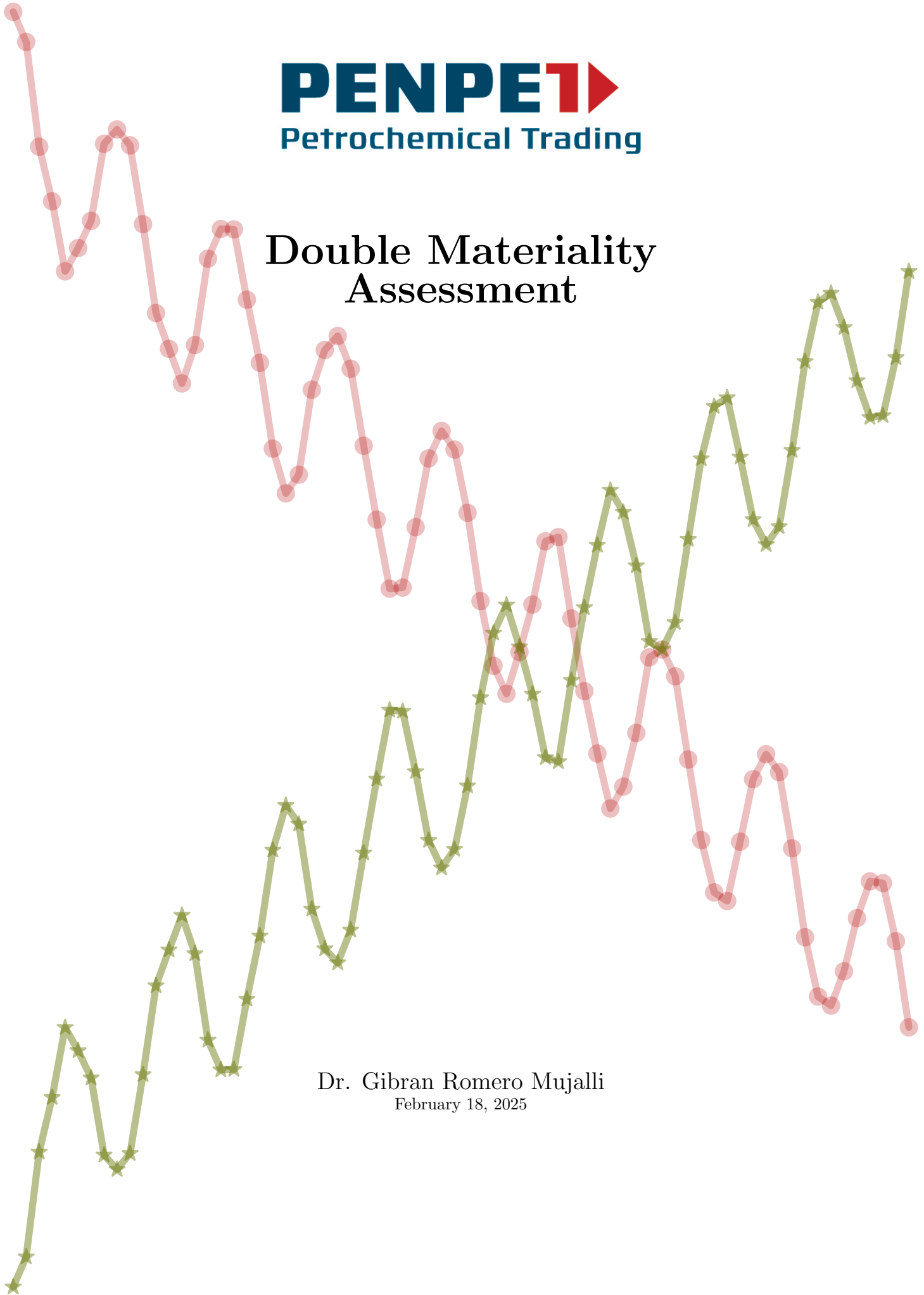


Double Materiality Assessment



Dr. Gibran Romero Mujalli
February 18, 2025

Summary

A double materiality assessment is a new mechanism that helps identifying material topics considering both financial and impact perspectives. Moreover, the risks, opportunities and impacts (ROI) of environmental, social and governance topics are addressed. We have followed the standard methodology provided by the corporate sustainability reporting directive (CSRD) and the European sustainability reporting standards (ESRS), which consist of identifying the relevant topics and stakeholders, followed by the quantitative or qualitative analysis of the risks. The material topics that we have identified are risk management, health and safety, product quality and safety, own workforce, climate change, supply chain management, economic performance and client's satisfaction. Consequently, we have found opportunities to address these issues, consisting of achieving the new ISO14001 certification; developing and analysing ESG metrics; developing a new risk management system; publication of our results through the sustainability report, which represents one part of the engagement mechanism with our stakeholders; and the improvement of our sustainability rating.

1 Introduction

Double materiality is a term that originated from the European Union's Corporate Sustainability Reporting Directive (CSRD [1]) and is included as an important subject under the European Sustainability Reporting Standard (ESRS [2]). This term was developed out of the necessity to establish a common framework to address the most significant environmental, social, and governance (ESG) topics that impact or are strongly influenced by an organisation's activities.

