



PEARL Case Study Template



Case Study Identification

Case Study Title:

Partner Institution: Steinbeis Augsburg Business School

Country: Germany

Sector /Industry: Manufacturing

SME Profile:

Company size (micro / small / medium): medium, 200 employies

Ownership structure (family-owned, partnership, etc.): family-owned

Market scope (local / regional / international): regional and international

2. Relevant PEARL Curriculum Module(s)

(Select one primary module and, if relevant, secondary modules: Module 1 – Introduction to ESG, Module 2 – ESG Onboarding, Vision and Responsibility, Module 3 – ESG Risk Analysis and Materiality Assessment, Module 4 – ESG Strategy and Implementation, Module 5 – Reporting, Communication and Branding, Module 6 – Sustainable Financing and Funding Options for SMEs)

Primary Module: 3

Secondary / Supporting Modules (if any):

3. Learning Purpose of the Case

What ESG challenge, decision, or dilemma does this case illustrate?

This case illustrates a typical situation faced by many small and medium-sized industrial companies that increasingly encounter ESG expectations from customers and supply chains. Large construction companies and international clients are requesting more transparency regarding environmental impacts, particularly product-level CO₂ emissions.

The company already collects operational data on energy use, water consumption, waste, and safety. However, these data are mainly used for internal operational management and are not yet structured within an ESG framework.

The central challenge for the company is therefore to identify which ESG topics are **most material** for its business and stakeholders. Participants analyse the available information to identify potential **impacts, risks, and opportunities** and prioritise them through a **materiality assessment**.

Why is this case relevant for SMEs?

Many SMEs are not directly subject to sustainability reporting requirements, but they are increasingly affected through **customer expectations, supply chain requirements, and ESG questionnaires**.

In sectors such as construction materials and infrastructure supply, climate impacts and resource efficiency are particularly relevant due to the high carbon intensity of materials such as cement and steel.

This case reflects a realistic situation in which an SME must translate existing operational data into a structured ESG perspective and prioritise sustainability topics despite limited resources.

Which competence gaps (knowledge, skills, attitudes) does it address?

The case helps participants develop three key competencies:

ESG understanding

Participants learn how operational topics such as energy use, water consumption, workplace safety, and supply chain management relate to ESG concepts.

Analytical skills

Participants practise identifying **impacts, risks, and opportunities** and applying a **materiality matrix** to prioritise relevant ESG topics.

Strategic perspective

The exercise demonstrates how ESG issues can influence operational efficiency, customer relationships, and long-term competitiveness.

4. Case Context and Background

Provide a concise but concrete description of the SME's situation:

The company operates a medium-sized concrete plant specializing in the production of precast concrete components for large-scale construction projects such as infrastructure, commercial buildings, and industrial facilities. Its products are mainly delivered to major international construction companies that increasingly integrate ESG criteria into procurement and supplier evaluation processes. As a result, expectations regarding environmental transparency, particularly related to CO₂ emissions at product level, have risen significantly in recent years. Concrete production is energy-intensive, and energy costs represent a strategically relevant cost factor for the company. In response, the company has initiated investments in photovoltaic systems and implemented energy-efficiency measures across production processes. These measures are intended to reduce long-term operating costs while contributing to a lower carbon footprint, although full CO₂ transparency at product level remains challenging.

Water consumption plays an important role in the production process, especially for mixing, cooling, and cleaning activities. To address this, the company has introduced a closed-loop water system that allows for the reuse of process water, reducing freshwater withdrawal. While this system improves resource efficiency, it requires ongoing monitoring and maintenance.

The company has also invested in processing concrete waste generated during production and demolition returns. By increasing the share of recycled concrete in selected product lines, it aims to support circularity and reduce material-related emissions. However, recycled content levels vary depending on technical requirements and customer specifications.

Workplace safety is a critical operational issue, particularly in production, storage, and transport activities involving heavy machinery and materials. The workforce includes a notable share of temporary and agency workers, reflecting cyclical demand in the construction sector. These workers often remain with the company for limited periods, which increases the importance of effective onboarding, training, and safety communication.

