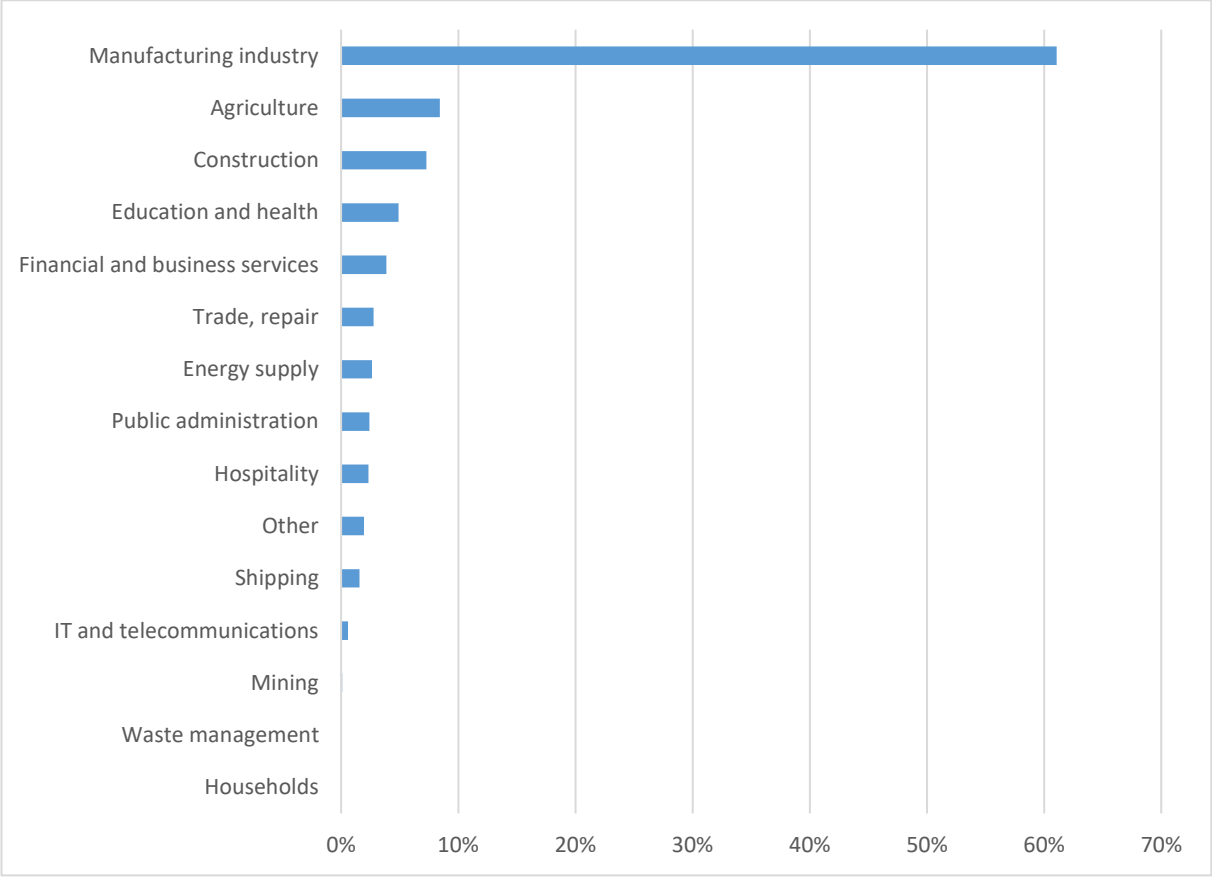

Figure 3: Share of each sector in total value chain GHG emissions based on 2015 data
Source: own editing based on EORA26 data

When the sectoral ranking is reviewed based on the indirect emissions, the manufacturing sector is responsible for the highest emissions (32.3 Mt), followed by agriculture (4.5 Mt) and then by construction (3.9 Mt). The three largest emitters account for 40.63% of total emissions.

Using a production and consumption approach, I have interpreted the direct and indirect impacts quantified by EUROSTAT and EORA 26 in a new context. In the figure below, the light blue columns show the direct emissions generated in Hungary within the country and

within a given industry (Scope 1, Eurostat). This quantification assigns emissions to the geographical areas and industries where they are directly emitted to the atmosphere, i.e., where they are produced. However, the dark blue columns in the figure illustrate the emissions over the whole life cycle of the industry that produced the product or service for final use. These indirect emissions reflect the place-of-use approach (SZENDREY et al., 2024b).