Under these assessments, the organisation represents the system, which includes internal stakeholders, while the rest of the universe comprises external stakeholders and the environment (Fig. 1). Implementing this systemic approach leads to better planning of the sustainability strategy and ensures that these issues are reported to the stakeholders. Furthermore, this approach helps organisations understand the interactions occurring within their boundaries and their responsibility in contributing to sustainability objectives.

The double materiality addresses both the impact and the financial materiality. The impact materiality refers to the organisation's direct and indirect influence on the environment, society, and broader economy. Under this topic the contribution to global challenges—mainly environmental and social problems—are considered. The financial materiality, on the other hand, focuses on the impacts that ESG issues have over the organisation's activities and performance over time.

The present assessment focuses on the impact to the environment and society, and general external stakeholders, from the activities of Penpet Petrochemical Trading GmbH (Impact Materiality) and addresses how the surroundings—environment, regulations, market variability and other factors—affect the company (Financial Materiality). At Penpet, a small-size chemical trading company with a customer-first mindset, we have defined clear environmental and sustainability policies to comply with global regulations and to maintain customers' satisfaction while providing them high quality products and services. Therefore, the objective of this assessment is to determine the risks, opportunities, and priorities of the organisation in terms of both its financial performance and its impact on the environment and society.

2 Methodology

This assessment followed a stepwise approach consisting of identifying relevant ESG themes and their potential impacts.

2.1 System Boundaries

The system boundaries were categorized into:

- Thematic Scope following ESRS: ESG topics such as climate change, biodiversity, own workforce, and corporate governance.
- Temporal Scope: Short-, medium-, and long-term risks and opportunities. Relevant for identifying the actions that should be taken immediately.