To date, the company has not implemented a comprehensive or overarching ESG reporting system. However, many relevant operational data points are already collected across departments, including energy use, water consumption, waste volumes, and safety-related indicators. These data are primarily used for internal management purposes and compliance, rather than being integrated into a structured ESG framework or external reporting.

Overall, the company finds itself in a situation where operational efficiency, cost pressure, and rising ESG expectations increasingly intersect, creating the need for a structured and prioritized approach to sustainability-related decision-making.

5. ESG Challenge / Problem Statement

Clearly describe the central ESG-related issue, for example:

(**Central issue:** The company must respond to rising ESG requirements from key customers, especially around **CO₂ reporting**, while ensuring its ESG efforts focus on the most **material impacts and risks**.)

Key tension:

- Customer demands push for fast CO₂ information
- Internal resources are limited
- The company needs a structured basis for decisions:
- Which ESG topics are material and why?
- Which impacts are most significant?
- Which risks could affect business continuity, cost, and customer access?

6. Data, Evidence, and Inputs

Company Profile and Operational Context

- Medium-sized precast concrete manufacturer located in Germany
- Approx. 140 employees in total
- About 25–30 percent agency and temporary workers, mainly in production and logistics
- Annual turnover approx. 35–45 million EUR
- Production focused on structural and infrastructure-related precast elements
- Own concrete mixing facilities and curing halls
- Logistics operated with 8 company-owned trucks plus external transport partners

Qualitative Inputs Provided in the Case

Customer ESG expectations:

- Key customers are large international construction companies
- Increasing demand for CO₂ transparency at product level
- ESG questionnaires are regularly part of procurement processes
- Requests focus mainly on climate data, less on social or governance topics

Energy and climate

- Energy costs are a strategically relevant cost factor
- Climate-related investments have already started
- CO₂ data for purchased cement and steel is available via supplier declarations

Water

- Water use is relevant for mixing, cooling, and cleaning
- Closed-loop water system implemented to reduce freshwater withdrawal

Circularity

- Concrete waste from production and returns is processed on-site
- Recycled aggregates are used where technically feasible

Occupational safety

- Safety is critical in production, transport, and on-site delivery
- Particular attention required for short-term and agency workers

Quantitative Inputs (Simplified, Realistic Case Data)

Energy and climate

- Annual electricity consumption: approx. 4.2 GWh
- Energy costs account for approx. 9–11 percent of total operating costs
- Photovoltaic systems cover approx. 35–40 percent of annual electricity demand
- Remaining electricity sourced from the grid
- Cement and reinforcing steel are the most CO₂-intensive purchased materials
- CO₂ intensity data for cement and steel is available from German suppliers

Water

- Annual water withdrawal: approx. 55,000–65,000 m³
- Water recirculation rate via closed-loop system: approx. 70–75 percent

Materials and circularity

- Recycled concrete share in selected product lines: approx. 20–30 percent

Occupational safety

- Recordable safety incidents:
- Overall trend: slightly decreasing over the last three years
- Higher incident risk in logistics and loading activities
- Regular safety briefings exist, but onboarding quality varies for temporary workers

(Workforce

- Agency workers mainly assigned to physically demanding and higher-risk tasks
- High fluctuation rate among temporary staff due to market cycles

Pollution and Biodiversity

- Biodiversity: no tangible effects
- No hazardous substances are used and no relevant pollution impacts are identified.

Supply Chain and Procurement Inputs

Suppliers

- Core suppliers (cement, aggregates, steel) are located in Germany
- Most suppliers already provide basic ESG or CO₂-related data
- No high-risk sourcing countries involved

Procurement

- CO₂ intensity of cement and steel is considered in purchasing decisions
- Price and availability remain dominant decision factors

Stakeholder Inputs for Validation Exercises

External

- Typical customer ESG questionnaires and tender requirements
- Customer requests for product-level CO₂ figures and improvement pathways

Internal

- Production: energy use, waste, process efficiency
- Maintenance: equipment efficiency, downtime, energy-saving measures
- Logistics: transport emissions, safety risks
- HR: workforce structure, agency workers, training, safety onboarding
- Finance: cost structure, energy price sensitivity, investment capacity

7. Suggested Tools from the PEARL Toolbox

Indicate which PEARL tools can be applied in this case and how?