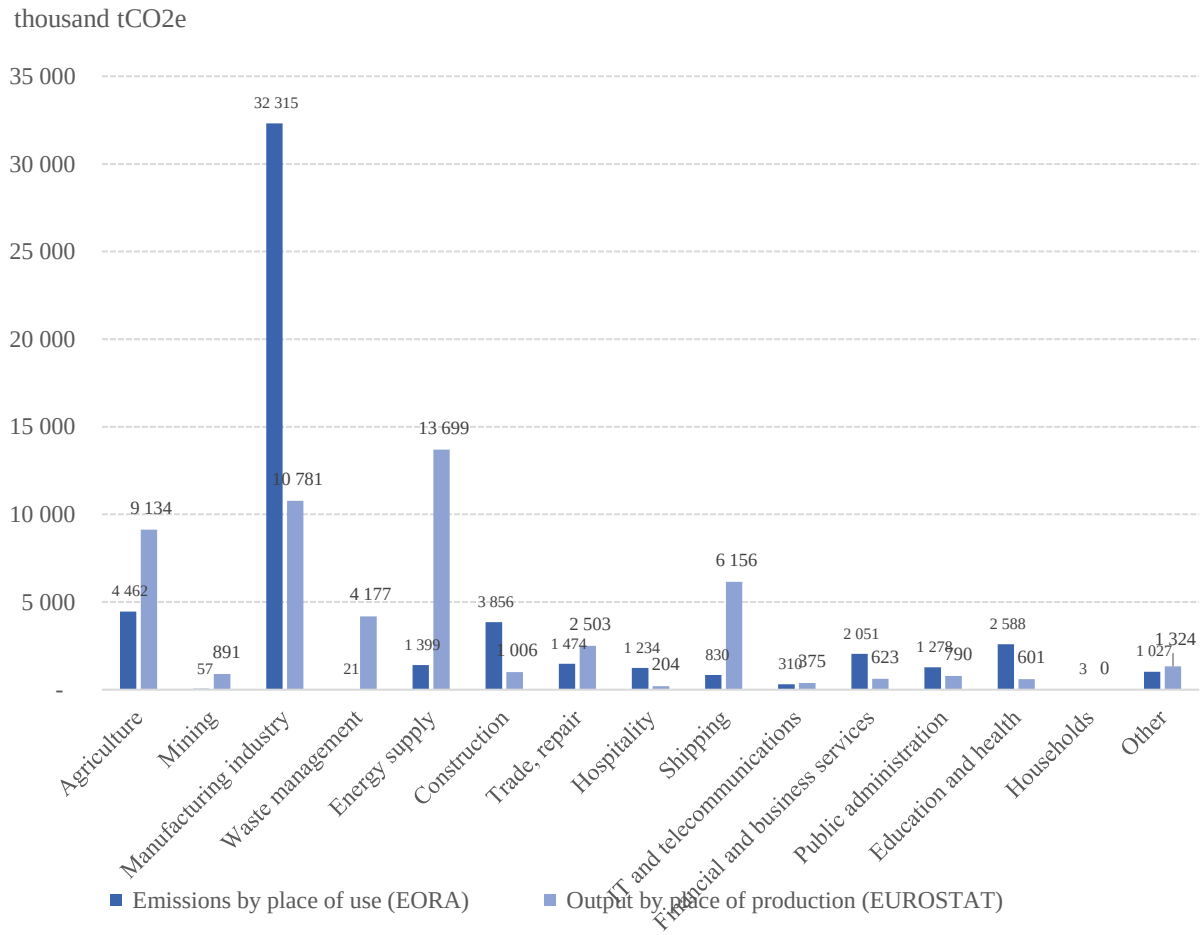

Figure 4: Emissions by production and consumption sector I.

Source: SZENDREY et al., 2024b

A rearrangement of *Figure* 4 above yields interesting results. *In Figure* 5 below, it is clear that some sectors have negative emissions. This occurs in cases where direct emissions are lower than the indirect effects. The higher direct emissions are generated by units in an industry that pass on the product or service they produce as an input to other sectors. The extent of this transfer is indicated by the negative values in the figure below. However, these transfers are included in the indirect outputs of other industries, which are shown as orange bars in the figure. In the case of mining, for example, it can be seen that emissions by place

of production are significantly higher than those by place of use. This is because mining typically produces products that are inputs to other industries (e.g., construction). The reverse is the case, for example, in the financial services sector, where the process of producing services generates low direct output, while the indirect effects include the economic relationships that financial services providers finance in their activities (SZENDREY et al., 2024b).