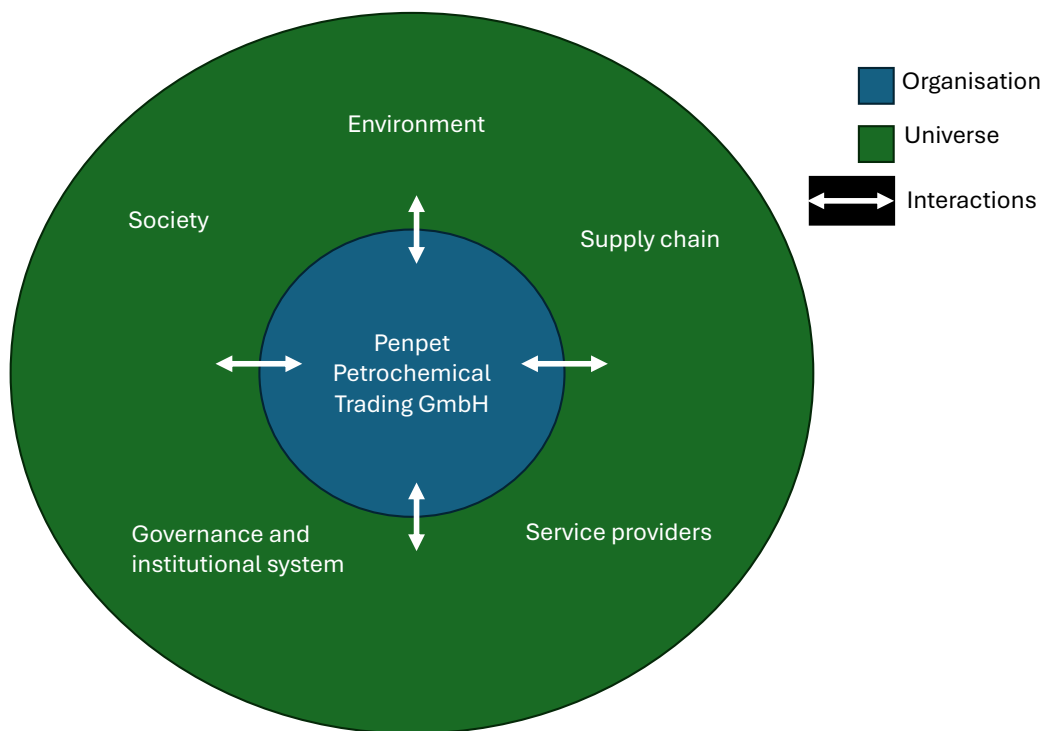


Figure 1: Overview of the system and its structure.

- Geographical Scope: Impacts across all operational regions and along the value chain.

2.2 Stakeholder Identification

A structured stakeholder engagement process was carried out to incorporate diverse perspectives:

- Stakeholder Identification: Key internal and external stakeholders, including employees, investors, regulators, customers, suppliers, and community representatives, were identified.
- Feedback Collection: Engagement methods such as surveys, interviews, focus groups, and workshops were employed to gather insights on perceived material issues.

2.3 Identification of Relevant Topics

A comprehensive list of potential material topics was developed through an analysis of internal information such as complaints, inquiries from our customers and results of audits and questionnaires. Moreover, we have explored external sources, including regulatory guidelines (e.g., CSRD, GRI, EUDR, REACH), peer benchmarking, and industry-specific trends. Finally, we have performed short interviews with specific stakeholders to understand their specific expectations.

2.4 Analysis of Double Materiality

The materiality of identified topics was assessed through two distinct lenses:

- Financial Materiality: Evaluating how ESG issues could impact the organisation's financial performance, value creation, or risk exposure. The first approach of financial materiality was done qualitatively using a scale from 1 to 5, for low and high impact, respectively; and considering the scenarios that have occurred in the past. In future approaches, however, a quantitative method should be developed.
- Impact Materiality: Assessing the organisation's environmental, societal, and economic impacts, with data derived from life cycle assessments, stakeholder input, and external benchmarks. The

impact materiality was assessed qualitatively using a scale from 1 to 5 for low and high impact, respectively.

2.5 Risks and Opportunities

The assessed topics were ranked based on their significance using a scoring system that integrated financial materiality and impact materiality dimensions. Subsequently, a materiality matrix was developed, plotting financial materiality on the x-axis and impact materiality on the y-axis to visualize the relative importance of each topic. Moreover, we have defined three categories of equal size in the materiality matrix as:

- Emerging and non-material topics, which have low financial and impact values.
- Critical topics, representing the topics that might be addressed in the near future.
- Highest material topics, which are the topics where actions are required.

2.6 Validation and Refinement

The results were reviewed by the directors to ensure alignment with strategic objectives and stakeholder expectations. Feedback was incorporated to refine the findings.

2.7 Reporting and Monitoring

The outcomes of this assessment are reported in the sustainability report aligned with the European Sustainability Reporting Standard (ESRS) to comply with the Corporate Sustainability Reporting Standard (CSRS).

3 Material Topics

This assessment led to the development of a list of topics potentially relevant to Penpet. We have classified these topics according to the European Sustainability Reporting Standard (ESRS) into three main fields, i.e. Environmental, Social and Governance.