- *ESG Impact Assessment Matrix (M3)*
- *ESG Risk-Opportunity Matrix (M3)*
- *ESG Materiality Analysis (M3)*

Participants should use the ESG Impact Assessment Matrix to analyse how the company's activities affect the environment and society across its operations and value chain.

Based on the information provided in the case, participants should identify and formulate **at least seven ESG impacts** related to the company's production processes, resource use, logistics, workforce structure, and supply chain.

Participants should evaluate the **significance of each impact** by considering factors such as scale, scope, and likelihood. The goal of this step is to identify which environmental and social impacts are potentially most relevant for the company and its stakeholders.

The identified impacts will serve as the basis for the subsequent materiality assessment.

Participants should analyse how ESG-related factors may influence the company's business performance, operational stability, and future competitiveness.

Using the information provided in the case, participants should formulate **at least five ESG-related risks and at least five ESG-related opportunities**.

Risks should reflect potential negative effects on the company's operations, costs, market access, or reputation. Opportunities should reflect potential positive effects such as efficiency improvements, innovation potential, or stronger stakeholder relationships.

Participants should assess the **relevance and potential magnitude** of each identified risk and opportunity.

Participants should combine the results of the impact analysis and the risk–opportunity assessment to perform an ESG materiality analysis.

Using the identified ESG topics, participants should determine which issues are most relevant for the company from both a **sustainability perspective** and a **business perspective**.

Participants should position the identified topics in a **materiality matrix**, comparing their significance in terms of environmental and social impacts and their relevance for the company's strategic and financial performance.

The objective of this exercise is to identify and prioritise the ESG topics that should be considered most material for the company and therefore most relevant for future ESG management and decision-making.

8. Suggested Solution

ESG Impact	Strength	Likelihood	Impact Score
High energy consumption in concrete production (Hotspot: energy-intensive mixing and curing processes)	5	5	25
CO ₂ emissions from cement and steel inputs (Hotspot: carbon-intensive raw materials in construction supply chains)	5	5	25
Indirect emissions from electricity use (Hotspot: grid electricity dependence)	4	4	16
Water consumption in production processes (Hotspot: mixing, cooling and cleaning processes)	3	4	12
Waste generation from concrete production and demolition returns (Hotspot: production waste and returned materials)	3	4	12
Closed-loop water system reducing freshwater withdrawal (Sweet Spot: internal water recirculation improving resource efficiency)	3	4	12
Recycling of concrete materials and use of recycled aggregates (Sweet Spot: circular material flows in construction)	4	4	16
Occupational health and safety risks in production and logistics (Hotspot: heavy machinery, loading operations and transport activities)	4	4	16
Transport emissions from company trucks and logistics operations (Hotspot: diesel-based transport of heavy materials)	3	3	9
Workforce structure with temporary workers affecting safety management (Hotspot: onboarding and training challenges for agency workers)	3	3	9

8. Suggested Solution

Risk	Likelihood	Business Impact	Risk Score
Rising energy prices affecting production costs	5	5	25
Customer requirements for CO ₂ transparency	4	5	20
Stricter climate regulation in construction sector	3	4	12
Workplace accidents causing operational disruption	3	4	12
Supply chain dependence on carbon-intensive materials	4	4	16

Opportunity	Likelihood	Business Impact	Score
Cost savings through energy efficiency measures and increased on-site renewable energy generation (e.g., photovoltaic systems)	4	5	20
Competitive advantage in tenders through increased use of recycled concrete materials and circular construction solutions	4	4	16
Lower long-term logistics costs through gradual transition to electric trucks (reduced fuel and maintenance costs)	3	4	12
Improved market access through transparent CO₂ footprint data for construction clients and ESG-driven procurement processes	4	4	16
Higher productivity and reduced downtime through improved occupational health and safety management	3	4	12



9. Expected Learning Outcomes

After working on this case, which KSAs will learners be able to develop?

After working on this case, learners will be able to:

Identify key ESG impacts of a concrete manufacturing SME and structure them logically (inside-out).

Assess key ESG risks affecting business performance and customer access (outside-in).

Create a justified longlist and shortlist of ESG topics and explain exclusions based on case assumptions.

Draft a first materiality assessment output suitable for internal alignment and stakeholder communication.