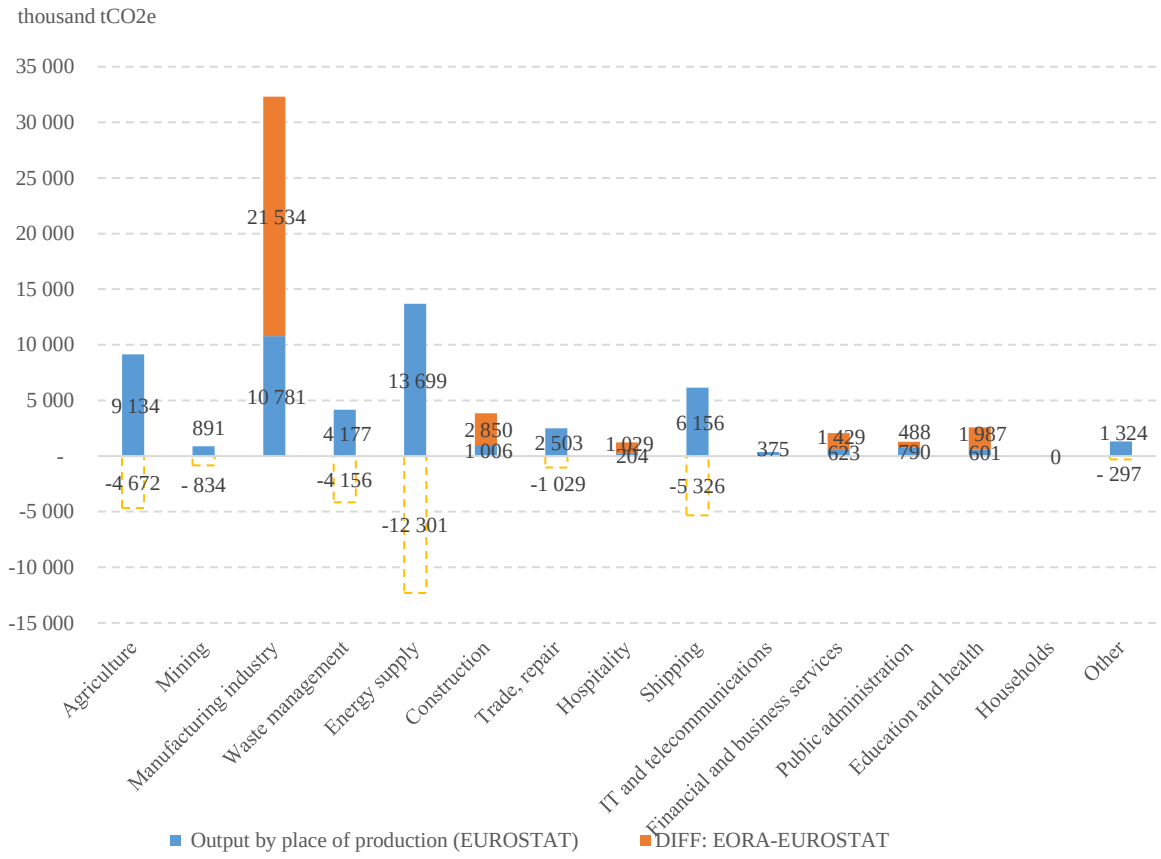

Figure 5: Emissions by production and consumption sector II.

Source: SZENDREY et al., 2024b

The current methodologies for quantifying the carbon footprint and carbon intensity of economic sectors typically rely on direct emissions data when the transition risks of individual sectors are assessed (SZENDREY & DOMBI 2023). However, this approach may underestimate the actual risk exposure of certain industries, although they may appear to be lower risk based on their direct emissions, they may carry a much greater risk when their total emissions are considered. A potential transit shock, such as a sudden carbon tax, could have a significant impact on other sectors through upstream supply chains (SZENDREY et al., 2024b).

My results confirm that accounting for direct impacts is not sufficient to properly identify and quantify the risks associated with emissions. However, the input-output analyses that I present can be used as a tool for conducting aggregate sectoral analyses, as well as for sectoral rankings and risk analyses.

The ESG-PSAM model

My goal in creating the ESG-PSAM model was to help SMEs in their ESG transition by providing them with free, easy-to-use data to conduct an ESG self-assessment without the need for an external expert. The ESG-PSAM model is structured around 4 groups of questions: general, environmental, social and governance aspects, in which general characteristics are not scored. The set of criteria includes 9 general, 19 environmental, 23 social and 33 corporate governance questions, up to a total of 84 questions.

The model can be considered as a qualitative internal self-assessment model, whereby it is important to note that when compliance with ESG criteria is assessed, several researchers claim that it is advisable to conduct a qualitative analysis (see YU et al., 2018). The criteria framework as a kind of partner register is already suitable on its own for evaluating, ranking, or even selecting partners, without applying weighting. Comparisons can be made between partners along the individual criteria and pillars because the assessment framework is uniform.