3.1 Environmental

- **Pollution:** refers to emission of materials to the environment—or more specifically to the atmosphere, hydrosphere, pedosphere and biosphere—caused by the organisation’s activities. This encompasses risks from spills or leaks and emissions caused indirectly through third-party transportation. Additionally, we have included the measurement and monitoring of immissions in our workplace, which is part of our safe and safety policy.
- **Resource consumption:** highlights the significance of limited natural resources and emphasizes the importance of efficient use of resources such as water, time and space. Energy and waste are distinct from this topic due to their regulatory and operational significance.
- **Waste management:** focuses on understanding the environmental impact of waste generation and the importance of efficient disposal and analysis of product End-of-Life (EoL) processes. This topic seeks to address physical limits and environmental implications related to waste.
- **Energy management:** includes the use of electricity, fuel, and heating within the organisation, as well as associated regulatory requirements and cost variability.
- **Climate change:** involves the evaluation of greenhouse gas emissions related to operations and the trade of chemicals with high global warming potential. It also includes considerations of corporate and product carbon footprints (CCF and PCF) due to their broader societal and governmental relevance.
- **Biodiversity:** examines the potential impact of biobased product demand on biodiversity, including land-use changes and regulatory mechanisms such as the EUDR. This topic evaluates product-specific impacts through life cycle assessments.

3.2 Social

- Health and safety: encompasses the assessment of occupational safety for workers and the health implications of traded chemicals.
- Own workforce: evaluates the impact of employees' personal and professional growth on organisational competitiveness, along with fostering an inclusive environment that promotes equal opportunities.
- Human rights: considers the organisation's influence on human rights and labour standards in its supply chain, as well as the safety of communities near storage or transit hubs. This topic also addresses societal implications of the company's products.

3.3 Governance

- Economic performance: focuses on financial sustainability, including revenue growth, profitability, and long-term financial planning. Monitoring economic trends and opportunities is key to ensuring resilience.
- Risk management: covers market risks such as raw material price volatility, supply chain disruptions, and competition, along with operational efficiency aspects like storage, transportation, and logistics costs.
- Business ethics: Highlights adherence to ethical standards, legal compliance, and codes of conduct.
- Cybersecurity and data protection: Pertains to safeguarding sensitive organisational data, personnel information, and high-value internal analyses, as well as evaluating vulnerabilities to cyberattacks.
- Product quality and safety: addresses the importance of maintaining high standards to ensure customer trust and compliance with regulations.
- Supply chain management: emphasizes the importance of maintaining operational continuity and mitigating vulnerabilities within the supply chain.
- Clients' satisfaction: considers reputation and stakeholder trust as critical financial factors, addressing environmental risks and evolving ESG expectations that influence sustainable practices and financial performance.

4 Stakeholders

Stakeholders, in this assessment, refer to individuals, groups, or entities that influence, are influenced by, or have an interest in the Penpet Petrochemical Trading GmbH's activities, goals, or performance. They can be categorized into two groups (Table 1): internal stakeholders, who are directly connected to the organisation, and external stakeholders, who exist outside the organisation but are still impacted by its actions.

Each stakeholder is further classified according to their relevance factor. This classification helps the company to analyse and calculate, with relatively greater accuracy, the risk factor.

The internal stakeholders are the employer, including the Chief Executive Officer and other executives, as well as the employees at all levels. The external stakeholders, on the other hand, include clients, suppliers, logistics companies, service providers, legislative authorities, government entities, banks, insurance companies, investors, families and relatives, and surrounding communities. This distinction ensures that all relevant parties, whether directly involved in or affected by the organisation's activities, are appropriately considered in the assessment.

5 Impact Materiality

The results of the impact materiality by topic are summarised below. The values for score are between 1 and 5 for low and high impact, respectively. The environmental impacts are limited because the organisation does not possess a production facility. However, its indirect environmental impact and potential transportation incidents represent the main topics of concern. The social impacts are significant,

Table 1: Internal and external stakeholders

Category	Identification number	Stakeholder
Internal	S01	Owner/Director
Internal	S02	Employees
External	S03	Clients (B2B)
External	S04	Suppliers
External	S05	Service providers
External	S06	Associations
External	S07	Legislators
External	S08	Government entities
External	S09	Banks
External	S10	Insurance companies
External	S11	Public media
External	S12	Partners and investors
External	S13	Family and relatives
External	S14	Community

and topics of concern include the safe and safety of workers, and the development of employees. Finally, in the governance topics we have identified as high impact topics the risk management, the business ethics and the product quality and safety.