To assess the overall ESG performance, I proposed 3 possible weighting methods, which are:

1. ***Equal weighting***

   The first and most obvious method is the equal weighting method. Then the performance in each pillar is weighted equally, 1/3, 1/3, 1/3.

2. ***Overemphasis on the environmental pillar***

   In contrast to the equal weighting method, many researchers consider that the environmental pillar should be overweighted in terms of sustainability (see FLEISCHER 2014, SIMONYI & ZSÓTER, 2020), as this not only avoids the company masking its actual negative environmental performance, but also reflects

the view that if the natural environment is significantly damaged, social and governance performance becomes less important.

3. Decreasing weighting per pillar

The wedding cake model of sustainability objectives highlighted the need to present objectives in a hierarchical structure, rather than in a juxtaposed approach. In this view, the system is based on our natural environment, on which the social community is built, and the economy is then built on all of these together. This approach can be reflected if the E-S-G pillars of the ESG framework are considered with progressively decreasing weights so that the final ESG performance could be determined. This approach is reinforced by the predominance of environmental standards in the reporting frameworks (see ESRS), followed by social issues and then governance aspects.

After setting up the ESG-PSAM model, I tested its applicability. It is important to note that my purpose in testing the model was not to compare the ESG performance of the participating companies' partners on the basis of the ratings obtained, but to obtain information on the practical applicability of the model.

Taking all this into account, the 7 surveyed companies carried out an assessment of 70 suppliers and 50 buying partners. The results of the testing show that the assessment took a maximum of 5 hours and required the involvement of 2 employees in each case. None of the companies used any specific expertise to complete the assessment, and no additional information or assistance was requested for the model beyond the information provided. A review of the completed tables shows that all evaluators completed the mandatory information in full and some additional aspects were noted by all of them.

4. NEW RESULTS OF THE DISSERTATION

The dissertation summarises the challenges and opportunities associated with the ESG framework, with a particular focus on the difficulties in quantifying indirect impacts and the anomalies associated with reporting:

1. Strict sustainability regulation has a positive impact on corporate sustainability performance, but the impact on business performance is not clear.

2. The literature suggests that the implementation of the ESG framework has a positive impact on the performance of companies in several respects.

3. The following applies to small and medium-sized enterprises

   i. have not typically published an ESG report

   ii. the implementation of the framework poses a number of challenges for SMEs, not least the lack of resources and expertise

   iii. the current regulatory environment should be significantly simplified and made operational

4. The methods used by regulatory authorities to measure climate risks typically only take the direct emissions into account, whereas indirect impacts in the value chain carry significant risks.

5. The current frameworks require quantification of indirect impacts at an individual level, which increases the uncertainty of results and reduces the possibility to make informed decisions due to different calculation mechanisms, their inaccuracy, and the lack of data of sufficient quality and quantity.

6. Aggregating indirect impacts at the firm level runs into the problem of multiple counting at the sectoral level, which can be overcome with the use of input-output models with environmental extensions, and it reveals differences in sectoral rankings based on direct and indirect emissions. Through the introduction of a production and use approach, corporate responsibility can be clearly defined on the basis of direct and indirect emissions.

7. To support SMEs in their ESG preparation and future reporting, we have built the ESG-PSAM model, which enables SMEs to carry out self-assessments of their own partner

network in a time and cost-efficient way, without the need for external expertise. Although the current regulatory environment does not provide for mandatory reporting for all actors in this segment, there may be cases where SMEs can expect requests for ESG data from their partners.

5. PRACTICAL APPLICABILITY OF THE RESULTS

Comparison of ESG reporting frameworks and standards

Since large companies operating in Hungary may fall under the scope of the CSRD and the ESG Act at the same time, the comparison can provide them with a basis for exploiting synergies between reporting requirements.

Input-output models and indirect impacts

In this paper, I have shown that it is worth quantifying indirect impacts in addition to direct emissions, as sectoral rankings that take both the direct and indirect impacts into account, may give a different picture of actual climate risks. Taking these principles into account, both authorities with supervisory responsibilities and financial market participants can review the risks of financial portfolios and incorporate the results into their supervisory and lending policies. It will also allow them to assess the range of sectors to be supported from an environmental perspective, for example through preferential credit terms or capital requirement relief, against a comprehensive set of criteria. Of course, indirect effects-based risk management is not only important for financial market participants and their supervisors. For the green transition, it is essential that actors in the corporate sector also integrate indirect factors in their assessment processes, in addition to their direct impacts. It is reinforced by the increasing regulatory demand to quantify Scope 3 emissions.