- Pollution: Pollution incidents are uncommon. However, storage and handling in deposits could have localize impacts. **Score of 2,0.**
- Resource consumption: We have identified a low direct impact through the organisation’s activities. However, this topic must be evaluated for a growing company, where the impact might increase significantly. **Score of 1,5.**
- Waste management: The amount of waste produced, although limited quantity, has an environmental impact depending on the end-of-life of each specific waste type. **Score of 3,4.**
- Energy management: The overall impact to the environment is negligible. The organisation consumes electricity for its operational facilities that include the warehouses and office. **Score of 1,7.**
- Climate change: Our direct impact is limited due to the low operational emissions. However, indirect emissions through transport are significant and represent more than 90 % of the corporate carbon footprint. Additionally, our products. **Score of 3,0.**
- Biodiversity: Impacts on biodiversity are limited due to the absence of production facilities. However, the indirect impact through the supply chain should be monitored. **Score of 1,0.**
- Health and safety: Handling with chemicals implies that the organisation must guarantee the health and safety of its employees and surrounding communities. **Score of 4,5.**
- Own workforce: The organisation bears a moderate impact on the professional development of its employees. Despite that the organisation encourages and provides additional training, there exists individual differences in interest among employees. The organization has a direct impact on work-life balance, providing adequate wages and ensuring no discrimination against its employees. **Score of 3,7.**
- Human rights: The impact related to human rights in the supply chain is matter of interest to stakeholders, especially concerning suppliers from high-risk areas or countries. **Score of 3,3.**
- Economic performance: Given that the organisation is a small business the overall economic impact is limited. **Score of 2,4.**
- Risk management : It is a central topic to minimize harmful impacts to the environment, society and the supply chain. **Score of 5,0.**
- Business ethics: The organisation’s activities have a direct impact on business ethics, and it must ensure compliance with high standards. Especially concerning suppliers. **Score of 4,1.**

- Cybersecurity and data protection: The overall impact is limited due to the nature of the data managed. **Score of 1,5.**
- Product quality and safety: Ensuring high quality of products is crucial for clients and it possess and relative high impact to their own activities. The organisation does not possess a production facility; however, the organisation must ensure high quality of products and packaging during transport. **Score of 4,6.**
- Supply chain management: Effective supply chain management, including the coordination of logistics and warehouse operations, is crucial for ensuring timely deliveries. Proper management affects third-party logistics partners, enhancing their ability to meet deadlines and deliver on commitments. **Score of 3,0.**
- Clients' satisfaction: The organisation has a direct impact on clients' operations, including their own compliance with current regulations. **Score of 2,7.**

6 Financial Materiality

The results of the financial materiality by topic are summarised below. The values for score are between 1 and 5 for low and high impact, respectively. The most relevant environmental topic that we have identified to have a high financial impact is the climate change. Under social topics, health and safety and the retention of high skilled employee are critical to business continuity and resilience. Finally, Governance topics are relevant to the organisation's performance, such as the economic performance, risk management, product quality and safety, supply chain management, and clients' satisfaction.

- Pollution: Incidents during transport could lead to significant financial costs due to pollution control and cleaning. There could be also penalties and potential reputational damage. Additionally, incidents could happen by managing chemical products (non-hazardous substances) in the organisation's warehouses that could lead to additional costs. **Score of 3,5.**
- Resource consumption: The organisation does not have a production facility nor intense resource consumption. **Score of 1,5.**
- Waste management: The improper handling of chemicals in the warehouse could lead to additional costs through cleaning and potential reputational damage. **Score of 3,1.**
- Energy management: The organisation consumes negligible energy given that it does not have production facilities and because the transportation is done by third party partners. **Score of 2,2.**
- Climate change: The reporting of carbon footprints of products and corporate activities is of increasing interest to stakeholders, and accurate and effective reporting is directly related to market reputation. **Score of 4,1.**
- Biodiversity: The organisation must comply with current and future regulations. The financial risks, however, are limited to biobased products. For example, through the EUDR regulation. **Score of 1,3.**
- Health and safety: The organisation must ensure strict safe and safety protocols through the GHS and safety data sheets for all its products. Additionally, compliance with ISO 45001 influences the organisation's reputation. **Score of 4,7.**
- Own workforce: Attracting and retaining high qualified personal is crucial for operational continuity and resilience. It has a direct financial impact. **Score of 4,2.**
- Human rights: Potential issues in the supply chain could damage the organisation's reputation. **Score of 2,3.**
- Economic performance: The strong financial performance is critical to the organisation's survival. **Score of 5,0.**
- Risk management: Managing risks related to chemical trading, such as storage hazards or supply chain disruptions, is central to operational resilience and financial performance. **Score of 4,9.**
- Business ethics: Ethical business practices are a growing expectation and influence market reputation. **Score of 2,5.**

- Cybersecurity and data protection: Although it has not occurred in the past, a data breach or a system shutdown could lead to financial penalties, disruption of activities or reputational damage. **Score of 3,0.**
- Product quality and safety: This topic is relevant for customers and has a direct influence on market reputation. An effective quality control should ensure that the products won't reduce their quality during transport. Otherwise it could cost to the company, not only cleaning procedures of packaging, but also financial penalties. Moreover, the organisation must ensure regulatory compliance for all its products. Additionally, public image on chemical products can have an indirect effect and hence compliance with high quality and safety standards is relevance for business continuity and financial performance. **Score of 4,5.**
- Supply chain management: Potential issues on the supply chain could impact the organisation's operations and reputation. One of the most common complaints from our clients is with respect to transportation of products. **Score of 4,5.**
- Clients' satisfaction: This is an essential topic for sustained business performance. **Score of 4,6.**

7 Risk Assessment

Through this assessment we have identified the highest material topics as: risk management, product quality and safety, health and safety of employees and surrounding society, and employee development and retention (own workforce). The most relevant critical topics to considered are climate change, supply chain management and economic performance (Fig. 2). These topics should be monitored and further analysed to developed actions in the short- to medium-term. Although some topics were classified as non-material to the organisation, they must be monitored and reported accordingly to the stakeholders. However, no immediate action must be taken.

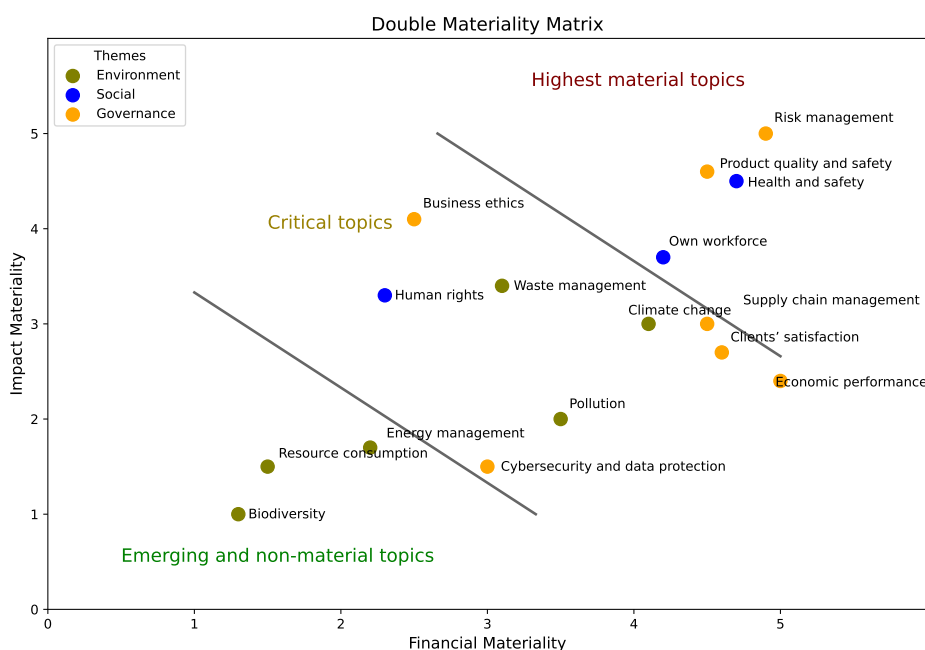


Figure 2: Double materiality matrix displaying the highest material topics, the critical and the emerging issues.