In addition to climate risks, other threats to ecosystem services, such as biodiversity, must also be taken into account. In my view, when environmental risks, such as natural resource use, water use, and land use, are identified in a broader way, consideration should be given to both the direct and indirect impacts, and the identification of qualitative and temporal factors in addition to their quantitative distribution should not be neglected. Input-output models can also be used to quantify the so-called footprint-type indicators for other environmental factors, to integrate indirect effects and open up the possibility of new studies (SZENDREY et al., 2024b).

The ESG-PSAM model

As I have emphasised above, while defining the ESG-PSAM self-assessment model, I have sought to enable companies to self-assess their partners on the basis of publicly available,

free, up-to-date information and their own experience. The model has its own advantage since it does not require the involvement of partners in the evaluation and does not include information that is only available for a fee. The model and weighting methods I have presented are transparent and the databases used here are accessible to all so that partners can reconstruct the evaluation process in a clear, step-by-step manner. Completion is also facilitated by the fact that, in its current form, companies carrying out the assessment do not need to quantify or ask for quantification of indicators related to their partners' environmental impact, which greatly reduces the uncertainty associated with the results. The model that is free of charge and does not require any third-party involvement also allows companies to effectively direct their saved resources towards the ESG transition, such as green technology-related investments.

I have also stressed that the model is currently based on a set of criteria that can be considered relevant for all companies, but by its nature, it can easily be supplemented with additional specific criteria that are relevant for companies. In this context, if a company is, for example, active in a sector that is characterised by additional industry standards or specifications, these can easily be incorporated into the assessment process by the company itself, without the need for consultants or other service providers. In this way, a sectoral or company-by-company assessment can be created. When companies are assessed against the baseline, ESG performance of companies can be compared, while the ESG performance of sectors can be compared through the industry specification.

The model is not a substitute for the mandatory reporting required by the regulator, but it can help to promote ESG preparedness in the absence of available financial and human resources. In this sense, the ESG assessment of partners can provide a starting point for companies to develop their own internal ESG reporting and monitoring, and to carry out the associated risk assessment, which can provide the knowledge to enable companies to assess the reporting of others. Raising awareness can promote the use of sustainability, ESG professionals and the use of external rating services. I have stressed at several points that the procedure I have presented is an internal partner assessment procedure, but some of the criteria used here could also be incorporated into the models of companies that carry out external ratings.

In terms of its application, the model can be incorporated into corporate decision-making at a number of points. On the one hand, it can be integrated into or complementary to classical customer-supplier evaluation models, supporting the evaluation of existing partners or the screening of new partners. At the same time, partner evaluation can also be an opportunity for green corporate value chains. If the company carrying out the assessment is working with several companies in the same industry or intends to establish a new relationship, non-industry-specific criteria can facilitate the choice.

In addition to the above, and as reflected in the regulatory requirements, companies should pay particular attention to identifying and communicating with stakeholders. The assessment carried out with the ESG-PSAM model allows companies as stakeholders to select those customers and suppliers with whom they wish to communicate from an ESG perspective, for example, through further interviews due to their environmental risks.

In addition, the results can also provide end-users and industries with information on which companies and sectors need innovation support.

6. LIST OF PUBLICATIONS RELATED TO THE DISSERTATION

UNIVERSITY AND NATIONAL LIBRARY
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H-4002 Egyetem tér 1, Debrecen
Phone: +3652/410-443, email: publikaciok@lib.unideb.hu

Registry number: DEENK/136/2025.PL
Subject: PhD Publication List

Candidate: Orsolya Szendrey
Doctoral School: Doctoral School of Management and Business
MTMT ID: 10086201

List of publications related to the dissertation

Articles, studies (13)

1. **Szendrey, O.**, Dombi, M.: A hazai fenntarthatósági közzététel helyzete és fejlődési lehetőségei. *Észak-magyarországi Stratégiai Füzetek. 21* (1), 98-114, 2024. ISSN: 1786-1594. DOI: http://dx.doi.org/10.32976/stratfuz.2024.8

2. **Szendrey, O.**, Bányai, G., Dombi, M., Futó, J. E., Gulyás, D. J., Karcagi-Kováts, A., Harazin, P.: ESG-szabályozás és ami mögötte van: lehetőségek és kihívások a vállalkozások magyarországi ESG felkészülésében. *Competitio. 23* (1-2), 19-41, 2024. ISSN: 1588-9645. DOI: http://dx.doi.org/10.21845/comp/2024/1-2/2

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