8 Opportunities and Actions

The double materiality matrix was used as a reference to understand where the company should prioritize its actions and how to develop opportunities from high-risk topics.

8.1 Risk Management

We see this topic as an opportunity to develop a risk management system that will monitor internal and external data and provide the managing director with risk reports, which will include ESG topics relevant for the organisation's performance. The goal is to provide quantitative data on risks, improving significantly our future materiality assessments.

8.2 Health and Safety

We recognize that strict control over the health and safety of employees, especially those working in the warehouse, is crucial to prevent potential disruptions in operations. Therefore, we are working closely with a third-party organization to develop a process that guarantees that the safety data sheets are updated according to the GHS for all chemical products we handle. These sheets will also be translated into the respective languages of the countries where we transport these materials. Additionally, we comply with ISO 45001, although we do not yet have certification.

8.3 Product Quality and Safety

We will monitor complaints regarding the quality of products delivered to our clients through our 8D complaint report. We will develop a simple and yet effective mechanism to rate our suppliers. We will monitor the safety during transport and the use of correct packaging of products. A new process should be in place to ensure that the stability and quality of the products are maintained during transport and storage in the respective warehouse.

8.4 Own Workforce

The organisation will develop a training program in the areas of environment, safe and safety of chemical products, and the use of specific Software. As a priority, we must identify mechanisms to improve the processes of each department that are critical to the workflow at the organisation. This is a relevant point that will influence the motivation and satisfaction of both employees and employers.

8.5 Climate Change

Under this topic we will report our CCF, and we already report our PCF values to our clients. We see this topic as an opportunity to improve the reputation of the organisation substantially because we have advance rapidly in only few months. The main action is to set goals and to update our environmental policy.

8.6 Supply Chain Management

Will be part of the quality and environmental management system (integrated management system). We will monitor Service providers (transport of products) and suppliers according to quality and environmental standards through a rating mechanism that will depend on clients' complaints and on internal evaluations.

8.7 Economic Performance

We will develop and analyse metrics to follow the economic performance and to study how sustainability practises will influence our overall performance in the long-term. Additionally, as part of the risk management system, the market trends and the regulatory environment will be followed to be prepared for sudden changes in the market and use them as opportunities to improve our reputation.

8.8 Client's satisfaction

In our B2B system the satisfaction of our clients is one of the most relevant aspects that impact our overall performance. The increasing inquiries in topics concerning the sustainability and climate change have given us a perspective in how to address this issue and used it as an opportunity to increase the satisfaction of our clients. We have identified as main points the Ecovadis rating, the calculation and reporting of PCF values, the reporting of CCF values, and the ISO certifications. We will plan to produce our first sustainability report, which will summarize these topics and will serve as a mechanism for improving our reputation and overall sustainability rating. Finally, we will publish our sustainability policy on our website to increase our impact and improve our business practices.

9 Conclusion

The material topics relevant to Penpet Petrochemical Trading GmbH are risk management, health and safety, product quality and safety, own workforce, climate change, supply chain management, economic performance and client's satisfaction. These topics represent not only risks but also opportunities if addressed correctly. Therefore, we have identified the following actions to be taken:

- Developing and monitoring of metrics, including the application and analysis of the 8D complaint procedure.
- Developing of a new risk management system, which will address and follow many relevant ESG topics.
- Achieving new certifications, especially the ISO14001.
- Publication and development of the first sustainability report.
- Improving sustainability ratings, namely Ecovadis and IntegrityNext.
- The satisfaction of employee will be improved by focusing on an effective workflow by each department.

Following these actions and goals we will ensure the continuity and good performance of our organisation. Moreover, we will improve substantially our reputation.

References

- [1] European Parliament and Council of the European Union. Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting, 2022. OJ L 322, 16.12.2022, p. 15–80.
- [2] European Commission. Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards, 2023. OJ L series, 22.12.2023, p. 1–284.